APPENDIX A

Standard Drawings
Sewerage and Water Board of New Orleans

Sewerage and Water Board of New Orleans

Standard Drawings

Revised August 4, 2025

INDEX OF STANDARD DRAWINGS

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5. 2445-F-2 Rectangular frame and cover for meter or valve
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7. D-3264 Detail of standard 24”x 30” clear opening drop inlet catch basin
8. D-3340 Detail of standard manhole for circular pipe larger than 36”
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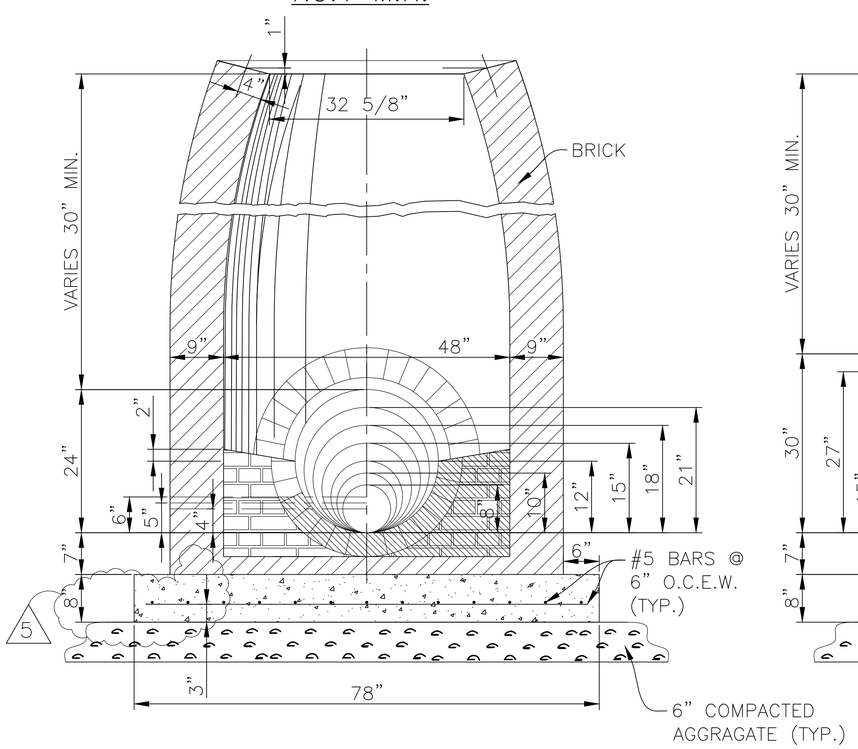
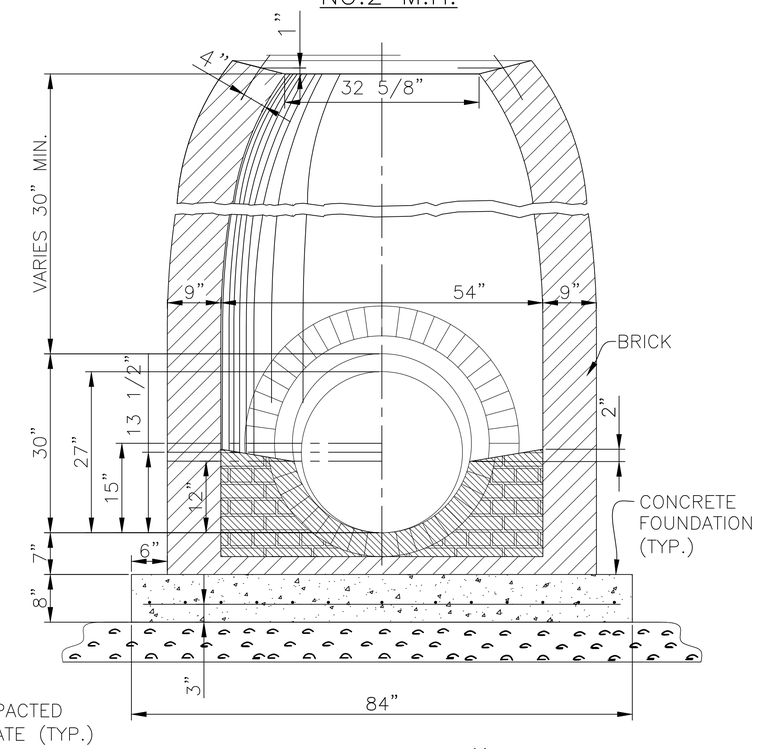
35. 8353-W2 Above ground assembly-fire only
36. 8353-W3 Above ground assembly-domestic only

NO.1 M.H.



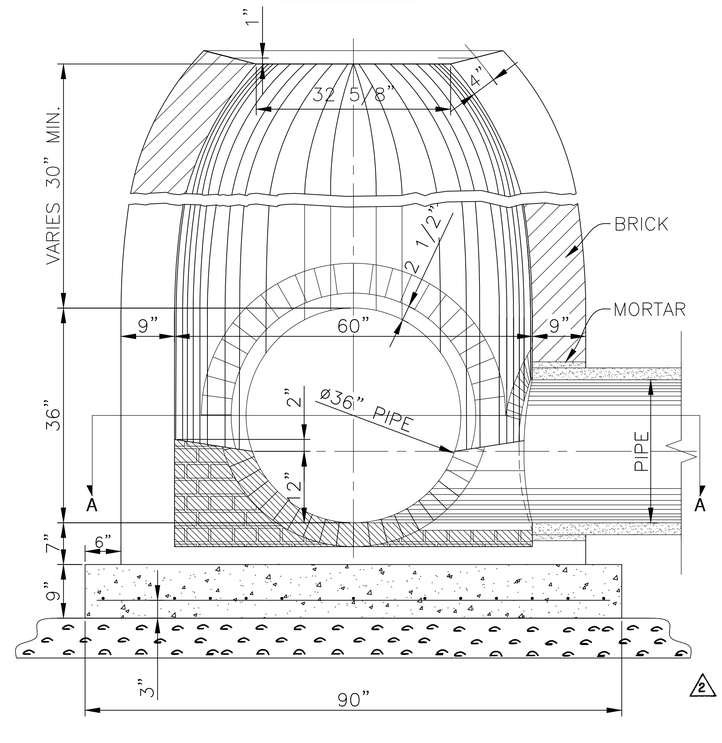
SECTION FOR 8'', 10'', 12'', 15'', 18'', 21'' & 24'' PIPE

NO.2 M.H.

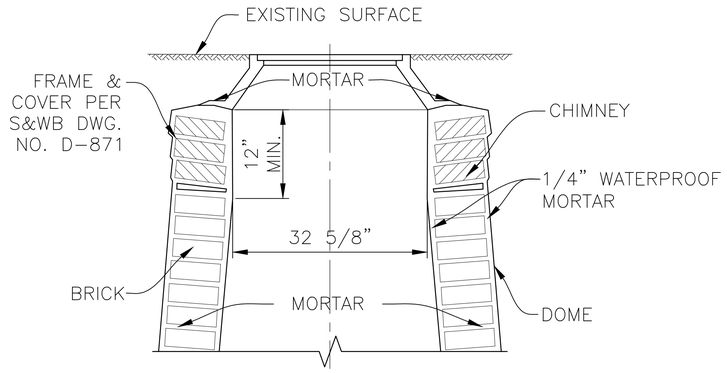


SECTION FOR 27'' & 30'' PIPE

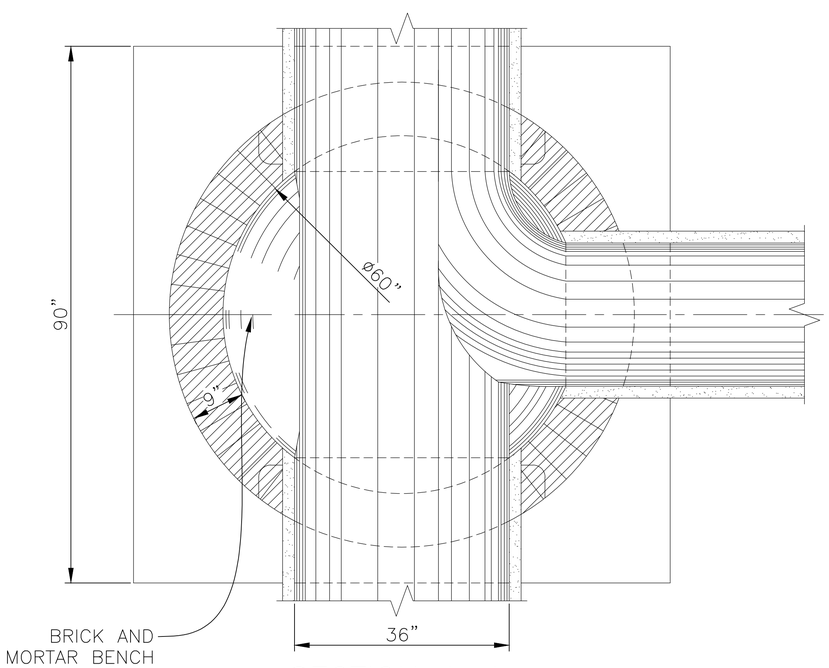
NO.3 M.H.



SECTION FOR 36" PIPE



TYPICAL UPPER MANHOLE SECTION



SECTION A–A

NO.3 M.H. – AS SHOWN
NO.1 & 2 M.H. – SIMILAR

NOT TO SCALE

4 NOTES:

1. ALL MANHOLES, FRAMES AND COVERS SHALL BE AS SHOWN ON S&WB DWG. NO. D–871, GENERAL PLAN OF MANHOLE FRAME AND COVER.
2. INSIDE & OUTSIDE BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH A HYDROGEN SULPHIDE RESISTANT AND WATERPROOFING COMPOUND SUCH AS SPECTRASHIELD / ZYPEX OR EQUIVALENT, FOR THICKNESS OF 1/4'' IN ACCORDANCE WITH SPECIFICATIONS.
3. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3,000 P.S.I. IN 28 DAYS.
4. SEE S&WB DWG. NO. 6178–B–6 FOR PRE–CAST MANHOLES.
5. ALL BACKFILL MATERIAL HAS TO BE IN 12 INCH LIFT COMPACTED TO 95% PROCTOR DENSITY.

REV.	DATE	DESCRIPTION	BY
6	06–10–25	GENERAL REVISIONS	D.MC.
5	03–09–07	CHANGED COVERING AND CONCRETE FOUNDATION THICKNESS	D.MC.
4	03–09–07	DELETED, REVISED AND ADDED NOTES	D.MC.
3.	7–11–88	GENERAL REVISION	M.L.L
2	2–28–75	REPLACED LUMBER FOUNDATION WITH CONCRETE	P.C.B.
1.	11–5–65	NOTE FOR PLASTERING	R.P.D

SEWERAGE AND WATER BOARD OF NEW ORLEANS

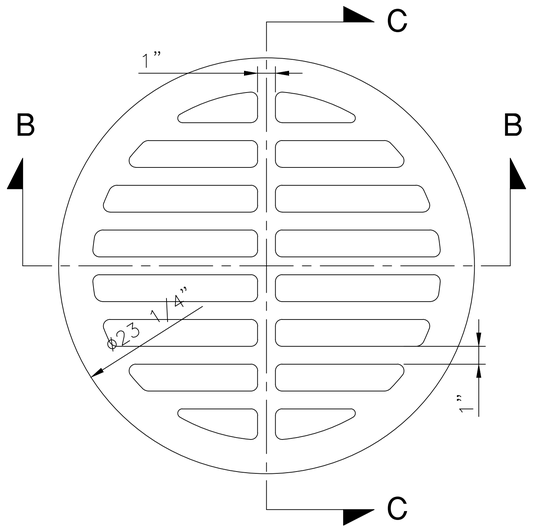
GENERAL SECTION OF STANDARD DRAIN BRICK MANHOLE

DR.	DRG.COMM.
TRC.	
CK.	P.H.Q.
AP.	
SCALE	GRAPHIC
DATE	7–1–58

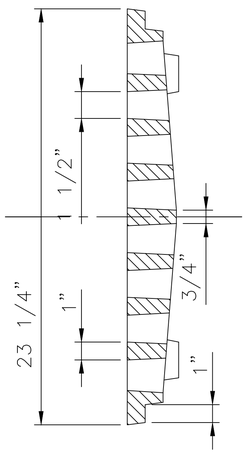
GENERAL SUPERINTENDENT

DWG. NO. D–870

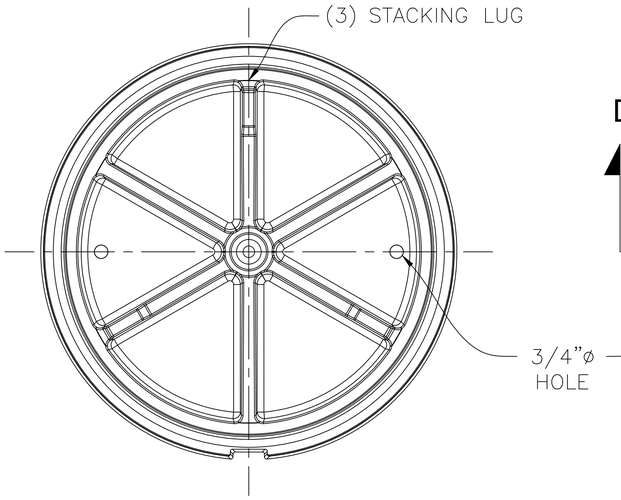
SET NO. | SHEET NO.



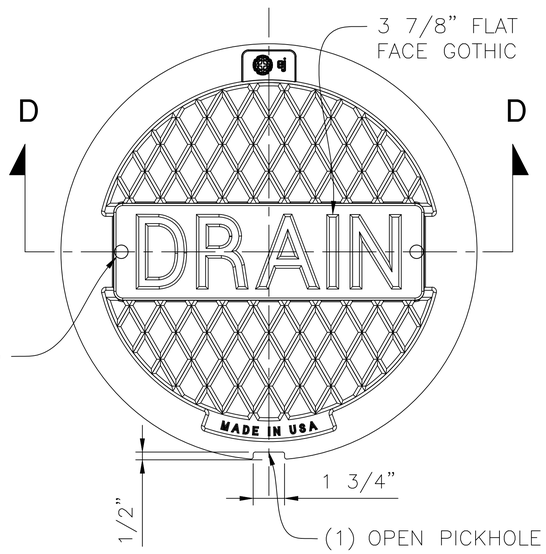
TOP VIEW OF OPEN GRATE MANHOLE COVER



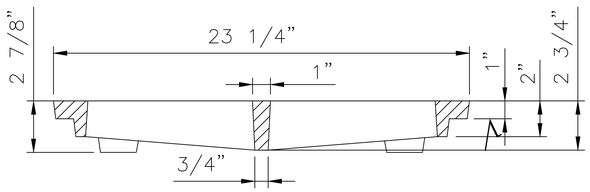
SECTION OF VIEW C–C



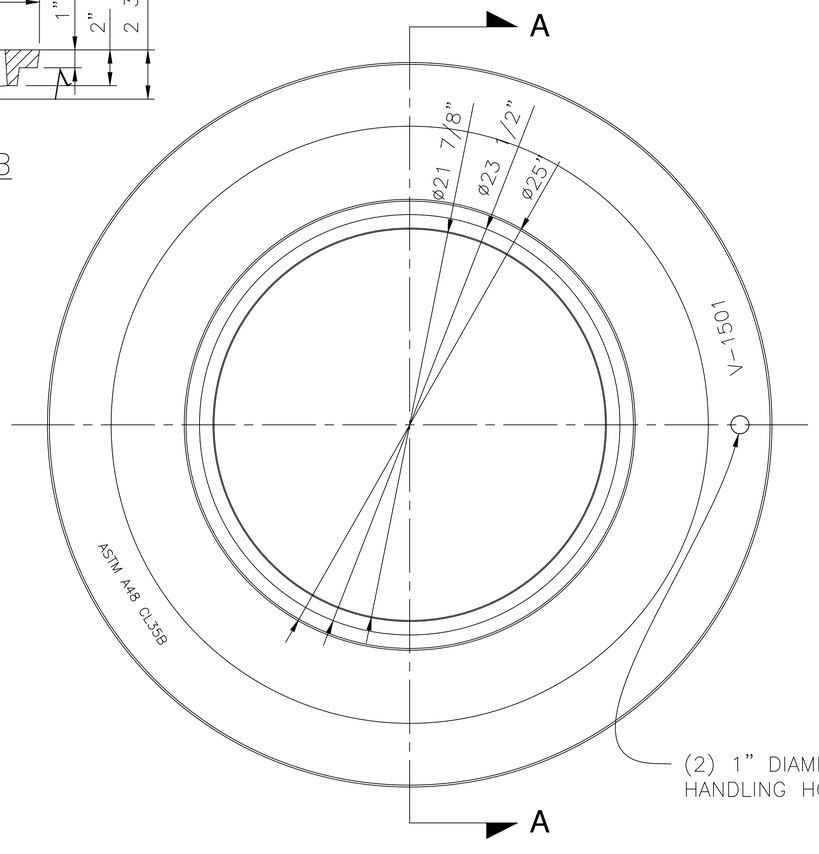
BOTTOM VIEW OF MANHOLE COVER



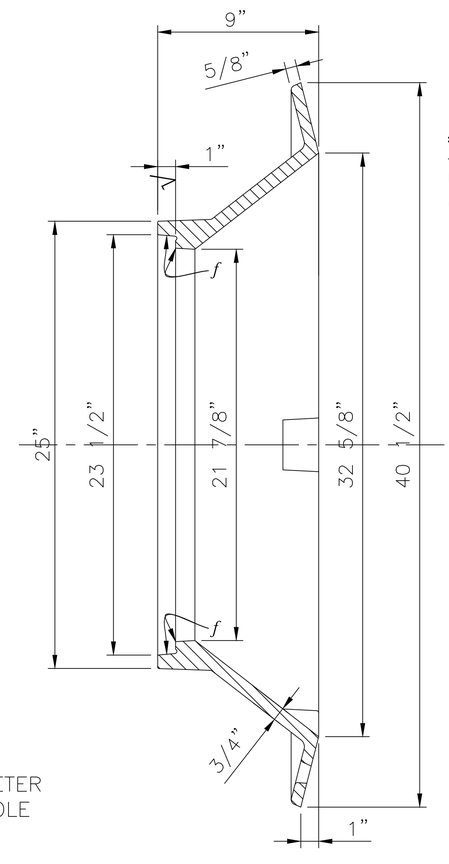
TOP VIEW OF MANHOLE COVER



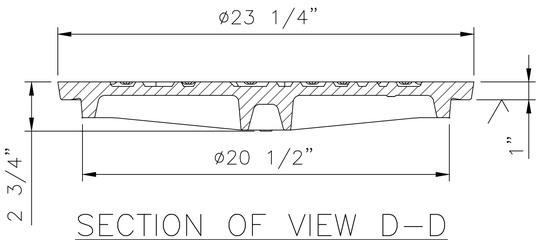
SECTION OF VIEW B–B



TOP VIEW OF MANHOLE FRAME



SECTION OF VIEW A–A



SECTION OF VIEW D–D

⚠3 NOTE:

1. f = MACHINED SURFACE
2. FRAME & COVER SHALL CONFORM TO EAST JORDAN IRON WORKS, INC. V–1501 FRAME & V3501 COVER OR APPROVED EQUAL.
3. PREFERRED FOR THE CENTRAL BUSINESS DISTRICT (CBD) AREA: FRAME & COVER SHALL CONFORM TO EAST JORDAN IRON WORKS, INC. V–1032 – STORMSURGE ACCESS ASSEMBLY. FRAME & COVER OR APPROVED EQUAL. (SEE S&WB DWG. NO. 3143–E–1).
4. FOR ADJUSTING MANHOLE ELEVATION, COMPOSITE RING, MADE BY EAST JORDAN OR EQUIVALENT, CAN BE USED IN LIEU OF BRICK & MORTAR PER APPROVAL OF THE S&WB ENGINEER.

NOT TO SCALE

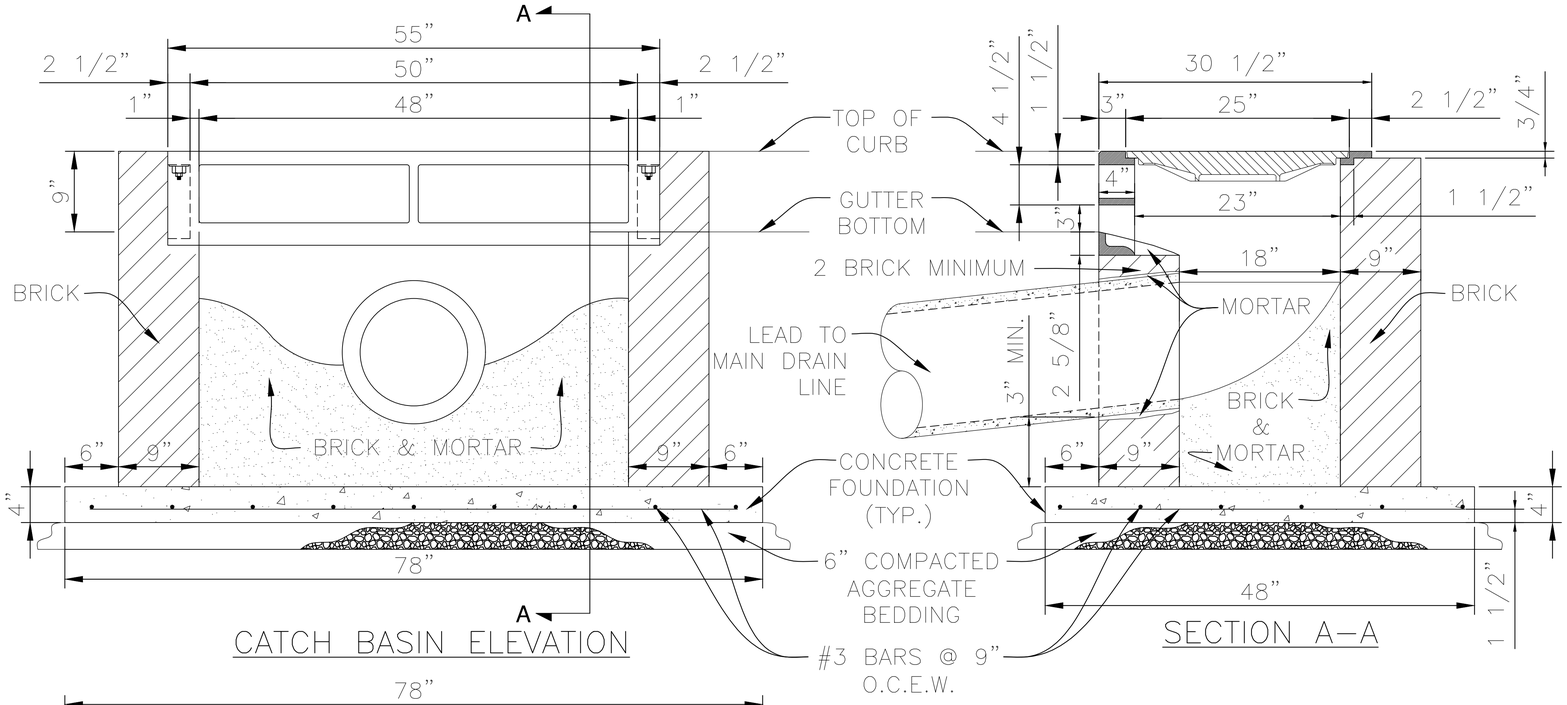
REV.	DATE	DESCRIPTION	BY
4	06–10–25	GENERAL REVISIONS	D.MC.
⚠3	03–09–07	CHANGE COVER AND FRAME WEIGHTS	D.MC.
⚠2	12–1–93	REISSUED	J.L.P.
1.	8–5–65	REVISED CASTINGS WEIGHTS N.E.T.	

SEWERAGE AND WATER BOARD OF NEW ORLEANS

GENERAL PLAN OF DRAIN MANHOLE FRAME & COVER

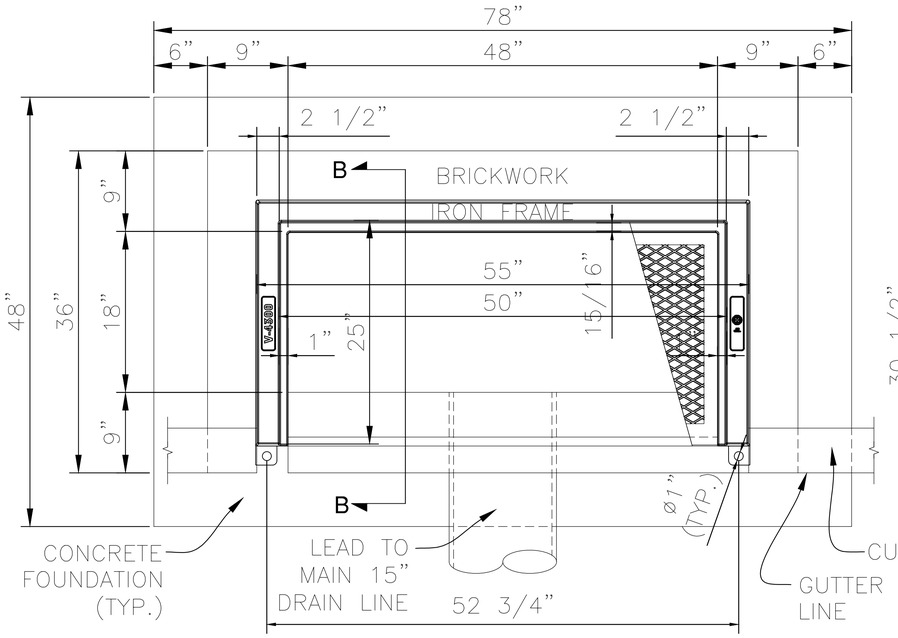
DR. DRG CHK'D R.A.	J. Joseph Sullivan GENERAL SUPERINTENDENT
TRC.	
CK. P.H.Q. & W.P.	
AP.	
SCALE GRAPHIC	DWG. NO. D–871 ⚠2
DATE 7–1–58	SET NO. SHEET NO.

2

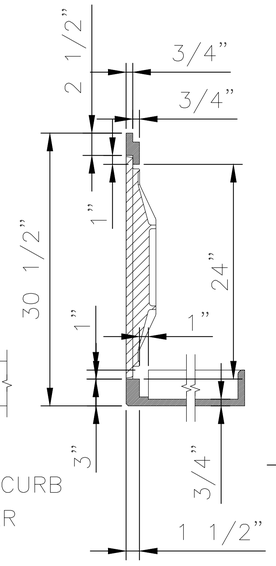


CATCH BASIN ELEVATION

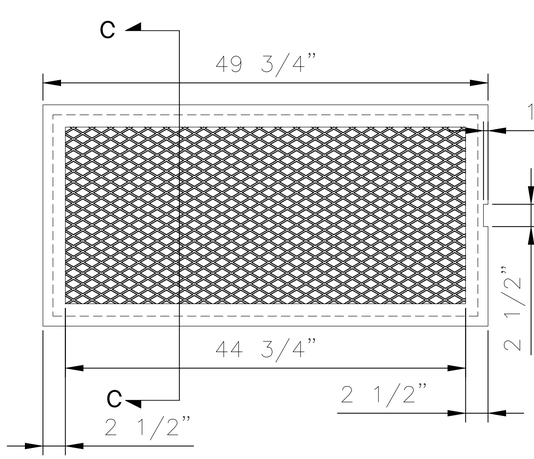
SECTION A–A



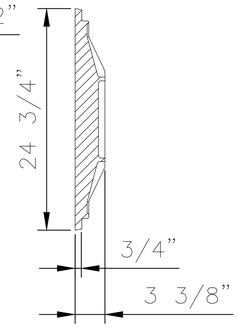
PLAN VIEW



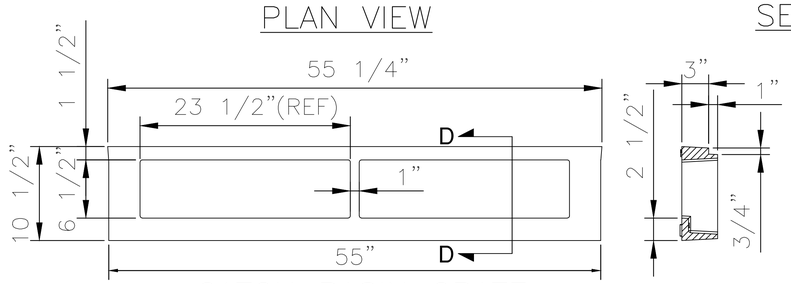
SECTION B–B



PLAN OF IRON COVER



SECTION C–C



CATCH BASIN GRATE FRONT VIEW

SECTION D–D

⚠6 NOTES:

1. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES & INVERTS TO BE HYDRAULIC CEMENT MORTARED AND/OR A WATERPROOFING COMPOUND, THICKNESS OF 1/4” IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
2. FRAME & COVER IS THE SAME FOR ALL CATCH BASINS WITH AN OPTION OF THE 2 PIECE COVER: V4300–7.
3. FOR DOUBLE VERTICAL CATCH BASIN, SEE S&WB DWGS. NO. D–873A.
4. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3,000 P.S.I. IN 28 DAYS.
5. SEE S&WB DWG. NO. D–3264 FOR DROP INLETS.
6. SEE S&WB DWG. NO. D–3431–A & D–3431–B FOR MOUNTABLE CATCH BASINS.
7. FRAME & GRATE SHALL CONFORM TO EAST JORDAN IRON WORKS, V–4300 CURB INLETS SERIES. [FRAME: V4300, GRATE: V4302 & COVER: V4300–3 & V4300–7].
8. MAXIMUM DEPTH OF CATCH BASIN CANNOT EXCEED 5’ UNLESS APPROVED BY S&WB ENGINEER.
9. MINIMUM PIPE LEAD OF 15”.

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
8	07–08–25	GENERAL REVISIONS	D.MC.
⚠7	03–09–07	REVISED FRAME AND GRATES	D.MC.
⚠6	03–09–07	GENERAL REVISIONS	D.MC.
⚠5	1-4-94	REDRAWN	

SEWERAGE AND WATER BOARD OF NEW ORLEANS

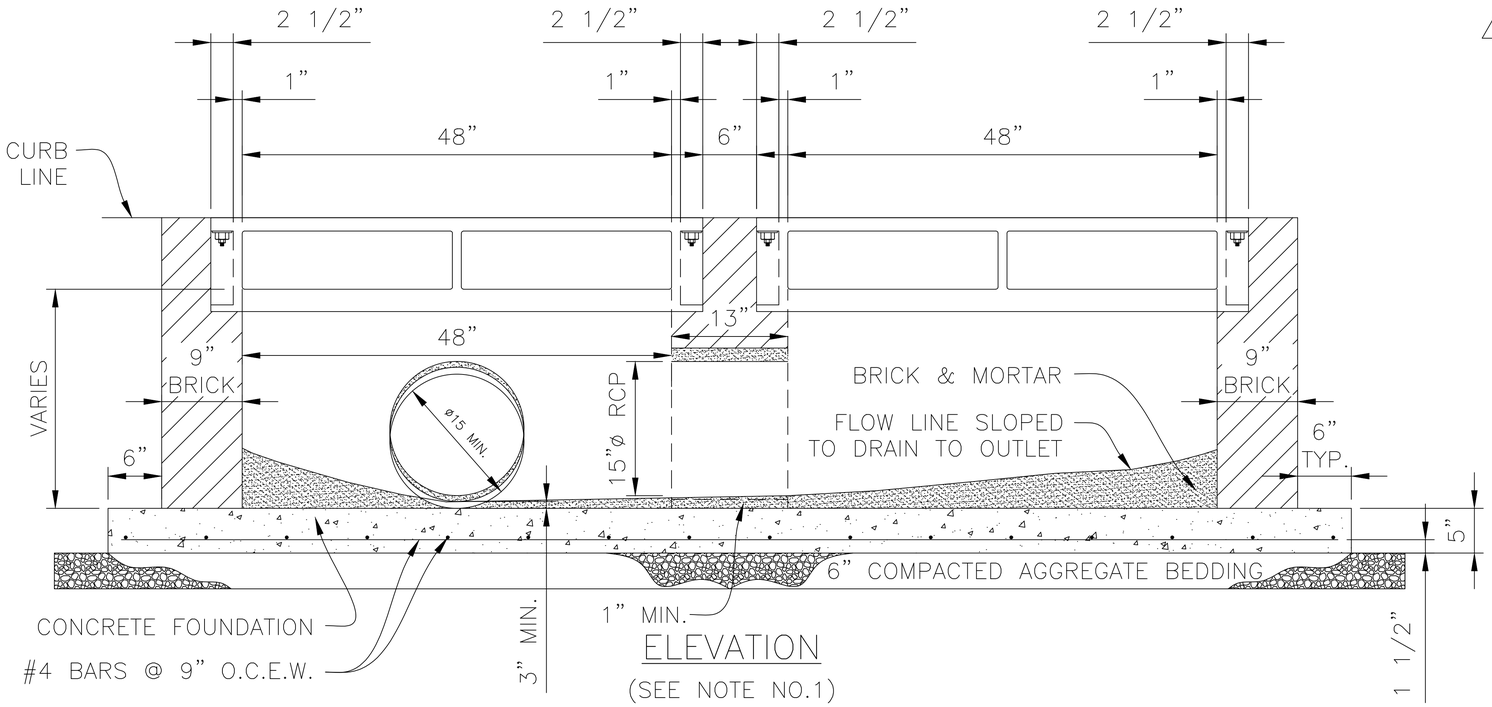
DETAIL OF STANDARD SINGLE VERTICAL CATCH BASIN NUMBERS 1, 2 & 3

DR. #	
TRC.	
CK. JP	
AP. JEP	
SCALE	
DATE 1-4-94	SET NO. / SHEET NO.

S. Gayle Sullivan, GENERAL SUPERINTENDENT

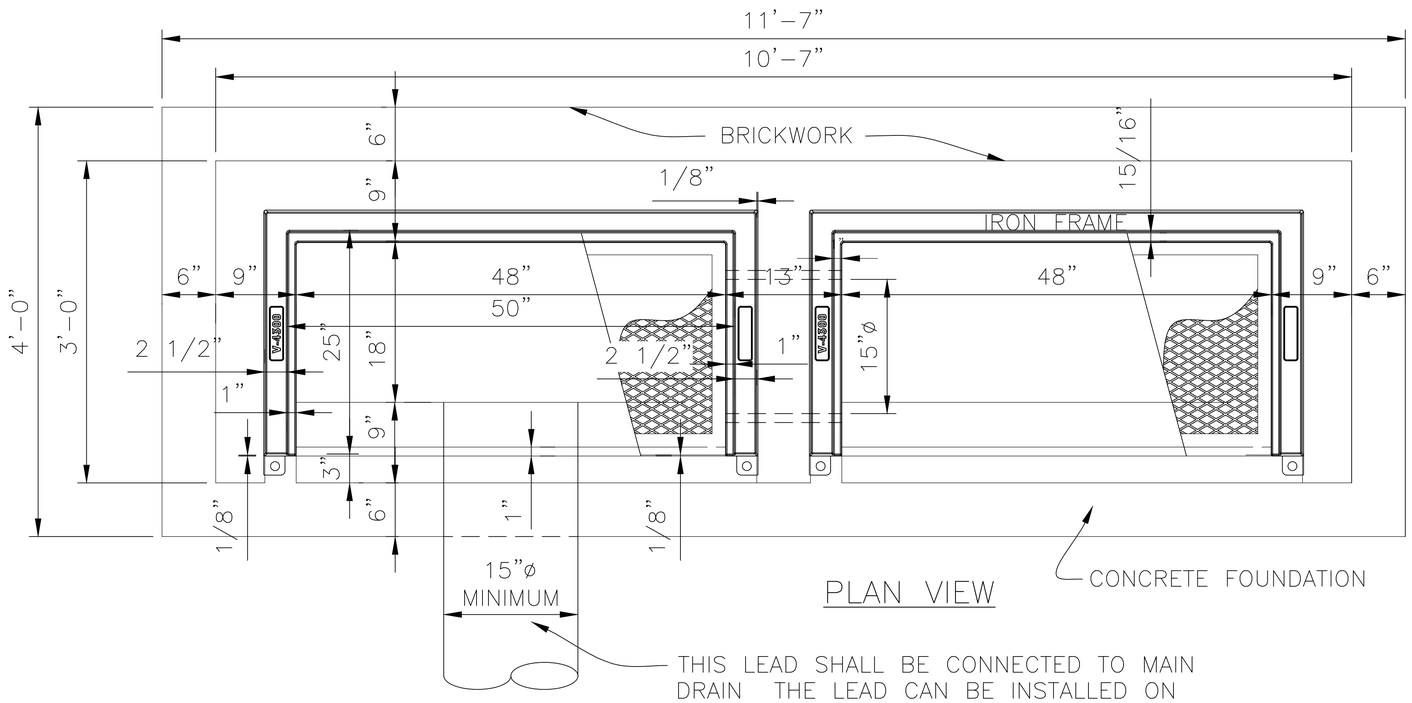
DWG. NO. D–873 ⚠5

3



ELEVATION

(SEE NOTE NO.1)



PLAN VIEW

THIS LEAD SHALL BE CONNECTED TO MAIN DRAIN THE LEAD CAN BE INSTALLED ON EITHER SIDE OF THE CATCH BASIN. THE BOTTOM OF CATCH BASIN MUST BE SLOPED TO DRAIN TOWARDS LEAD. CATCH BASIN LEAD MAY BE POSITIONED AT AN ANGLE AS REQUIRED TO ATTACH TO MAIN DRAIN LINE.

⚠1 NOTES:

1. DOUBLE CATCH BASIN SHOWN. SEE S&WB DWG. NO. D-873 FOR SINGLE TYPE CATCH BASIN CASTINGS.
2. SEE S&WB DWG. NO. D-873 FOR SECTIONS & DETAILS OF CATCH BASINS AND METAL CASTING. SEE S&WB DWG. NO. 8320-D AND 8321-D FOR COMBINATION CATCH BASIN STRUCTURES.
3. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES & INVERTS TO BE HYDRAULIC CEMENT MORTARED AND/OR A WATERPROOFING COMPOUND, THICKNESS OF 1/4" IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
4. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.
5. SEE S&WB DWG. NO. D-3264 FOR DROP INLETS.
6. SEE S&WB DWG. NO. D-3431-A & D-3431-B FOR MOUNTABLE CATCH BASINS.
7. MAXIMUM DEPTH OF CATCH BASIN CANNOT EXCEED 5' UNLESS APPROVED BY S&WB ENGINEER.
8. FRAME & GRATE SHALL CONFORM TO EAST JORDAN IRON WORKS, V-4300 CURB INLETS SERIES. [FRAME: V4300, GRATE: V4302 & COVER: V4300-3 AND V4300-7].

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
3	06-10-25	GENERAL REVISIONS	D.MC.
⚠2	03-09-07	REVISED FRAME & GRATES	D.MC.
⚠1	03-09-07	DELETED, REVISED AND ADDED NOTES	D.MC.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

DETAIL OF STANDARD DOUBLE VERTICAL CATCH BASIN

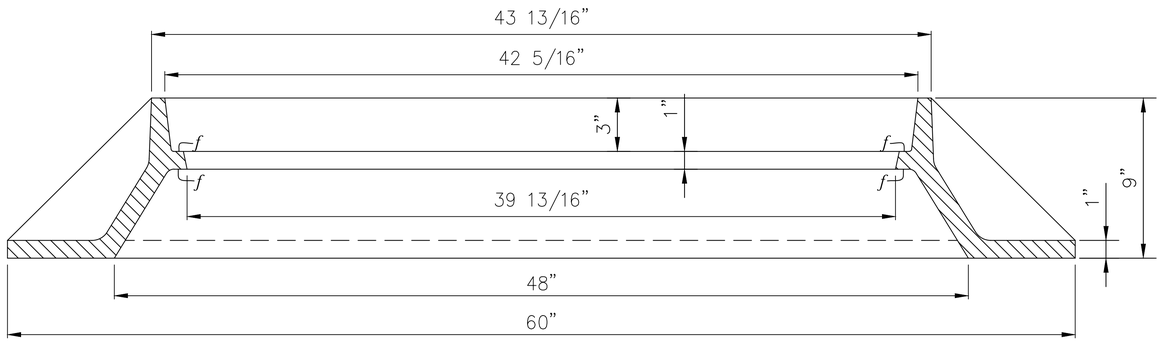
DR.	
TRC.	
CK.	YSL
AP.	
SCALE	AS SHOWN
DATE	11-9-06

GENERAL SUPERINTENDENT

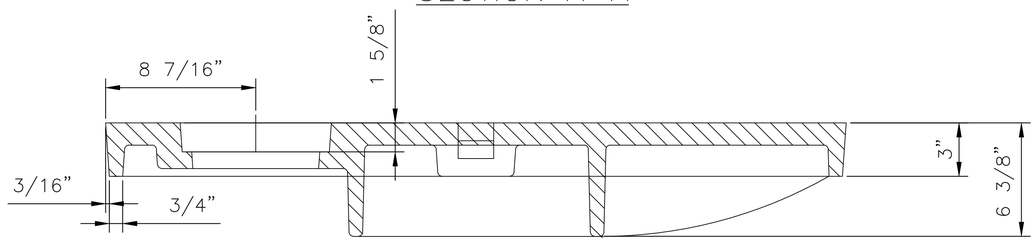
DWG. NO. D-873A

SET NO. | SHEET NO.

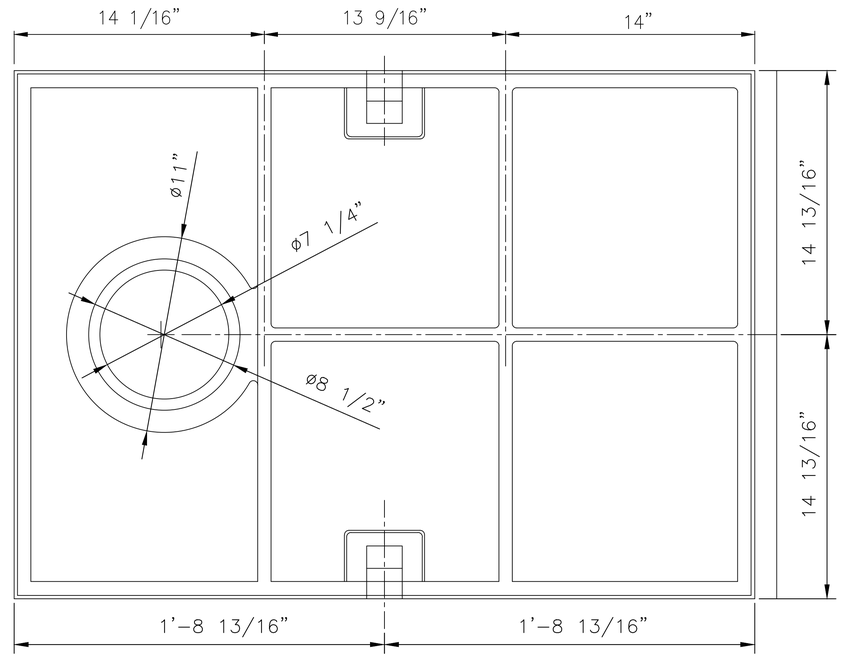
4



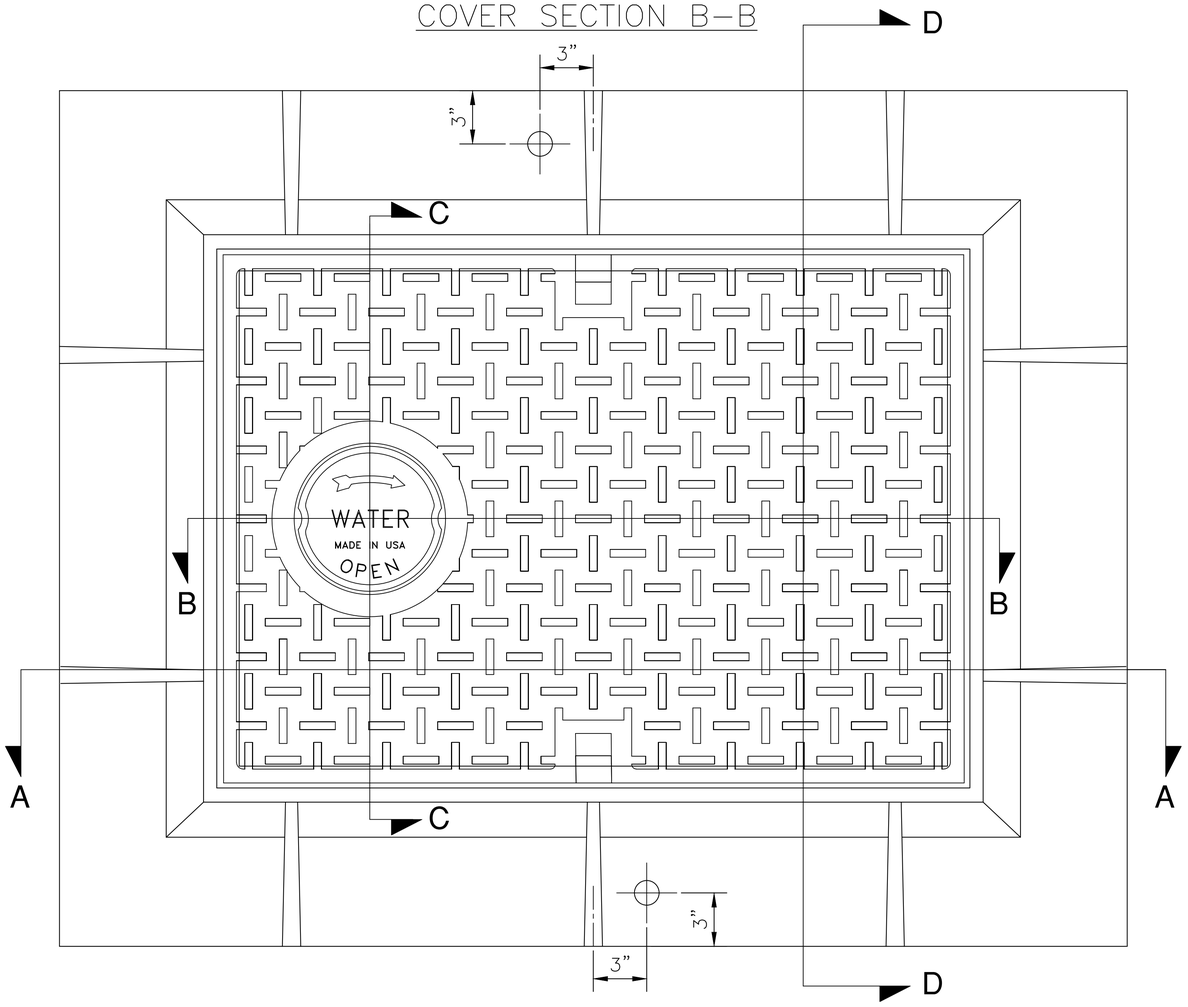
SECTION A–A



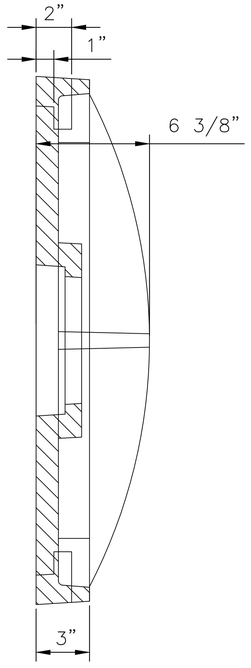
COVER SECTION B–B



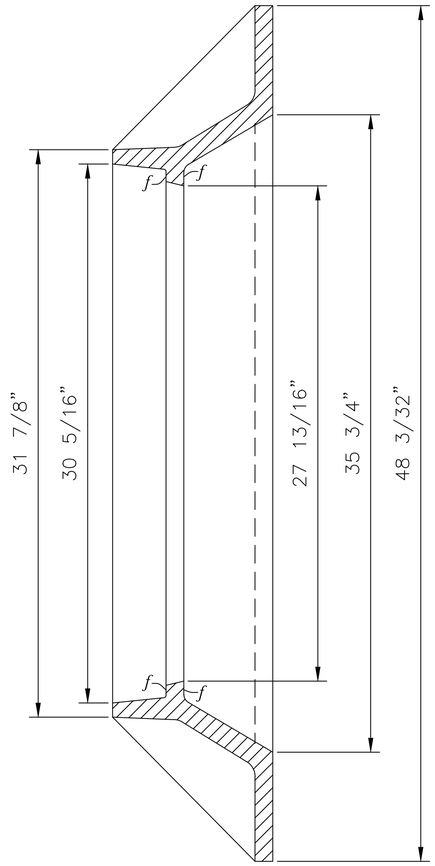
UNDER SIDE OF COVER



PLAN OF COVER & FRAME



COVER SECTION C–C



SECTION D–D

NOTE:

1. f = MACHINED SURFACE
2. FRAME & COVER SHALL CONFORM TO EAST JORDAN IRON WORKS, V–6399 FRAME & GRATE OR APPROVED EQUAL.
3. VALVE BOX COVER EJ 8451 OR EQUAL.

NOT TO SCALE

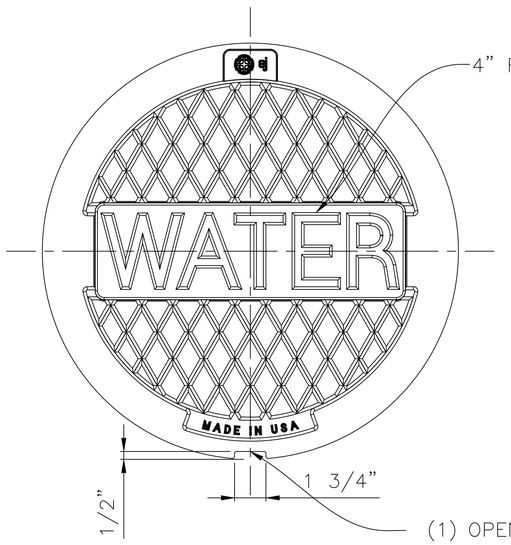
REV.	DATE	DESCRIPTION	BY
3	06–03–25	GENERAL REVISIONS	D.MC.
2	03–09–07	ADDED NOTE	D.MC.
1	1-13-61	ADDED COVER FOR SEWER MANHOLE	R.J.M.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

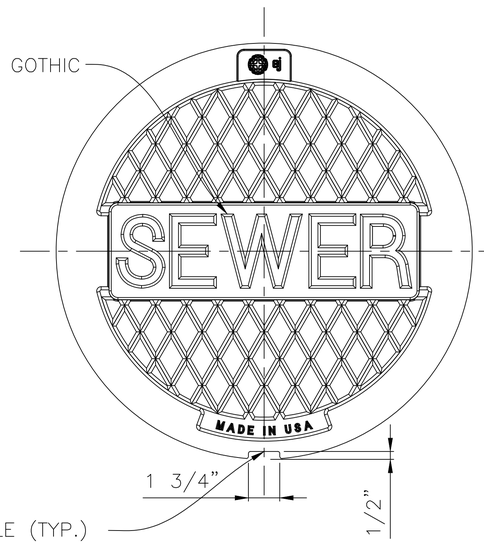
RECTANGULAR FRAME AND COVER FOR METER OR VALVE

DR. O. HENRY			
TRC.			
CK. C. WIEMERS			
AP.	GENERAL SUPERINTENDENT		
SCALE GRAPHIC	DWG. NO. 2445-F-2		
DATE 7/1/58	SET NO.	SHEET NO.	

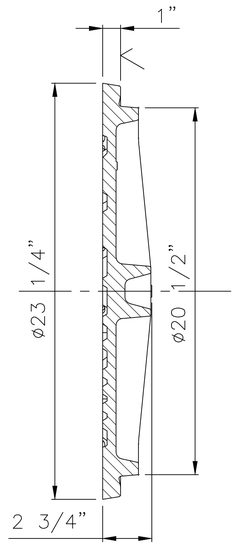
5



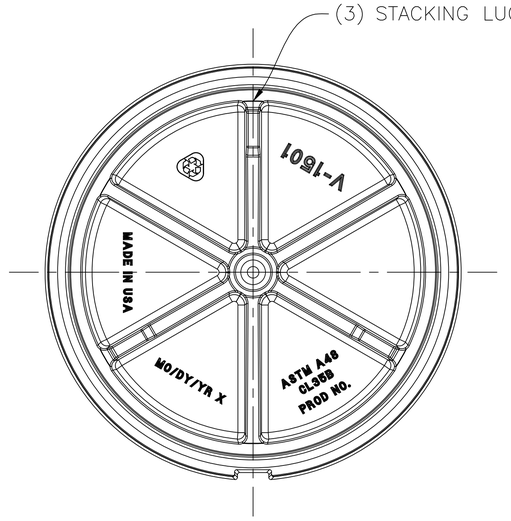
TOP VIEW OF WATER MANHOLE COVER



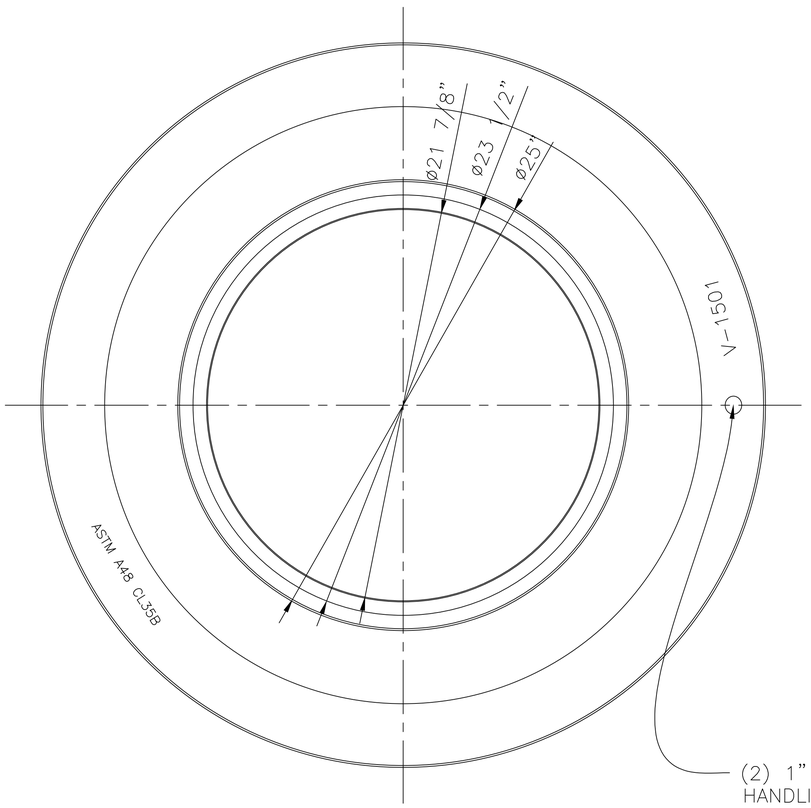
TOP VIEW OF SEWER MANHOLE COVER



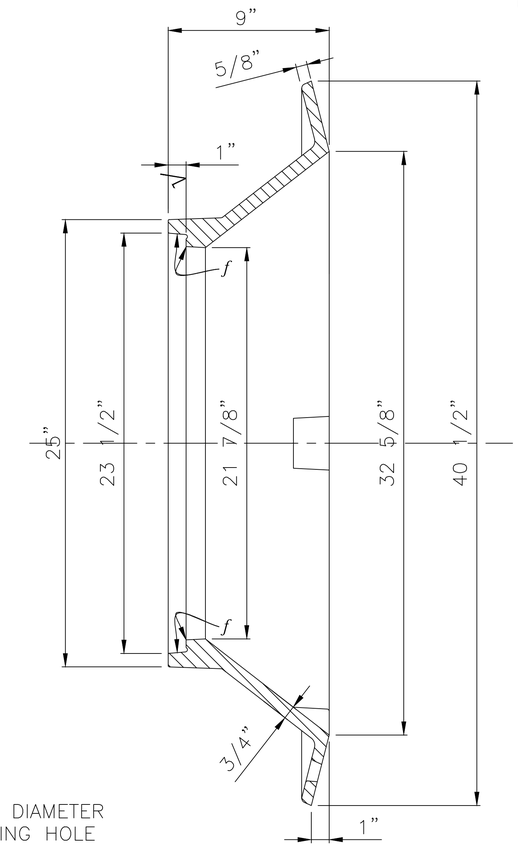
CROSS SECTION OF MANHOLE COVER
(SEWER & WATER)



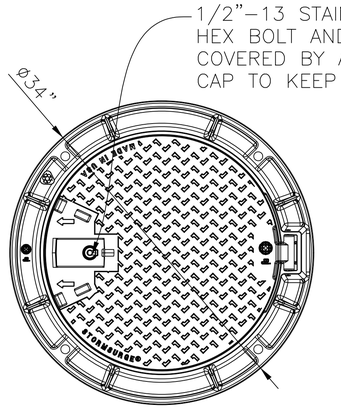
BOTTOM VIEW OF MANHOLE COVER
(SEWER & WATER)



PLAN OF FLARING FRAME MANHOLE



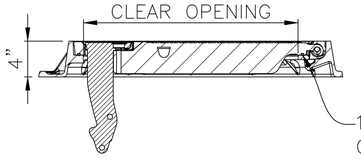
CROSS SECTION OF FLARING MANHOLE FRAME



TOP VIEW OF STORMSURGE ACCESS ASSEMBLY

NOTE:

1. f = MACHINED SURFACE
2. FRAME & COVER SHALL CONFORM TO EAST JORDAN IRON WORKS, V–1501 FRAME AND COVER.
3. PREFERRED FOR THE CENTRAL BUSINESS DISTRICT (CBD) AREA: FRAME COVER SHALL CONFORM TO EAST JORDAN IRON WORKS, INC. V–1032 – STORMSURGE ACCESS ASSEMBLY, FRAME & COVER OR APPROVED EQUAL.



CROSS SECTION OF STORMSURGE ACCESS ASSEMBLY

NOT TO SCALE

2	05–15–25	GENERAL REVISIONS	D.MC.
⚠	03–09–07	DELETED CROSS SECTION OF STRAIGHT MANHOLE FRAME DRAWING.	D.MC.

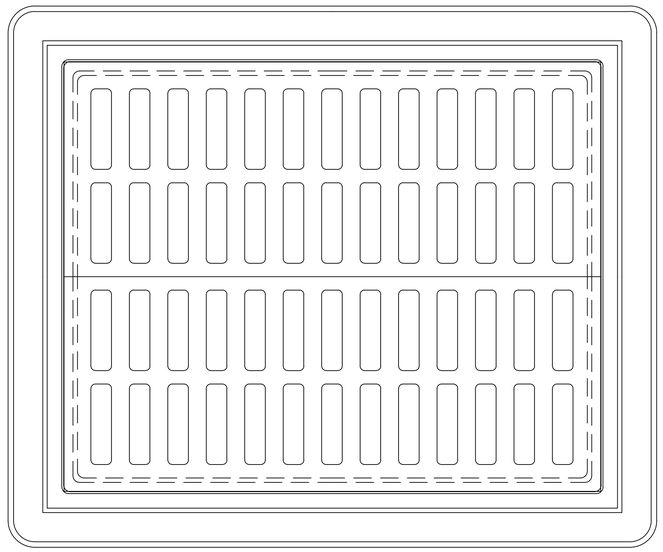
SEWERAGE AND WATER BOARD OF NEW ORLEANS

DETAILS OF
SEWER AND WATER MANHOLE CASTINGS

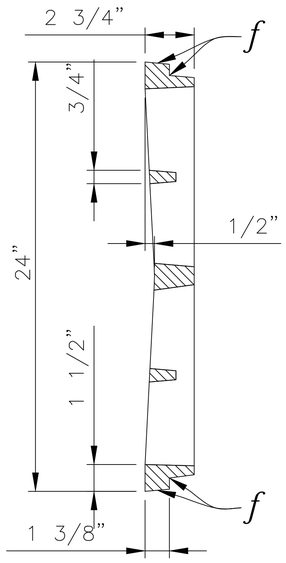
GENERAL SUPERINTENDENT

DR. A.P. GENTILE	
TRC.	
CK. C. WIEMERS	
AP.	DWG. NO. 3143–E–1
SCALE GRAPHIC	
DATE 7/1/58	SET NO. / SHEET NO.

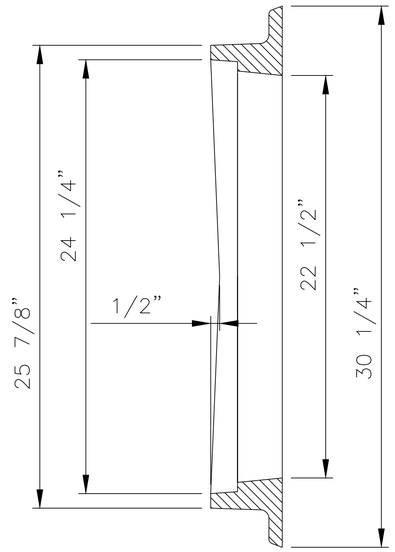
6



PLAN OF FRAME AND GRATE



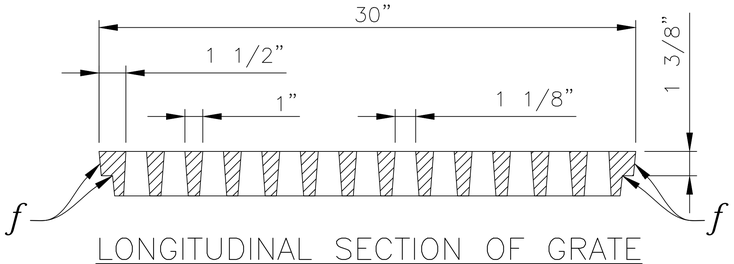
TRANVERSE SECTION OF GRATE



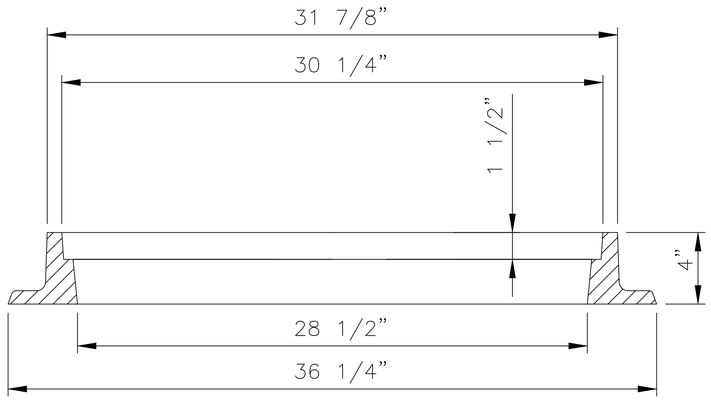
TRANVERSE SECTION OF FRAME

NOTES:

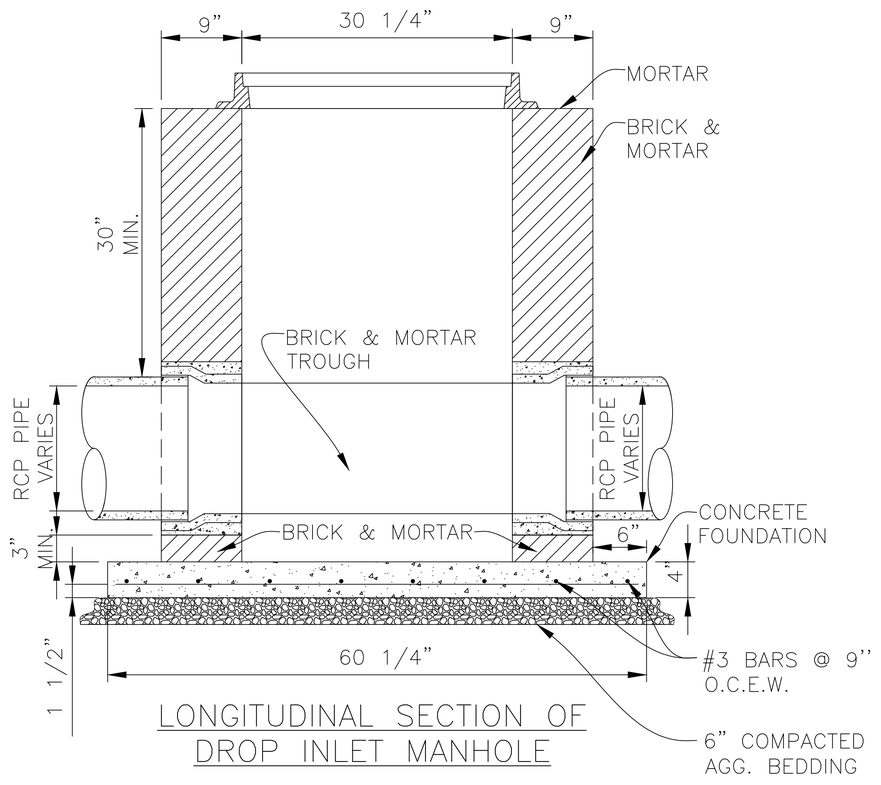
1. f = MACHINED SURFACE
2. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH WATERPROOFING COMPOUND FOR THICKNESS OF 1/4" IN ACCORDANCE WITH SPECIFICATION.
3. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.
4. FRAME & GRATE SHALL CONFORM TO EAST JORDAN WORKS, INC. V-4430 GUTTER INLET.
5. MINIMUM PIPE SIZE IS 15" DIAMETER.



LONGITUDINAL SECTION OF GRATE



LONGITUDINAL SECTION OF FRAME



LONGITUDINAL SECTION OF DROP INLET MANHOLE

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
6	06.03.25	GENERAL REVISIONS	DMC
5	12-1-93	REDRAWN, ADDED BARS TO GRATE	

SEWERAGE AND WATER BOARD OF NEW ORLEANS

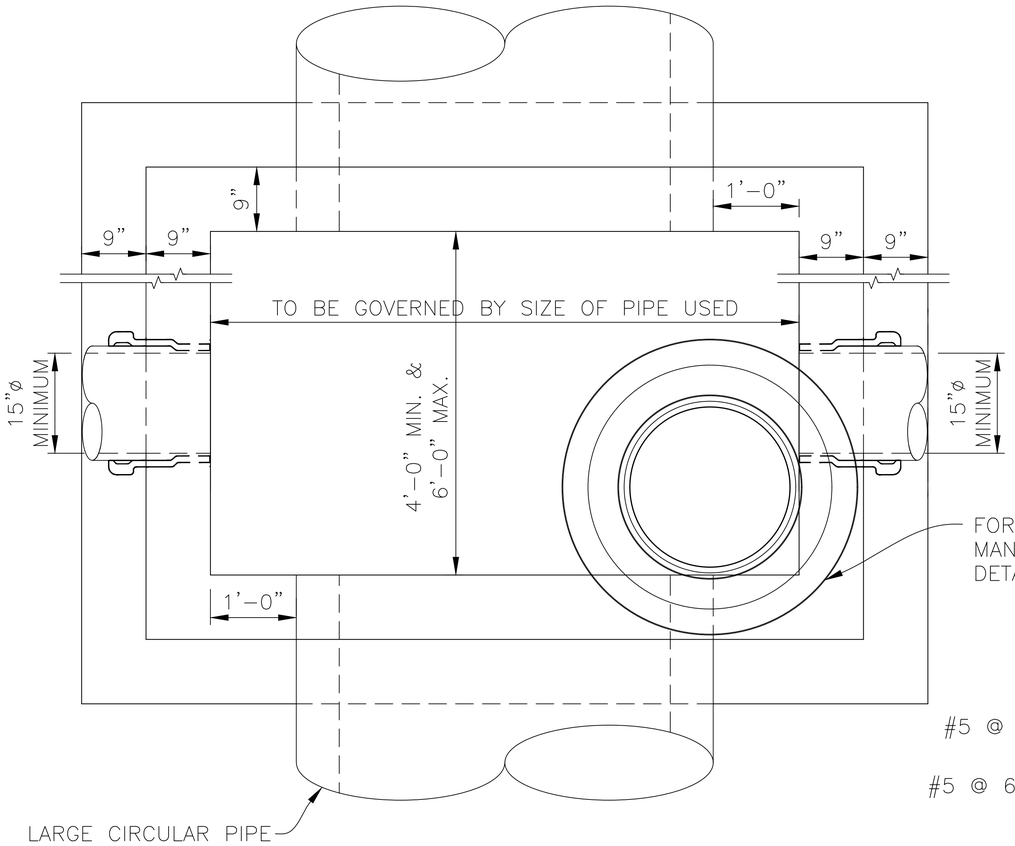
DETAIL OF STANDARD 24"x30" CLEAR OPENING DROP INLET CATCH BASIN

DR.	
TRC.	
CK. JP	
AP. JFP	
SCALE	
DATE 12-2-93	

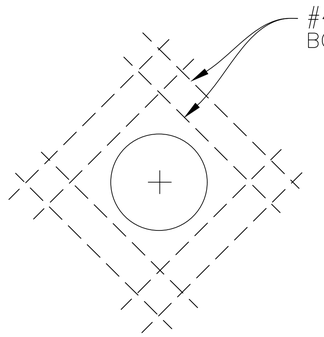
GENERAL SUPERINTENDENT

DWG. NO. D-3264 5

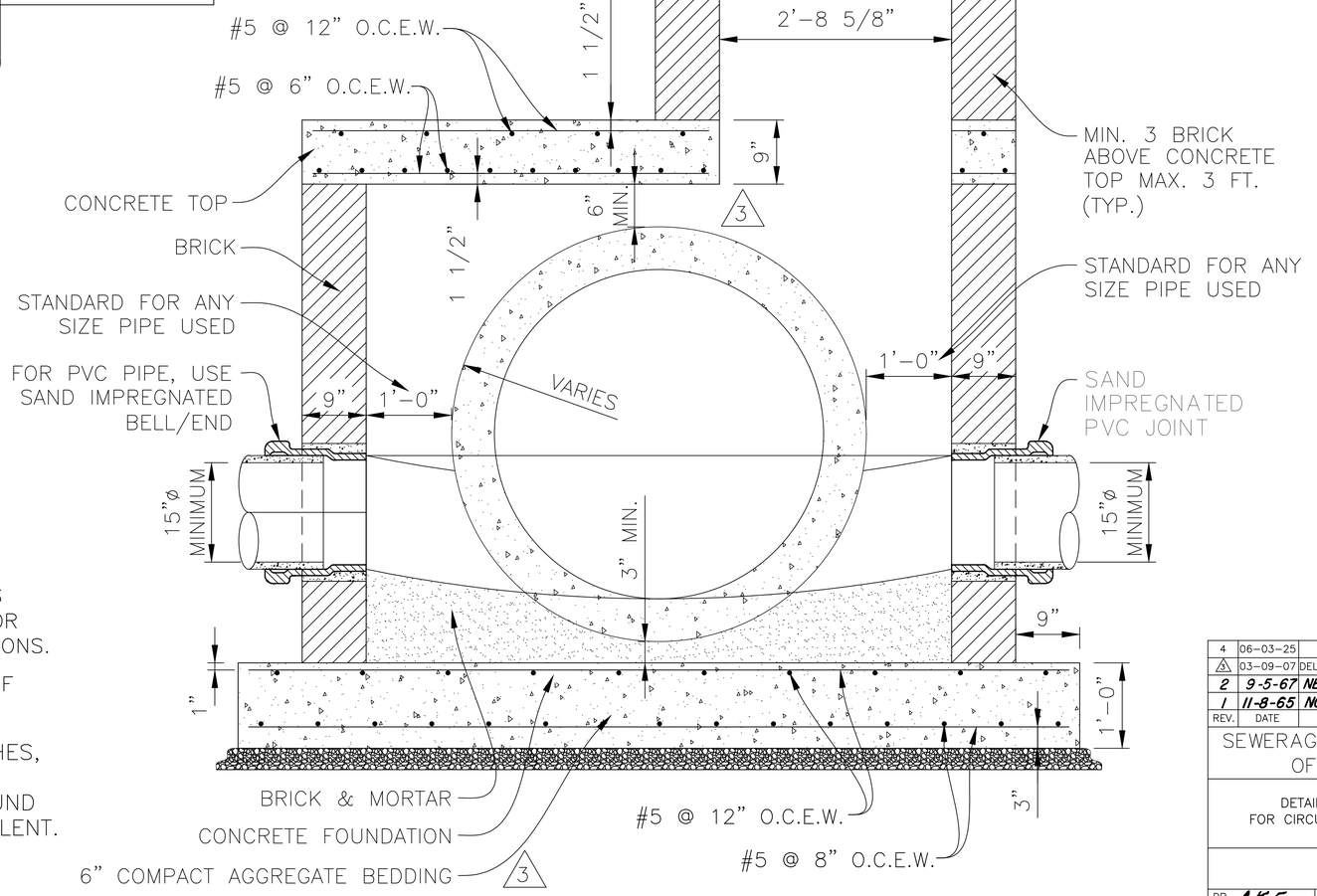
SET NO. | SHEET NO.



PLAN VIEW



DETAIL-1



SECTION VIEW

⚠3 NOTES:

1. INSIDE & OUTSIDE BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH WATERPROOFING COMPOUND FOR THICKNESS OF 1/4'' IN ACCORDANCE WITH SPECIFICATIONS.
2. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.
3. FOR SEWER MANHOLE INSIDE BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH A HYDROGEN SULPHIDE RESISTANT AND WATERPROOFING COMPOUND LIKE ZYPEX, SPECTRASHIELD OR APPROVED EQUIVALENT.

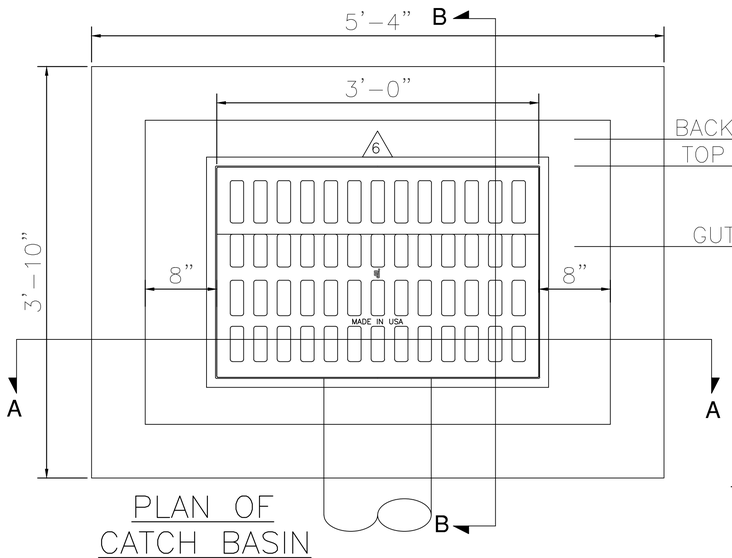
NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
4	06-03-25	GENERAL REVISIONS	D.MC.
⚠3	03-09-07	DELETED, REVISED AND ADDED NOTES	D.MC.
2	9-5-67	NEW BOTTOM & STEEL	A.M.
1	11-8-65	NOTE FOR PLASTERING	R.P.D.

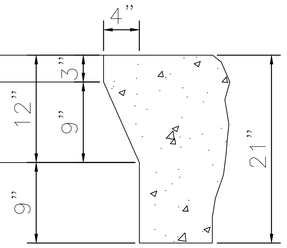
SEWERAGE AND WATER BOARD OF NEW ORLEANS

DETAIL OF STANDARD MANHOLE FOR CIRCULAR PIPE GREATER THAN 36"

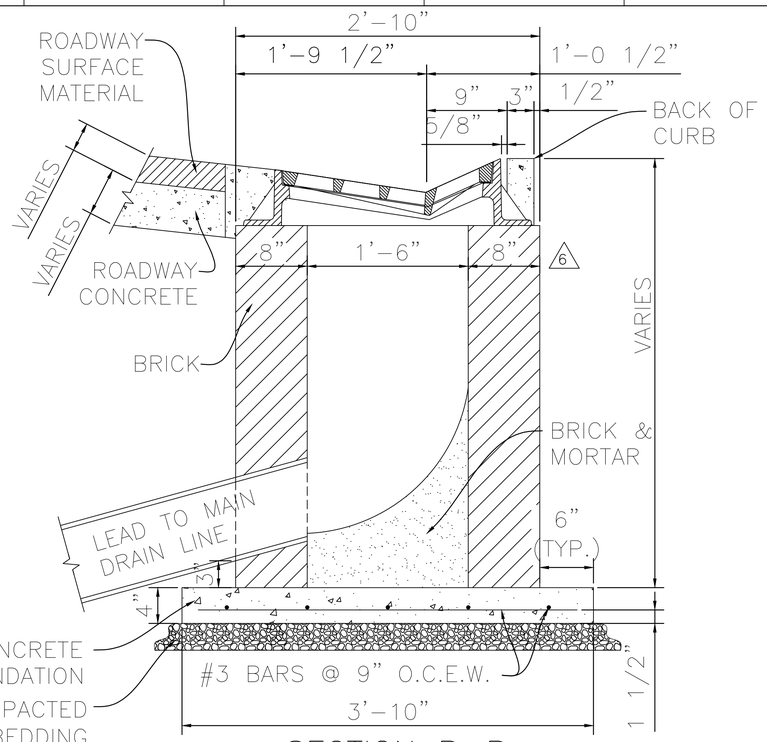
DR. A.K.F.	GENERAL SUPERINTENDENT
TRC.	
CK.	
AP.	DWG. NO. D-3340
SCALE GRAPHIC	SET NO.
DATE 7-1-58	SHEET NO.



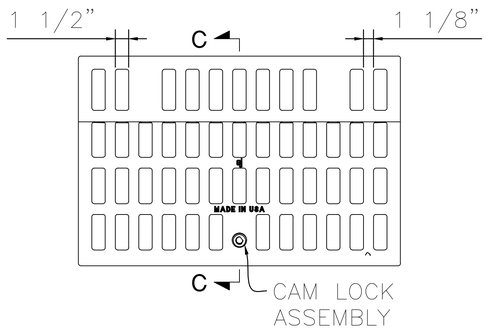
PLAN OF CATCH BASIN

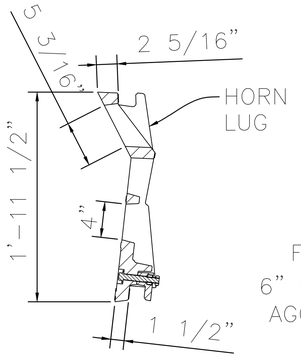


SECTION OF MOUNTABLE CURB

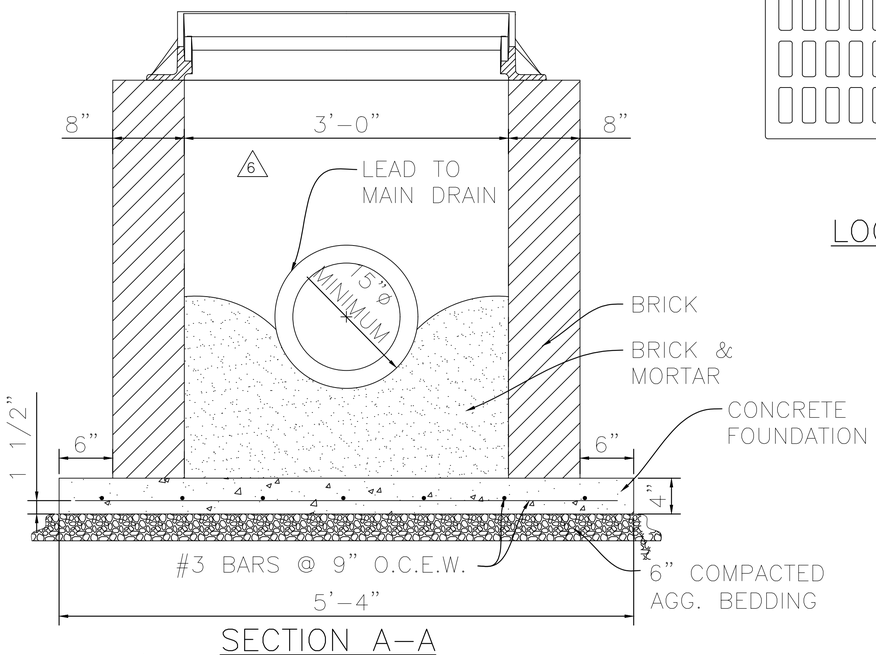


SECTION B–B

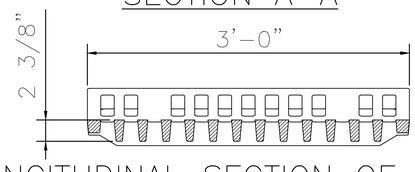




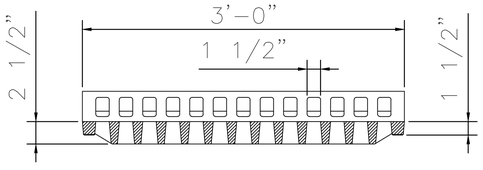
LOCKING ASSEMBLY GRATE & SECTION C–C



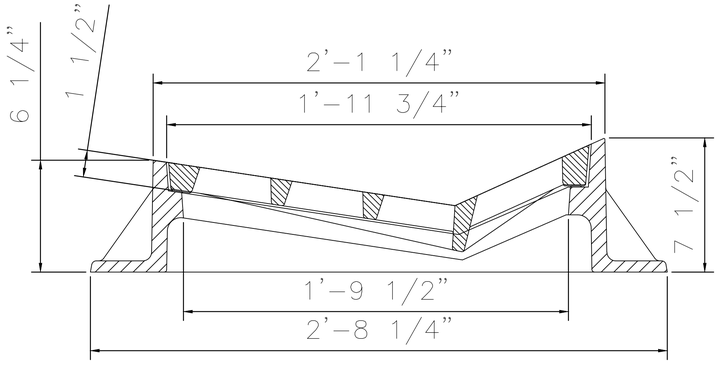
SECTION A–A



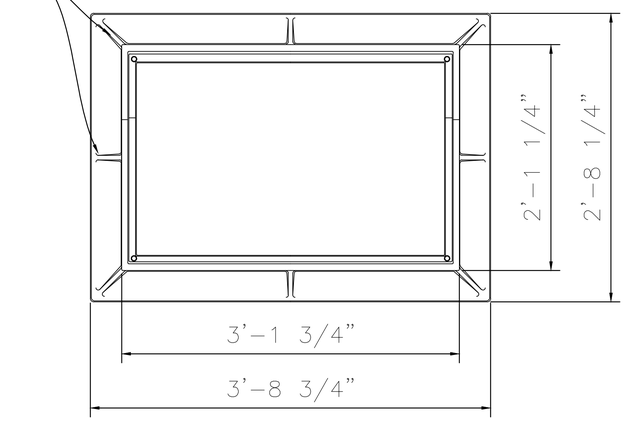
LONGITUDINAL SECTION OF GRATE



LONGITUDINAL SECTION OF LOCKING ASSEMBLY GRATE



CROSS SECTION OF GRATE & FRAME



PLAN OF FRAME

⚠7 NOTES:

1. INSIDE & OUTSIDE BRICK WALLS, BENCHES, & INVERTS TO BE HYDRAULIC CEMENT MORTARED AND/OR A WATERPROOFING COMPOUND, THICKNESS OF 1/4" IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
2. THIS GRATE IS THE SAME AS THE GRATES ON DOUBLE MOUNTABLE CATCH BASIN SHOWN ON DWG. NO. D–3431–B.
3. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.
4. FRAME SHALL CONFORM TO EAST JORDAN IRON WORKS, INC. V–4511 GUTTER INLET OR APPROVED EQUAL.
5. GRATE SHALL CONFORM TO EAST JORDAN IRON WORKS, INC. V–4510–1, V–4510–1L OR APPROVED EQUAL.

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
8	06–10–25	GENERAL REVISIONS	D.MC.
⚠5	03–09–07	DELETED, REVISED AND ADDED NOTES	D.MC.
⚠6	03–09–07	DELETED REQ. OF 10" STUB	D.MC.
⚠7	11-17-93	REDRAWN, ADDED HORIZONTAL BAR	

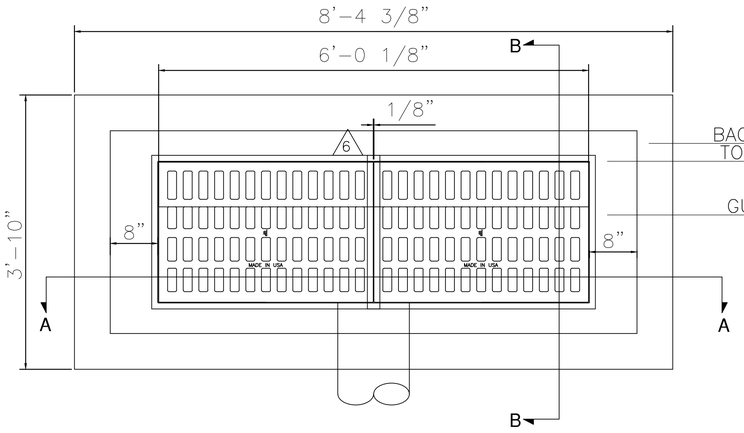
SEWERAGE AND WATER BOARD OF NEW ORLEANS

DETAIL OF STANDARD SINGLE MOUNTABLE CATCH BASIN

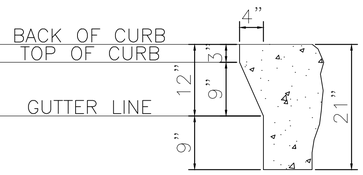
DR.
TRC.
CK. J.P.
AP. J.P.
SCALE AS SHOWN
DATE 11-17-93

J. Joseph Sullivan
GENERAL SUPERINTENDENT

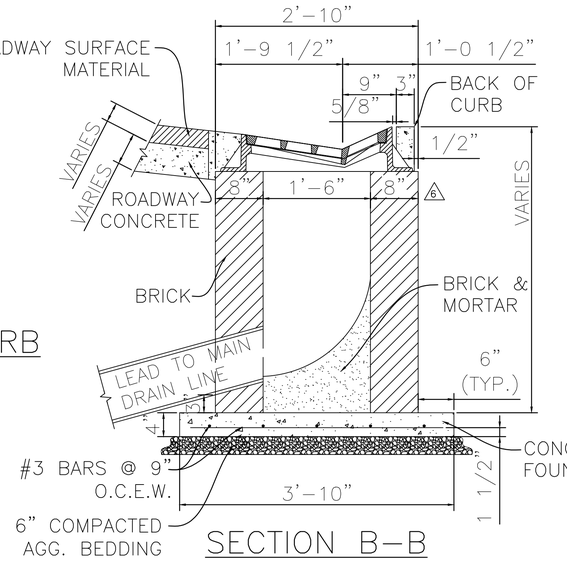
DWG. NO. D–3431–A ⚠7
SET NO.
SHEET NO.



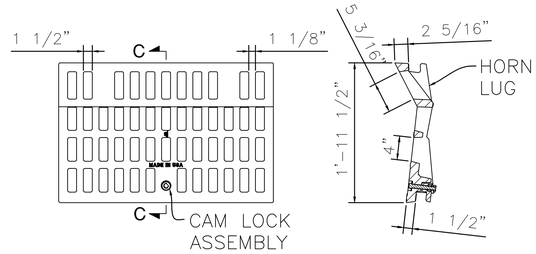
PLAN OF CATCH BASIN



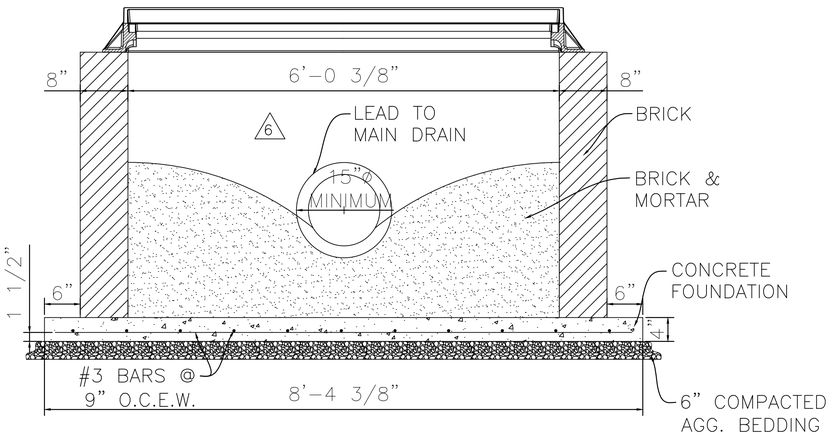
SECTION OF MOUNTABLE CURB



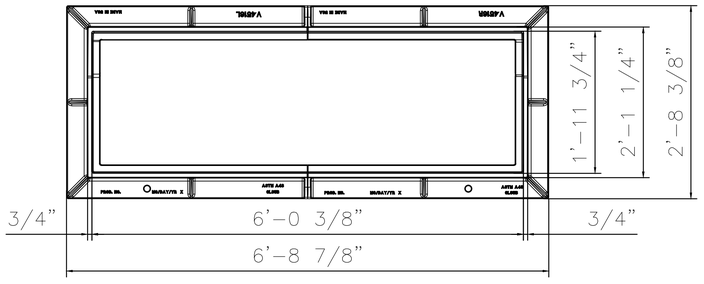
SECTION B-B



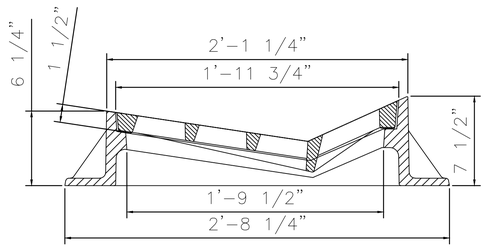
LOCKING ASSEMBLY GRATE & SECTION C-C



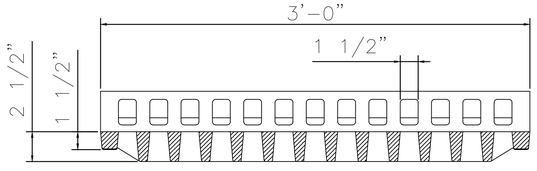
SECTION A-A



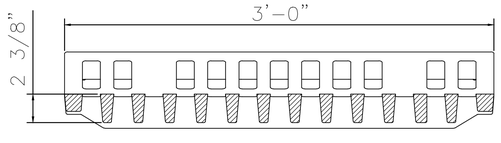
PLAN OF FRAME



CROSS SECTION OF GRATE & FRAME



LONGITUDINAL SECTION OF GRATE



LONGITUDINAL SECTION OF LOCKING ASSEMBLY GRATE

⚠7 NOTES:

1. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES & INVERTS TO BE HYDRAULIC CEMENT MORTARED AND/OR A WATERPROOFING COMPOUND, THICKNESS OF 1/4" IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
2. BOTH GRATES ARE THE SAME AS THE GRATE FOR SINGLE MOUNTABLE CATCH BASIN SHOWN ON DWG. NO. D-3431-A.
3. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGH OF 3000 P.S.I. IN 28 DAYS.
4. FRAME SHALL CONFORM TO EAST JORDAN IRON WORKS, INC. V-4516 GUTTER INLET OR APPROVED EQUAL.
5. GRATE SHALL CONFORM TO EAST JORDAN IRON WORKS, INC. V-4510-1, V-4510-1L OR APPROVED EQUAL.

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
8	06-10-25	GENERAL REVISIONS	D.MC.
⚠7	03-09-07	DELETED, REVISED AND ADDED NOTES	D.MC.
⚠6	03-09-07	DELETED REQ. OF 10" STOP	D.MC.
⚠5	8-15-93	REDRAWN, ADDED BARS TO GRATE	

SEWERAGE AND WATER BOARD OF NEW ORLEANS

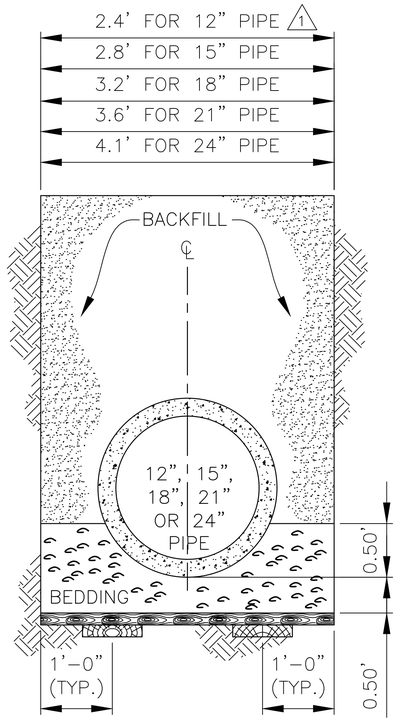
DETAIL OF STANDARD DOUBLE MOUNTABLE CATCH BASIN

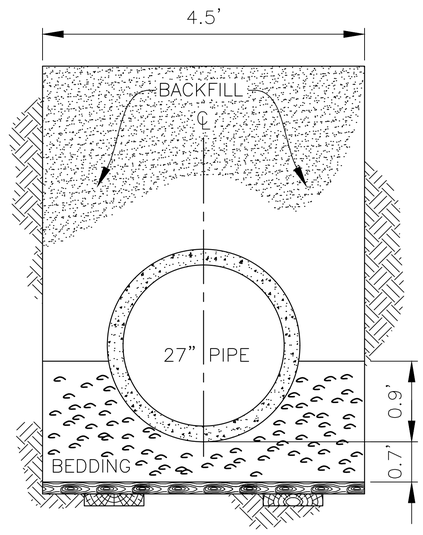
DR.
TRC.
CK. J.P.
AP.
SCALE AS SHOWN
DATE 8-15-93

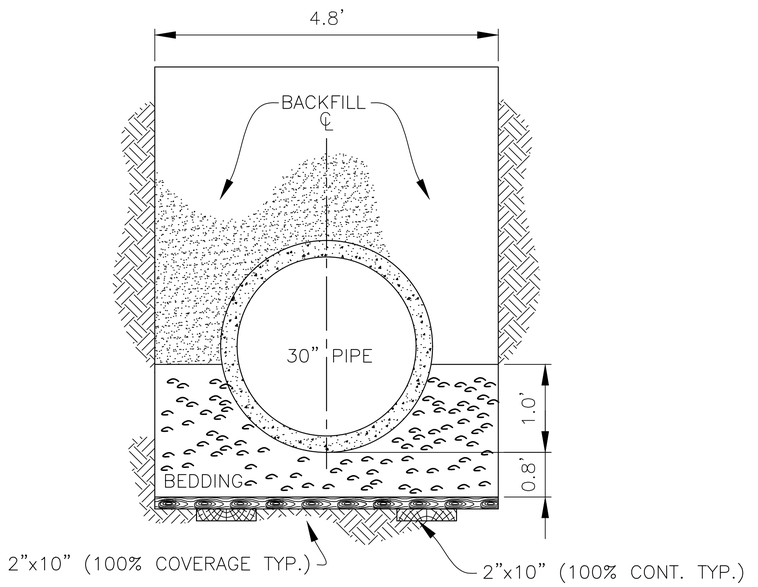
GENERAL SUPERINTENDENT

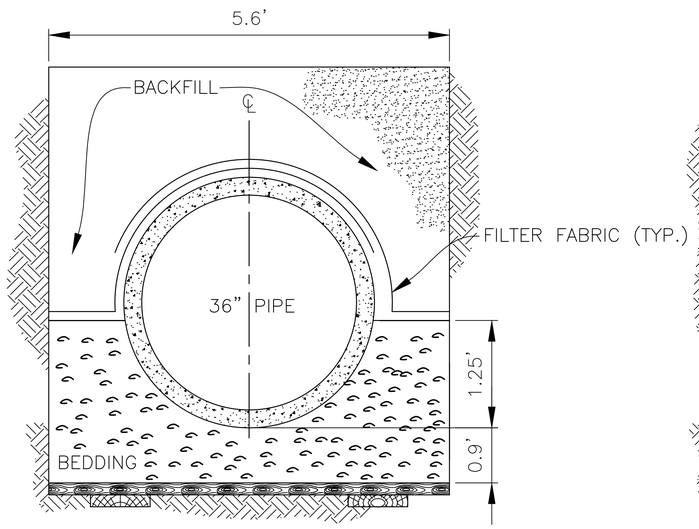
DWG. NO. D-3431-B ⚠5

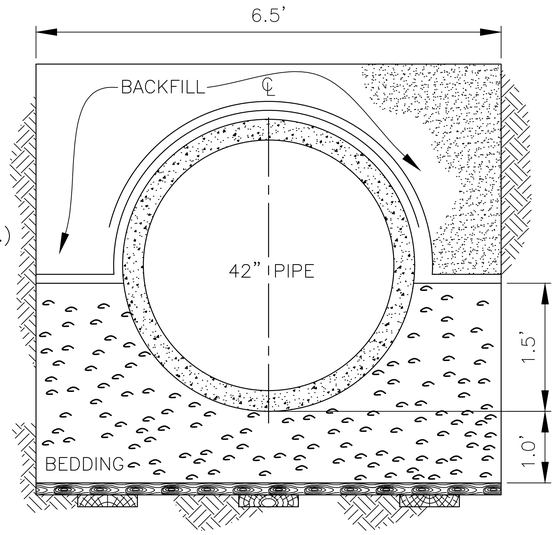
SET NO. | SHEET NO.











CONCRETE PIPE BEDDING SECTIONS FROM 12'' TO 42"

⚠2 NOTES:

1. SECTIONS TO BE APPLICABLE FOR SIZE PIPE BEING INSTALLED.
2. FOUNDATION LUMBER SHALL CONSIST OF A CONTINUOUS TRANSVERSE LAYER OF 2'' BOARDS (MIN. 8'' WIDE) ON 2''X10'' SILLS DRIVEN INTO SOIL.
3. BEDDING SHALL BE PUMPED RIVER SAND, INSTALLED IN 12'' LIFTS AND COMPACTED TO 95% OF MAX. DENSITY. FOR PIPES 36" AND GREATER, BEDDING SHALL BE COMPACTED AGGREGATE.
4. BACKFILL MATERIAL TO BE PUMPED RIVER SAND INSTALLED IN 12'' LIFTS AND COMPACTED TO 95% OF MAX. DENSITY.
5. CONTRACTOR TO PROVIDE 95% COMPACTION TEST RESULTS FOR EACH 12'' LIFT. FAILURE TO COMPLY WILL RESULT IN IMMEDIATE SUSPENSION OF WORK.
6. IF THE WORKING SURFACE OF SOIL BENEATH THE PIPE IS CONSIDERED UNACCEPTABLE BY THE S&WB INSPECTOR, THE SOIL MUST BE REMOVED DOWN TO STABLE AND ACCEPTABLE MATERIAL, AND REPLACED WITH COMPACTED PUMPED RIVER SAND.
7. ALL PIPE JOINTS TO BE WRAPPED WITH 2' WIDE FILTER CLOTH WITH 3 FT. MIN. OVERLAP.
8. ALL PIPE TO BE RCP CLASS III UNLESS OTHERWISE NOTED.

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
3	06-10-25	GENERAL REVISIONS	D.MC.
⚠2	03-09-07	DELETED, REVISED AND ADDED NOTES	D.MC.
⚠1	2-6 75	DELETED AND REV NOTES ADD AND REV FIGS FOR 12 15 18 21 & 24 PIPE	J L P

SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SECTIONS OF CONCRETE PIPE BEDDING FROM 12'' TO 42'' PIPE

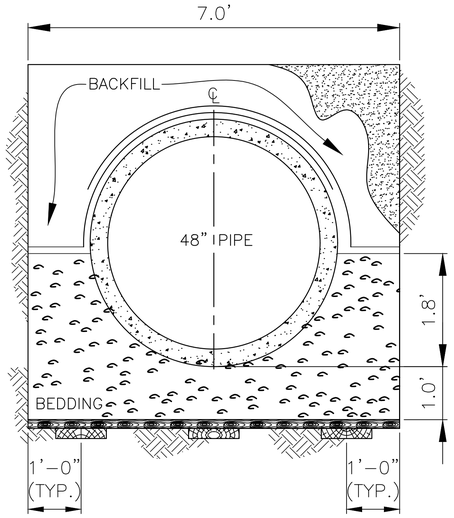
DR.	R P.D
TRC.	
CK.	
AP.	
SCALE	GRAPHIC
DATE	11-15-63

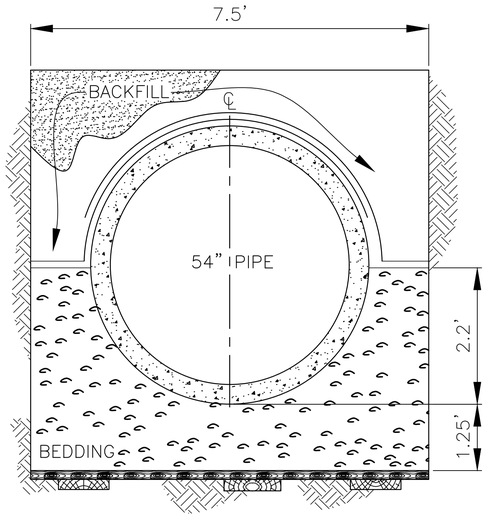
GENERAL SUPERINTENDENT

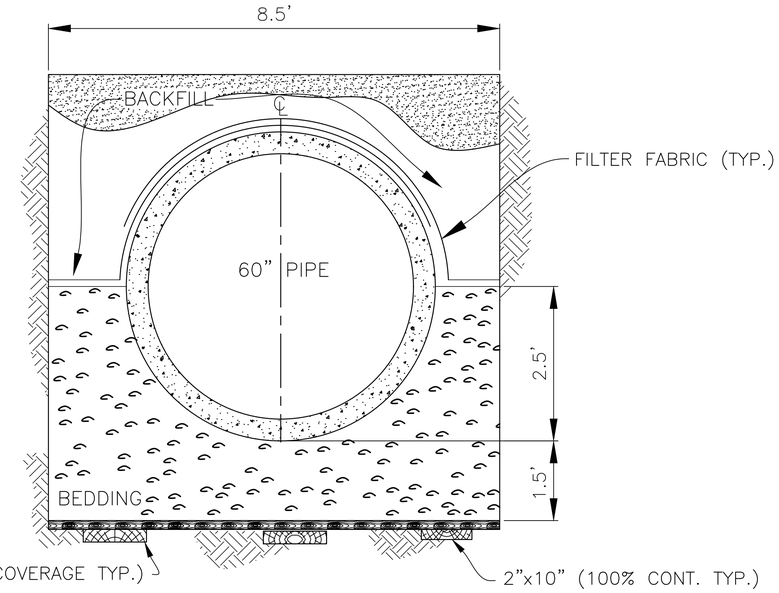
DWG. NO. D-3809

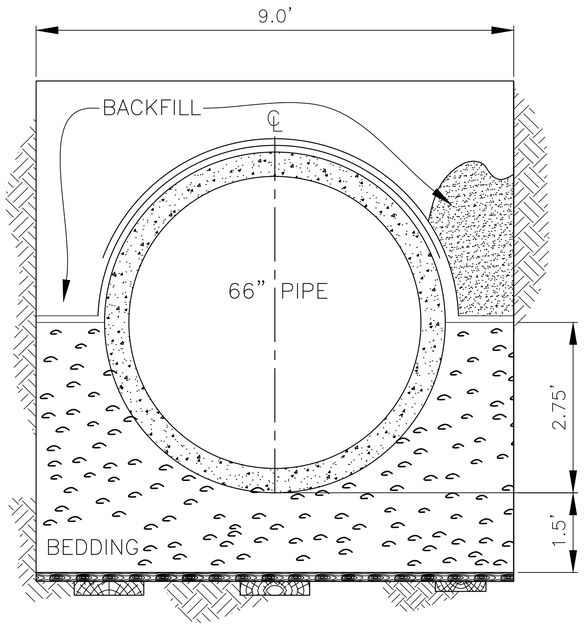
SET NO. | SHEET NO. 1 OF 2

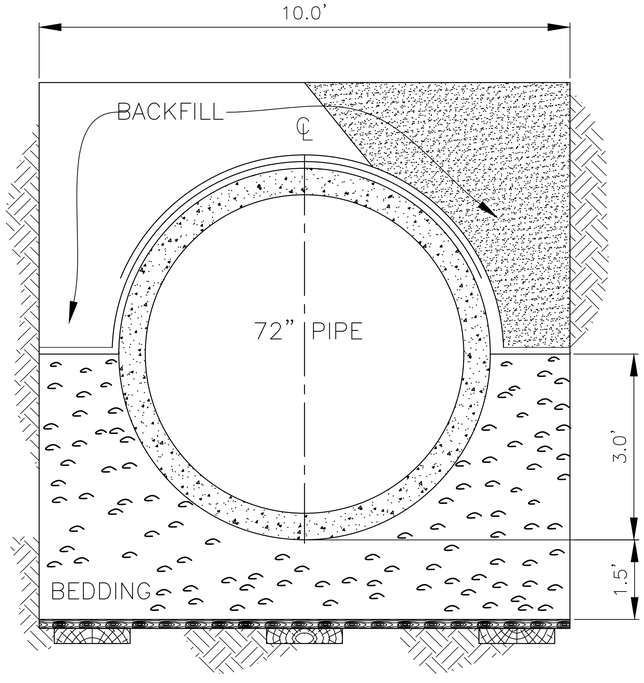
11











CONCRETE PIPE BEDDING SECTIONS FROM 48'' TO 72''

⚠2 NOTES:

1. SECTIONS TO BE APPLICABLE FOR SIZE PIPE BEING INSTALLED.
2. FOUNDATION LUMBER SHALL CONSIST OF A CONTINUOUS TRANSVERSE LAYER OF 2'' BOARDS (MIN. 8'' WIDE) ON 2''x10'' SILLS DRIVEN INTO SOIL.
3. BEDDING SHALL BE COMPACTED AGGREGATE.
4. BACKFILL MATERIAL TO BE PUMPED RIVER SAND INSTALLED IN 12" LIFTS AND COMPACTED TO 95% MAX. DENSITY.
5. CONTRACTOR TO PROVIDE 95% COMPACTION TEST RESULTS FOR EACH 12'' LIFT. FAILURE TO COMPLY WILL RESULT IN IMMEDIATE SUSPENSION OF WORK.
6. IF THE WORKING SURFACE OF SOIL BENEATH THE PIPE IS CONSIDERED UNACCEPTABLE BY THE S&WB INSPECTOR, THE SOIL MUST BE REMOVED DOWN TO STABLE AND ACCEPTABLE MATERIAL, AND REPLACED WITH COMPACTED PUMPED RIVER SAND.
7. ALL PIPE JOINTS TO BE WRAPPED WITH 2' WIDE FILTER CLOTH WITH 3 FT. MIN. OVERLAP.
8. ALL PIPE TO BE RCP CLASS III UNLESS OTHERWISE NOTED.

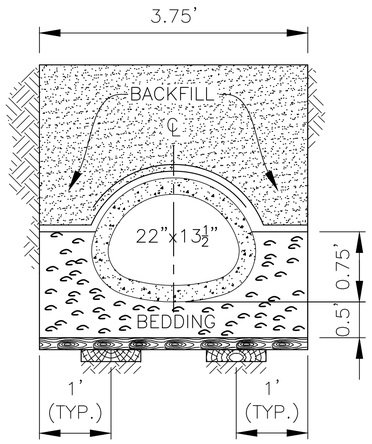
NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
3	06-10-25	GENERAL REVISIONS	D.M.C.
⚠	03-09-07	DELETED, REVISED AND ADDED NOTES	D.M.C.
⚠	2-10-75	DELETED AND REVISED NOTES	J L P

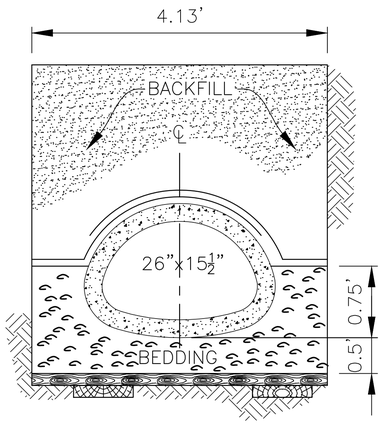
SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SECTIONS OF CONCRETE PIPE BEDDING FROM 48'' TO 72''

DR. R P.D	GENERAL SUPERINTENDENT
TRC.	
CK.	
AP.	DWG. NO. D-3810
SCALE GRAPHIC	
DATE 11-15-63	SET NO. SHEET NO. 2 OF 2



18'' EQUIVALENT



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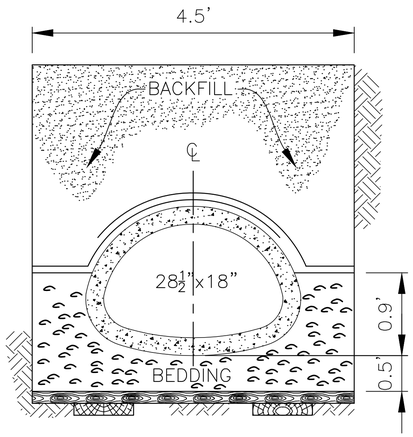
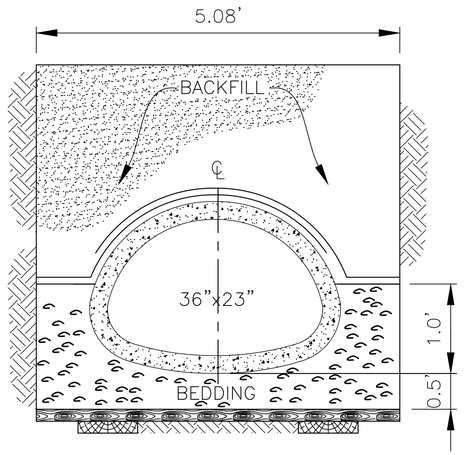


24'' EQUIVALENT



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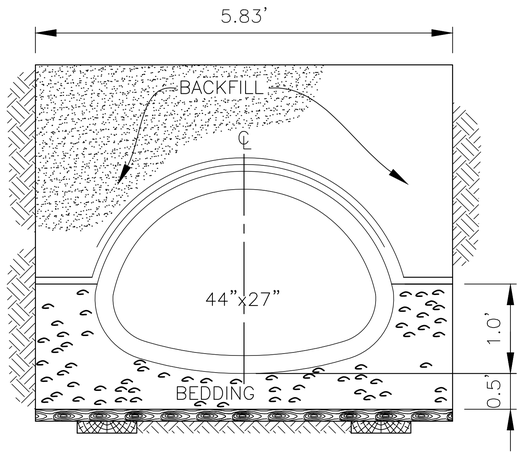
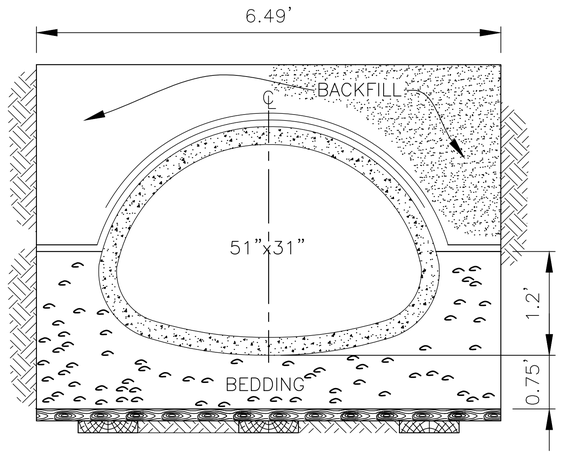
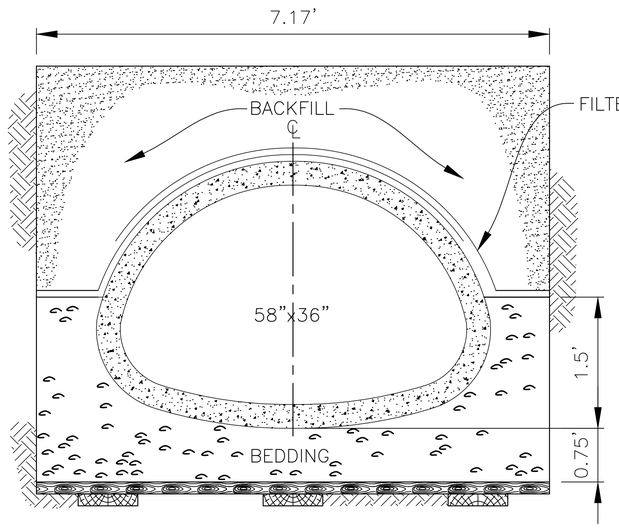


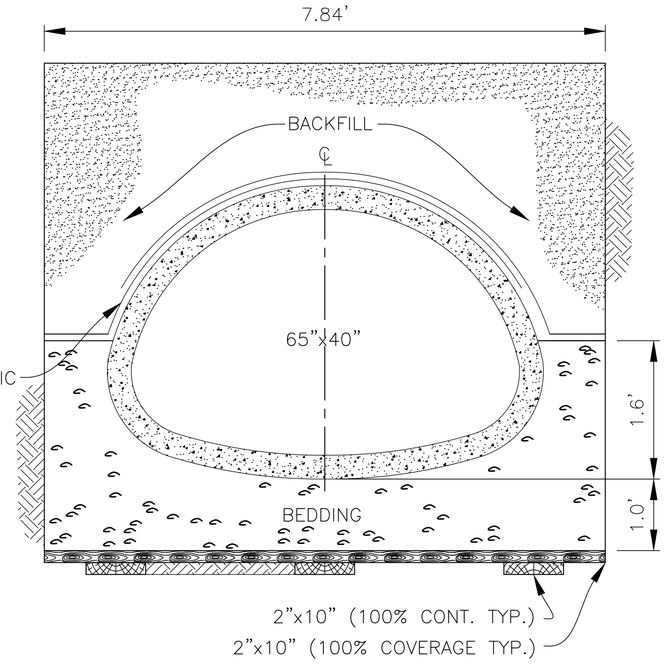
36'' EQUIVALENT



42'' EQUIVALENT



48'' EQUIVALENT



54'' EQUIVALENT

CONCRETE PIPE BEDDING SECTIONS FROM 22''x13 1/2" TO 65"x40"

⚠2 NOTES:

1. SECTIONS TO BE APPLICABLE FOR SIZE PIPE BEING INSTALLED.
2. FOUNDATION LUMBER SHALL CONSIST OF A CONTINUOUS TRANSVERSE LAYER OF 2'' BOARDS (MIN. 8'' WIDE) ON 2''X10'' SILLS DRIVEN INTO SOIL.
3. BEDDING SHALL BE COMPACTED AGGREGATE.
4. BACKFILL MATERIAL TO BE PUMPED RIVER SAND INSTALLED IN 12'' LIFTS AND COMPACTED TO 95% OF MAX. DENSITY.
5. CONTRACTOR TO PROVIDE 95% COMPACTION TEST RESULTS FOR EACH 12'' LIFT. FAILURE TO COMPLY WILL RESULT IN IMMEDIATE SUSPENSION OF WORK.
6. IF THE WORKING SURFACE OF SOIL BENEATH THE PIPE IS CONSIDERED UNACCEPTABLE BY THE S&WB INSPECTOR, THE SOIL MUST BE REMOVED DOWN TO STABLE AND ACCEPTABLE MATERIAL, AND REPLACED WITH COMPACTED PUMPED RIVER SAND.
7. ALL PIPE JOINTS TO BE WRAPPED WITH 2' WIDE FILTER CLOTH WITH 3 FT. MIN. OVERLAP.
8. ALL PIPE TO BE RCP CLASS III UNLESS OTHERWISE NOTED.

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
3	06-10-25	GENERAL REVISIONS	D.MC.
⚠2	03-09-07	DELETED, REVISED AND ADDED NOTES	D.MC.
⚠1	2-27-75	DELETED AND ADDED REV. NOTES	J.L.P.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SECTIONS OF REINFORCED CONCRETE ARCH PIPE BEDDING FROM 22''x13 1/2'' TO 65"x40''

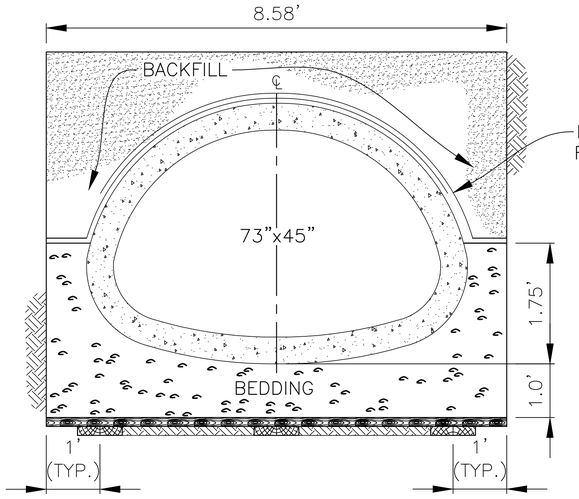
DR.	R.P.D.
TRC.	
CK.	
AP.	
SCALE	GRAPHIC
DATE	10-26-66

GENERAL SUPERINTENDENT

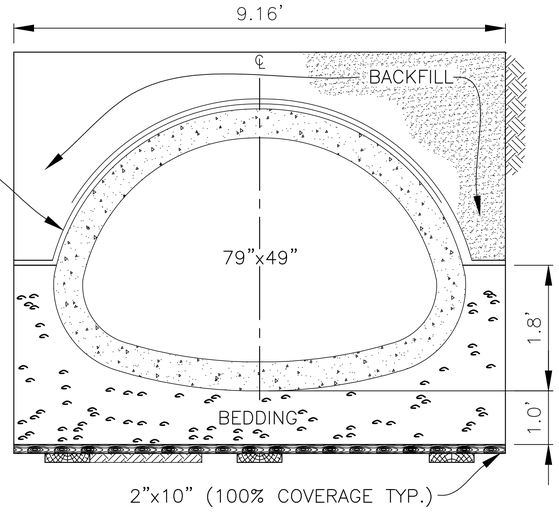
DWG. NO. D-3933

SET NO. | SHEET NO. 1 OF 2

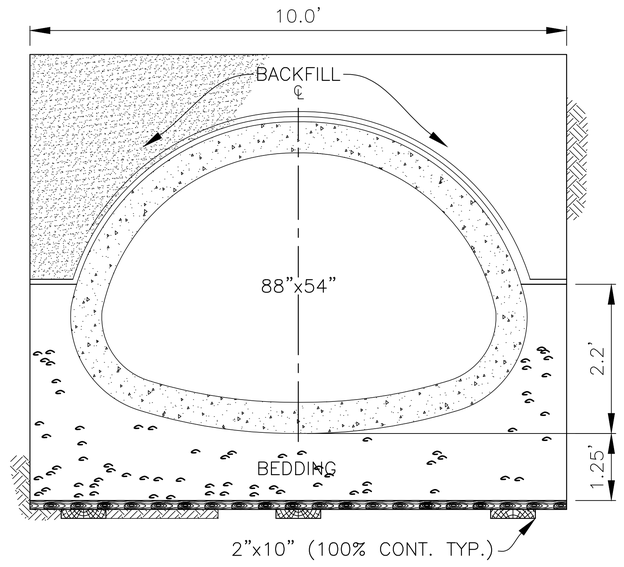
13



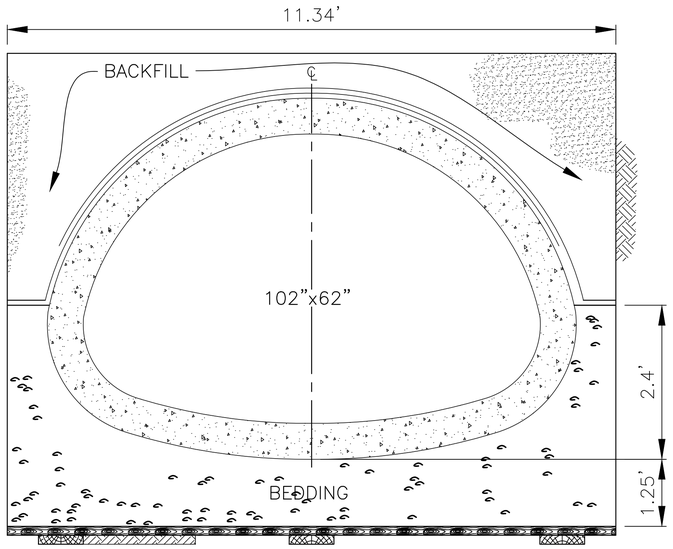
60'' EQUIVALENT



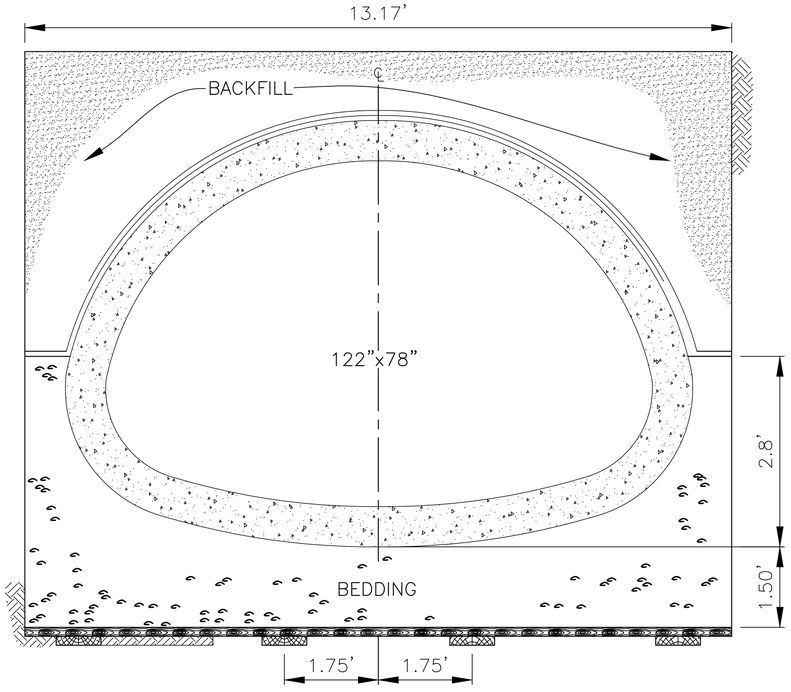
66'' EQUIVALENT



72'' EQUIVALENT



84'' EQUIVALENT



96'' EQUIVALENT

CONCRETE PIPE BEDDING SECTIONS FROM 73''x45" TO 122"x78"

⚠2 NOTES:

1. SECTIONS TO BE APPLICABLE FOR SIZE PIPE BEING INSTALLED.
2. FOUNDATION LUMBER SHALL CONSIST OF A CONTINUOUS TRANSVERSE LAYER OF 2'' BOARDS (MIN. 8'' WIDE) ON 2''X10'' SILLS DRIVEN INTO SOIL.
3. BEDDING SHALL BE COMPACTED AGGREGATE.
4. BACKFILL MATERIAL TO BE PUMPED RIVER SAND INSTALLED IN 12'' LIFTS AND COMPACTED TO 95% OF MAX. DENSITY.
5. CONTRACTOR TO PROVIDE 95% COMPACTION TEST RESULTS FOR EACH 12'' LIFT. FAILURE TO COMPLY WILL RESULT IN IMMEDIATE SUSPENSION OF WORK.
6. IF THE WORKING SURFACE OF SOIL BENEATH THE PIPE IS CONSIDERED UNACCEPTABLE BY THE S&WB INSPECTOR, THE SOIL MUST BE REMOVED DOWN TO STABLE AND ACCEPTABLE MATERIAL, AND REPLACED WITH COMPACTED PUMPED RIVER SAND.
7. ALL PIPE JOINTS TO BE WRAPPED WITH 2' WIDE FILTER CLOTH WITH 3 FT. MIN. OVERLAP.
8. ALL PIPE TO BE RCP CLASS III UNLESS OTHERWISE NOTED.

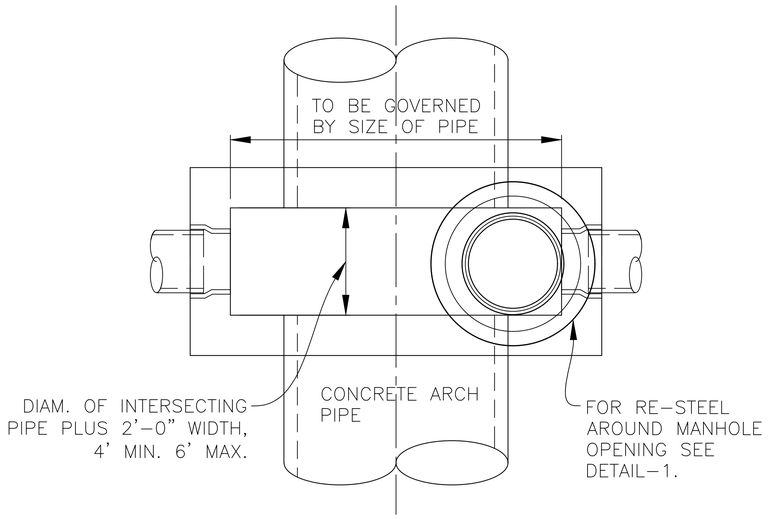
NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
3	06-10-25	GENERAL REVISIONS	D.MC.
⚠	03-09-07	DELETED, REVISED AND ADDED NOTES	D.MC.
⚠	2-27-75	DELETED AND ADDED REV NOTES	J L P

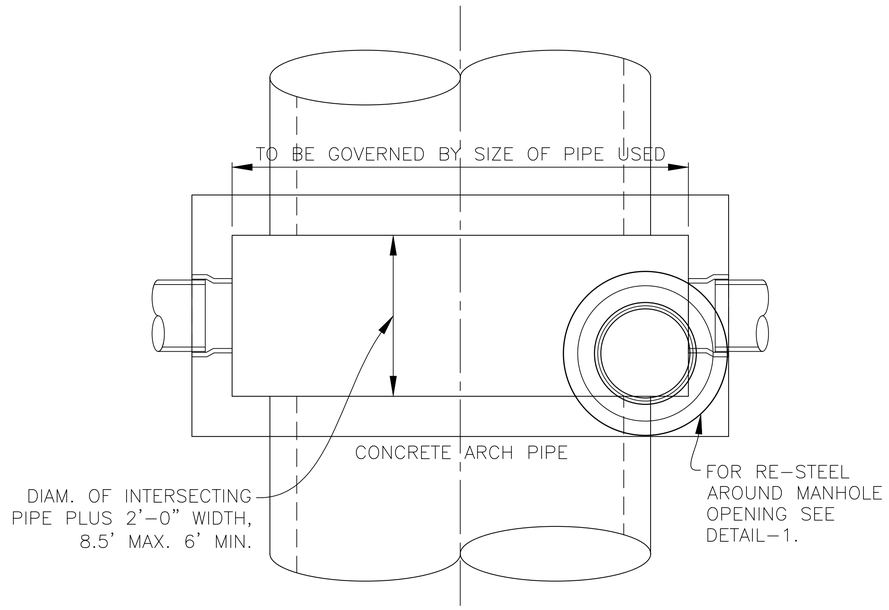
SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SECTIONS OF REINFORCED CONCRETE ARCH PIPE BEDDING FROM 73"x45" TO 122"x78"

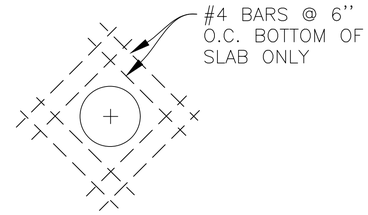
DR. R.P.D	GENERAL SUPERINTENDENT
TRC.	
CK.	
AP.	
SCALE GRAPHIC	DWG. NO. D-3934
DATE 10-26-65	SET NO. SHEET NO. 2 OF 2



PLAN VIEW



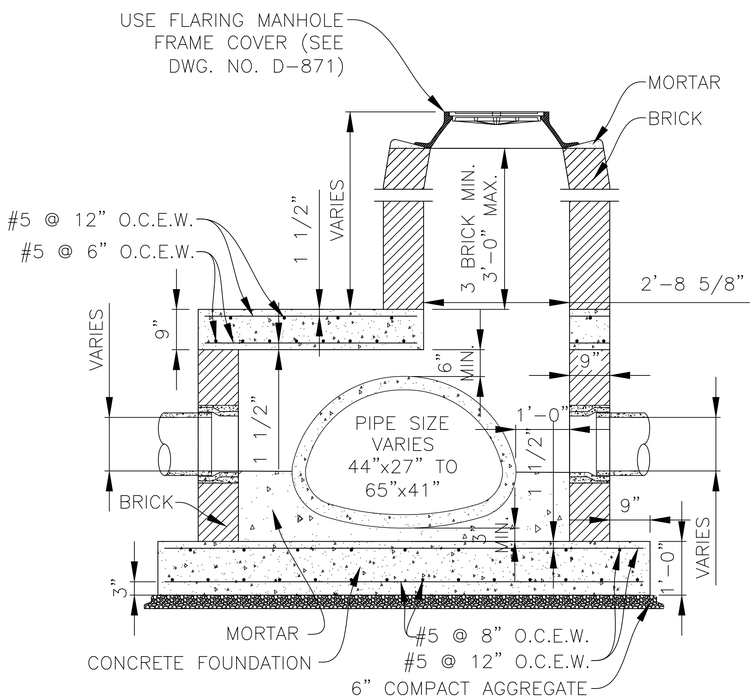
PLAN VIEW



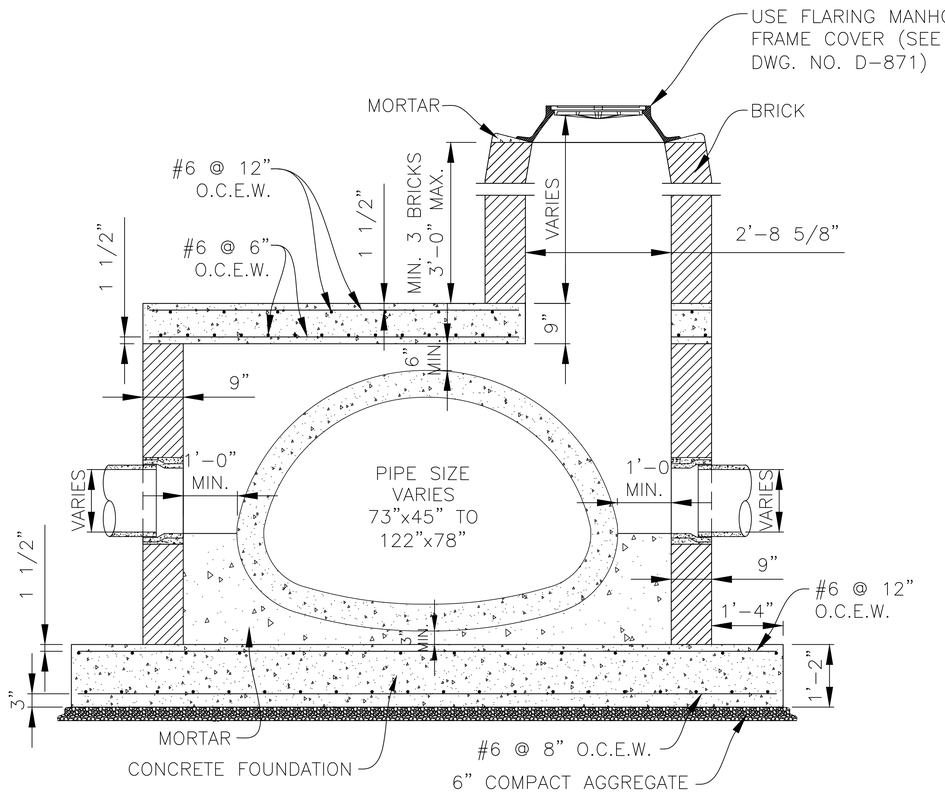
DETAIL–1

⚠3 NOTES:

1. FOR ARCH PIPE SIZES SMALLER THAN SHOWN ON THIS DRAWING, USE STANDARD ROUND MANHOLE AS INDICATED ON DWG. NO. D–870.
2. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.
3. INSIDE & OUTSIDE BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH WATERPROOFING COMPOUND OR HYDRAULIC CEMENT MORTAR FOR THICKNESS OF 1/4'' IN ACCORDANCE WITH SPECIFICATION.



SECTION VIEW



SECTION VIEW

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
4	07–08–25	GENERAL REVISIONS	D.MC.
⚠	03–09–07	DELETED, REVISED AND ADDED NOTES	D.MC.
2.	7-11-88	GENERAL REVISION	M.L.L.
1	10-7-76	REV. DET. SMALLER M.H.	J.L.P.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

DETAIL OF STANDARD MANHOLES FOR LARGE CONCRETE ARCH PIPE

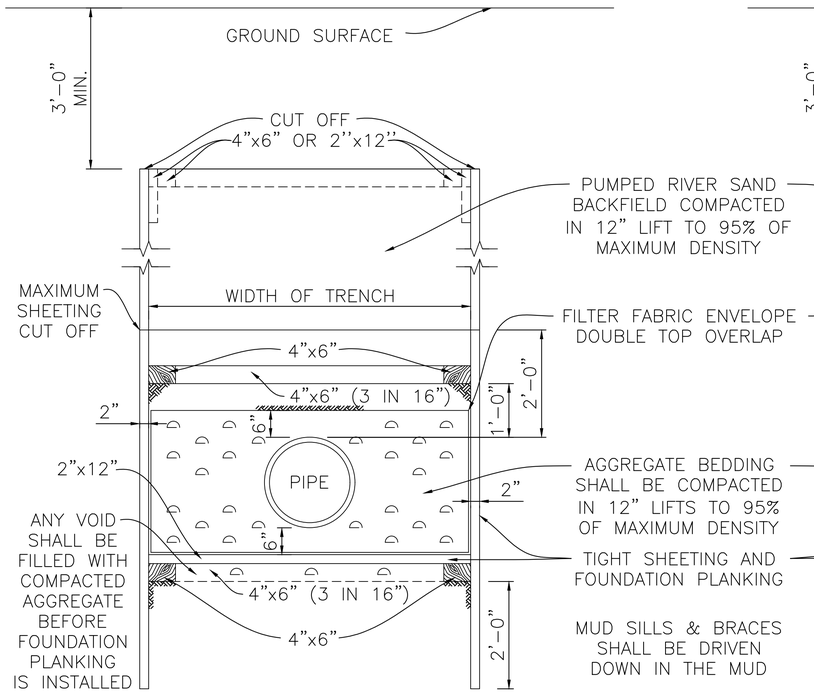
DR.	R.P.D
TRC.	
CK.	
AP.	
SCALE	GRAPHIC
DATE	11-10-65

GENERAL SUPERINTENDENT

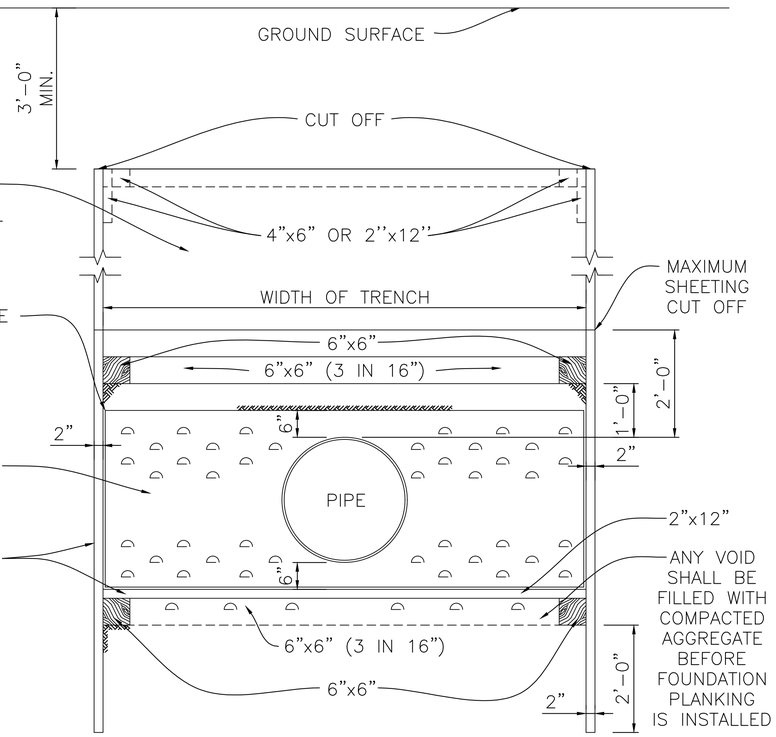
DWG. NO. D–3937

SET NO. SHEET NO.

15



FOR P.V.C. SEWER PIPE SIZES
8'', 10'', 12'', 15'' & 18''

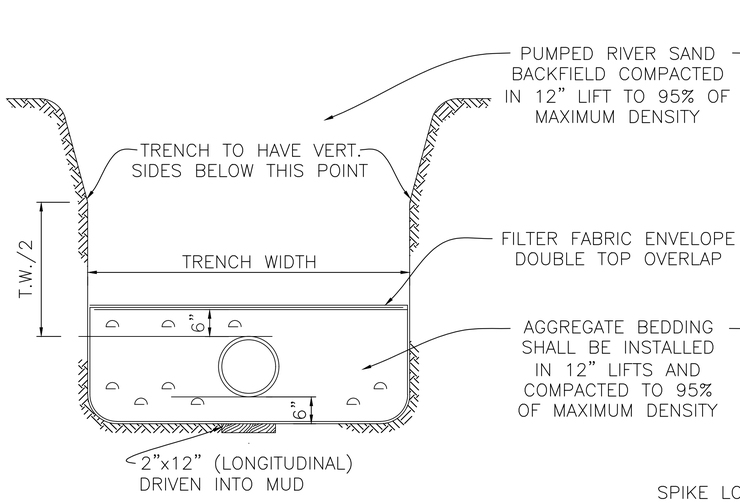


FOR P.V.C. SEWER PIPE SIZES
21'', 24''& 27''

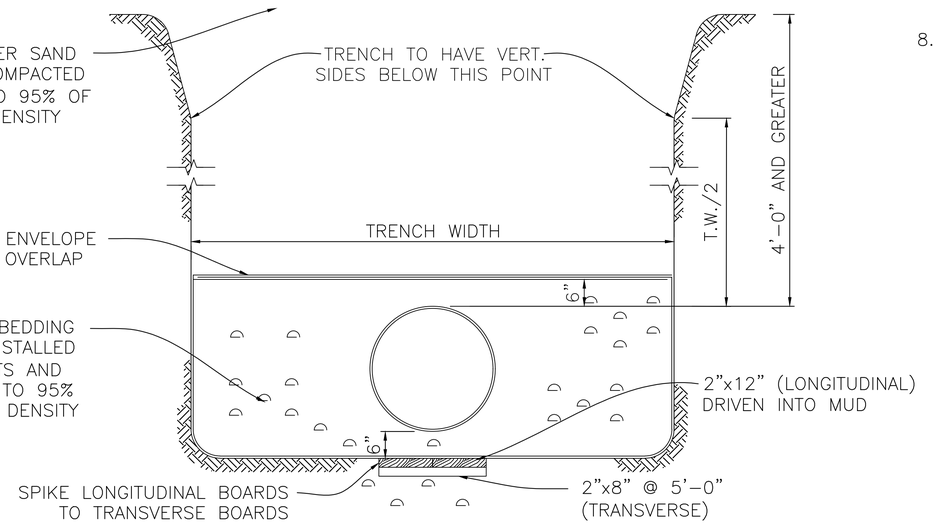
NOTES

1. CONTRACTOR SHALL USE OSHA COMPLIANT STANDARD SHEETING, BRACING AND FOUNDATION LUMBER AS SHOWN ON THIS DRAWING FOR THE FOLLOWING CONDITIONS:
   a. WHEN THE TRENCH OVER THE PIPE EXCEEDS FOUR (4) FEET OR DEEPER.
   b. WHEN IN THE OPINION OF THE S&WB ENGINEER, TRENCH CONDITIONS DICTATE THAT STANDARD SHEETING BRACING AND FOUNDATION LUMBER ARE REQUIRED.
2. WHEN STANDARD SHEETING, BRACING AND FOUNDATION LUMBER ARE NOT REQUIRED, THE NONSTANDARD OPEN TRENCH SECTION SHOWN ON THIS DRAWING SHALL BE USED.
3. ANY SHEETING AND BRACING SHOWN ON THIS DRAWING IS INTENDED FOR PROTECTION OF THE PIPE, AFTER INSTALLATION IS COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR DESIGN AND IMPLEMENTATION FOR ANY SHEETING AND/OR BRACING REQUIRED FOR THE SAFETY OF HIS EMPLOYEES AND TO PROTECT HIS OPERATIONS DURING CONSTRUCTION.
4. ANY ADDITIONAL SHEETING DRIVEN BELOW THE "MAXIMUM SHEETING CUTOFF" SHOWN ON THE DRAWING MUST BE LEFT IN PLACE.
5. STANDARD SHEETING AND BRACING SHALL BE INSTALLED BY FIRST DRIVING THE WOOD SHEETING. THEN THE MUD SILLS SHALL BE DRIVEN INTO THE SOIL, PROPERLY BRACED, AND ALL VOIDS FILLED WITH COMPACTED AGGREGATE BEFORE FOUNDATION LUMBER PLANKING IS INSTALLED. THE STANDARD BOTTOM SHALL NOT BE INSTALLED AS A PREFABRICATED BOX.
6. MAXIMUM TRENCH WIDTH ALLOWED SHALL BE FOUR FEET FOR 8" AND 10" PIPE. FOR LARGER DIAMETER PIPE, THE MAXIMUM TRENCH WIDTH ALLOWED SHALL BE THREE FEET PLUS THE OUTSIDE DIAMETER OF THE PIPE.
7. IF THE WORKING SURFACE OF SOIL BENEATH THE PIPE IS CONSIDERED UNACCEPTABLE, BY THE S&WB ENGINEER, THE SOIL MUST BE REMOVED DOWN TO STABLE AND ACCEPTABLE MATERIAL, AND REPLACED WITH COMPACTED PUMPED RIVER SAND.
8. THE CONTRACTOR SHALL NOT USE NAILS OR SPIKES TO HOLD SHEETING OR BRACING BELOW PIPE.

TYPICAL STANDARD SHEETING TRENCH SECTION



FOR P.V.C. SEWER PIPE SIZES
8'', 10'', & 12''



FOR P.V.C. SEWER PIPE SIZES
15", 18" 21'', 24''& 27''

TYPICAL NON-STANDARD OPEN TRENCH SECTION

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
11	06-10-25	GENERAL REVISIONS	D.MC.
10	03-09-07	GENERAL REVISIONS	D.MC.
9	3-15-84	DWG. UPDATED	SHP

SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL STANDARD AND NON STANDARD SHEETING AND OPEN TRENCH SECTIONS FOR SEWER PIPE INSTALLATION

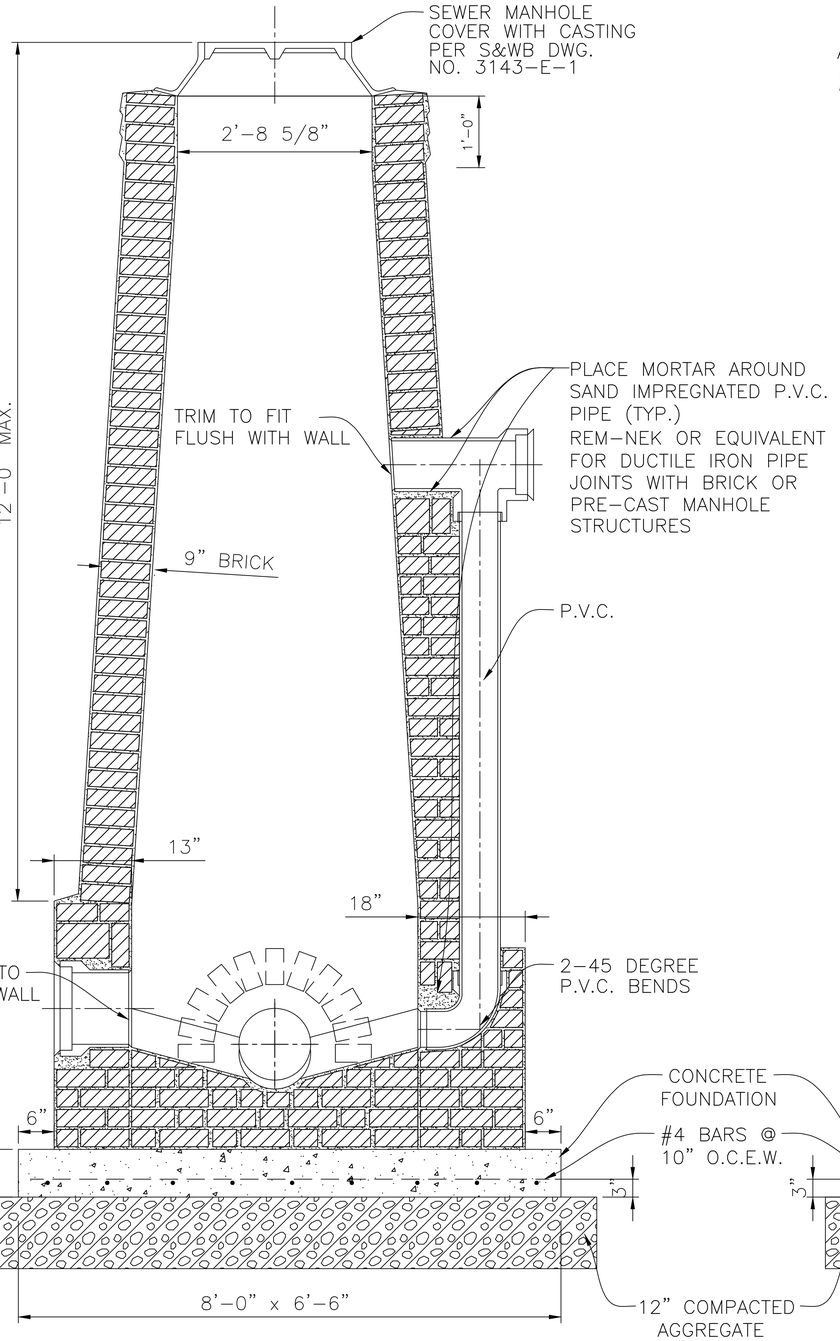
DR.	SHP
TRC.	
CK.	
AP.	
SCALE	NONE
DATE	3-15-84

GENERAL SUPERINTENDENT

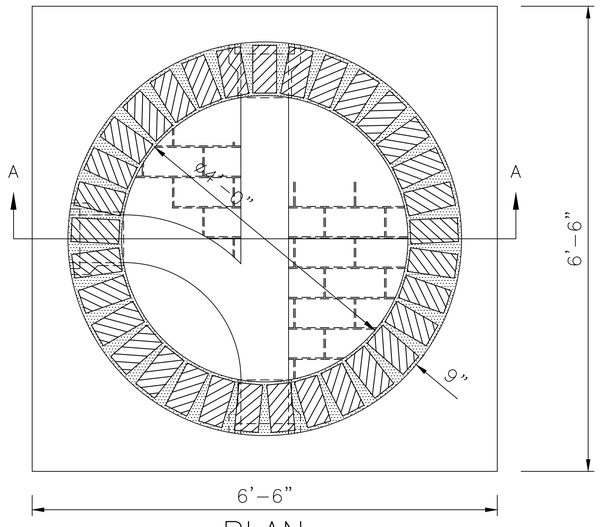
DWG. NO. 4697-E5-A

SET NO. | SHEET NO.

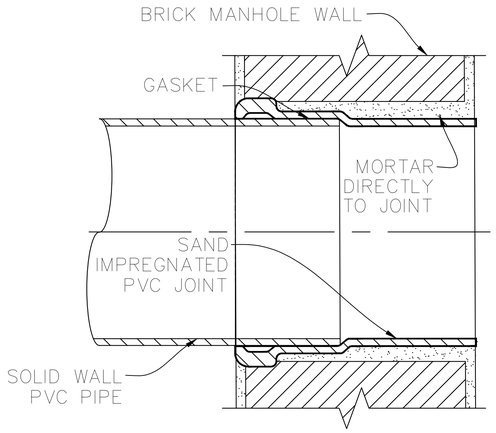
16



MANHOLE SECTION WITH DROP

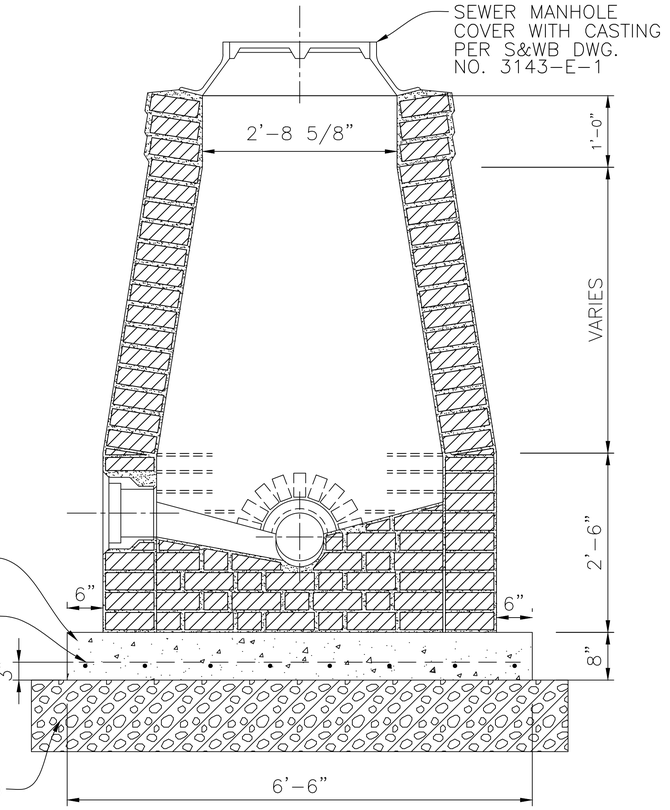


PLAN



BRICK WALL DETAIL

SCALE: N.T.S.



SECTION A-A

NOTES:

1. MANHOLE WALL THICKNESS IS 9" TO A DEPTH OF 12' AND 13" THICK BELOW 12' DEPTH.
2. MANHOLES THAT EXCEED 17' IN DEPTH SHALL USE A 10" CONCRETE SLAB IN LIEU OF AN 8" CONCRETE SLAB.
3. SEWER MANHOLE WALLS SHALL BE MADE ADEQUATELY RESISTANT TO HARSH AGGRESSIVE CHEMICALS BY EITHER AN APPROVED CONCRETE BATCH ADDITIVE OR PROTECTIVE WATERPROOFING COMPOUND.
4. A DROP CONNECTION SHALL BE CONSTRUCTED WHERE THE INFLOW INVERTS ARE 18" OR MORE ABOVE THE OUTFLOW INVERTS.
5. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. IN 28 DAYS.
6. CONTRACTOR TO PROVIDE 95% COMPACTION TEST RESULTS FOR EACH 12'' LIFT. FAILURE TO COMPLY WILL RESULT IN IMMEDIATE SUSPENSION OF WORK.

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
1	06.10.25	GENERAL REVISIONS	DMC

SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SEWER BRICK MANHOLE AND DROP MANHOLE

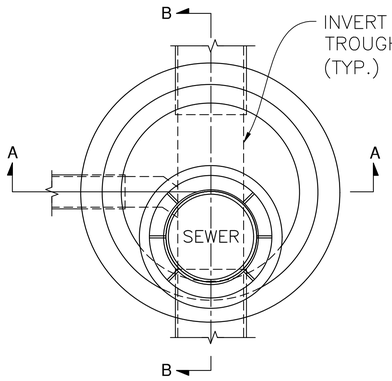
DR.	D. McCRAY
TRC.	
CK.	M. JOHNSON
AP.	J. BECKER
SCALE	NONE
DATE	03-09-07

GENERAL SUPERINTENDENT

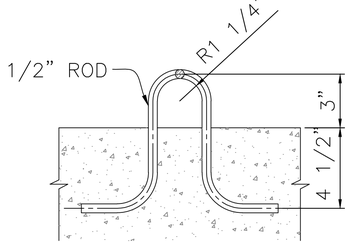
DWG. NO. 6178-B-6

SET NO. | SHEET NO.

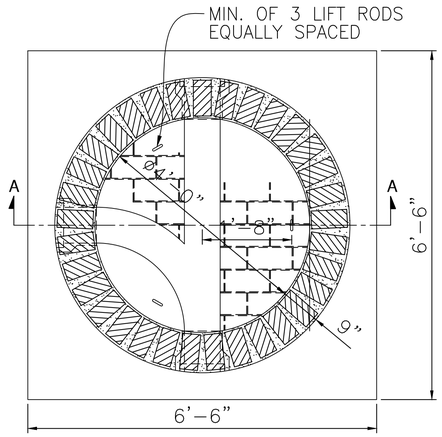
17



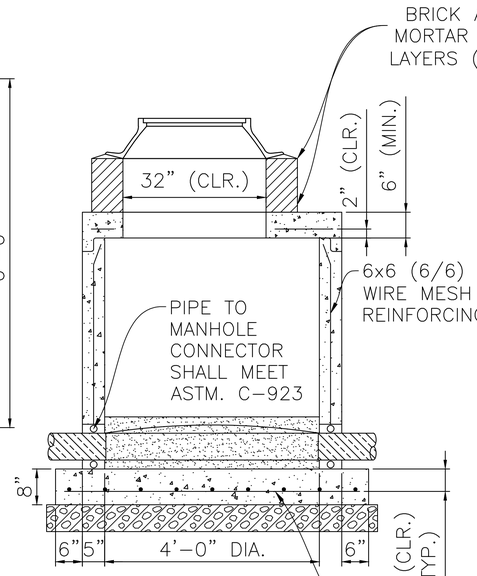
PLAN VIEW



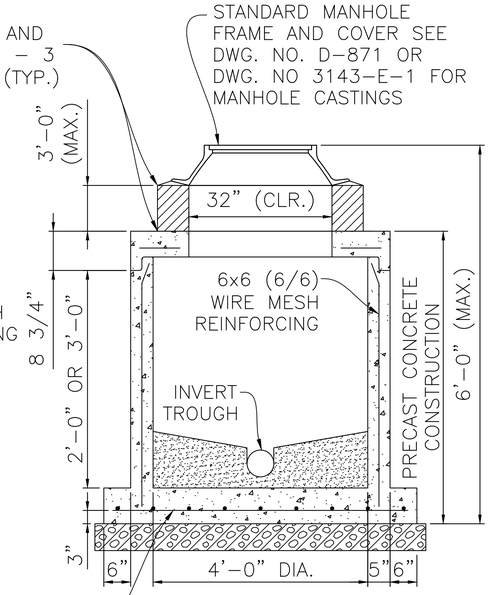
LIFTING EYE DETAIL



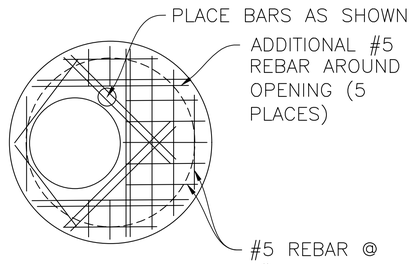
PLAN OF MANHOLE TROUGH



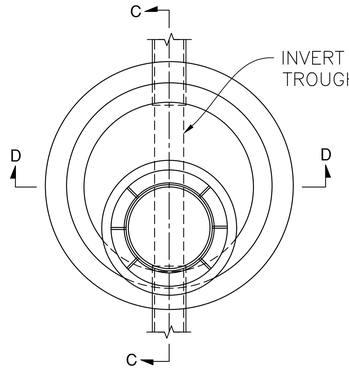
SECTION C–C



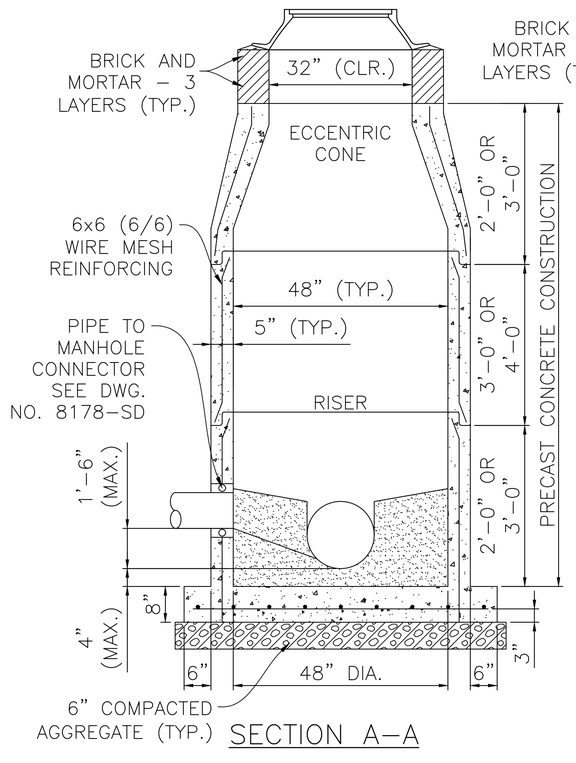
SECTION D–D



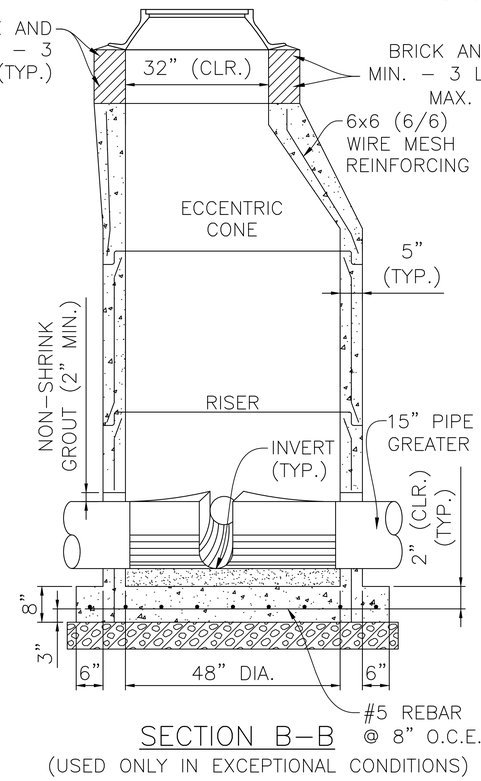
CONCRETE TOP SLAB PLAN



PLAN VIEW

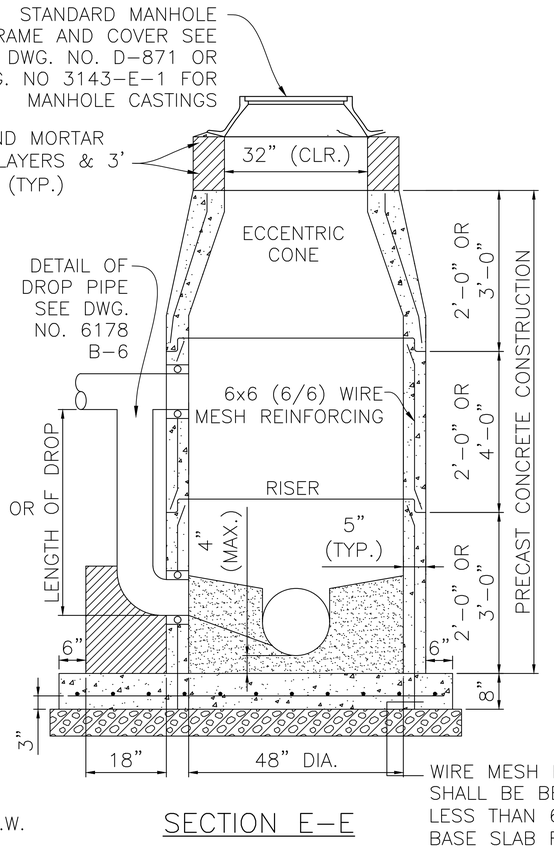


SECTION A–A



SECTION B–B

(USED ONLY IN EXCEPTIONAL CONDITIONS)



SECTION E–E

NOTES:

1. REINFORCING STEEL TO MEET A.S.T.M. A–615 GRADE 60. CONCRETE TO BE 4000 P.S.I. IN 28 DAYS, TYPE II CEMENT, REINFORCING TO MEET A.A.S.H.O. HD–40.
2. JOINTS BETWEEN PRECAST UNITS WILL BE SEALED WITH A RUBBER GASKET TO MEET A.S.T.M. C–443.
3. PRECAST CONCRETE STRUCTURE TO MEET A.S.T.M. C–478.
4. 6''–15'' PIPE, USE RESILIENT BOOT CONNECTOR.
5. 16'' OR LARGER PIPE, USE MIN. 2'' NON–SHRINK GROUT.
6. MANHOLES THAT EXCEED 17' IN DEPTH SHALL USE A 10" THICK BASE IN LIEU OF AN 8" THICK BASE.
7. SEWER MANHOLE WALLS SHALL BE MADE ADEQUATELY RESISTANT TO HARSH AGGRESSIVE CHEMICALS BY EITHER AN APPROVED CONCRETE BATCH ADDITIVE OR PROTECTIVE WATERPROOFING COMPOUND.
8. A DROP CONNECTION SHALL BE CONSTRUCTED WHERE THE INFLOW INVERTS ARE **18"** OR MORE ABOVE THE OUTFLOW INVERTS.

NOT TO SCALE

STANDARD MANHOLE DETAIL

STANDARD DROP MANHOLE DETAIL

REV.	DATE	DESCRIPTION	BY
1	04.22.25	STEPS REMOVED PER OSHA	DMC

SEWERAGE AND WATER BOARD OF NEW ORLEANS

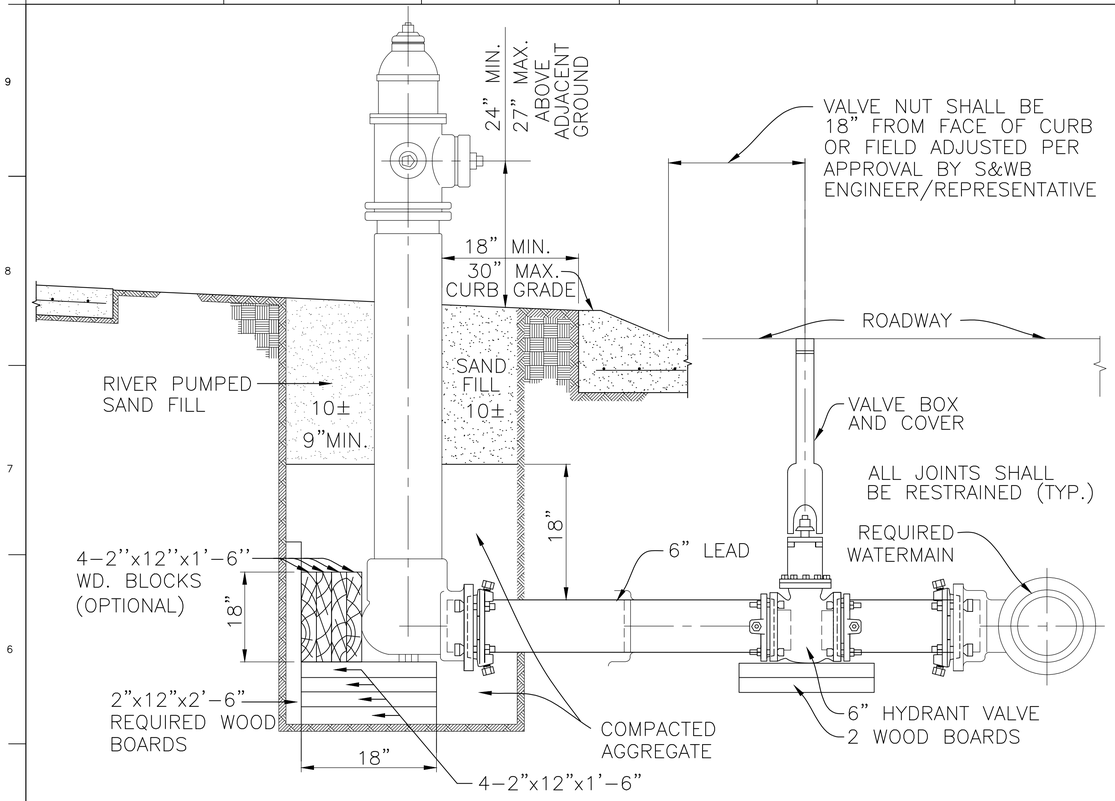
TYPICAL PRE–CAST CONCRETE MANHOLE

DR.	D. McCRAY
TRC.	
CK.	M. JOHNSON
AP.	J. BECKER
SCALE	NONE
DATE	03–09–07

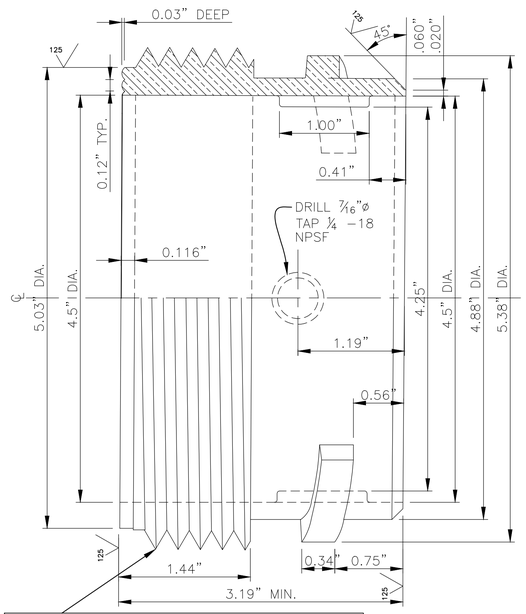
GENERAL SUPERINTENDENT

DWG. NO. 6178–B–6A

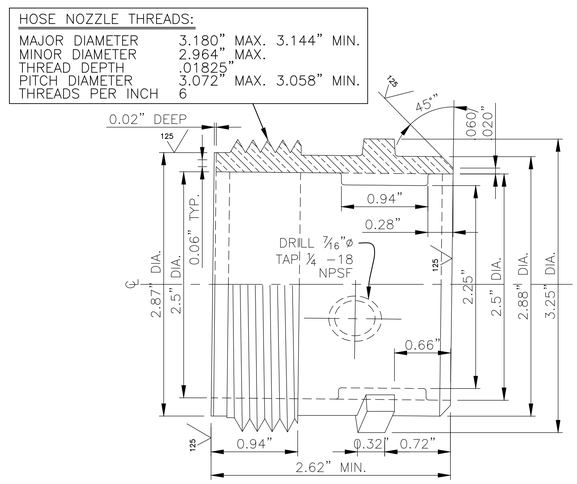
SET NO. | SHEET NO.



⚠14 TYPICAL HYDRANT SETTING



STEAMER NOZZLE THREADS:	
MAJOR DIAMETER	5.457" MAX. 5.427" MIN.
MINOR DIAMETER	5.132" MAX.
THREAD DEPTH	.01624"
PITCH DIAMETER	5.295" MAX. 5.280" MIN.
THREADS PER INCH	4



HOSE NOZZLE THREADS:	
MAJOR DIAMETER	3.180" MAX. 3.144" MIN.
MINOR DIAMETER	2.964" MAX.
THREAD DEPTH	.01825"
PITCH DIAMETER	3.072" MAX. 3.058" MIN.
THREADS PER INCH	6

⚠10 NOTES:

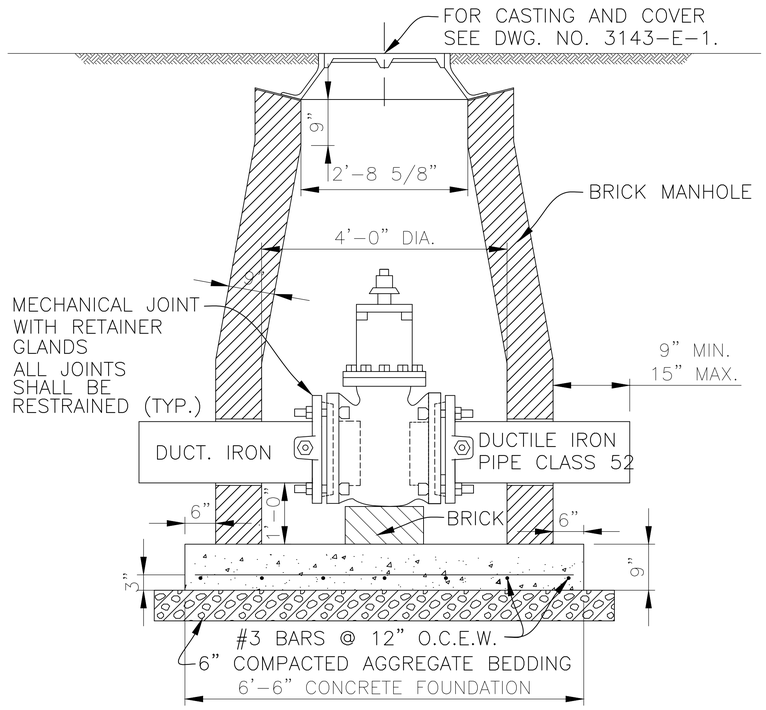
1. *f* = MACHINED SURFACE
2. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES & INVERTS TO BE MORTARED WITH WATERPROOFING COMPOUND, THICKNESS OF 1/4" IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
3. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.

⚠13 4. VALVES 4" TO 12" SHALL BE S&WB R.D. WOOD GATE VALVES (SEE S&WB DWG. NO. 11897–W–62) OR OR AMERICAN R.D. ROTATING GATE DISC VALVE C 500. VALVES 16" AND LARGER SHALL BE AMERICAN R/D GATE VALVES.

⚠13 5. HYDRANTS SHALL BE 5" BREAKAWAY FIRE HYDRANT BRONZE TRIM (SEE S&WB DWG. NO. 11825–W–62), 5 1/4" AMERICAN DARLING FIRE HYDRANT B–62–B, S&WB MUELLER HYDRANT A473 OR K81D GUARDIAN HYDRANT: KENNEDY VALVE (DWG NO. 80783–NOLA).

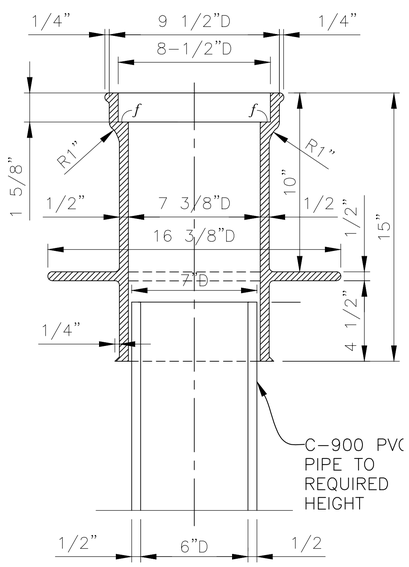
6. ALL JOINTS SHALL BE RESTRAINED.

7. VALVE BOX FRAME & COVER SHALL CONFORM TO EAST JORDAN IRON WORKS, INC. V–8451 VALVE BOX FRAME AND COVER OR APPROVED EQUAL.



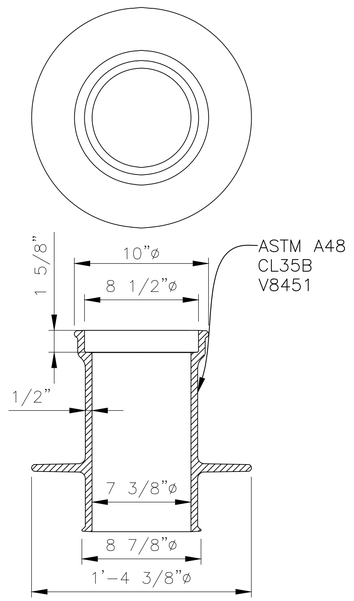
⚠11 WATER VALVE MANHOLE

(FOR SIZES 4'' THRU 12'')
N.T.S.

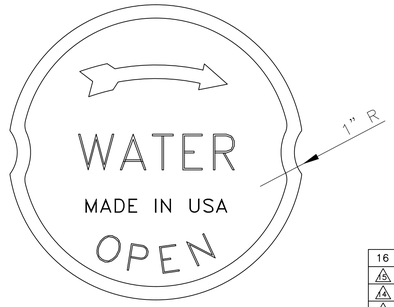


SECTION OF VALVE BOX

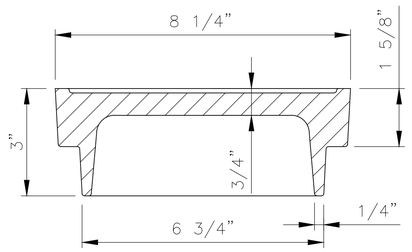
(FOR USE WITH METER VAULTS ONLY)



SECTION



PLAN VIEW



VALVE BOX COVER

NOT TO SCALE

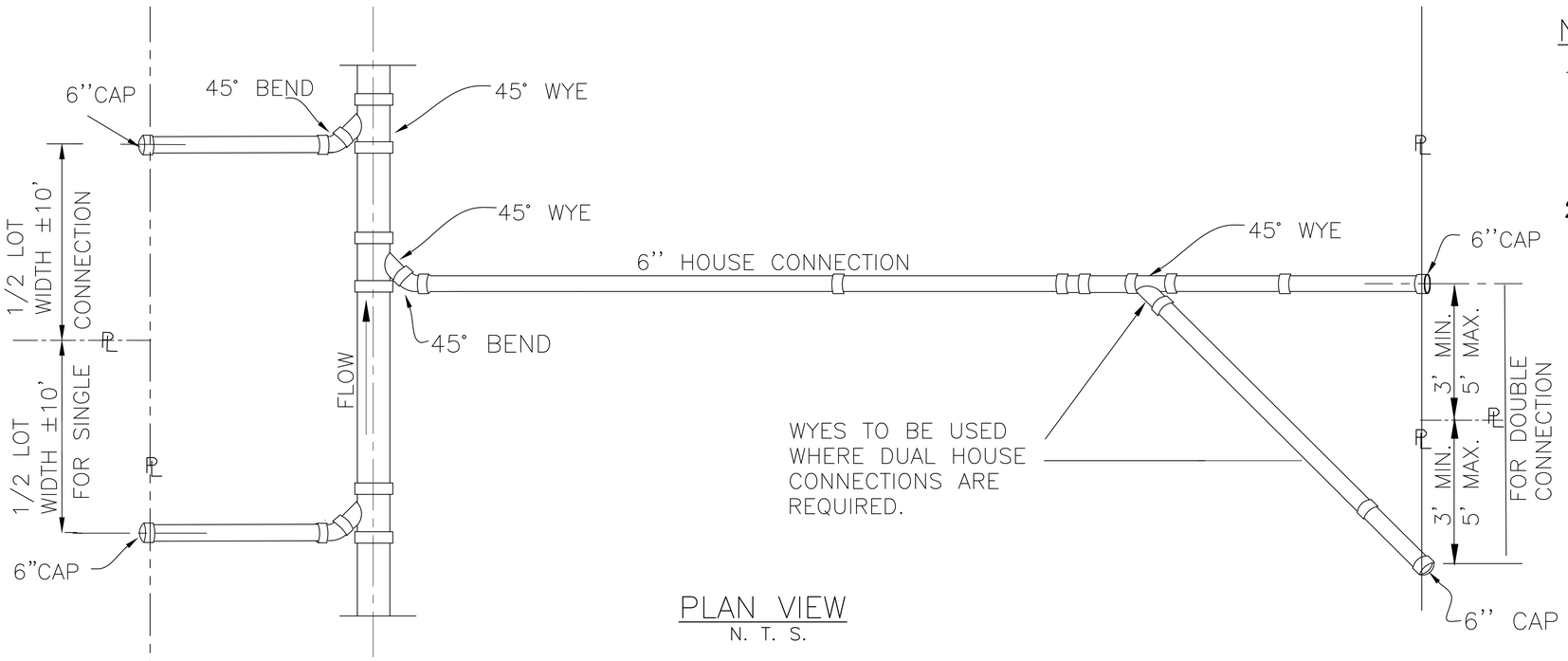
REV.	DATE	DESCRIPTION	BY
16	07–07–25	GENERAL REVISIONS	D.MC.
⚠5	10–25–18	REVISION TO NOTE #5	D.MC.
⚠4	10–08–15	REVISED FIRE HYDRANT	D.MC.
⚠3	04–16–13	REVISIONS TO NOTES #4 & #5	D.MC.
⚠2	03–09–07	DETAILS OF WATER MANHOLE, CASTING AND LARGE VALVE MANHOLE FRAME & COVER DELETED.	D.MC.
⚠1	03–09–07	DRAWING UPDATED	D.MC.
⚠0	03–09–07	DELETED, REVISED AND ADDED NOTES	D.MC.
⚠9	9–16–83	DRAWING UPDATED	S.H.P

SEWERAGE AND WATER BOARD OF NEW ORLEANS

HYDRANT SETTING,
DETAILS OF VALVE BOX AND COVER
AND VALVE MANHOLE

DR. DRAFTING DEPT			
TRC.			
CK.			
AP.		DWG. NO.	6179–F–2
SCALE	NONE		
DATE	3–20–73	SET NO.	SHEET NO.

19

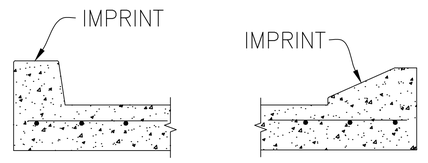


PLAN VIEW
N. T. S.

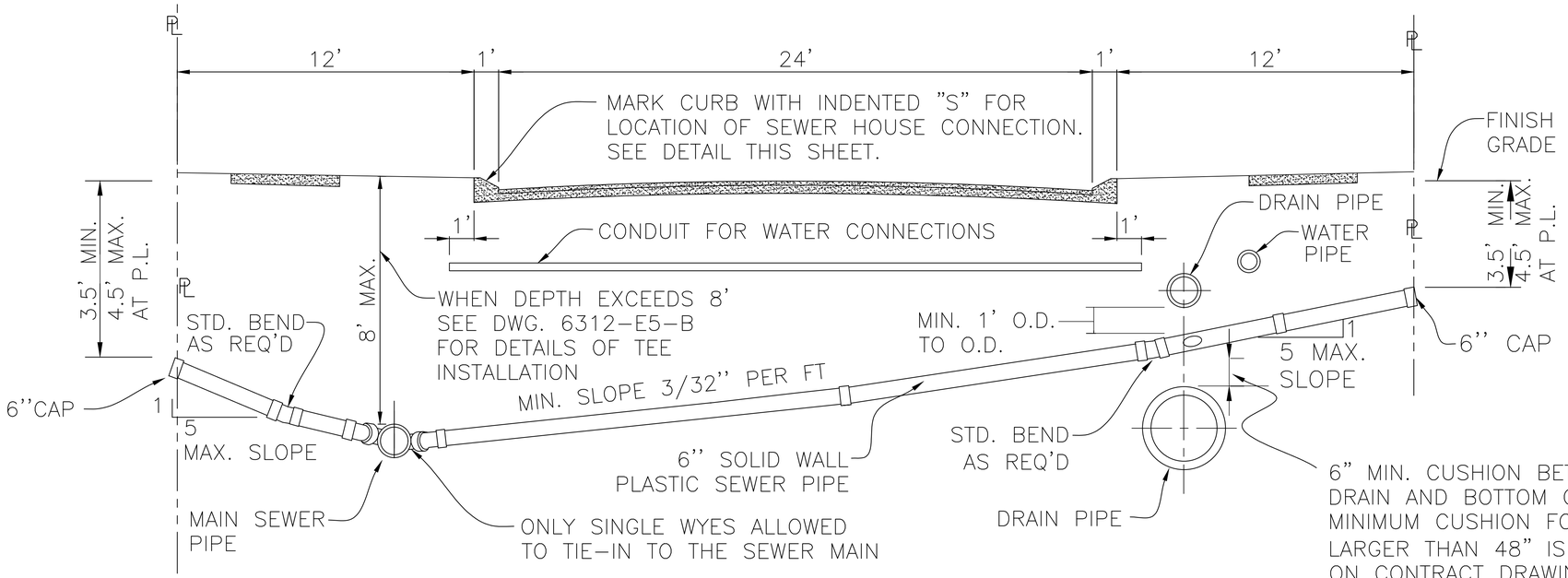
NOTES:

1. THE LOCATION OF THE SEWER SERVICE CONNECTIONS SHALL BE IMPRINTED IN THE CURB WITH AN "S". (SEE DETAIL)
2. **THE USE OF DOUBLE WYES ARE NOT ALLOWED.**

LETTER "S" TO BE 1/4" DEEP



DETAIL OF WATER LETTERS TO BE IMPRINTED IN CURB



TYPICAL UTILITY SECTION – FOR 50 FT. R/W
N. T. S.

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
1	06.04.25	GENERAL REVISIONS	D.MC.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SEWER SERVICE CONNECTION FOR SEWER MAIN LESS THAN OR EQUAL TO 8' DEEP

DR.	D. McCRAY
TRC.	
CK.	M. JOHNSON
AP.	J. BECKER
SCALE	NONE
DATE	03-09-07

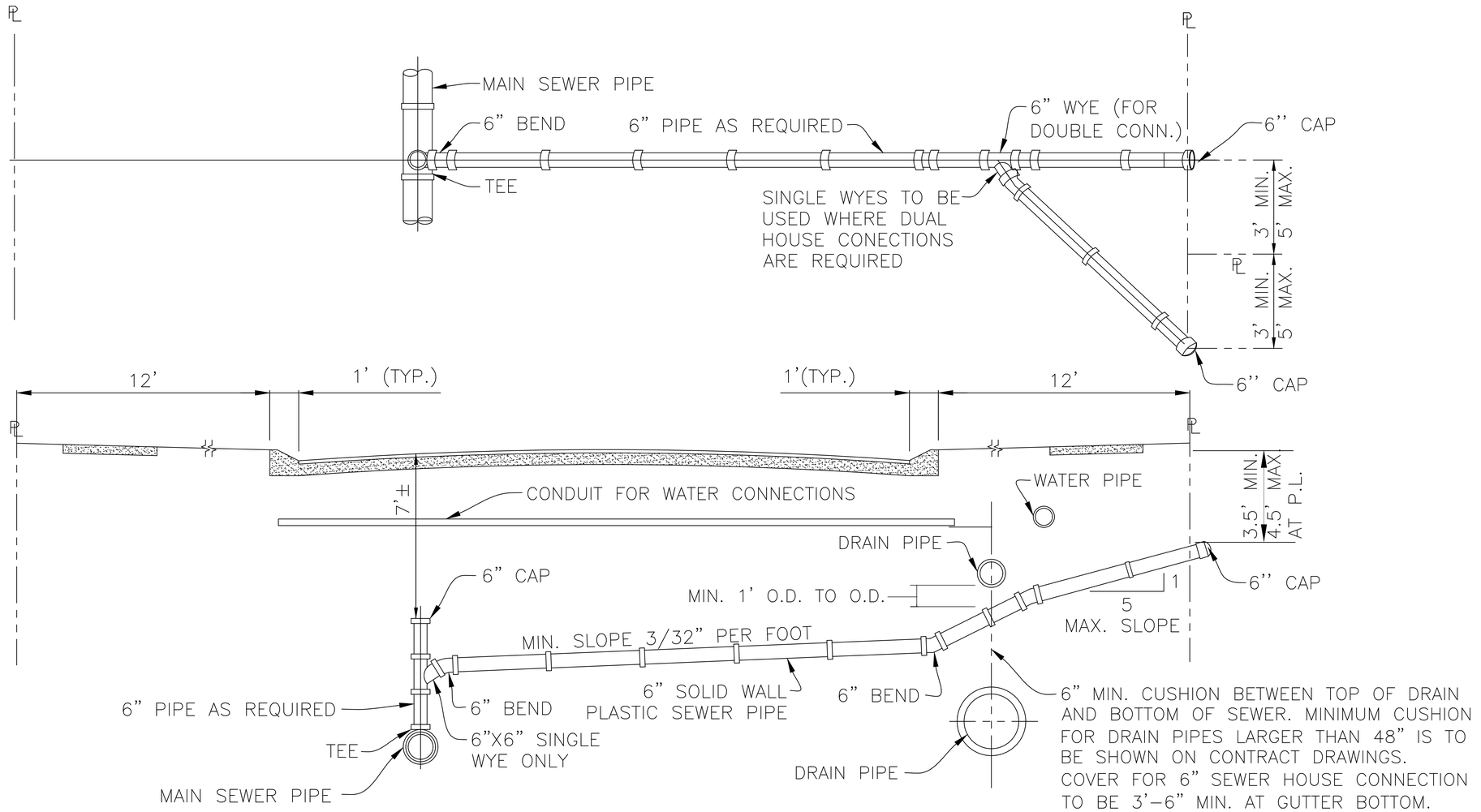
GENERAL SUPERINTENDENT

DWG. NO. 6312-E5-A

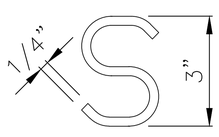
SET NO.

SHEET NO.

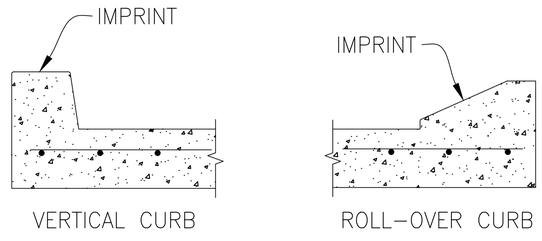
20



TYPICAL UTILITY SECTION – FOR 50 FT. R/W



LETTER "S" TO BE 1/4" DEEP



VERTICAL CURB ROLL–OVER CURB

DETAIL OF SEWER LETTERS TO BE IMPRINTED IN CURB

NOTES:

1. THE LOCATION OF THE SEWER SERVICE CONNECTIONS SHALL BE IMPRINTED IN THE CURB WITH AN "S". (SEE DETAIL)
2. FOR SEWER MAIN INSTALLATION SEE S&WB DWG. NO. 4697–E–5–A.
3. **THE USE OF DOUBLE WYES ARE NOT ALLOWED.**

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
1	07.08.25	GENERAL REVISIONS	D.MC.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

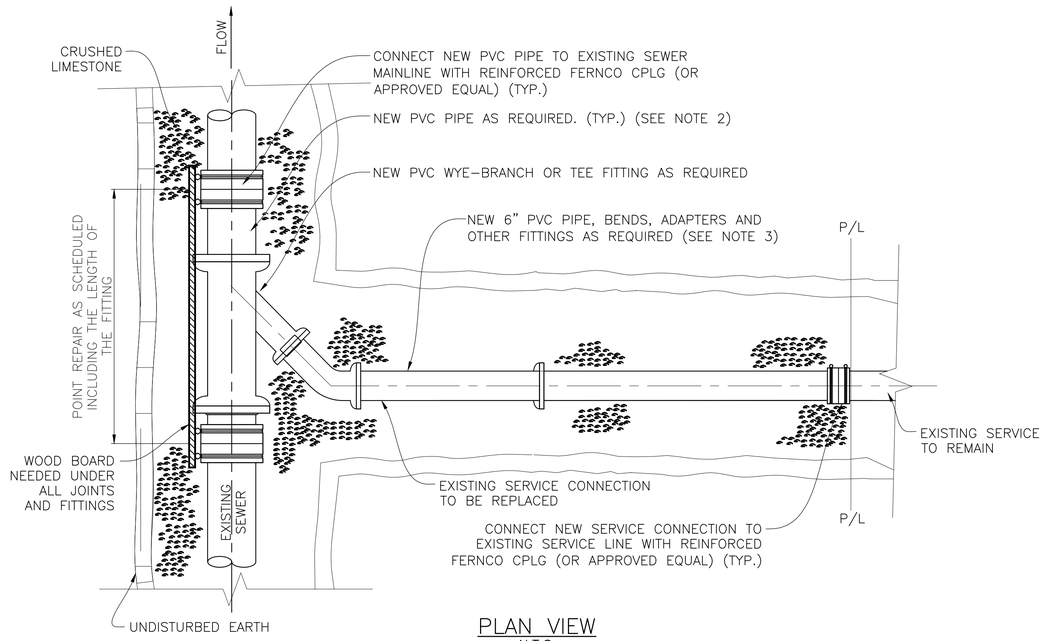
TYPICAL SEWER SERVICE CONNECTION FOR SEWER MAIN GREATER THAN 8' DEEP

DR.	D. McCRAY
TRC.	
CK.	M. JOHNSON
AP.	J. BECKER
SCALE	NONE
DATE	03–09–07

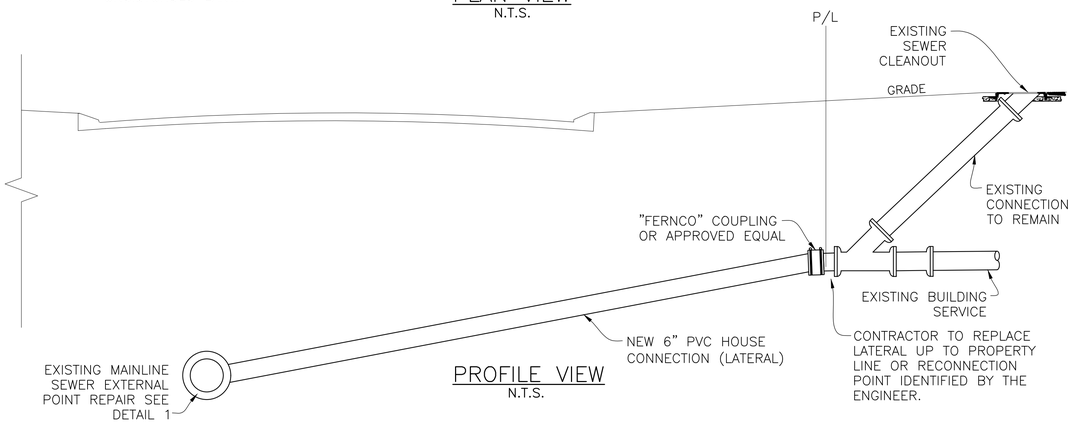
GENERAL SUPERINTENDENT

DWG. NO. 6312–E5–B

SET NO. SHEET NO.



PLAN VIEW
N.T.S.



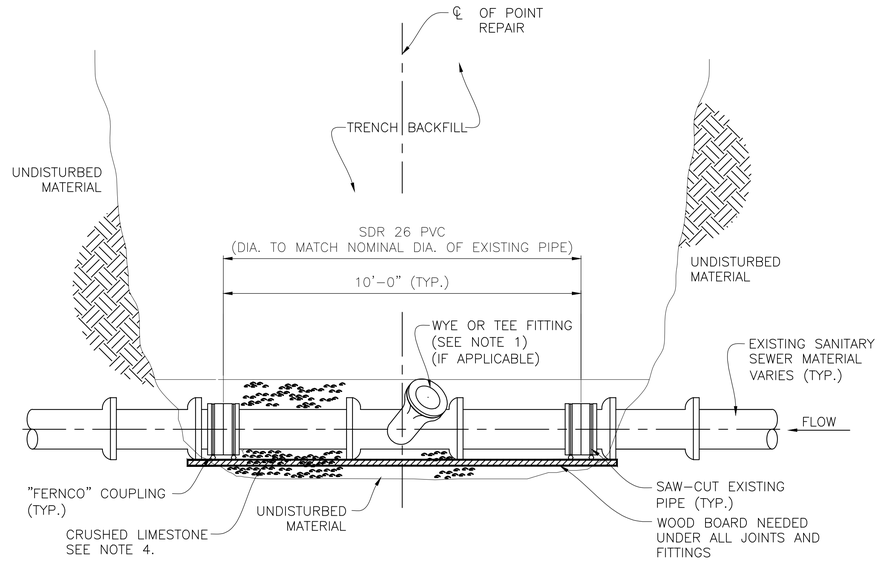
PROFILE VIEW
N.T.S.

6" LATERAL REPLACEMENT DETAILS (NEW OR EXISTING)

N.T.S.

NOTES:

1. WYE OR TEE REPLACEMENT WITH SAME CONFIGURATION.
2. REPLACE SCHEDULED PORTION OF MAINLINE WITH NEW SDR 26 PVC PIPING, INCLUDING THE LENGTH OF THE WYE OR TEE FITTING SHALL BE REQUIRED TO COMPLETE THE CONNECTION.
3. REPLACE THE FULL LENGTH OF THE SERVICE LATERAL WITH NEW PVC PIPING AND FITTINGS, FROM THE MAINLINE TO THE PROPERTY LINE.
4. DEPTH MEASUREMENT SHALL BE TAKEN AS THE AVERAGE OF THE UPSTREAM INVERT AND THE DOWNSTREAM INVERT AT THE RESPECTIVE MANHOLES MEASUREMENT FROM THE ADJACENT GROUND SURFACE TO THE NEAREST WHOLE FOOT.
5. INVERTS OF NEW PIPE TO MATCH INVERTS OF EXISTING PIPE.
6. ENDS OF NEW AND EXISTING PIPES SHALL BE CUT SQUARELY PRIOR TO JOINING WITH COUPLING.
7. REFER TO SEWERAGE AND WATER BOARD STD DETAILS FOR TYPICAL STANDARD TRENCH SECTIONS FOR DETAILED REQUIREMENTS.

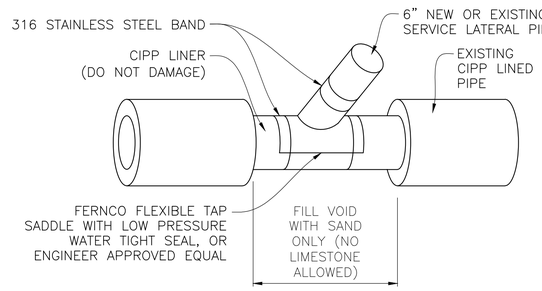


POINT REPAIR DETAIL

N.T.S.

NOTES:

1. NEW PVC WYE OR TEE FITTINGS, IF APPLICABLE, NEW SERVICE LATERAL TO THE PROPERTY LINE, PVC PIPING BENDS, ADAPTORS AND OTHER FITTINGS SHALL BE REQUIRED WHEN SERVICE CONNECTIONS ARE LOCATED WITHIN THE LIMITS OF THE POINT REPAIR.
2. DEPTH MEASUREMENT SHALL BE TAKEN AS THE AVERAGE OF THE UPSTREAM INVERT AND THE DOWNSTREAM INVERT AT THE RESPECTIVE MANHOLES MEASUREMENT FROM THE ADJACENT GROUND SURFACE TO THE NEAREST WHOLE FOOT.
3. INVERTS OF NEW PIPE TO MATCH INVERTS OF EXISTING PIPE.
4. REFER TO SEWERAGE AND WATER BOARD STD DETAILS FOR TYPICAL STANDARD TRENCH SECTIONS FOR DETAILED REQUIREMENTS.
5. FOUNDATION LUMBER ONLY TO BE PLACED WHERE EXISTING LUMBER IS REMOVED DURING EXCAVATION.
6. ENDS OF NEW AND EXISTING PIPES SHALL BE CUT SQUARELY PRIOR TO JOINING WITH COUPLING.
7. S&WB AND/OR CONTRACTOR MAY EXTEND THE POINT REPAIR UP TO A TOTAL OF 12 LINEAR FEET, INCLUSIVE OFF SERVICE FITTINGS, AT NO ADDITIONAL COST TO THE CONTRACT.



NOTES:

1. DETAIL SHALL APPLY TO SERVICE REPAIRS ON ALREADY CIPP LINED PIPES ONLY.
2. CAREFULLY REMOVE EXISTING WYE FROM AROUND THE LINER. IF NECESSARY, GRIND THE PERIMETER OF THE LINER OPENING TO REMOVE JAGGED EDGES.
3. POSITION THE SADDLE OVER THE LINER OPENING AND ALIGN THE INSIDE SURFACE OF THE FITTING WITH THE LOWER EDGE OF THE OPENING BEFORE TIGHTENING THE STAINLESS STEEL BANDS.
4. ONCE THE FITTING IS CORRECTLY IN PLACE, INSTALL THE PRESSURE KIT AND VERIFY THAT EACH BAND HAS BEEN PROPERLY TIGHTENED.

INSTALLATION OF SADDLE ON CURED–IN–PLACE LINED PIPE

N.T.S.

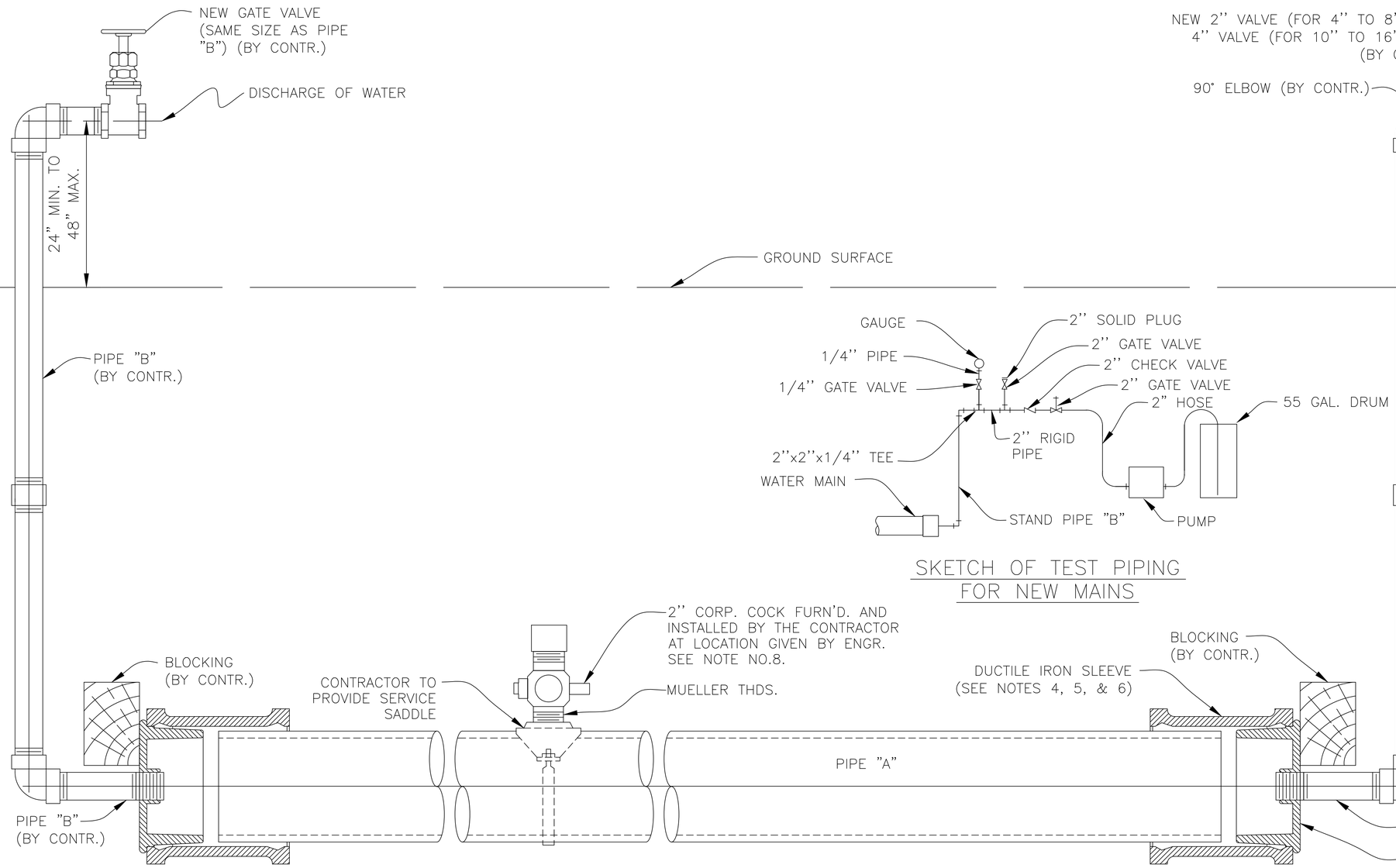
NOT TO SCALE

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

SEWER PIPE REPAIR DETAILS

DR. D. McCRAY	GENERAL SUPERINTENDENT
TRC.	
CK. M. MAQBOOL	
AP. K. BREAUX	DWG. NO. 6312–E5–C
SCALE NONE	
DATE 06–10–25	SET NO. / SHEET NO.



I.D. OF PIPE "A"	I.D. OF PIPE "B"
4" TO 8"	2"
10" TO 16" (INC.)	4"

SKETCH OF TEST PIPING FOR NEW MAINS

ELEVATION VIEW

SCALE: 6" = 1'-0"

NOTES:

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL THE FOLLOWING:
   a. 2" MIN. TEMPORARY WATER SUPPLY, (4" SUPPLY ON 10" TO 16")
   b. ALL PIPES, INCLUDING HOUSE CONNECTION SHIP WITH CURB STOP TERMINATING IN A METER BOX, VALVES, AND FITTINGS TO THE TEST PLUG AT THE MAIN AS SHOWN.
   c. 2" CORP. COCK FOR INJECTION OF CHLORINE IN 16" ONLY.
   d. TEMPORARY STAND PIPES ON ALL VENT COCKS IN THE SYSTEM EXTENDING 2' TO 4' ABOVE GRADE AND TERMINATING WITH AN ELBOW AND VALVE.
2. PIPE "B" AND ALL FITTINGS CONNECTING TO PIPE "B" SHALL BE STAINLESS STEEL OR NEW GALV. IRON.
3. THE CONTRACTOR SHALL OPEN AND CLOSE ALL VALVES TO EXPEL THE AIR AND SHALL REMOVE THE VENT PIPES AND CLOSE THE COCKS WHEN NOTIFIED BY THE S&WB ENGINEER.
4. FOR DUCTILE IRON PIPE, USE DUCTILE IRON SLEEVE AND TAP PLUG (2" OR 4" AS SHOWN) OR FITTINGS AS SPECIFIED FOR P.V.C. PIPE.
5. FOR P.V.C. PIPE USE A DUCTILE IRON CAP WITH RUBBER RING GASKET, FOLLOWER GLAND, NUTS, AND BOLTS.
6. ALL MATERIALS AND LABOR REQUIRED FOR PRESSURE TEST, TO BE FURNISHED BY CONTRACTOR.
7. THE CONTRACTOR SHALL USE 2" MUELLER H-10003 CORPORATION COCK OR APPROVED EQUAL.
8. ON COMPLETION OF THE CHLORINATION PROCESS, CONTRACTOR HAS 24 HOURS TO TIE-INS. THE CONTRACTOR SHALL REMOVE ALL TEMPORARY PIPING, DISHED HEADS, SLEEVES, PLUGS, VALVES, ETC. WHICH SHALL REMAIN THE CONTRACTOR'S PROPERTY EXCEPT WHERE NOTED ON CONTRACT DRAWINGS.

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
5	07-08-25	GENERAL REVISIONS	D.MC.
4	03-09-07	REVISED NOTES AND DRAWING	D.MC.
3	5-27-88	NOTE NO. 8 - REDUCER	SHP
2	4-3-87	ALTERNATE TEST PIPING	SHP
1	8-25-83	TEST CONN. REVISED	SHP

SEWERAGE AND WATER BOARD OF NEW ORLEANS

TEST CONNECTION ON NEW WATER MAINS (4" TO 16"), FLUSHING AND CHLORINATION

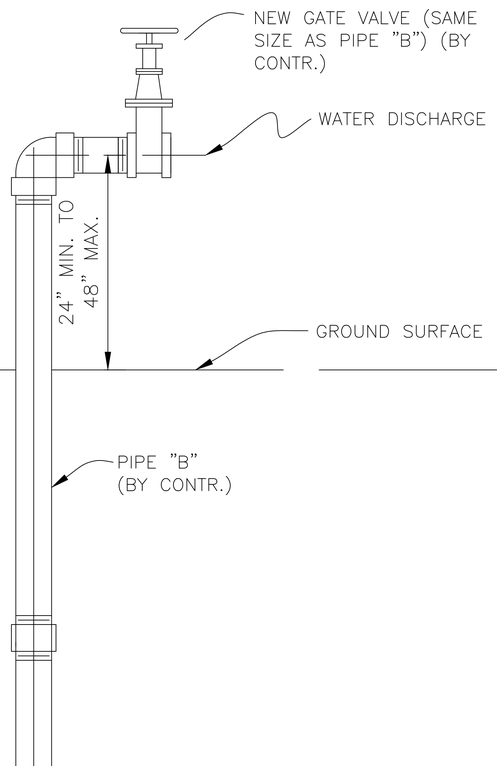
DR.	SHP
TRC.	
CK.	
AP.	
SCALE	NONE
DATE	7-13-83

GENERAL SUPERINTENDENT

DWG. NO. 7004-W

SET NO. | SHEET NO.

23



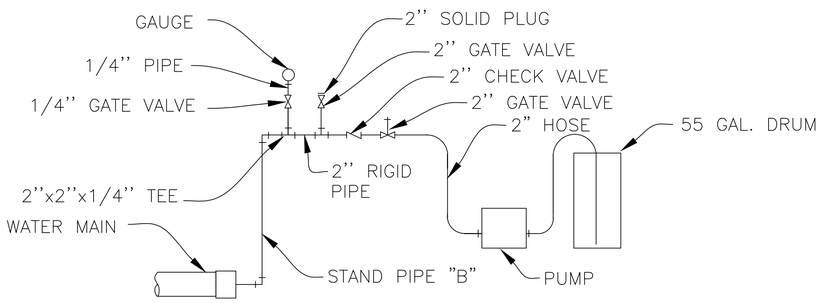
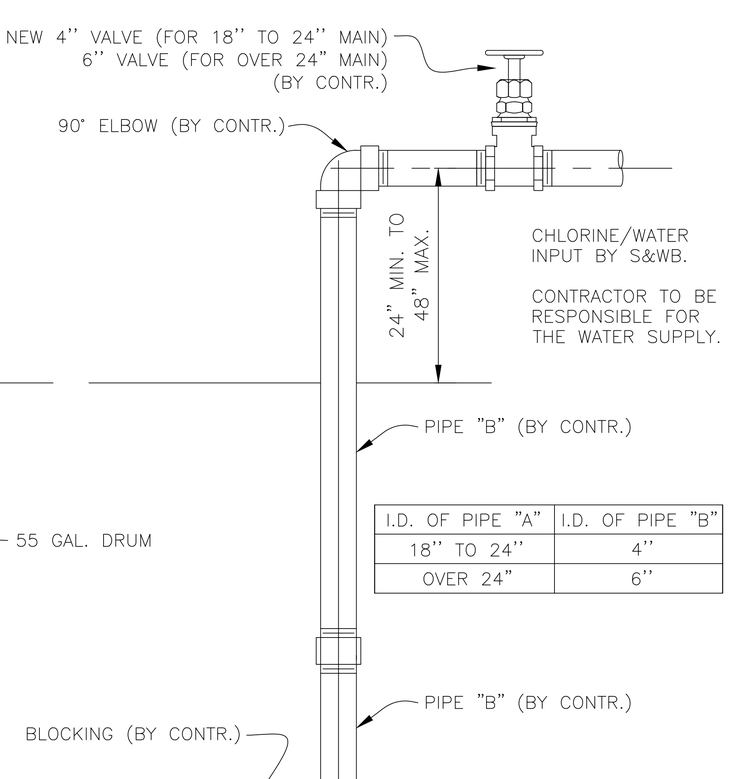
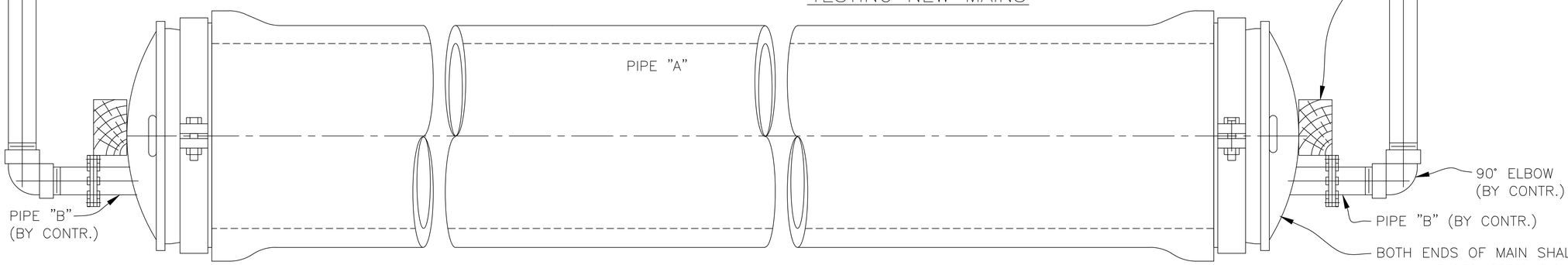


DIAGRAM FOR PRESSURE TESTING NEW MAINS



I.D. OF PIPE "A"	I.D. OF PIPE "B"
18" TO 24"	4"
OVER 24"	6"



ELEVATION VIEW

NOT TO SCALE

NOTES:

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL THE FOLLOWING:
   a. ALL THE VALVES AND FITTINGS SHOULD BE THOROUGHLY CLEARED OF ANY FOREIGN MATERIALS, I/E GREASE, BEFORE ASSEMBLING TO THE STAND PIPE FOR CHLORINATION.
   b. 4" MINIMUM TEMPORARY WATER SUPPLY. (DISCHARGE PIPE SHOULD BE ACCORDING TO SIZE OF LINE, 4" UP TO 24", AND 6" OVER 24".
   c. ALL PIPE, VALVES, AND FITTINGS TO THE FLANGED OUTLET AT THE MAIN AS SHOWN.
   d. PIPE, FITTINGS, AND VALVES AT DISCHARGE END OF THE MAIN.
   e. TEMPORARY STAND PIPES ON ALL VENT COCKS IN THE SYSTEM EXTENDING 2" TO 4" ABOVE GRADE AND TERMINATING WITH AN ELBOW AND VALVE.
2. PIPE "B" AND ALL FITTINGS CONNECTING TO PIPE "B" SHALL BE STAINLESS STEEL OR NEW GALVANIZED IRON.
3. THE CONTRACTOR SHALL OPEN AND CLOSE ALL VALVES TO EXPEL THE AIR AND SHALL REMOVE THE VENT PIPES AND CLOSE THE COCKS WHEN NOTIFIED BY THE S&WB ENGINEER.
4. ON COMPLETION OF THE CHLORINATION PROCESS AND AT MAKING OF TIE-INS, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY PIPING, DISHED HEADS, SLEEVES, PLUGS, VALVES, ETC. WHICH SHALL REMAIN THE CONTRACTOR'S PROPERTY EXCEPT WHERE NOTED ON CONTRACT DRAWINGS.
5. ALL MATERIALS AND LABOR REQUIRED FOR PRESSURE TEST TO BE FURNISHED BY CONTRACTOR.
6. THE CONTRACTOR SHALL USE 2" MUELLER H-10003 CORPORATION COCK OR APPROVED EQUAL.
7. AS PART OF PRESSURE TEST AND CHLORINATION OF THE NEW WATER LINE, HOUSE CONNECTION WHIP WITH CURB STOP HAS TO BE INSTALLED FROM THE WATER MAIN THROUGH A CORPORATION COCK. ALL OF THIS HAS TO BE PRESSURE TESTED AND CHLORINATED AS ONE UNIT. AFTER SUCCESSFUL PRESSURE TEST AND CHLORINATION, SUCCESSFUL PRESSURE TEST AND CHLORINATION, ALL THE ATTACHMENTS, I.E. DISH HEADS, STANDUP PIPES AND VALVES ARE TO BE REMOVED.

REV.	DATE	DESCRIPTION	BY
5	06-04-25	GENERAL REVISIONS	D.MC.
4	03-09-07	REVISED NOTES AND DRAWING	D.MC.
3	5-27-88	NOTE NO. 5 - REDUCER	SHP
2	4-3-87	ALTERNATE TEST PIPING	SHP
1	8-25-83	TEST CONN. REVISED	SHP

SEWERAGE AND WATER BOARD OF NEW ORLEANS

PRESSURE TEST CONNECTION ON NEW WATER MAINS (18" AND LARGER), FLUSHING AND CHLORINATION

DR.	SHP
TRC.	
CK.	
AP.	
SCALE	NONE
DATE	7-13-83

GENERAL SUPERINTENDENT

DWG. NO. 7005-W

SET NO. | SHEET NO.

24

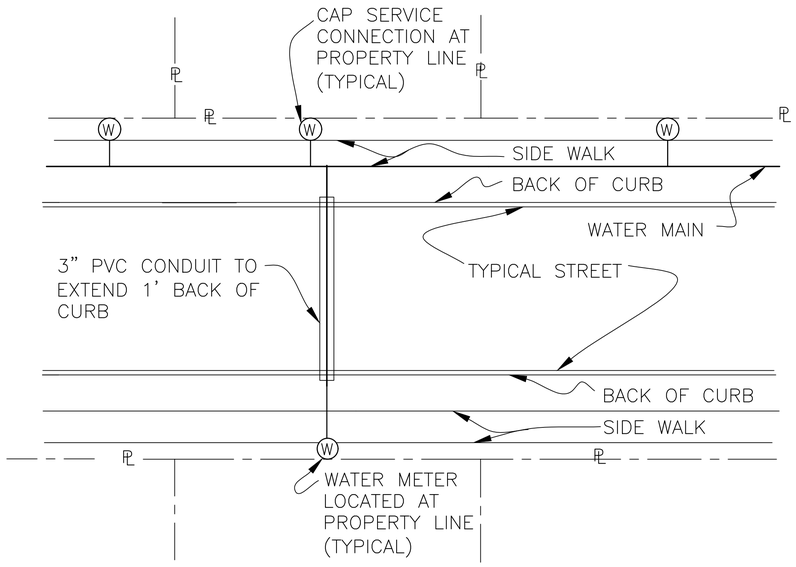
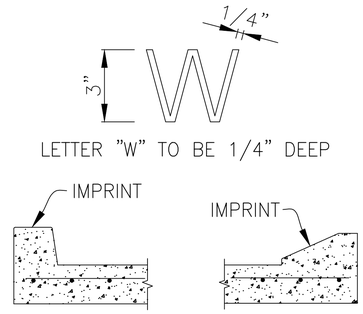


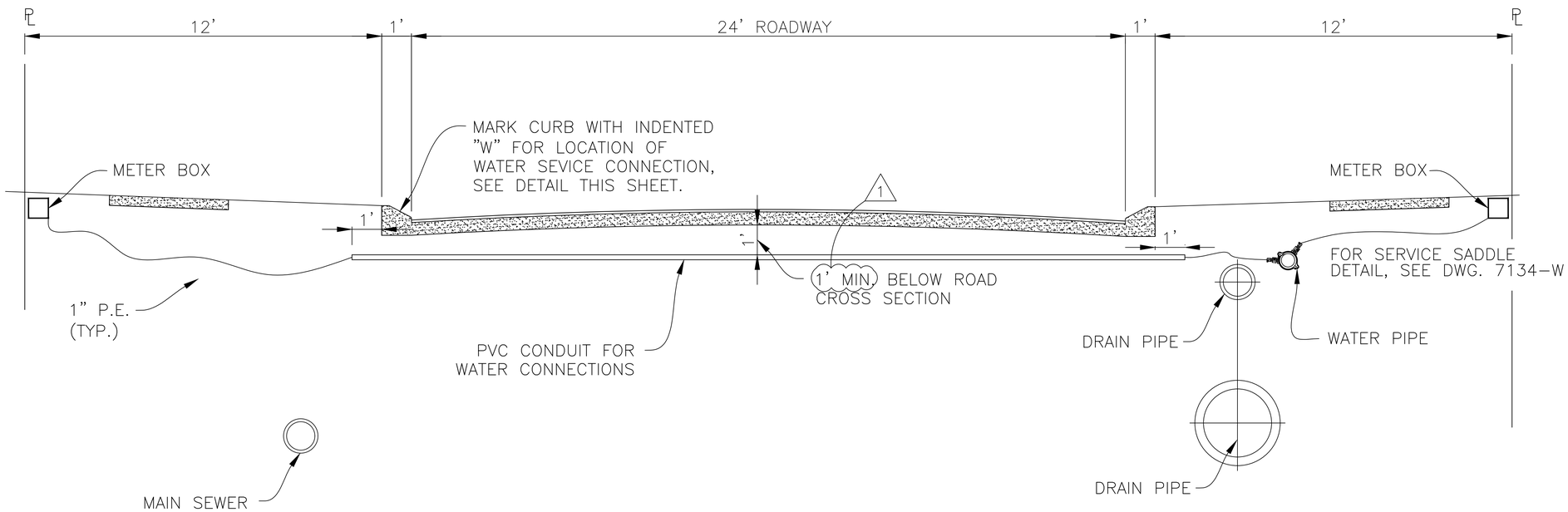
DIAGRAM OF WATER METER SERVICE CONNECTION



DETAIL OF WATER LETTERS TO BE IMPRINTED IN CURB

NOTE:

1. TUBING MATERIAL SHALL BE TYPE "K" COPPER OR POLYETHYLENE PE 3406 AND SHALL CONFORM TO THE LATEST ISSUE OF ASTM D–2737 AND D–1248 FOR TYPE 3 OR 4 GRADE P–34 CLASS "C".
2. WATER SERVICE CONNECTION TO BE NEAR CENTERLINE OF LOT, MIN. OF 5' HORIZONTALLY FROM SEWER H.C.
3. THE LOCATION OF THE WATER SERVICE CONNECTIONS SHALL BE IMPRINTED IN THE CURB WITH AN "W". (SEE DETAIL)
4. ALL BRONZE/BRASS FITTINGS, CONNECTORS, CORPORATION STOPS AND APPURTENANCES SHALL BE OF DOMESTIC MANUFACTURE, SHALL BE MADE OF LEAD FREE BRONZE/BRASS, AND MEET ALL REQUIREMENTS OF AWWA, ASTM AND ANSI FOR USE IN THE POTABLE WATER DISTRIBUTION SYSTEMS. (2)



TYPICAL UTILITY SECTION – FOR 50 FT. R/W

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
3	04.28.25	GENERAL REVISIONS	DMC
2	04.18.13	ADDITIONAL NOTE	DMC
1	10.05.12	GENERAL REVISIONS	DMC

SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL WATER SERVICE CONNECTION

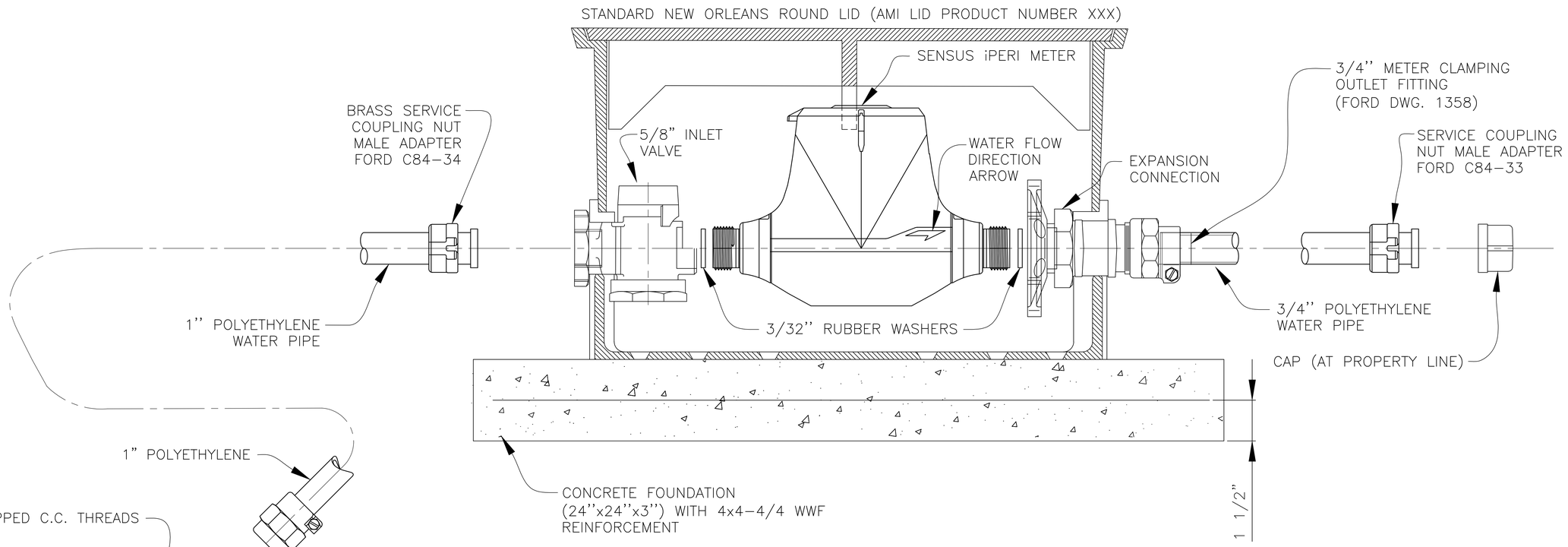
DR.	D. McCRAY
TRC.	
CK.	M. JOHNSON
AP.	J. BECKER
SCALE	NONE
DATE	03–09–07

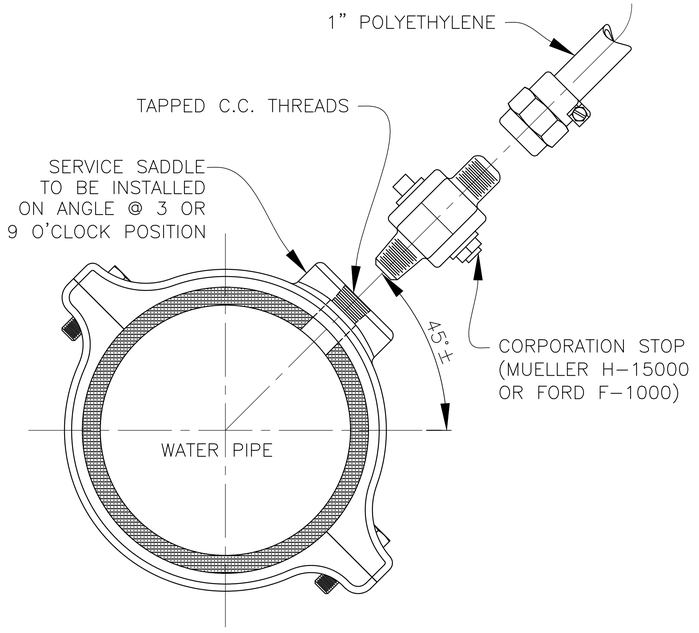
GENERAL SUPERINTENDENT

DWG. NO. 7134A–W

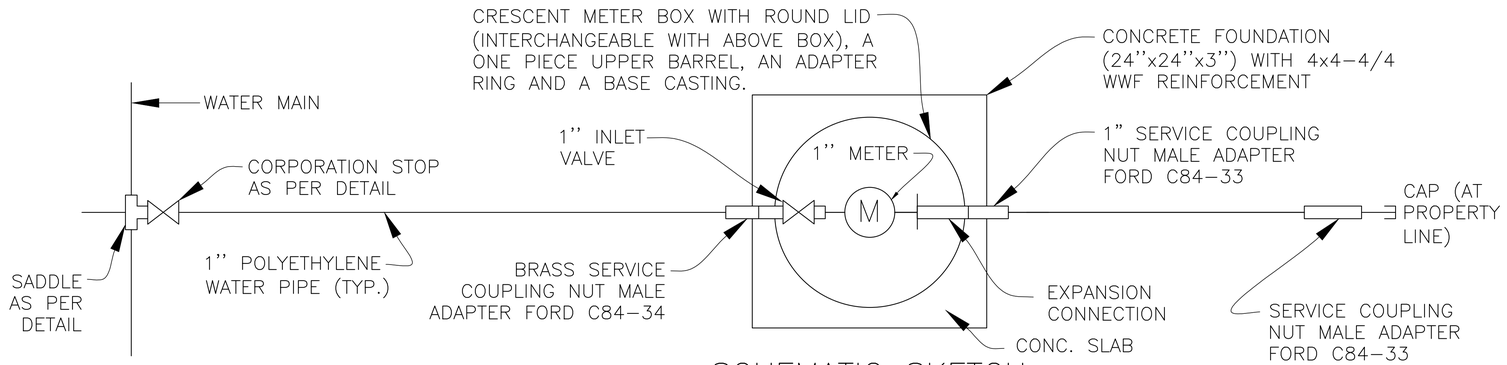
SET NO. | SHEET NO.

25





SERVICE SADDLE



SCHEMATIC SKETCH
1" WATER METER SERVICE CONNECTION

NOTE:

1. TUBING MATERIAL SHALL BE POLYETHYLENE PE 3406.
2. WATER SERVICE CONNECTION TO BE NEAR CENTERLINE OF LOT, MIN. OF 5' HORIZONTALLY FROM SEWER H.C.
1. 3. ALL BRONZE/BRASS FITTINGS, CONNECTORS, CORPORATION STOPS AND APPURTENANCES SHALL BE OF DOMESTIC MANUFACTURE, SHALL BE MADE OF LEAD FREE BRONZE/BRASS, AND MEET ALL REQUIREMENTS OF AWWA, ASTM AND ANSI FOR USE IN THE POTABLE WATER DISTRIBUTION SYSTEMS.

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
2	04.25.25	GENERAL REVISIONS	DMC
1	04.18.13	ADDITIONAL NOTE	DMC

SEWERAGE AND WATER BOARD OF NEW ORLEANS

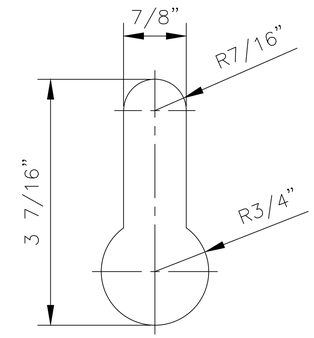
WATER METER SERVICE CONNECTION FOR 5/8", 3/4" AND 1" METER BOX SETTING

DR.	D. McCRAY
TRC.	
CK.	M. JOHNSON
AP.	J. BECKER
SCALE	NONE
DATE	03–09–07

GENERAL SUPERINTENDENT

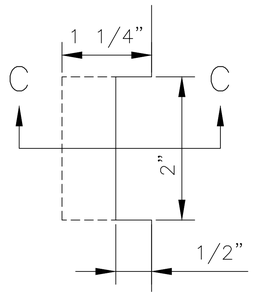
DWG. NO. 7134–W

SET NO. | SHEET NO.



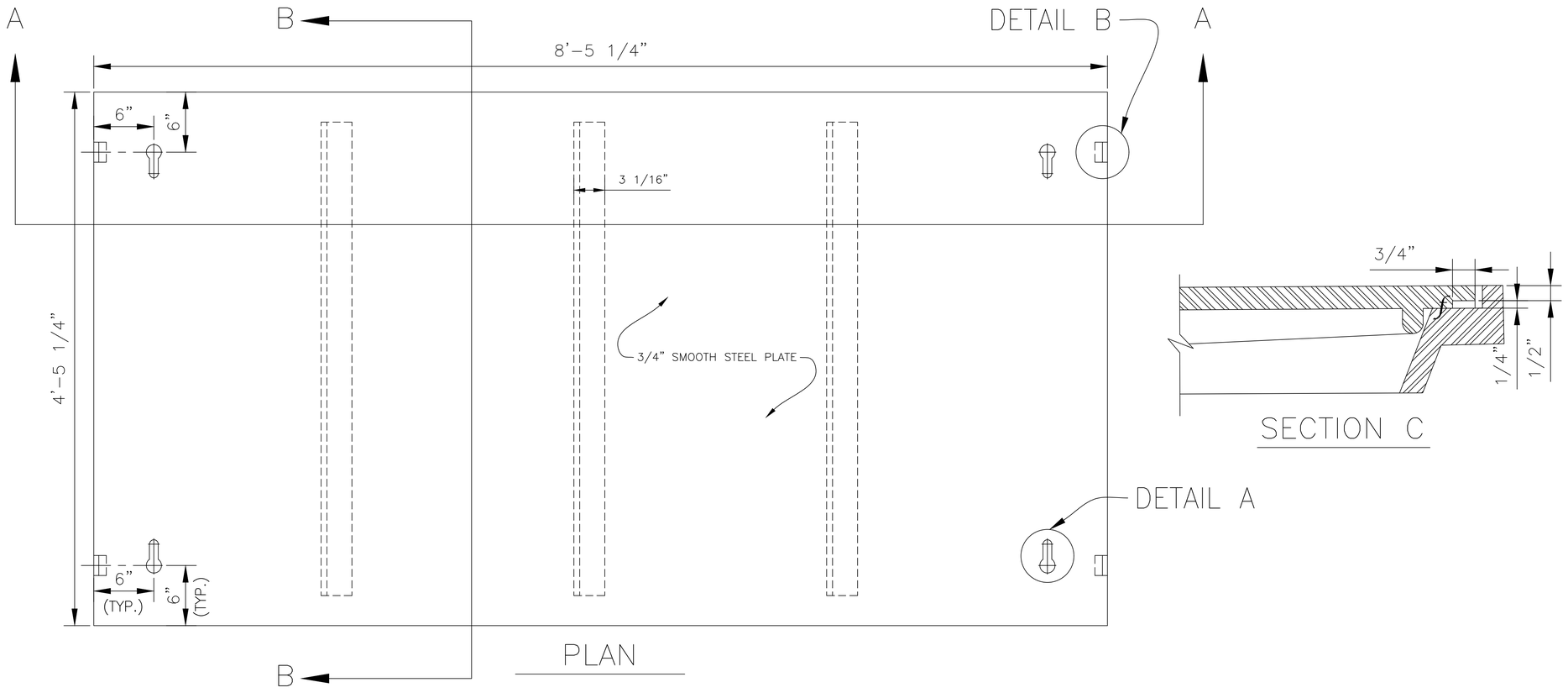
DETAIL A

(4 REQ'D)



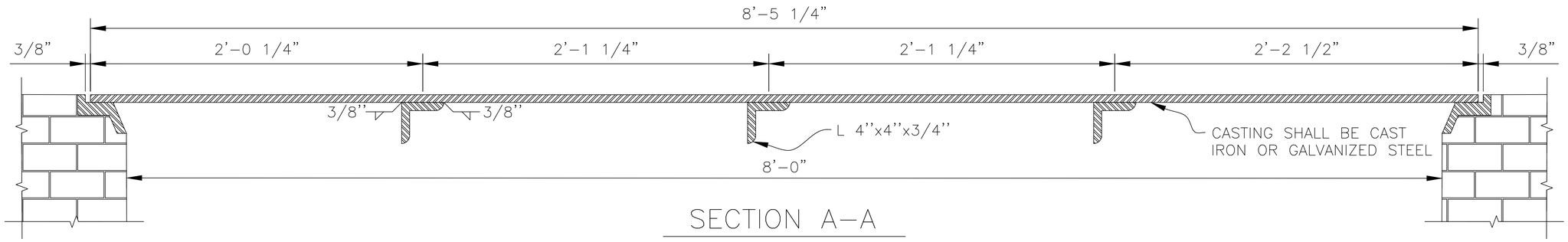
DETAIL B

(4 REQ'D)



PLAN

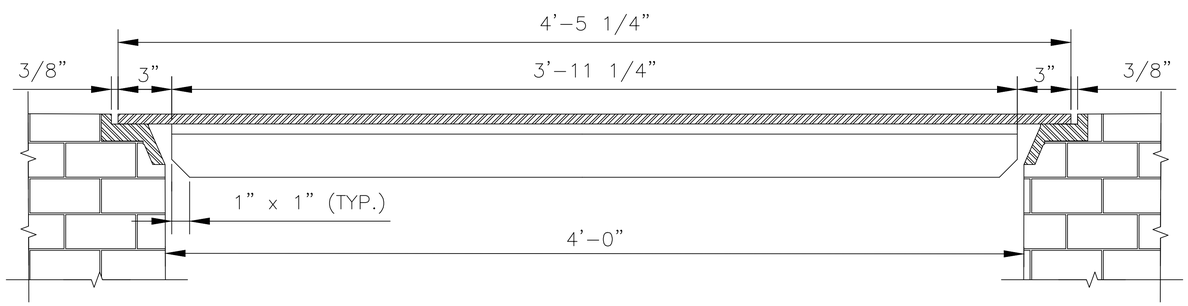
SECTION C



SECTION A-A

NOTES:

1. MANHOLE COVER AND FRAME SHALL CONFORM TO EAST JORDAN IRON WORKS 46899061 (ASTM. A-36 OR EQUAL)



SECTION B-B

NOT TO SCALE

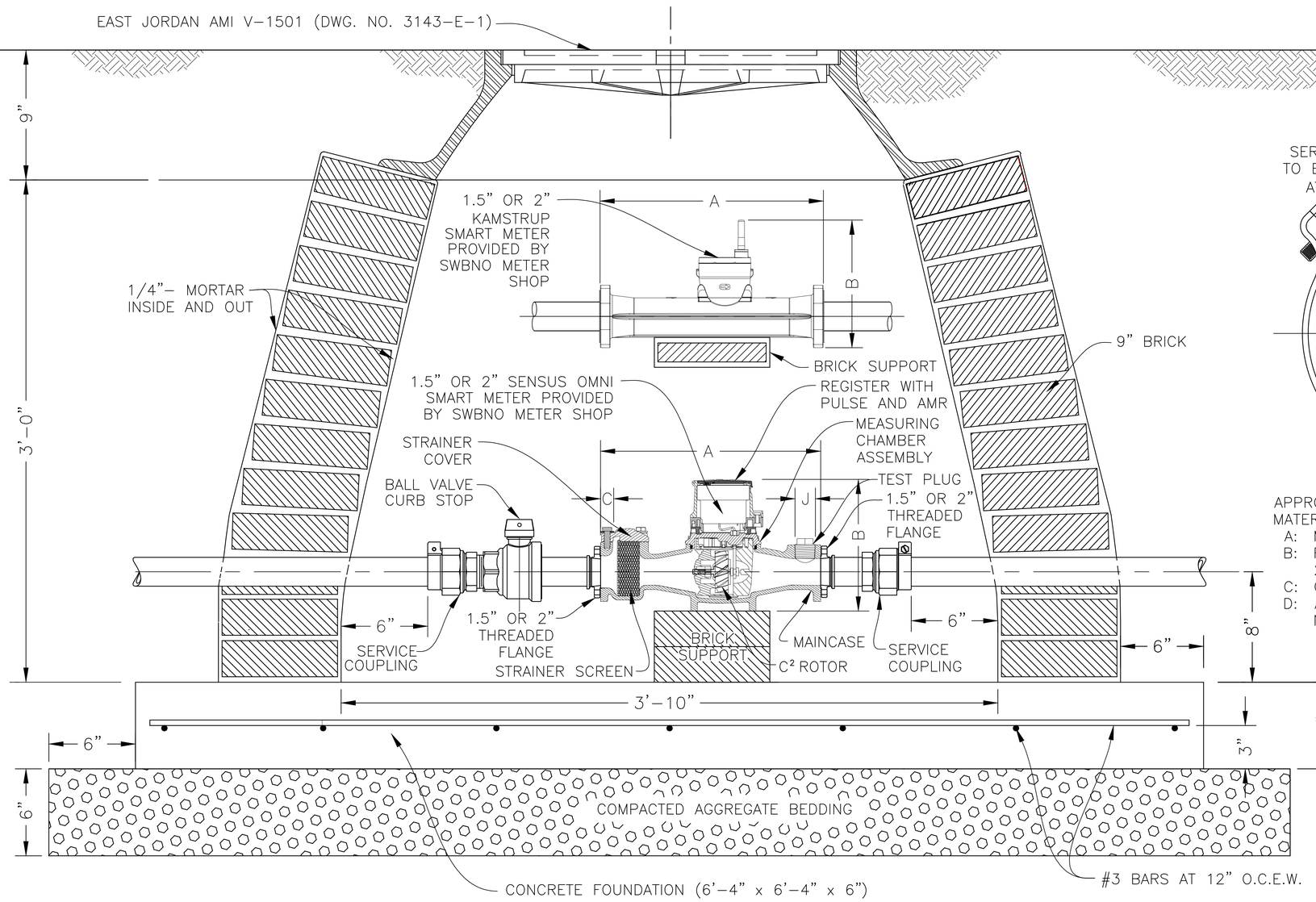
REV.	DATE	DESCRIPTION	BY
1	05.06.25	GENERAL REVISIONS	D.MC.

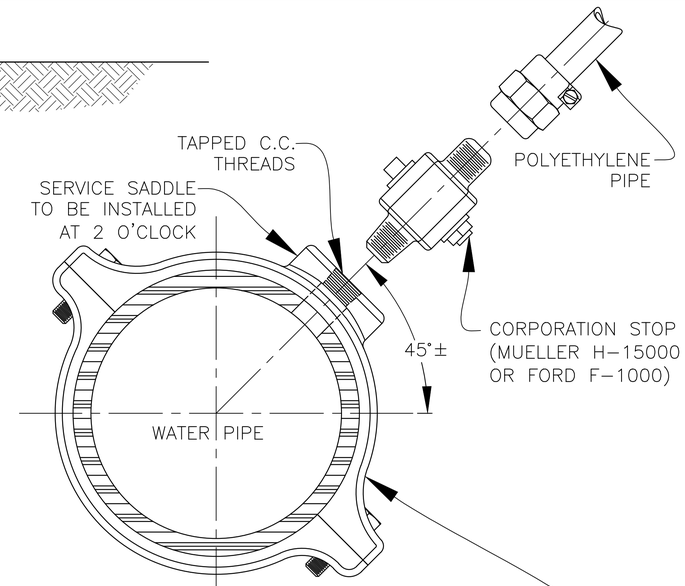
SEWERAGE AND WATER BOARD OF NEW ORLEANS

SPECIAL FABRICATED STEEL COVER FOR CANAL CLEANOUT MANHOLE

DR. D. McCRAY	GENERAL SUPERINTENDENT
TRC.	
CK. M. JOHNSON	
AP. J. BECKER	DWG. NO. 7165-D
SCALE N.T.S.	
DATE 03-09-07	SET NO. / SHEET NO.

27





APPROVED TAPPING SADDLES ARE SPECIFIED BY PIPE MATERIAL:

- A: MUELLER SERIES H-13400
- B: FORD SADDLE STYLE 1018, 202B, 101B5, 202B5, FC202
- C: CASCADE STYLE C512, C522
- D: A.Y. MCDONALD AWWA TAPS 3805 AND 3825: NPT 3806 AND 3826

TAP AND SERVICE SADDLE

NOTES:

1. TUBING MATERIAL SHALL BE POYLETHYLENE PE 3406 OR PE 3408.
2. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.
5 3. ALL BRONZE/BRASS FITTINGS, CONNECTORS, CORPORATION STOPS AND APPURTENANCES SHALL BE OF DOMESTIC MANUFACTURE, SHALL BE MADE OF LEAD FREE BRONZE/BRASS, AND MEET ALL REQUIREMENTS OF AWWA, ASTM AND ANSI FOR USE IN THE POTABLE WATER DISTRIBUTION SYSTEMS.

1 1/2" AND 2" DOMESTIC METER SERVICE

NOT TO SCALE

Dimensions and Net Weights

	Meter and Pipe Size	Normal Operating Range		Connections	A	B	C	D	E	F	G	H	J	Net Weight	Shipping Weight
OMNI	1-1/2"	.5 gpm .11 m3/hr	200 gpm 45 m3/hr	Flanged	13"	7-7/8"	15/16"	5-1/8"	2-5/16"	4"	2	5/8"	1"	18.8 lbs.	22.5 lbs.
	2"	.5 gpm .11 m3/hr	200 gpm 45 m3/hr	Flanged	15-1/4"	7-7/8"	1"	5-3/4"	2-5/16"	4-1/2"	2	3/4"	1"	25.4 lbs.	32.5 lbs.

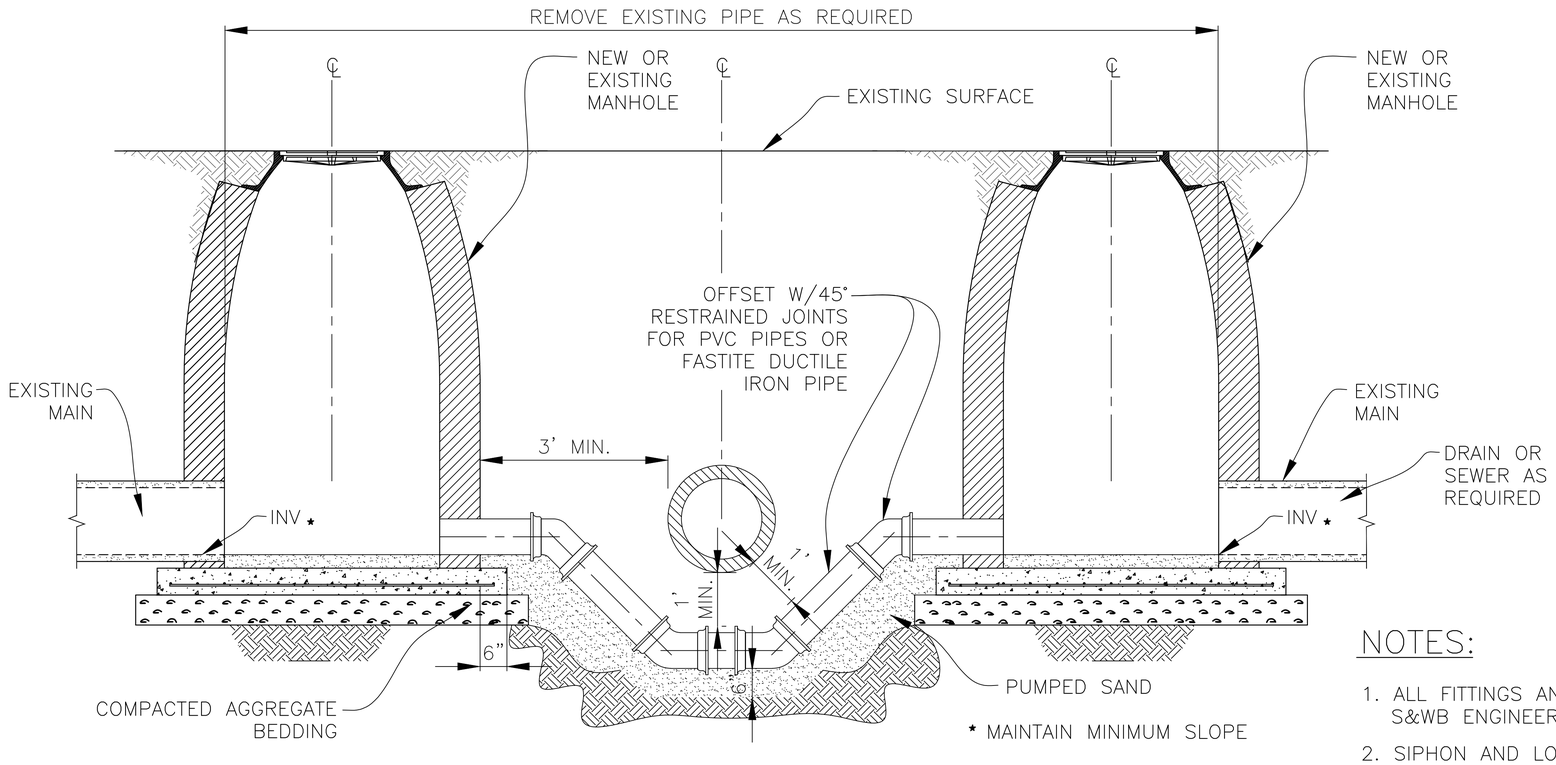
	Meter and Pipe Size	Normal Operating Range		Connections	A	B	Net Weight
KAMSTRUP	1-1/2"	.5 gpm .11 m3/hr	200 gpm 45 m3/hr	Flanged	13"	8-1/10"	13 lbs.
	2"	.5 gpm .11 m3/hr	200 gpm 45 m3/hr	Flanged	15-1/4"	8-7/10"	17 lbs.

REV.	DATE	DESCRIPTION	BY
6	07-01-25	GENERAL REVISIONS	DMC
5	04-18-13	ADDITIONAL NOTE	DMC
4	03-09-07	GENERAL REVISIONS	D.MC.
3	02-20-03	COMPLETELY REVISED AND REDRAWN	QF
A	02/20/01	ADDED OPT. SERVICE CONNECTION	BY
2	10/29/96	REMOVED 4" TO 10" METER DETAILS	WD
1	04/02/96	VOID TYPE II AND III METER DETAILS	DP
–	01/05/84	INITIAL RELEASE	SHP

SEWERAGE AND WATER BOARD OF NEW ORLEANS

1 1/2" AND 2" METER SERVICE CONNECTION

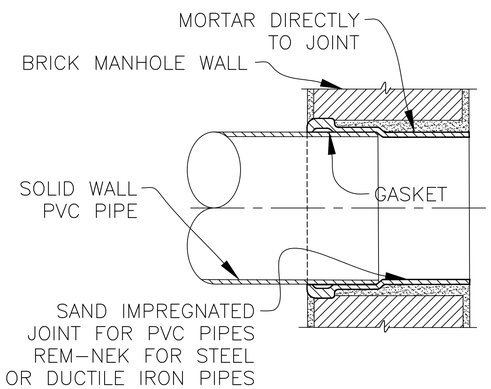
DR. Q. FENG	GENERAL SUPERINTENDENT
TRC.	
CK. B. JONES	
AP. J. BECKER	DWG. NO. 7332-W
SCALE AS NOTED	SET NO. / SHEET NO.
DATE 02-20-03	



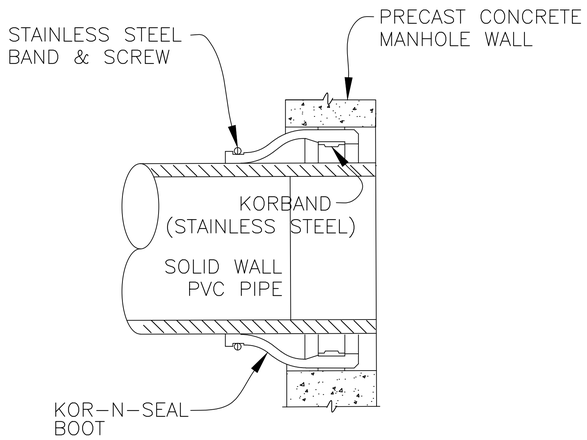
TYPICAL DRAIN & SEWER SIPHON DETAIL

NOTES:

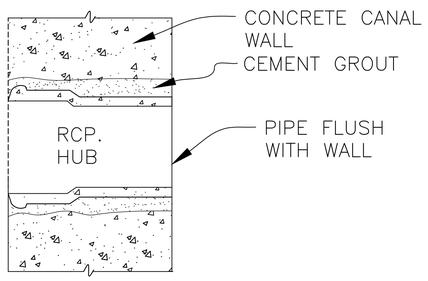
1. ALL FITTINGS AND PIPE TO BE APPROVED BY S&WB ENGINEER.
2. SIPHON AND LOCATION OF MANHOLES MUST BE APPROVED BY THE S&WB ENGINEER.
3. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES & INVERTS TO BE MORTARED WITH HYDRAULIC CEMENT OR A WATERPROOFING COMPOUND, THICKNESS OF 1/4" IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
4. REFER TO S&WB DWG. NO. D-870 FOR NEW DRAIN MANHOLE OR DWG. NO. 6178-B-6 FOR NEW SEWER MANHOLE.



BRICK WALL



PRECAST CONC. WALL



CONCRETE CANAL WALL

MANHOLE CONNECTORS

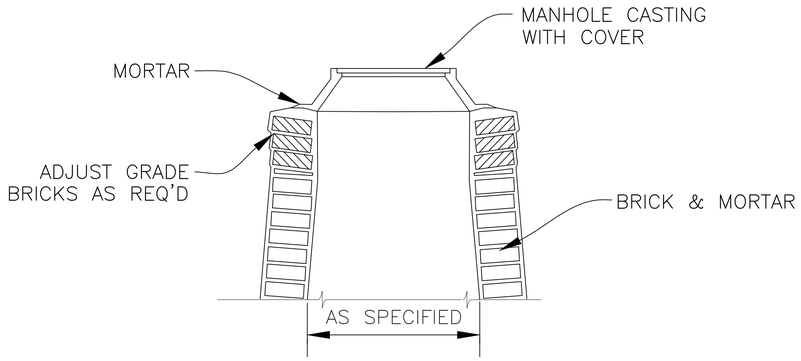
NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
1	06.11.25	REDRAWN	D.MC.

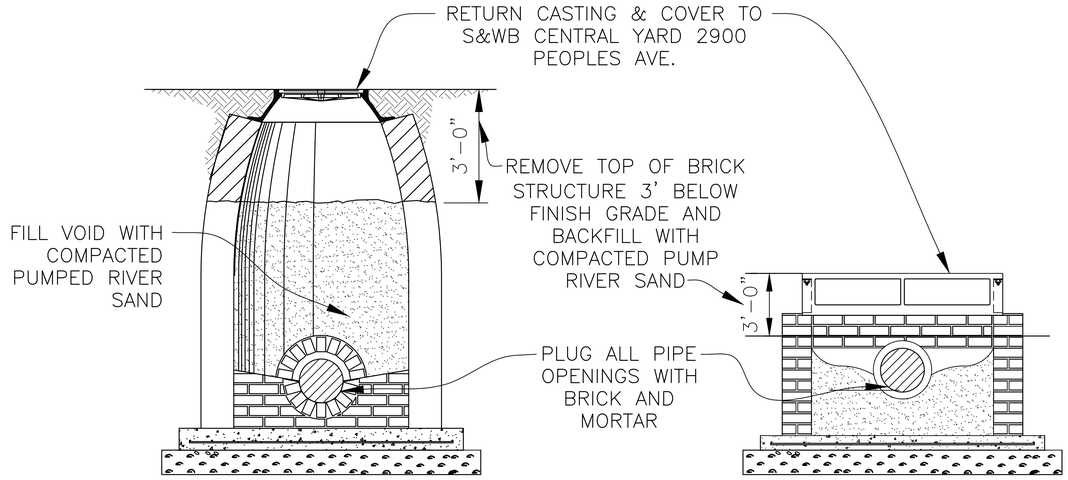
SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SEWER AND DRAIN SIPHON & PIPE/WALL CONNECTORS

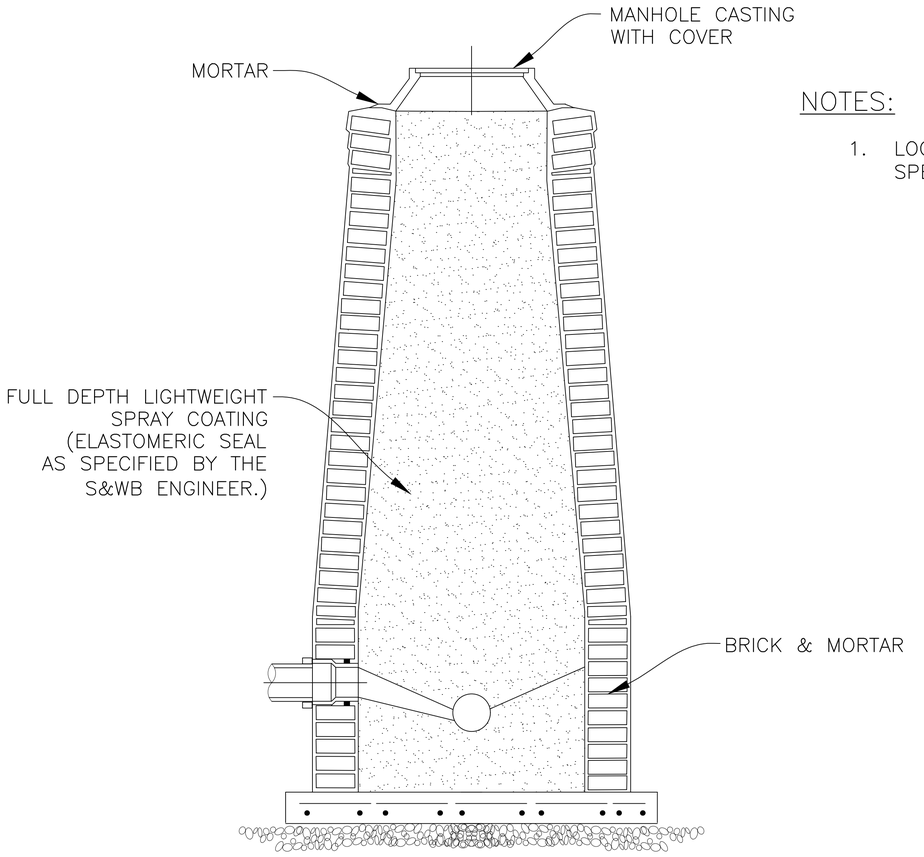
DR.	D. McCRAY	GENERAL SUPERINTENDENT	
TRC.			
CK.	M. JOHNSON		
AP.	J. BECKER	DWG. NO.	8178-SD
SCALE	NONE		
DATE	03-09-07	SET NO.	SHEET NO.



ADJUST OR REPLACE EXISTING
MANHOLE FRAME AND COVER



TYPICAL ABANDON MANHOLE AND CATCH BASIN DETAIL



MANHOLE REHABILITATION FULL
DEPTH WITH SPRAY APPLIED
STRUCTURAL CEMENTITIOUS LINER

NOTES:

1. LOCATION OF LINER MAY VARY AS SPECIFIED BY THE S&WB ENGINEER.

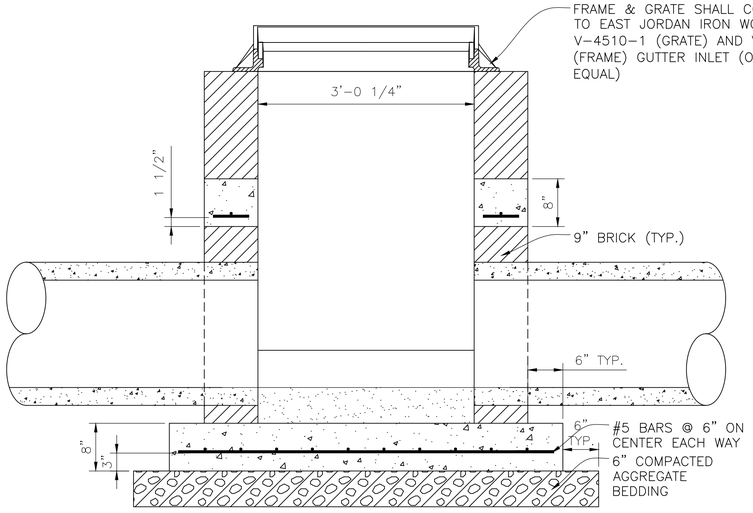
NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
1	06.11.25	GENERAL REVISIONS	D.MC.

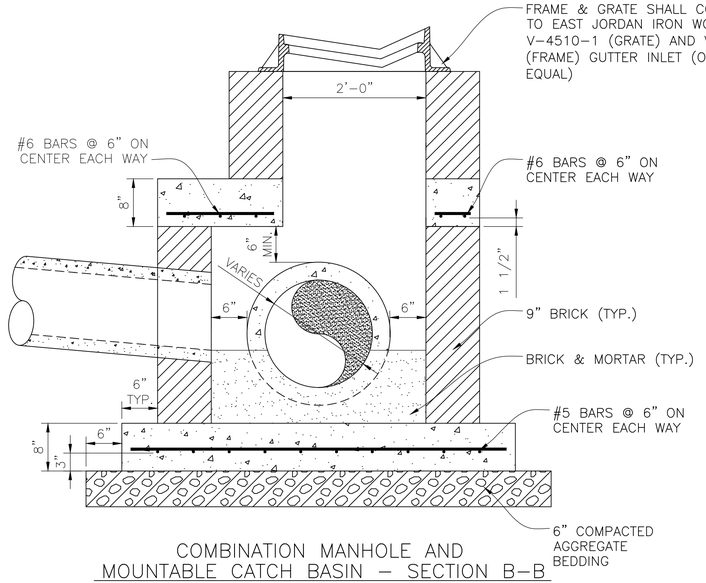
SEWERAGE AND WATER BOARD
OF NEW ORLEANS

MANHOLE ADJUSTMENT
AND REHABILITATION

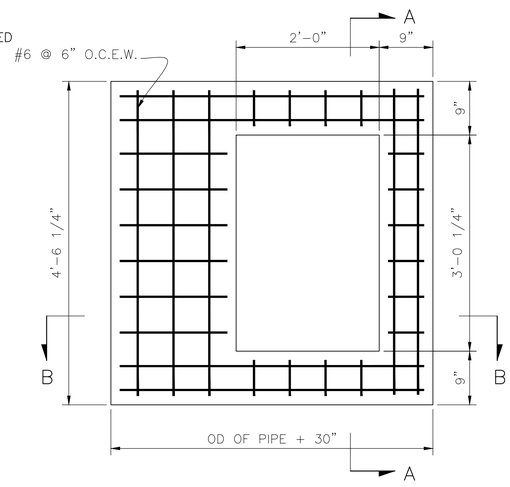
DR.	D. McCRAY	GENERAL SUPERINTENDENT	
TRC.			
CK.	M. JOHNSON		
AP.	J. BECKER	DWG. NO.	8180-SD
SCALE	NONE		
DATE	03-09-07	SET NO.	SHEET NO.



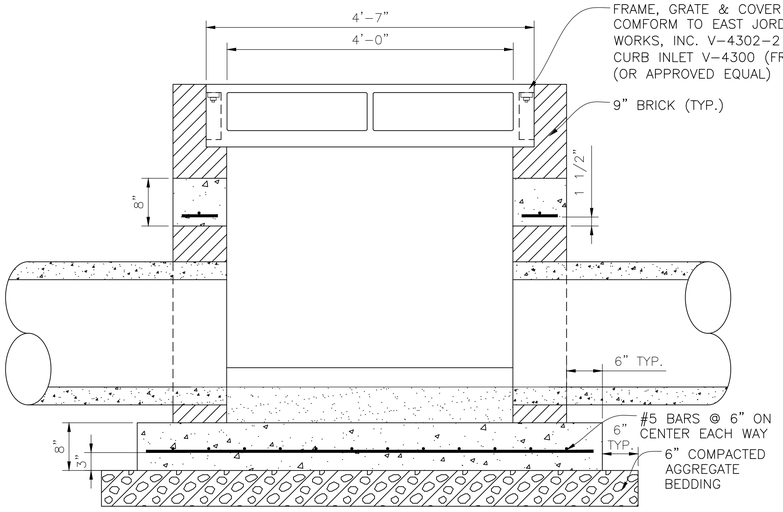
COMBINATION MANHOLE AND MOUNTABLE CATCH BASIN – SECTION A–A



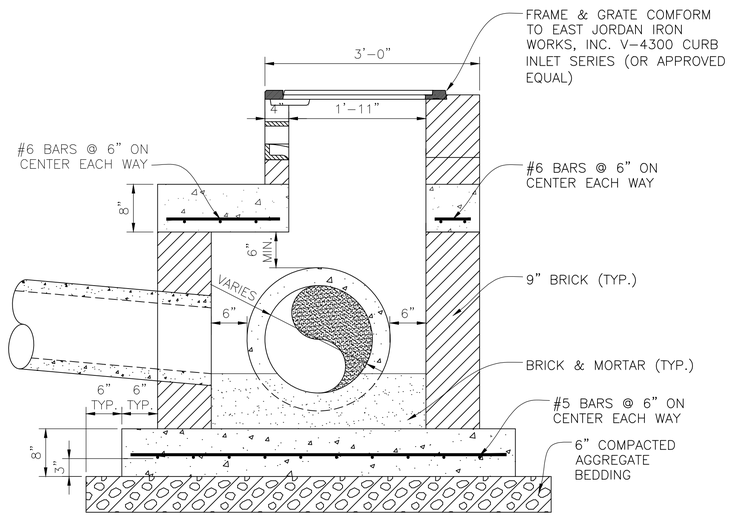
COMBINATION MANHOLE AND MOUNTABLE CATCH BASIN – SECTION B–B



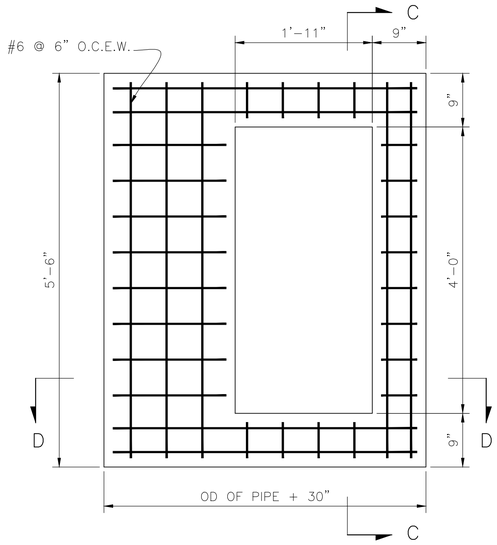
PLAN VIEW OF CONCRETE TOP SLAB (MOUNTABLE)



COMBINATION MANHOLE AND VERTICAL CATCH BASIN – SECTION C–C



COMBINATION MANHOLE AND VERTICAL CATCH BASIN – SECTION D–D



PLAN VIEW OF CONCRETE TOP SLAB (VERTICAL)

NOT TO SCALE

NOTES:

1. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES & INVERTS, TO BE MORTARED WITH A WATERPROOFING COMPOUND FOR THICKNESS OF 1/4" IN ACCORDANCE WITH SPECIFICATIONS.
2. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3,000 P.S.I. IN 28 DAYS.
3. SEE S&WB DWG. NO. D–3431–A FOR DETAILED MEASUREMENTS OF MOUNTABLE CATCH BASIN.
4. SEE S&WB DWG. NO. D–873 FOR DETAILED MEASUREMENTS OF VERTICAL CATCH BASIN.

REV.	DATE	DESCRIPTION	BY
1	05.16.25	GENERAL REVISIONS	D.MC.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

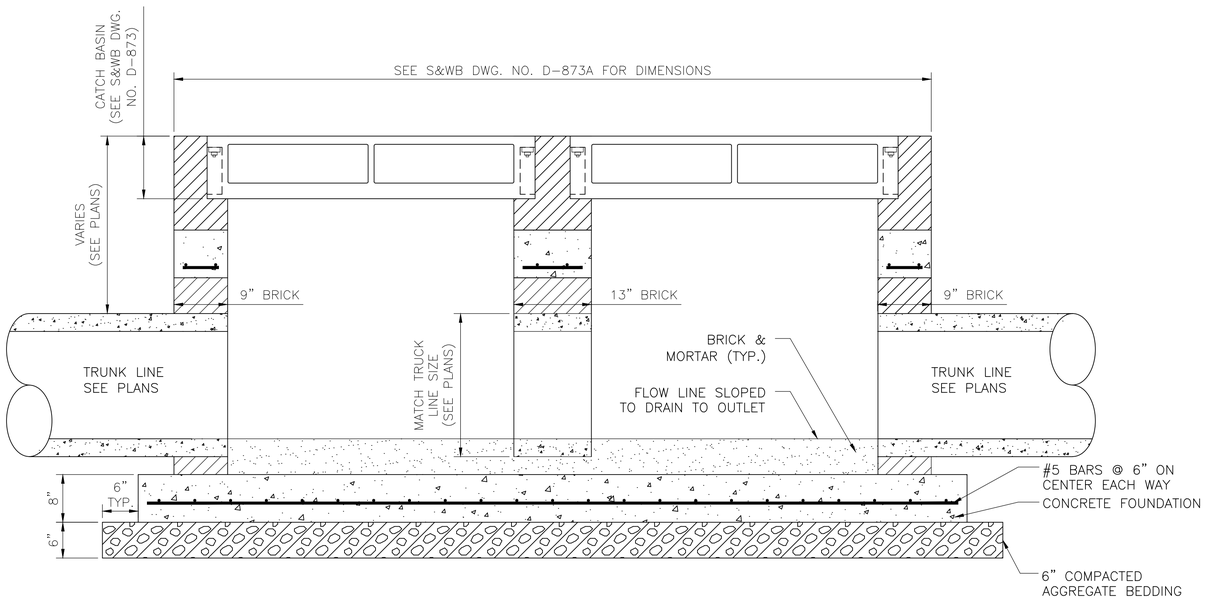
SINGLE COMBINATION CATCH BASIN – MANHOLE STRUCTURE

DR.	D. McCRAY
TRC.	
CK.	B. JONES
AP.	R. SPOONER
SCALE	1"=1'
DATE	06–05–08

GENERAL SUPERINTENDENT

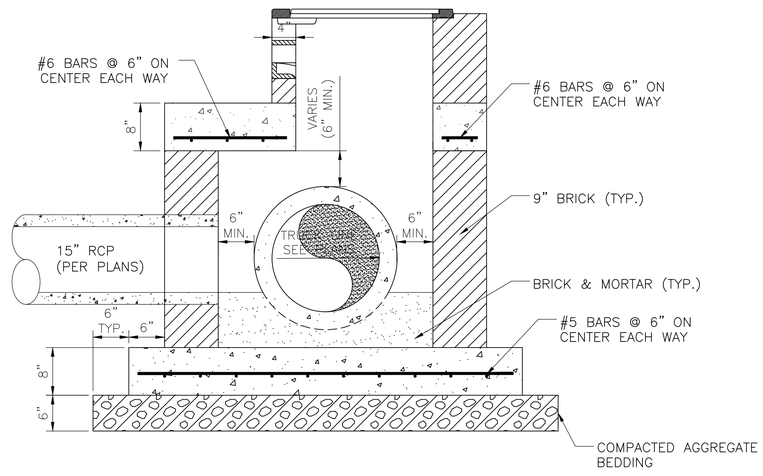
DWG. NO. 8319–D

SET NO. | SHEET NO.



DOUBLE COMBINATION VERTICAL
CATCH BASIN & MANHOLE – SECTION

SCALE: N.T.S.



DOUBLE COMBINATION VERTICAL
CATCH BASIN & MANHOLE – SECTION

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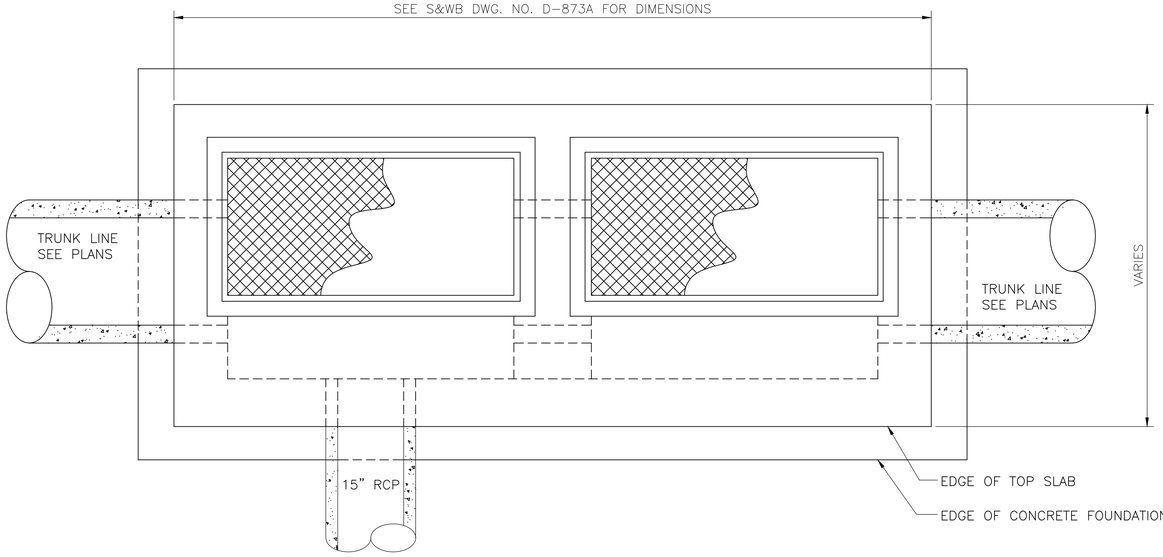
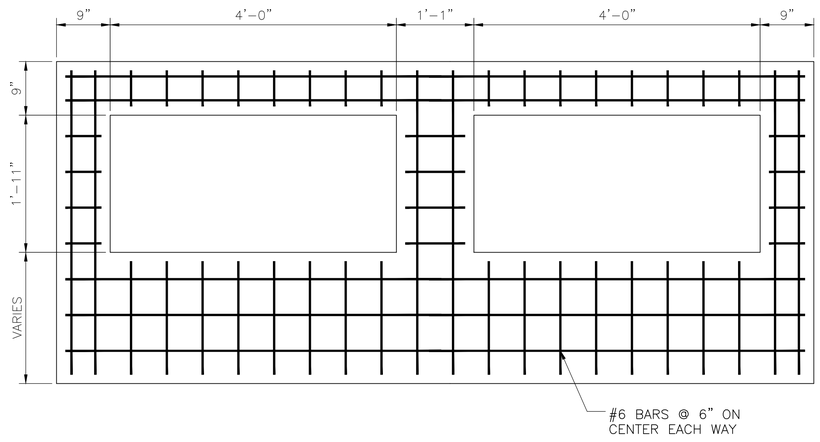


DOUBLE COMBINATION VERTICAL
CATCH BASIN & MANHOLE – PLAN

SCALE: N.T.S.



PLAN VIEW OF CONCRETE TOP SLAB

SCALE: N.T.S.

NOT TO SCALE

NOTE:

1. SEE S&WB DWG. NOS. D-873A AND 8319-D FOR ADDITIONAL INFORMATION INCLUDING FRAME AND GRATE.

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

DOUBLE COMBINATION VERTICAL
CATCH BASIN – MANHOLE
STRUCTURE

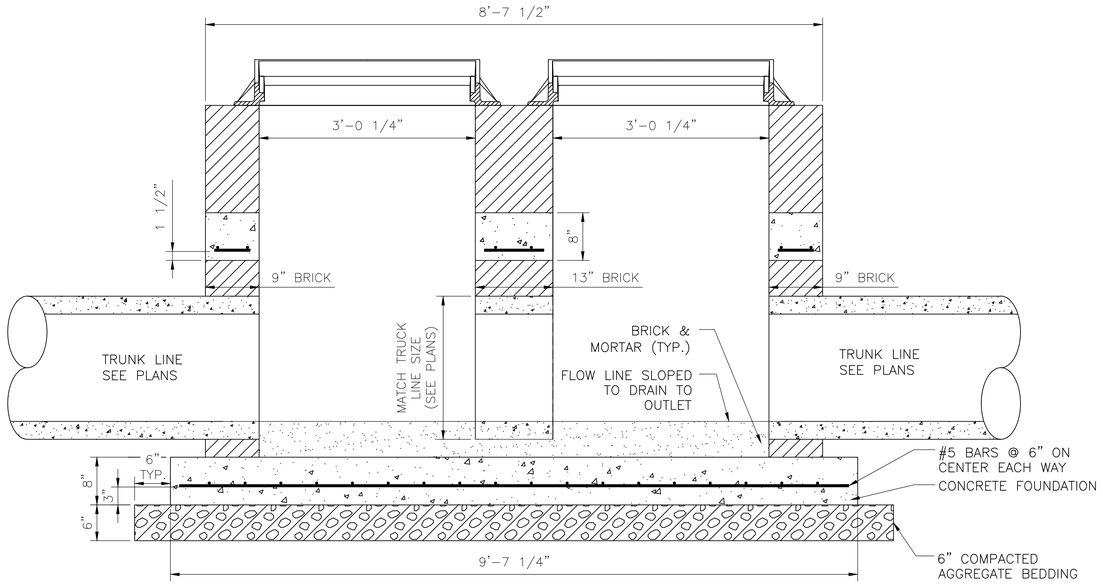
DR.	D. McCRAY
TRC.	
CK.	K. BREAUX
AP.	S. GIANG
SCALE	N.T.S.
DATE	05-16-25

GENERAL SUPERINTENDENT

DWG. NO. 8320-D

SET NO.

SHEET NO.



DOUBLE COMBINATION MOUNTABLE
CATCH BASIN & MANHOLE – SECTION

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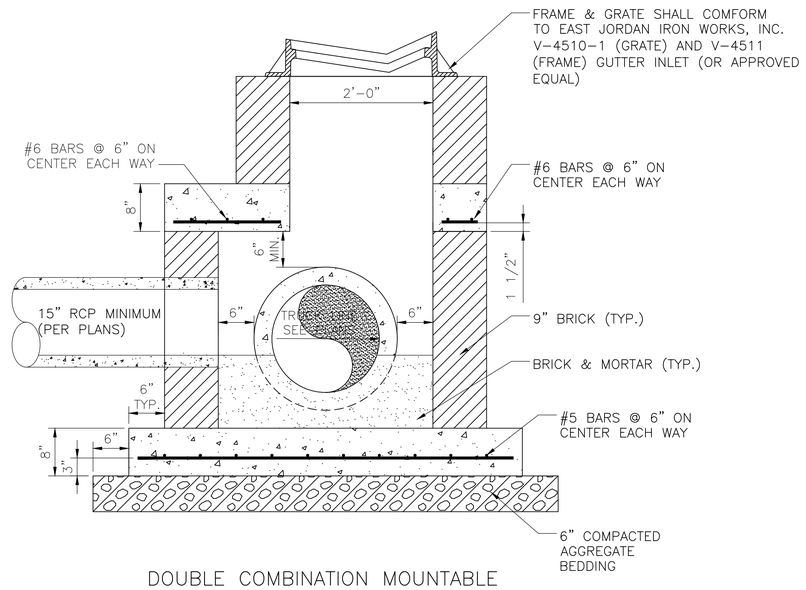

DOUBLE COMBINATION MOUNTABLE
CATCH BASIN & MANHOLE – SECTION

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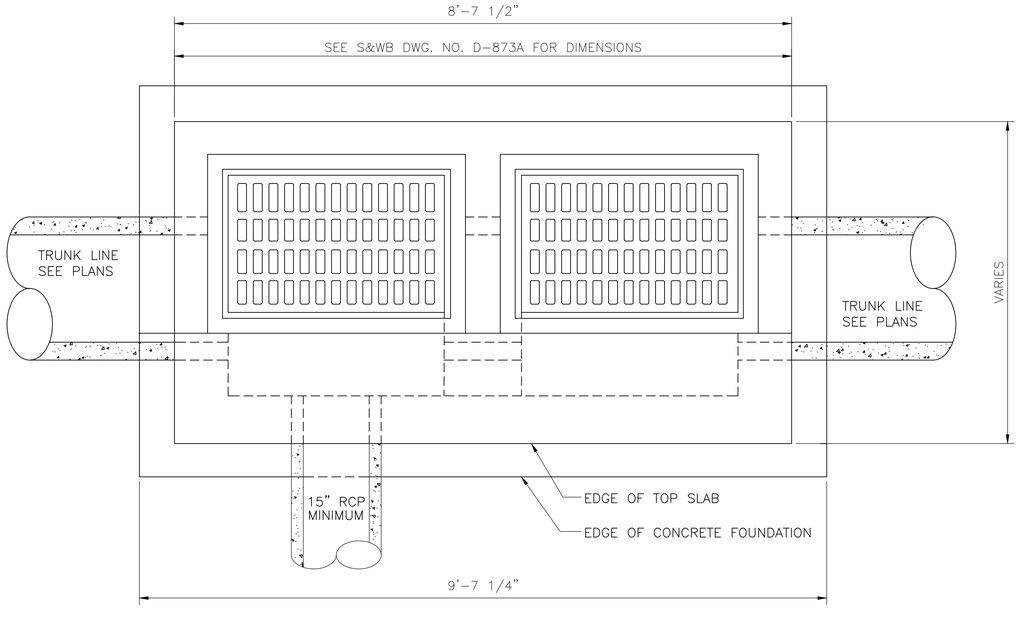
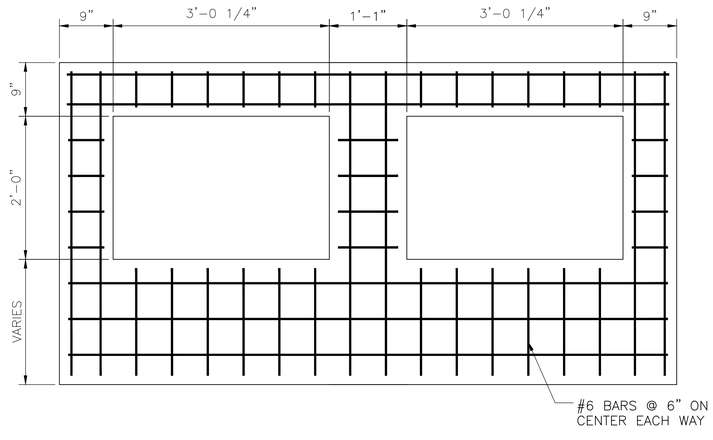


DOUBLE COMBINATION MOUNTABLE
CATCH BASIN & MANHOLE – PLAN

SCALE: N.T.S.



PLAN VIEW OF CONCRETE TOP SLAB (MOUNTABLE)

SCALE: N.T.S.

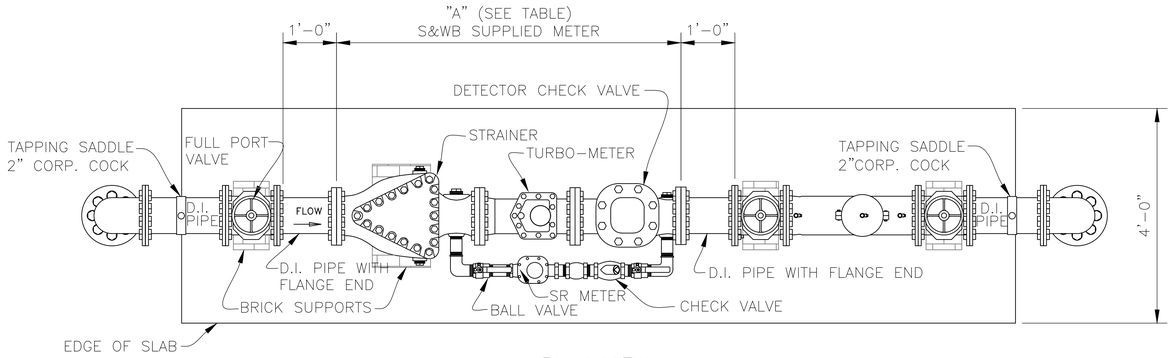
NOT TO SCALE

REV.	DATE	DESCRIPTION	BY

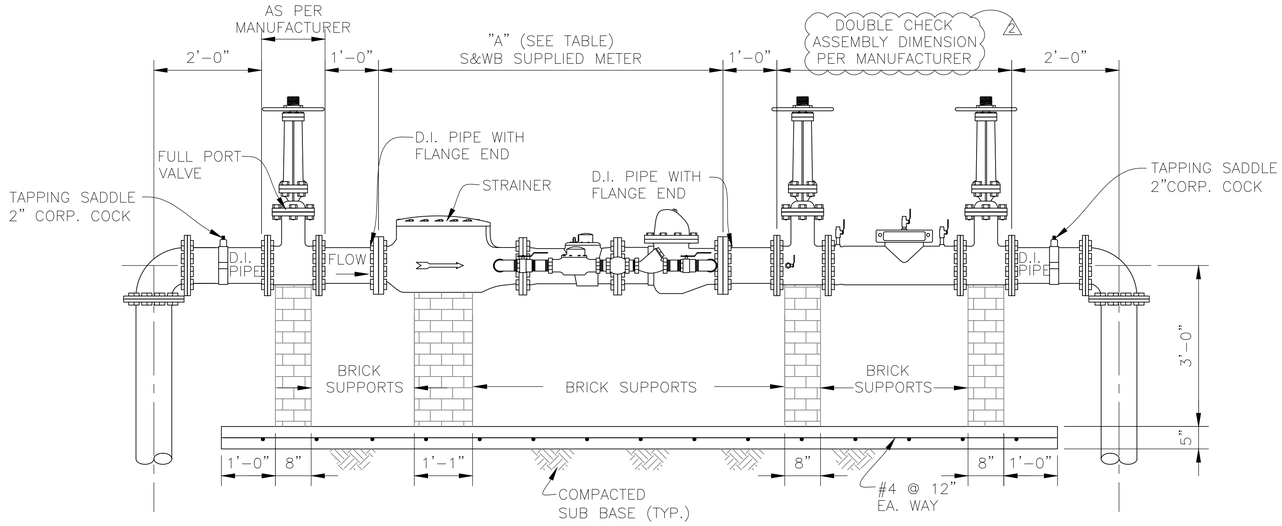
SEWERAGE AND WATER BOARD
OF NEW ORLEANS

DOUBLE COMBINATION MOUNTABLE
CATCH BASIN – MANHOLE
STRUCTURE

DR.	D. McCRAY	GENERAL SUPERINTENDENT
TRC.		
CK.	K. BREAUX	
AP.	S. GIANG	DWG. NO. 8321-D
SCALE	N.T.S.	
DATE	06-13-25	SET NO. / SHEET NO.



PLAN VIEW



LONGITUDINAL SECTION

S&WB SUPPLIED TURBO METER	"A" DIMENSION IN INCHES	
	SENSUS	BADGERMETER INC.
4"	52"	33"
6"	68"	45"
8"	77"	53"
10"	90" 1	68"

NOTES:

1. THE METER SHALL BE INSTALLED AS RECEIVED FROM THE S&WB METER DEPARTMENT AND MAY NOT BE MODIFIED IN ANY MANNER.
2. THE METER LOCATION SHALL NOT EXCEED 15' INSIDE THE PROPERTY LINE.
3. BACKFLOW PREVENTERS MUST BE LISTED AND CERTIFIED IN ACCORDANCE WITH THE UNIVERSITY OF SOUTHERN CALIFORNIA (USC) FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.
4. CONTRACTOR TO VERIFY WHICH TYPE OF METER WILL BE SUPPLIED BY THE S&WB METER DEPARTMENT.

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
4	05/21/25	GENERAL REVISIONS	DMC
3	06/20/13	GENERAL REVISIONS	DMC
2	05/02/13	GENERAL REVISIONS	DMC
1	01/26/11	REVISED "A" DIMENSION IN INCHES FOR 10"	DMC

SEWERAGE AND WATER BOARD OF NEW ORLEANS

FIRE AND DOMESTIC

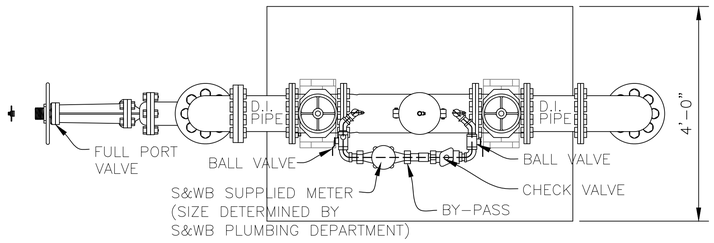
ABOVE GROUND ASSEMBLY DETAIL

DR.	D. McCRAY
TRC.	
CK.	B. JONES
AP.	J. ARNOLD
SCALE.	AS NOTED
DATE.	08-14-09

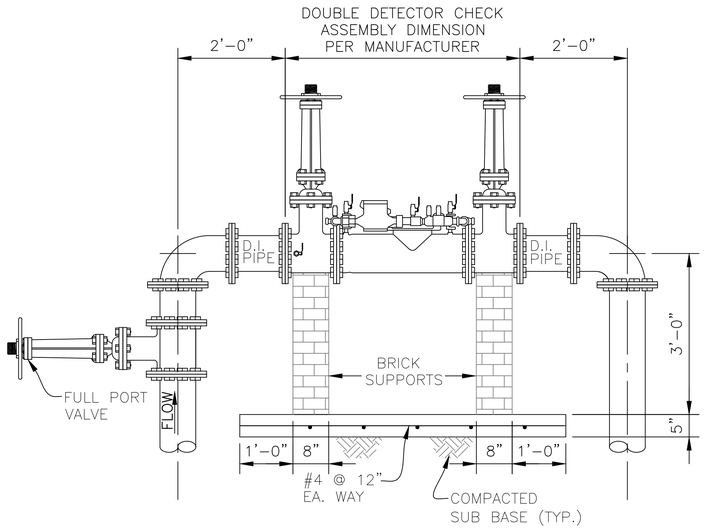
GENERAL SUPERINTENDENT

DWG. NO. 8353-W1

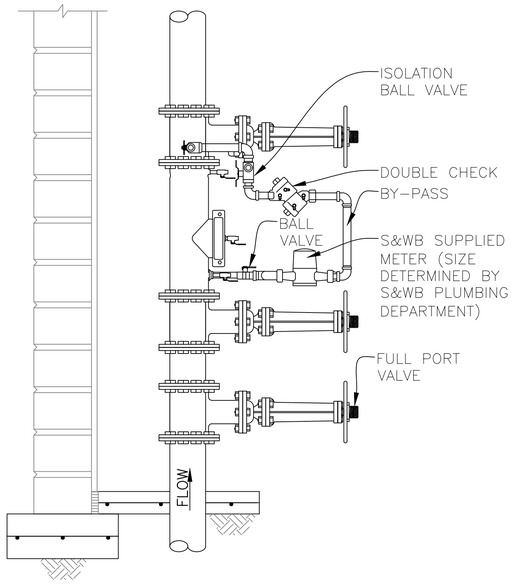
SET NO. | SHEET NO.



PLAN VIEW



DOUBLE DETECTOR CHECK ASSEMBLY
BACKFLOW PREVENTER DETAIL
HORIZONTAL INSTALLATION



DOUBLE DETECTOR CHECK ASSEMBLY
BACKFLOW PREVENTER DETAIL
VERTICAL INSTALLATION

NOTES:

1. THE METER SHALL BE INSTALLED AS RECEIVED FROM THE S&WB METER DEPARTMENT AND MAY NOT BE MODIFIED IN ANY MANNER.
2. THE METER LOCATION SHALL NOT EXCEED 15' INSIDE THE PROPERTY LINE.
3. DOMESTIC SERVICE CAN BE TAPPED BEFORE FULL PORT VALVE.
4. BACKFLOW PREVENTERS MUST BE LISTED AND CERTIFIED IN ACCORDANCE WITH THE UNIVERSITY OF SOUTHERN CALIFORNIA (USC) FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

FIRE ONLY

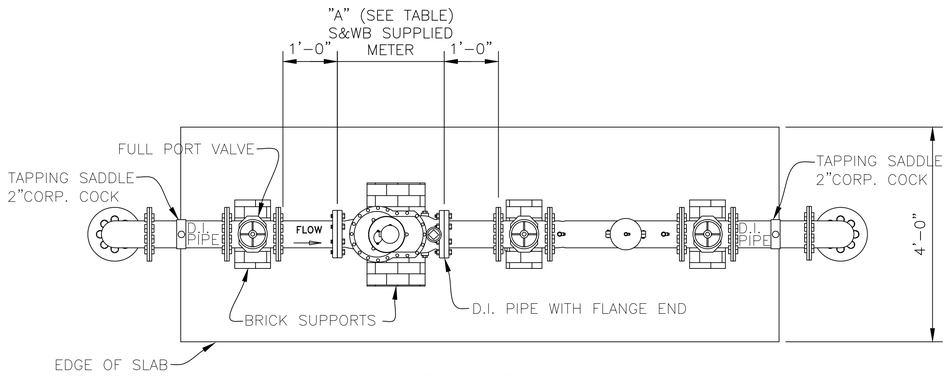
ABOVE GROUND ASSEMBLY DETAIL

DR.	D. McCRAY
TRC.	
CK.	B. JONES
AP.	J. ARNOLD
SCALE.	AS NOTED
DATE.	08-14-09

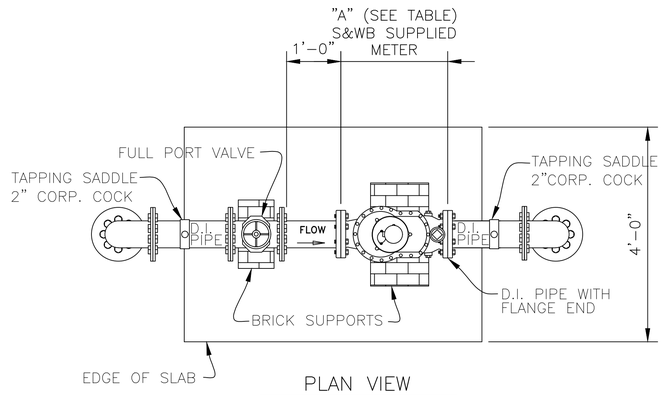
GENERAL SUPERINTENDENT

DWG. NO. 8353-W2

SET NO. | SHEET NO.

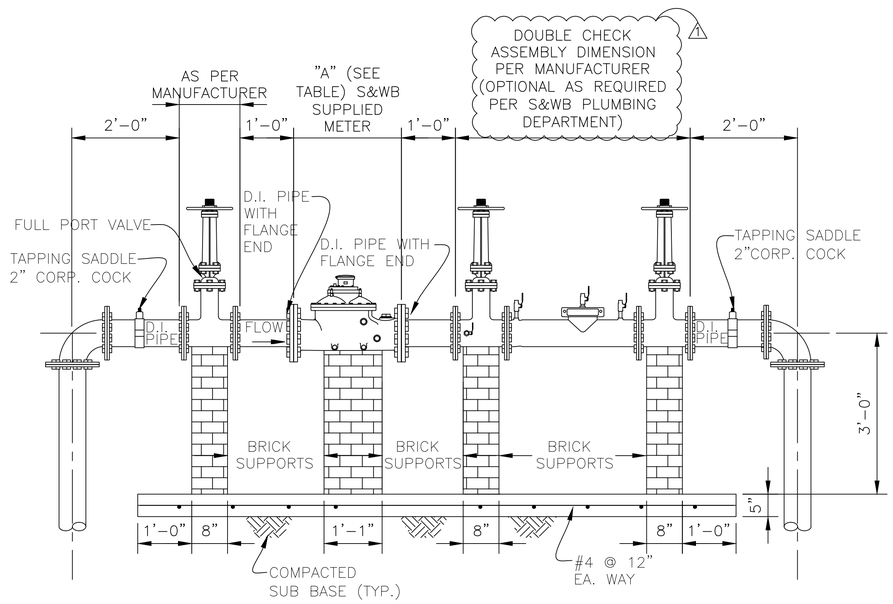


PLAN VIEW

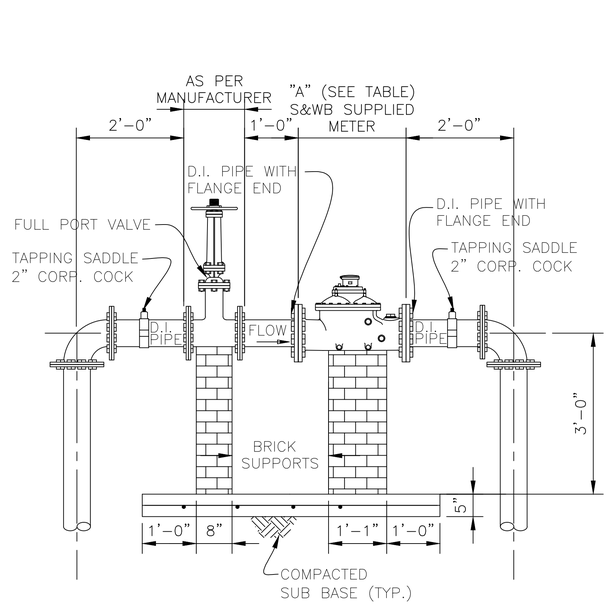


PLAN VIEW

DOMESTIC ONLY	
S&WB SUPPLIED COMPOUND METER	"A" DIMENSION IN INCHES
4"	20"
6"	24"



LONGITUDINAL SECTION WITH DOUBLE CHECK ASSEMBLY



LONGITUDINAL SECTION WITHOUT DOUBLE CHECK ASSEMBLY 1

NOTES:

1. THE METER SHALL BE INSTALLED AS RECEIVED FROM THE S&WB METER DEPARTMENT AND MAY NOT BE MODIFIED IN ANY MANNER.
2. THE METER LOCATION SHALL NOT EXCEED 15' INSIDE THE PROPERTY LINE.
3. BACKFLOW PREVENTERS MUST BE LISTED AND CERTIFIED IN ACCORDANCE WITH THE UNIVERSITY OF SOUTHERN CALIFORNIA (USC) FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.

NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
1	12/20/12	GENERAL REVISIONS	DMC

SEWERAGE AND WATER BOARD OF NEW ORLEANS

DOMESTIC ONLY

ABOVE GROUND ASSEMBLY DETAIL

DR.	D. McCRAY
TRC.	
CK.	B. JONES
AP.	J. ARNOLD
SCALE.	AS NOTED
DATE.	08-14-09

GENERAL SUPERINTENDENT

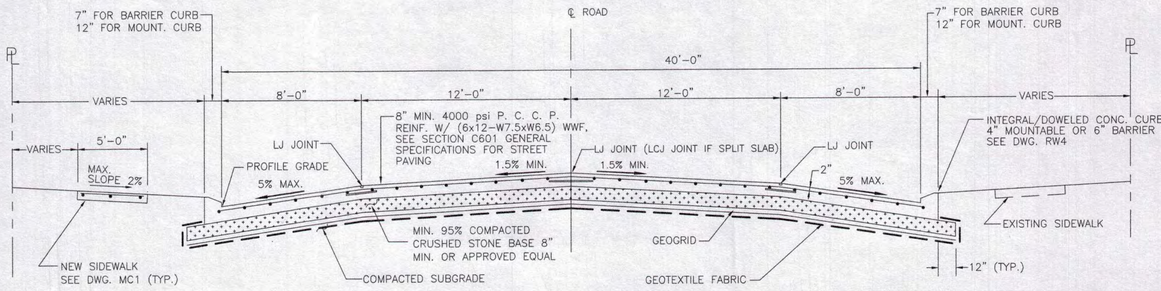
DWG. NO. 8353-W3

SET NO. | SHEET NO.

APPENDIX B

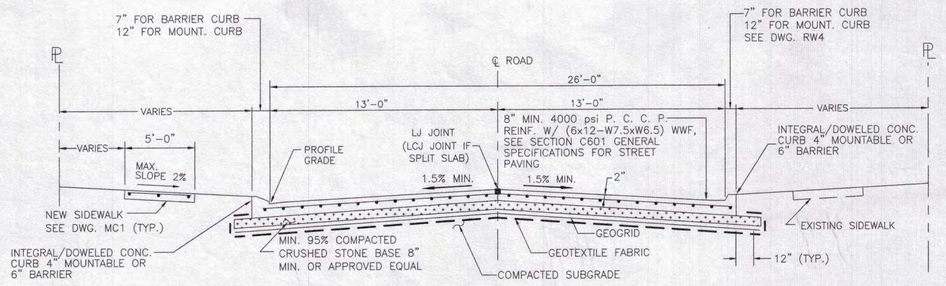
Standard Drawings
City of New Orleans Dept. of Public Works

SECTION 01 300
DPW STANDARD DRAWINGS



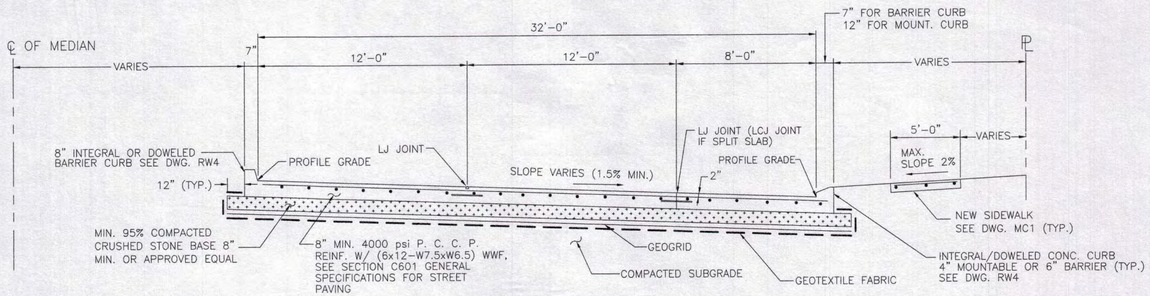
TYPICAL ROADWAY SECTION – 40'–0" RDWY. – P. C. C. P. (REINFORCED)

N.T.S.



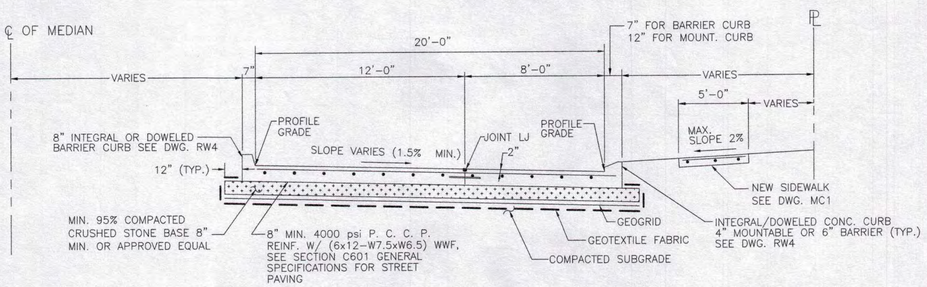
TYPICAL ROADWAY SECTION – 26'–0" RDWY. – P.C.C.P. (REINFORCED)

N.T.S.



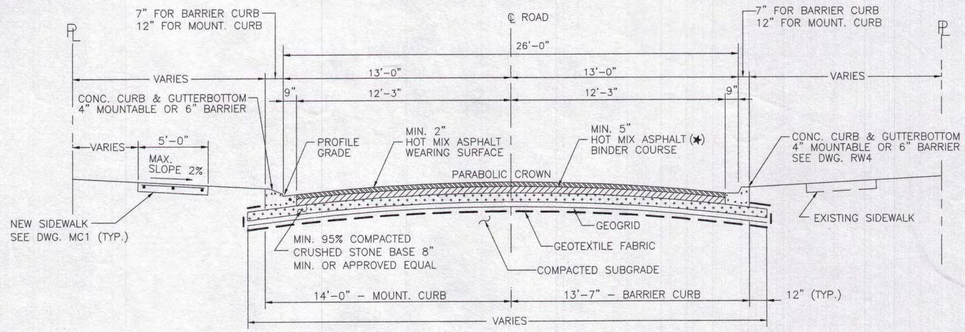
TYPICAL HALF SECTION – 32'–0" ROADWAY – P. C. C. P. (REINFORCED)

N.T.S.



TYPICAL HALF SECTION – 20'–0" ROADWAY – P. C. C. P. (REINFORCED)

N.T.S.

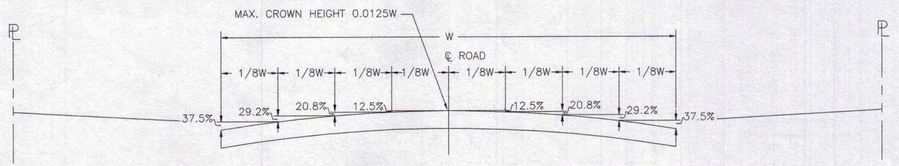


TYPICAL ROADWAY SECTION – 26'–0" RDWY. – ASPHALTIC CONCRETE PAVEMENT

MIN. THICKNESS = 7" TOTAL ASPHALTIC CONCRETE

N.T.S.

(*) PROVIDE TACK COAT(S) BETWEEN ASPHALT LAYER(S)



TYPICAL PARABOLIC CROWN – ASPHALTIC CONCRETE PAVEMENT

N.T.S.

GENERAL NOTES:

(1) NEW SIDEWALK SHALL BE 4" REINFORCED PORTLAND CEMENT CONCRETE 3000 PSI. SIDEWALK SHALL BE 6" REINFORCED P.C.C. AT DRIVEWAYS.
(2) NEW CURB AND GUTTERBOTTOM SHALL BE 4000 PSI REINFORCED PORTLAND CEMENT CONCRETE.
(3) SEE DRAWINGS RW2 AND RW3 FOR JOINT DETAILS AND PLACEMENT.
(4) ROADWAY MAXIMUM SLOPE MUST MEET AASHTO STANDARD.

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

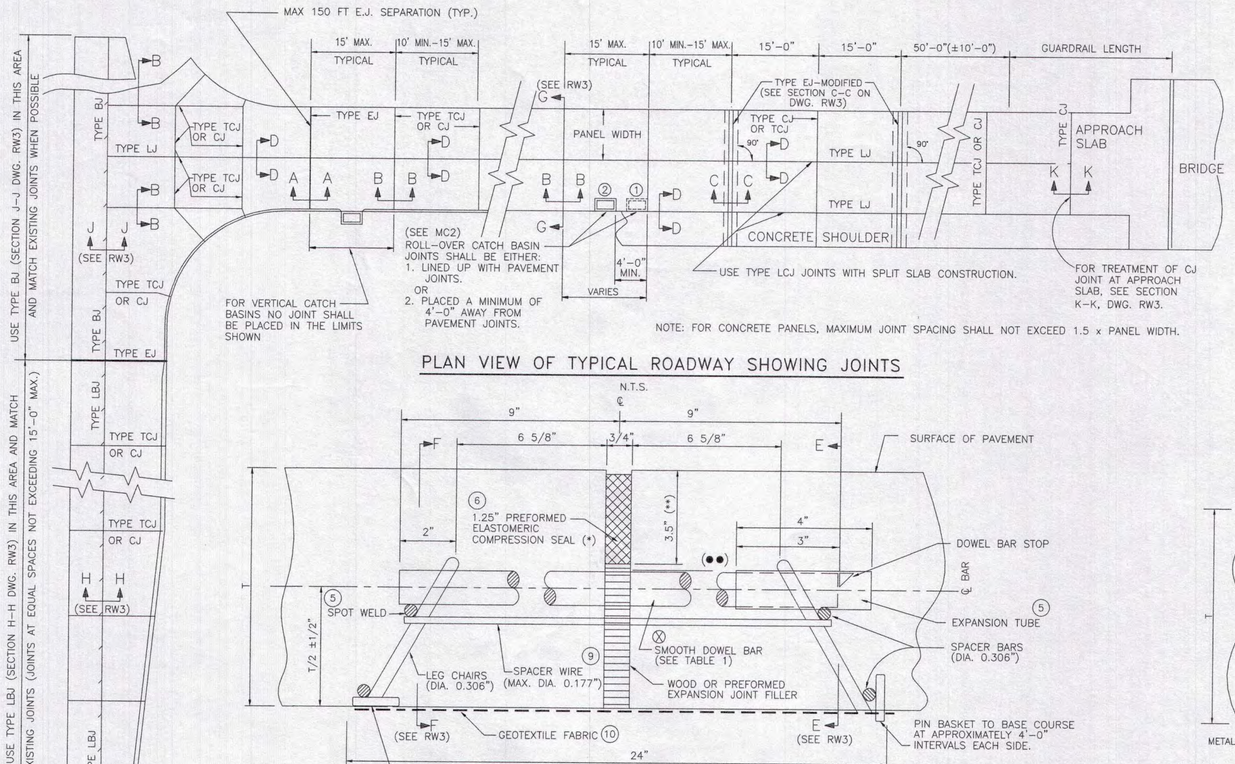
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

TYPICAL ROADWAY SECTIONS FOR STREET CONSTRUCTION

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	M.T. B.V. R.S. B.J. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

RW1



NOTE: FOR CONCRETE PANELS, MAXIMUM JOINT SPACING SHALL NOT EXCEED 1.5 x PANEL WIDTH.

PLAN VIEW OF TYPICAL ROADWAY SHOWING JOINTS

N.T.S.

SECTION A–A
TYPE EJ (12)
(TRANSVERSE EXPANSION JOINT)

N.T.S.

(*) APPROVED SILICONE JOINT SEALANT WITH BACKER MATERIAL IS OPTIONAL.

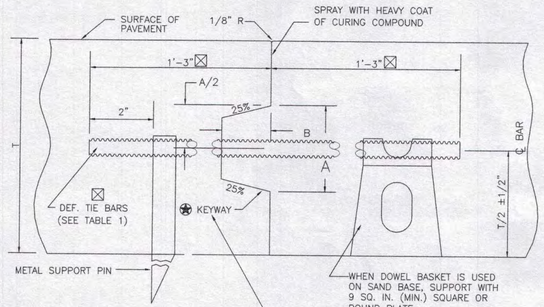
(**) 3" FOR 8" PAVEMENT

(●●) THIS HALF OF DOWEL SHALL BE GREASED.

TABLE 1
(ALL DIMENSIONS IN INCHES)

PAVEMENT THICKNESS T △	SMOOTH DOWEL BARS ⊗ SIZE	SMOOTH DOWEL BARS ⊗ LENGTH	SMOOTH DOWEL BARS ⊗ SPACING	DEF. TIE BARS ⊠ SIZE	DEF. TIE BARS ⊠ LENGTH	DEF. TIE BARS ⊠ SPACING	MINIMUM DEPTH OF JOINT ◪ TCJ & CJ ±1/4"	MINIMUM DEPTH OF JOINT ◪ LJ ±1/4"	KEYWAY ❀ A ±1/4"	KEYWAY ❀ B ±1/4"
7 OR LESS	1	18	12	1/2	24	24	2-1/2	2-1/2	ALLOW 7"	
8	1-1/4	18	12	1/2	24	24	3	3	2-1/2	1-1/4
9	1-1/4	18	12	1/2	24	24	3	3-1/2	2-1/2	1-1/4
10	1-1/2	18	12	1/2	24	24	3-1/2	4	2-1/2	1-1/4
11	1-1/2	18	12	5/8	30	24	3-1/2	4	2-1/2	1-1/4
12	1-1/2	18	12	5/8	30	24	4	4-1/2	3	1-1/2
13	1-1/2	18	12	5/8	30	24	4	4-1/2	3	1-1/2
14	1-1/2	18	12	5/8	30	24	4-1/2	5	3	1-1/2

△ FOR CONC. SHOULDERS, " T " IS THE THICKNESS AT PAVEMENT EDGE.



FOR KEYWAY DIMENSIONS A & B SEE TABLE 1. ❀

KEYWAY UTILIZATION SHALL NOT BE ALLOWED FOR PAVEMENT THICKNESS LESS THAN 8".

IN LIEU OF THE KEYWAY, ONE OF THE FOLLOWING OPTIONS WILL BE ALLOWED (FOR ALL CASES):

A. INSTALL TIE BARS OF THE SIZE SHOWN IN TABLE 1 AT 1/2 OF THE SPACING.

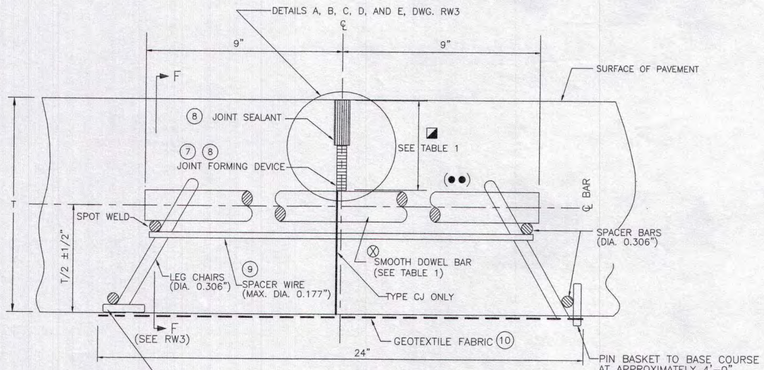
B. INSTALL TIE BARS HAVING DIAMETERS 1/4" LARGER THAN THE DIAMETERS SHOWN IN TABLE 1, AT THE SAME SPACING).

TYPE LCJ
(LONGITUDINAL CONSTRUCTION JOINT)

N.T.S.

GENERAL STREET CONSTRUCTION NOTES:

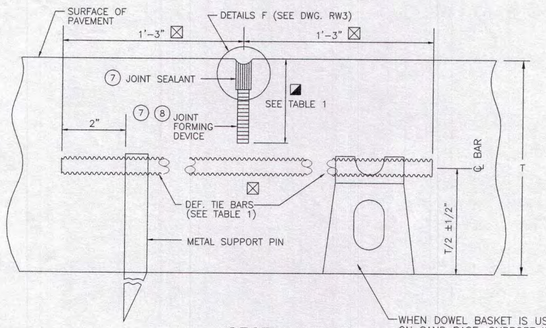
1. PAVEMENT EDGES SHALL BE SLIGHTLY ROUNDED TO APPROXIMATELY 1/4".
2. ASPHALTIC CONCRETE JOINING P.C.C.P. OR ASPHALTIC CONCRETE SHOULDER: THE ASPHALT JOINT SHALL BE SAW CUT AND CONSTRUCTED IN ACCORDANCE WITH SECTION I–I, DRAWING RW3.
3. FOR SECTIONS C–C, E–E, F–F, G–G, H–H, I–I, J–J, AND K–K SEE DRAWING RW3.
4. ALL JOINTS ARE TO BE USED WHERE SHOWN ON THIS SHEET OR AS SHOWN ELSEWHERE IN THE PLANS OR AS OTHERWISE DIRECTED BY THE ENGINEER.
5. ON TYPE EJ JOINTS, SPOT WELD ALTERNATE ENDS OF DOWEL BARS TO DOWEL BASKETS AND PLACE EXPANSION TUBES ON FREE ENDS OF DOWEL BARS, (SECTION A–A).
6. TYPE EJ JOINTS SHALL BE SEALED WITH PREFORMED ELASTOMERIC COMPRESSION JOINT SEALS CONFORMING TO SUBSECTION 1005.03 OF DOTD "LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES", LATEST EDITION. THE SEALS SHALL HAVE A NOMINAL WIDTH OF 1–1/4" BEFORE COMPRESSION. JOINTS SHALL BE CLEANED PRIOR TO SEALING.
7. FOR DESIGN SPEEDS OF 45 MPH OR GREATER:
   - A. TYPE LJ JOINTS SHALL BE SAW CUT AND CONSTRUCTED AS IN DETAIL "F" DRAWING RW3. THE JOINT SHALL BE SAW CUT AND CLEANED PRIOR TO SEALING WITH A JOINT SEALANT CONFORMING TO SUBSECTION 1005.02(b) OR (c) OF THE AFOREMENTIONED DOTD SPECIFICATIONS.
   - B. TYPE TCJ OR CJ SHALL BE SAW CUT AS SHOWN IN DETAIL "C" OR "D" DRAWING RW3 AND TO THE DEPTH SHOWN IN TABLE 1. THE JOINT SHALL BE SAND BLASTED AND CLEANED IMMEDIATELY PRIOR TO SEALING. THE INITIAL CUT SHALL BE MADE WITH 1/8" MINIMUM BLADE. THE SEALANT SHALL BE A PREFORMED ELASTOMERIC SEAL IN ACCORDANCE WITH SUBSECTION 1005.03 OR A SILICONE SEALANT IN ACCORDANCE WITH SUBSECTION 1005.02(c) OF THE AFOREMENTIONED DOTD SPECIFICATIONS.
8. FOR DESIGN SPEEDS OF LESS THAN 45 MPH:
   - A. TYPE LJ JOINTS SHALL BE SAW CUT AS DESCRIBED IN 7(A).
   - B. TYPE TCJ OR CJ SHALL BE CONSTRUCTED AS FOLLOWS:
     - (1) CONSTRUCTED AS DESCRIBED IN 7(B).
     - (2) WITH A REMOVABLE FORMING DEVICE AS SHOWN IN DETAILS "A" AND "B" DRAWING RW3. THE JOINT SHALL BE SAND BLASTED AND CLEANED IMMEDIATELY PRIOR TO SEALING AND MAY REQUIRE SAWING TO ACHIEVE PROPER RESERVOIR DIMENSIONS.
     - (3) WITH A COMBINATION JOINT FORMER/SEALER AS SHOWN IN DETAIL "E" DRAWING RW3. THE SEALER SHALL CONFORM TO SUBSECTION 1005.04 AND BE INSTALLED IN ACCORDANCE WITH SUBSECTION 601.09(c)(3) OF THE AFOREMENTIONED DOTD SPECIFICATIONS AND NO ADDITIONAL SEALANT IS REQUIRED.
9. EXCEPT AS NOTED BELOW, DOWEL BARS & TIE BARS SHALL BE HELD IN PLACE BY SUPPORTS SIMILAR TO THE ONES SHOWN, OR APPROVED EQUALS. APPROVED MECHANICAL PLACEMENT OF DOWEL BARS AND TIE BARS WILL BE ALLOWED WITH ALL PAVING METHODS. WHEN DOWEL BAR BASKETS ARE USED, APPROXIMATELY THE CENTER 7" OF SPACER WIRES, THAT SPANS ACROSS THE JOINT, SHALL BE CLIPPED AND REMOVED AFTER STAKING BASKETS IN PLACE.
10. INSTALL GEOTEXTILE FABRIC UNDER ALL TCJ, CJ, AND EJ JOINTS WHEN CONCRETE PAVEMENT IS PLACED ON UNSTABILIZED OR UNTREATED BASE COURSES OR SUBBASES. WHEN DOWEL BARS ARE MECHANICALLY IMPLANTED, THE GEOTEXTILE FABRIC SHALL BE ANCHORED TO THE BASE COURSE WITH PINS.
11. WHEN CONSTRUCTING CONCRETE CURB AND GUTTER ADJACENT TO NEW P.C.C. PAVEMENT, USE TYPE LCJ JOINT. WHEN ADJACENT TO EXISTING P.C.C. PAVEMENT, USE TYPE LBJ JOINT. THE FIRST LOAD TRANSFER DEVICE SHALL BE INSTALLED 18" FROM THE PAVEMENT EDGE.
12. TRANSVERSE EXPANSION JOINTS SHALL NOT BE USED FOR CONSTRUCTION JOINTS.
13. CONCRETE SHOULDERS:
    - A. CONSTRUCT TCJ JOINTS IN ACCORDANCE WITH SECTION B–B.
    - B. CONSTRUCT LCJ JOINTS IN ACCORDANCE WITH TYPE LCJ DETAIL ON THIS SHEET AND LJ JOINTS IN ACCORDANCE WITH SECTION D–D.
    - C. USE THE MAXIMUM SHOULDER THICKNESS WHEN DETERMINING DOWEL BAR AND TIE BAR SIZES IN TABLE 1.
    - D. WHEN SKEWED JOINTS ARE USED ON MAINLINE PAVING THE SHOULDER TCJ JOINTS MAY BE SKEWED OR CONSTRUCTED AT 90°.
    - E. SHOULDER JOINTS AND JOINT MATERIALS WILL MATCH THE MAINLINE.
    - F. HEIGHT OF DOWEL BASKETS WILL BE BASED ON THE SHOULDER THICKNESS. ALSO VARYING HEIGHT DOWEL BASKETS WILL BE ALLOWED.
14. TIE BARS SHALL NOT BE PLACED WITHIN 18" OF CONTRACTION OR EXPANSION JOINTS.
15. FOR REINFORCED STEEL, SEE DOTD SPECIFICATIONS SECTION 1009



SECTION B–B
TYPE TCJ OR CJ
(TRANSVERSE CONTRACTION JOINT OR TRANSVERSE CONSTRUCTION JOINT)

(●●) ALTERNATE ENDS THAT ARE NOT WELDED SHALL BE GREASED.

N.T.S.



SECTION D–D
TYPE LJ
(LONGITUDINAL JOINT)
(REQUIRED WHEN PAVEMENT WIDTH EXCEEDS 15')
(SEE NOTE (7))

N.T.S.

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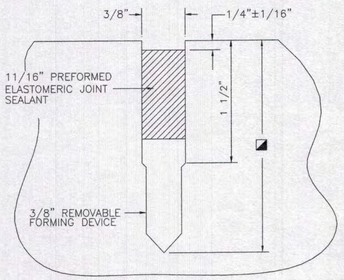
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

TYPICAL ROADWAY SECTIONS FOR STREET CONSTRUCTION

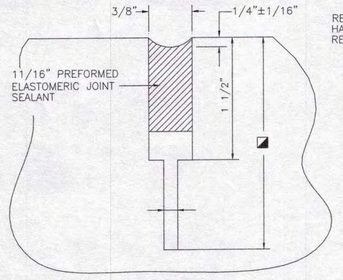
DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	M.T. B.V. R.S. B.J. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK B. JERNIGAN, DIRECTOR

DRAWING No.

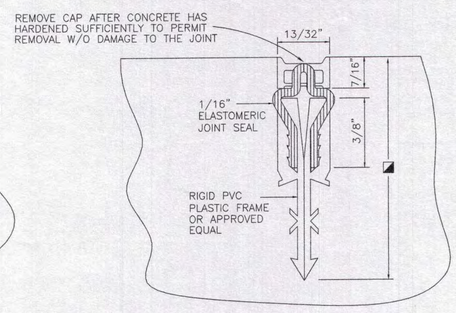
RW2



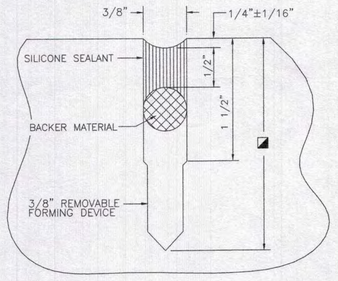
DETAIL "A"



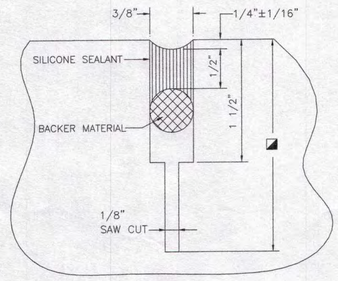
DETAIL "C"



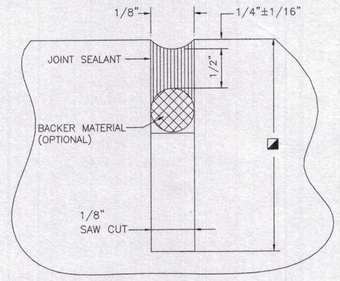
DETAIL "E"



DETAIL "B"



DETAIL "D"



DETAIL "F"

NOTES:

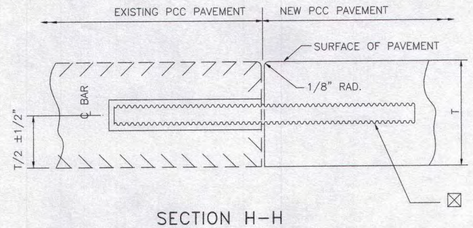
1. USE DETAILS "A" THRU "E" IN CONJUNCTION WITH TYPE TCJ AND CJ JOINTS (SECTION B–B); TYPE BJ JOINTS (SECTION J–J); AND NOTES (7) AND (8) ON DWG. RW2.
2. ◪ SEE TABLE I ON DWG. RW2

DETAILS "A" THRU "F"

N.T.S.

NOTES:

USE DETAIL "F" IN CONJUNCTION WITH TYPE LJ JOINT (SECTION D–D) AND NOTES (7) AND (8) ON DWG. RW2.



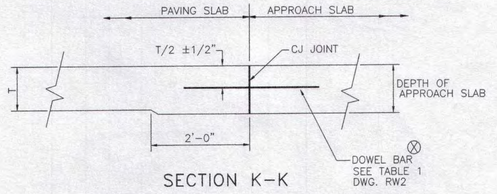
SECTION H–H
TYPE LBJ
(LONGITUDINAL BUTT JOINT)

(DWG. RW2)
N.T.S.

⊠ DEFORMED TIE BARS SHALL BE INSTALLED IN EXISTING PAVEMENT BY DRILLING HOLES 1/8" LARGER, IF EPOXY IS USED OR 1/2" LARGER IF GROUT USED, THAN THE DIAMETER OF THE TIE BAR TO A REQUIRED DEPTH OF 1/2 BAR LENGTH. THE HOLES SHALL BE FILLED WITH AN APPROVED ADHESIVE ANCHOR SYSTEM (QPL 52) OR TYPE I, GRADE C EPOXY RESIN BEFORE INSERTION OF THESE BARS. THE TIE BARS SIZE AND SPACING SHALL BE ONE OF THE FOLLOWING:

A. WHEN TIE BARS OF THE SIZE SHOWN IN TABLE 1, DRAWING RW2, ARE USED, THE BARS SHALL BE PLACED AT 1/2 SPACING.

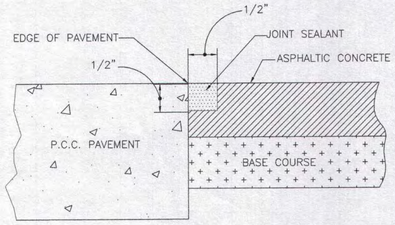
B. WHEN TIE BARS 1/4" LARGER THAN TIE BAR DIAMETER SHOWN IN TABLE 1, ARE USED) THE BARS SHALL BE PLACED AT THE SAME SPACING.



SECTION K–K

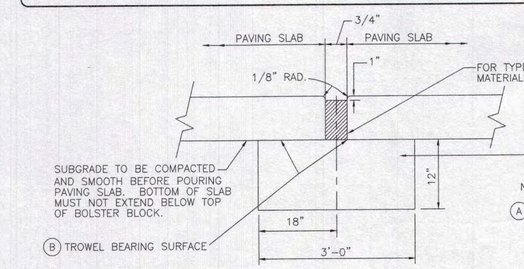
TYPE CJ AT APPROACH SLAB
FOR DETAILS NOT SHOWN SEE TYPE CJ, DWG. RW4
(SECTION B–B AND RELATED DETAILS)

(DWG. RW2)
N.T.S.



SECTION I–I
HOT POURED SEALANT

(DWG. RW2)
N.T.S.



SECTION C–C
(DWG. RW2)
TYPE EJ MODIFIED

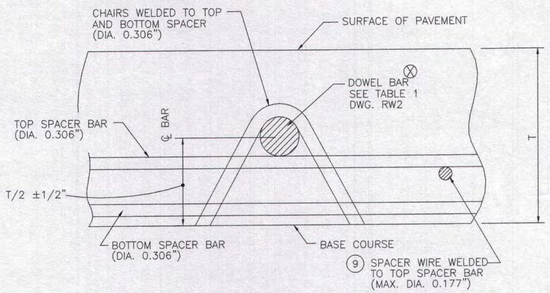
N.T.S.

NOTES:

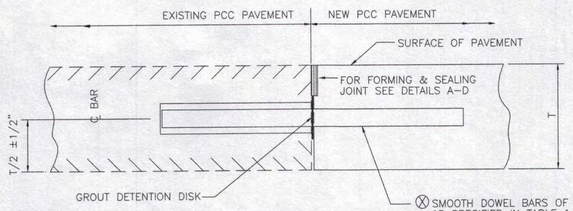
(A) JOINT SHALL BE FILLED WITH A PRE–FORMED POLYURETHANE FOAM TYPE FILLER OR A POURED–IN–PLACE POLYURETHANE FOAM, WITH PREFORMED FILLER, USE A SUITABLE LUBRICANT/ADHESIVE THAT IS INSENSITIVE TO MOISTURE.

(B) ONE LAYER OF 55–LB. TAR PAPER SHALL BE PLACED BETWEEN THE BOLSTER BLOCK AND THE PAVING SLABS.

(C) BOLSTER BLOCK SHALL BE CONSTRUCTED OF CLASS "A" OR PAVEMENT TYPE CONCRETE AT NO DIRECT PAY.

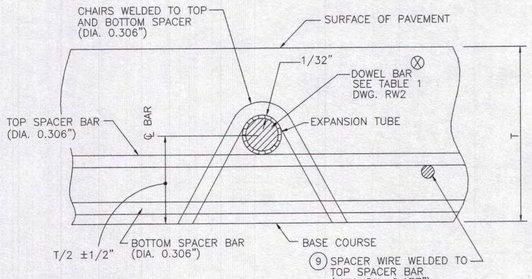


SECTION F–F
(DWG. RW2)
N.T.S.

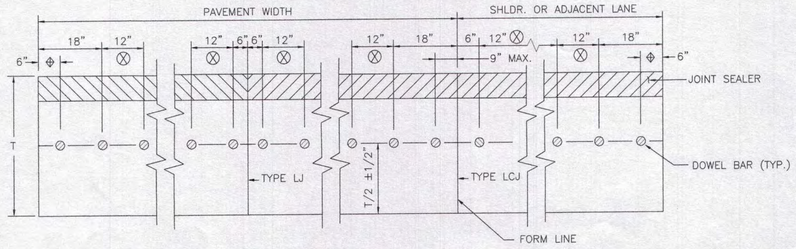


SECTION J–J
TYPE BJ
(TRANSVERSE BUTT JOINT)

(DWG. RW2)
N.T.S.



SECTION E–E
(DWG. RW2)
N.T.S.



Φ 9" WHEN MECHANICAL PLACEMENT OF DOWEL BARS IS USED WITH FORM PAVING. ALSO SEE NOTE (14) DWG. RW2.

SECTION G–G
DOWEL BAR SPACING FOR TYPE TCJ, CJ, AND EJ JOINTS

(DWG. RW2)
N.T.S.

⊗ SEE TABLE 1 DWG. RW2

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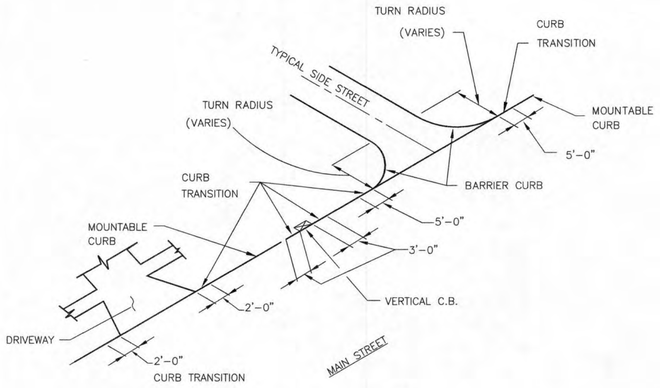
N. SCHNEIDER	M.T. B.V. R.S. B.J. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

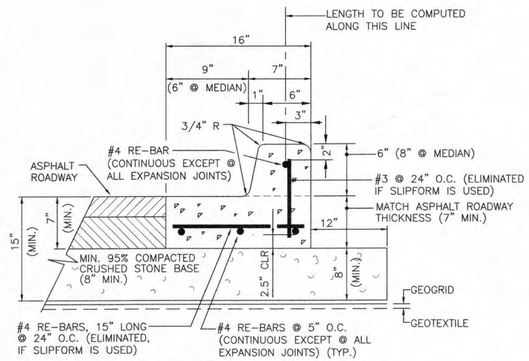
DRAWING No.

RW3



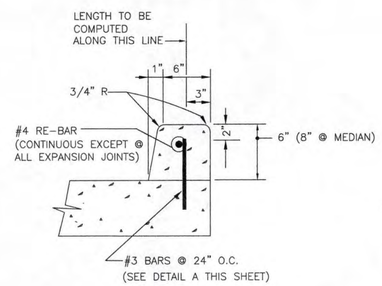
LOCATIONS OF CURB TRANSITION

N.T.S.



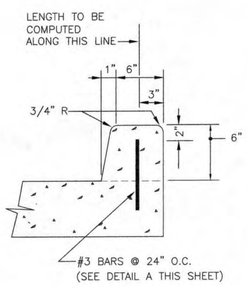
BARRIER CURB & GUTTERBOTTOM

N.T.S.



DOWELED BARRIER CURB

N.T.S.

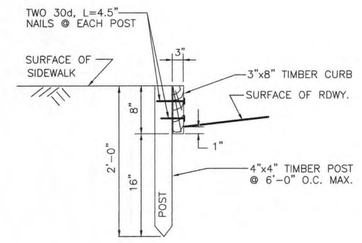


INTEGRAL BARRIER CURB

N.T.S.

NOTES:

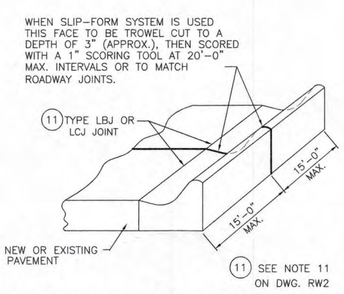
(1) ALL CONCRETE GUTTERBOTTOM AND CURBS TO BE 4000 PSI EXCEPT AS OTHERWISE INDICATED.



NOTE:
TIMBER TO BE TREATED NO. 1 COMMON PINE (12 LbS./Cf.)

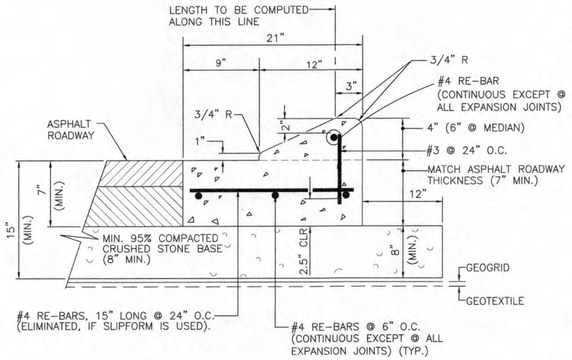
TYPICAL SECTION OF TIMBER CURB

N.T.S.



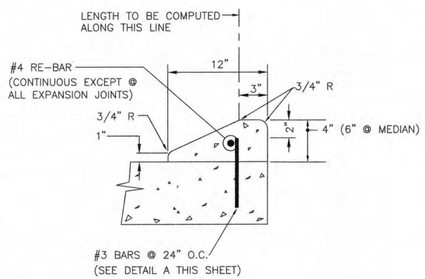
DETAIL SHOWING JOINTS IN CONCRETE CURB AND GUTTER

N.T.S.



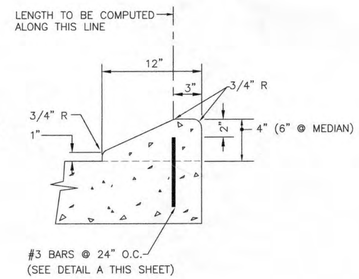
MOUNTABLE CURB & GUTTERBOTTOM

N.T.S.



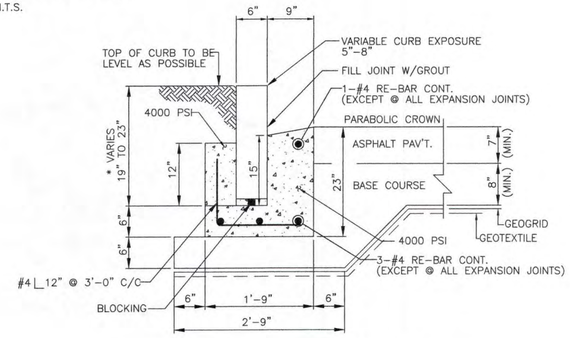
DOWELED MOUNTABLE CURB

N.T.S.



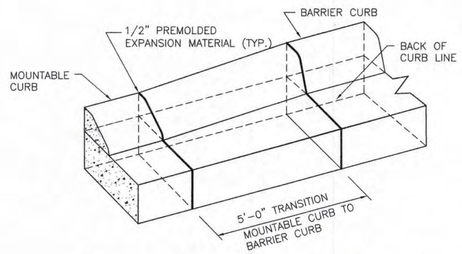
INTEGRAL MOUNTABLE CURB

N.T.S.



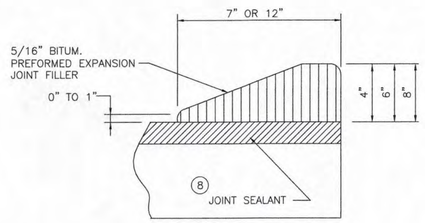
TYPICAL GRANITE BLOCK CURBING

*APPROX. 19" TO 23" (ASSUME EXIST. GRANITE CURB IS 19" HIGH)
N.T.S.



MOUNTABLE-BARRIER CURB TRANSITION

N. T. S.

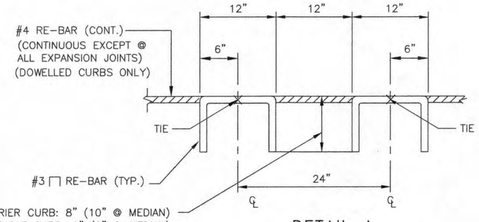


(8) SEE NOTE 8 ON DWG RW2

NOTE:
WHEN CURB IS POURED MONOLITHICALLY WITH PAVEMENT, THE BITUMINOUS PRE-FORMED EXPANSION JOINT FILLER SHALL EXTEND TO BOTTOM OF JOINT INSERT.

JOINT FILLER DETAIL FOR INTEGRAL CONCRETE CURB (MOUNTABLE OR BARRIER TYPE)

(MOUNTABLE CURB IS SHOWN)
N.T.S.



DETAIL A

SHOWING DIMENSIONS AND SPACING OF DEF. REINF. STEEL BARS FOR CONC. CURB
N.T.S.

CITY OF NEW ORLEANS
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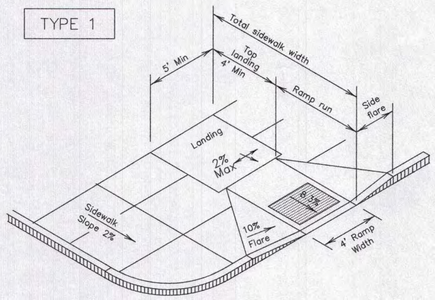
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

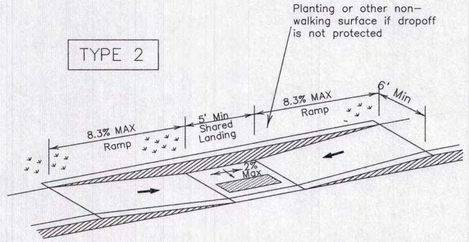
RW4

TYPE 1



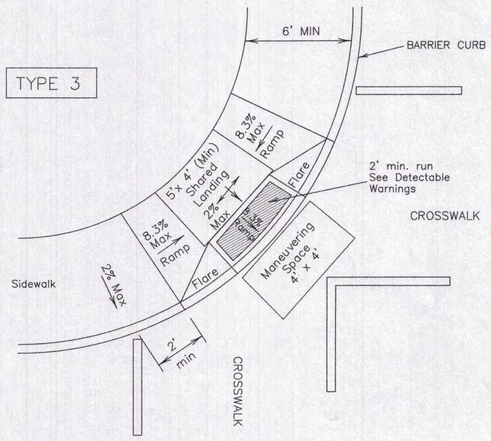
PERPENDICULAR CURB RAMP

TYPE 2



PARALLEL CURB RAMP
(Use only where water will not pond in the landing)

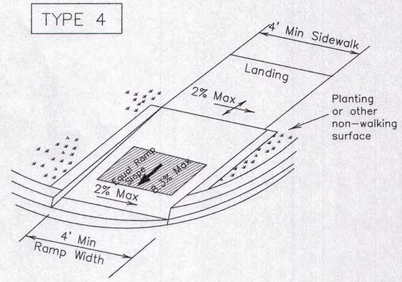
TYPE 3



DIAGONAL COMBINATION CURB RAMP
Perpendicular to the Tangent of the Curb Radius and Contained in Crosswalk

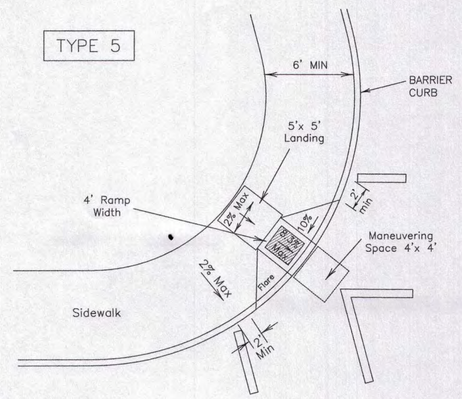
Curb returns shall be outside of the sidewalk width.

TYPE 4



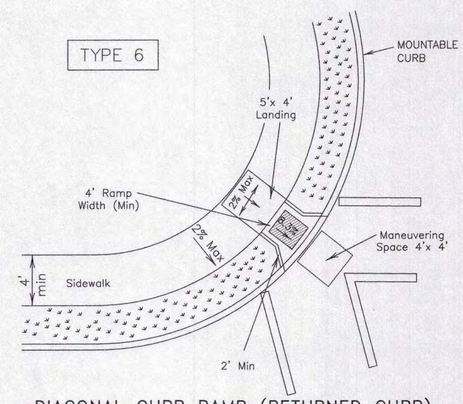
DIRECTIONAL RAMP WITHIN RADIUS
(Sidewalk set back from curb)

TYPE 5

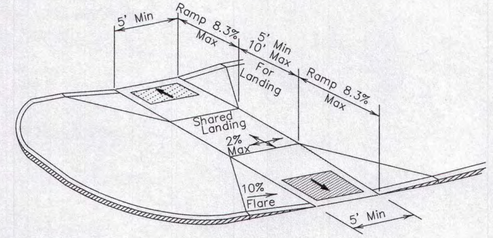


DIAGONAL CURB RAMP (FLARED SIDES)
(PERMISSION FROM CHIEF ENGINEER REQ'D)

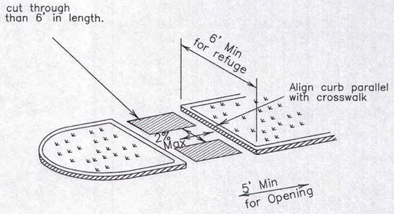
TYPE 6



DIAGONAL CURB RAMP (RETURNED CURB)
(PERMISSION FROM CHIEF ENGINEER REQ'D)



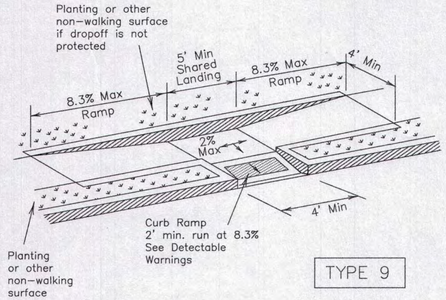
TYPE 7



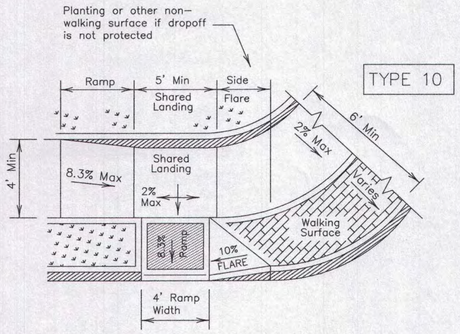
TYPE 8

Detectable warning to be located at Face of Curb for Type 8.

CURB RAMPS AT MEDIAN ISLANDS

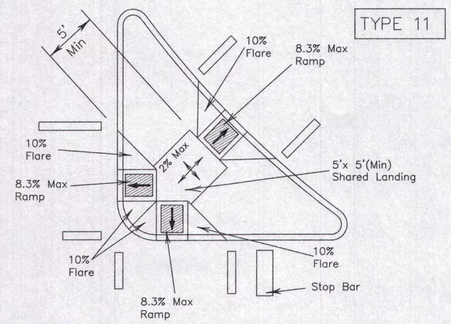


TYPE 9



TYPE 10

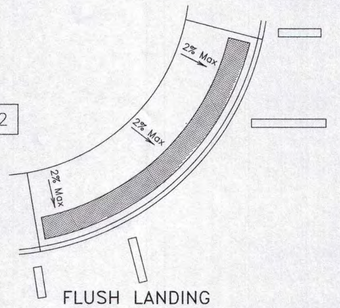
PERPENDICULAR SIDEWALK RAMP
WITH SINGLE FLARE DETAIL



TYPE 11

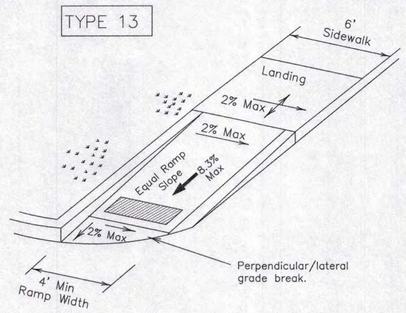
COMBINATION ISLAND RAMPS

TYPE 12



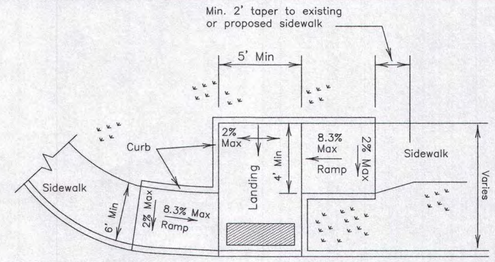
FLUSH LANDING

TYPE 13



DIRECTIONAL RAMP WITHIN RADIUS
(Sidewalk adjacent to curb)

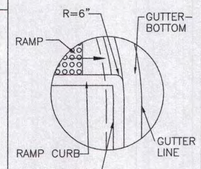
TYPE 14



OFFSET PARALLEL CURB RAMP

NOTES:

1. See General Notes on sheet ADA2 for more information.
2. Cross slope not to exceed 2% on any portion of ramp or transition to street.



CURB RADIUS DETAIL
N.T.S.

Denotes planting or non-walking surface.

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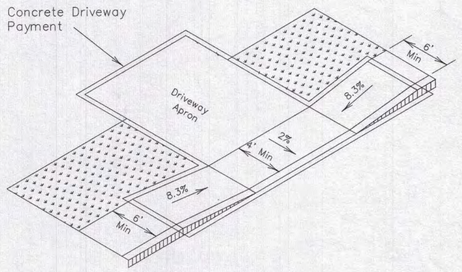
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

CURB RAMPS FOR STREET CONSTRUCTION

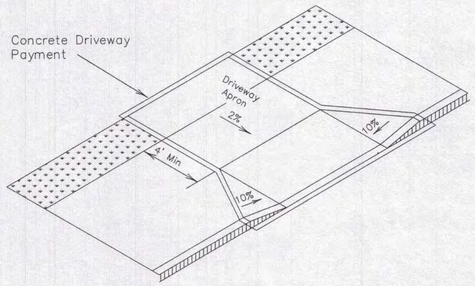
DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
J. LARMEU	A.Y. L.H. N.S.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

ADA1

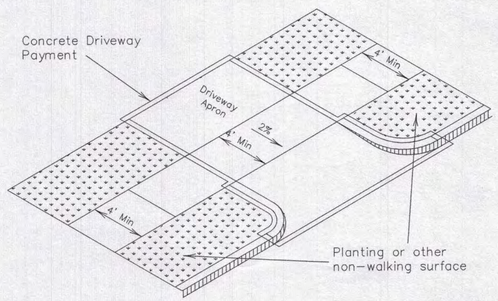


Ramp sidewalk



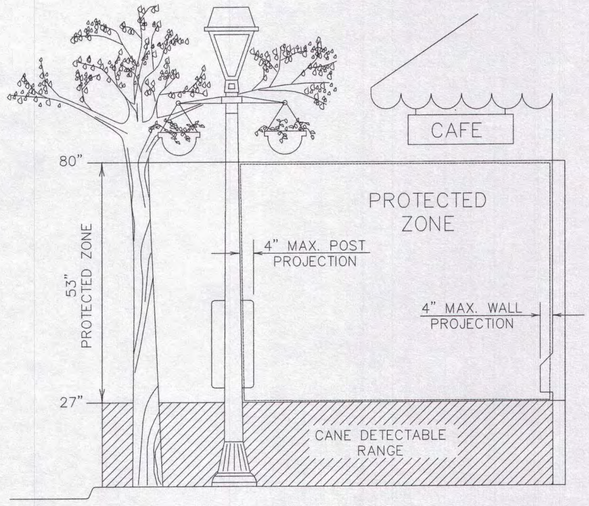
Wide sidewalk

Apron offset sidewalk



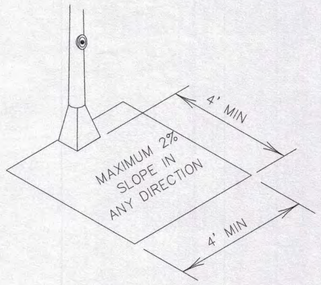
Setback sidewalk

SIDEWALK TREATMENT AT DRIVEWAYS

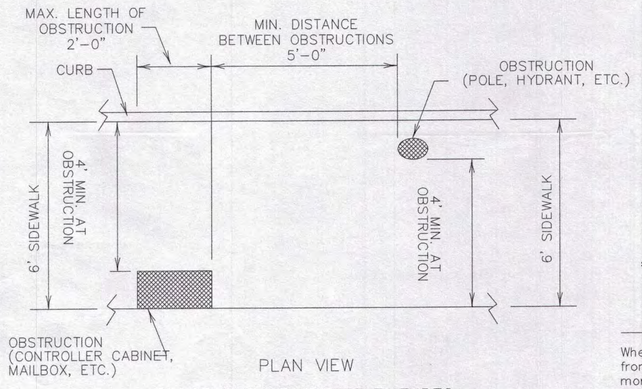


PROTECTED ZONE

In pedestrian circulation area, maximum 4" projection for post or wall mounted objects between 27"and 80" above the surface.



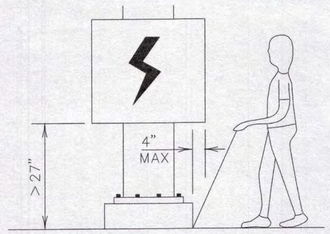
CLEAR GROUND SPACE AT PEDESTRIAN PUSH BUTTON



PLAN VIEW

PLACEMENT OF STREET FIXTURES

(ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' x 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.)



When an obstruction of a height greater than 27" from the surface would create a protrusion of more than 4" into the pedestrian circulation area, construct additional curb or foundation at the bottom to provide a maximum 4" overhang.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Pedestrian Facilities General Notes

1. All slopes shown are maximum allowable. The least possible slope that will still drain properly should be used.
2. The minimum sidewalk width is 4', unless otherwise regulated. Where the sidewalk is adjacent to back of a barrier curb, the sidewalk width shall be 6'. Where a 4' sidewalk cannot be provided due to site constraints, a minimum 3' sidewalk with 5' x 5' passing areas at intervals not to exceed 200 ft is required.
3. Changes in the level of sidewalk should be no more than 1/4". Changes in level greater than 1/4" but equal to or less than 1/2" may be beveled at a 1:2 maximum slope. Any change of level greater than 1/2" requires a ramp.
4. The maximum desirable slope of a curb ramp shall be 8.33% (1:12). Ramp length or grade of approach sidewalks may be adjusted as directed by the Project Engineer. In alterations, curb ramp slope(s) may be 10% for a maximum rise of 6" or 12.5% for a maximum rise of 3". Curb ramps in alterations need not exceed 6' in length.
5. Maneuvering space at the bottom of curb ramps shall be a minimum of 4' x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
6. Maximum allowable cross slope on sidewalk and ramp surfaces is 2%; desired cross slope is 1.5%.
7. The desirable landing dimensions are 5' x 5' with a maximum 2% slope in any direction. If a level landing of at least 3' width cannot be provided, perpendicular curb ramps should not be used.
8. Curb ramps with returned curbs may only be used where pedestrians would not normally walk across the ramp. Otherwise, flared sides shall be provided.
9. All concrete surfaces shall receive a light broom finish unless noted otherwise in the plans.
10. Separate curb ramps and landings from adjacent sidewalk and any other elements with premold or board joint of 3/4" unless otherwise directed by the Project Engineer.
11. Tooled joints are required at all sidewalk ramp or driveway slope break lines.
12. Provide a smooth transition where the curb ramps connect to the street.
13. Ramp textures must include truncated domed surfaces. Textures are required to be detectable underfoot. Surfaces that would allow water to accumulate are prohibited. Shaded areas indicate locations of detectable warnings. (Color: light reflective value and texture contrast)
14. Note that where sidewalks intersect with streets, detectable warning systems are required at all street crossings.
15. Ramps providing access to buildings shall follow the applicable requirements of the Public Right of Way Accessibility Guidelines (PROWAG).
16. To serve as a pedestrian refuge area, raised medians should be a minimum of 6' wide, 10' desirable. Medians should be designed to provide accessible passage over or through them.
17. Small channelization islands, which cannot provide a minimum 5' x 5' landing at the top of ramps, shall be cut through level with the surface of the street.
18. On street parking will not be allowed within 20' of any crosswalks.
19. Drainage structures in close proximity to curb ramps should be located on the upstream side of the ramp.
20. Traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items shall be placed so as not to obstruct the accessible route.
21. Street grades and cross-slopes shall be as shown elsewhere in the plans; however, parabolic crowns may require adjustment in crosswalk areas to limit crosswalk grade to 5%.
22. Where existing driveway is in good condition and meets slope requirements, construct only as much as required for satisfactory connection with new work.
23. Where gravel driveways occur, at least 10' of the driveway behind the sidewalk should be surfaced to prevent tracking of gravel onto the sidewalk.
24. Cross walk dimensions and crosswalk markings shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, ramps shall be aligned with theoretical crosswalks or as directed by the Project Engineer.
25. Where crosswalks occur, a 24" solid white line shall be placed across all approach lanes to indicate the point behind which vehicles are to stop. Stop bars shall be placed at a minimum 4' in advance of a crosswalk.
26. Driveways, sidewalks, and ramps shall be constructed and paid for in accordance with the applicable sections of the Standard Specifications. The limits of payment for handicap ramps shall include but not be limited to curb transition, detectable warning system, gutter, landing and base.
27. Though the least possible grade should be used to maximize accessibility, where it is structurally impractical to achieve ADA compliance, the running slope of sidewalks and crosswalks within the public right-of-way, may follow the grade of the parallel roadway without invoking variances or landings or handrails. Where a continuous grade greater than 5% must be provided, handrails may be desirable on one or both sides of the sidewalk to improve accessibility.

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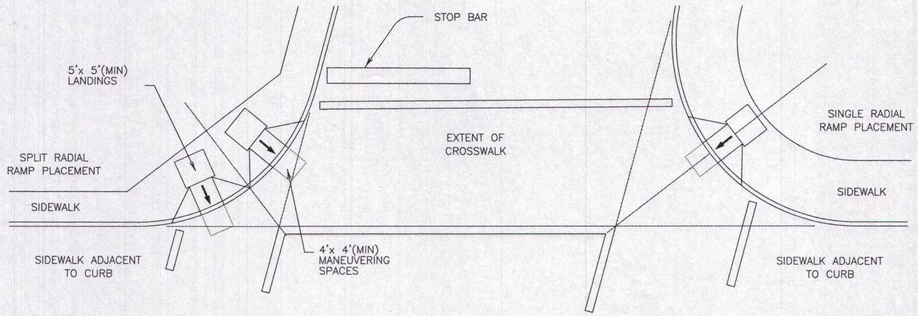
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

CURB RAMPS FOR STREET CONSTRUCTION

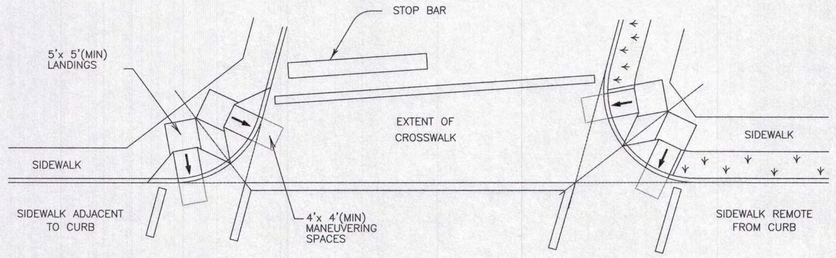
DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
J. LARMEU	A.Y. L.H. N.S.	NGPhan
		NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

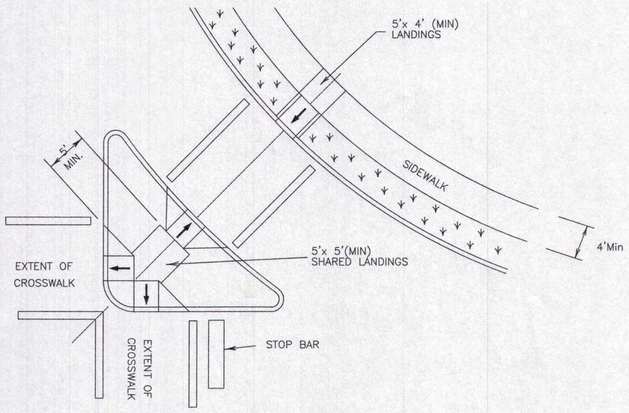
ADA2



SKEWED INTERSECTION WITH "LARGE" RADIUS



SKEWED INTERSECTION WITH "SMALL" RADIUS



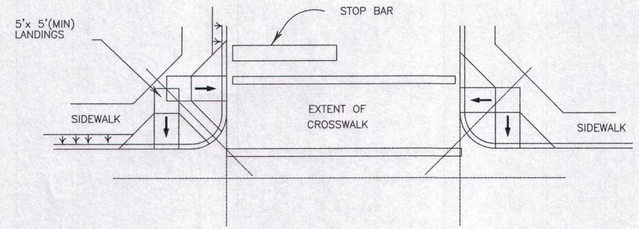
AT INTERSECTION
W/FREE RIGHT TURN & ISLAND

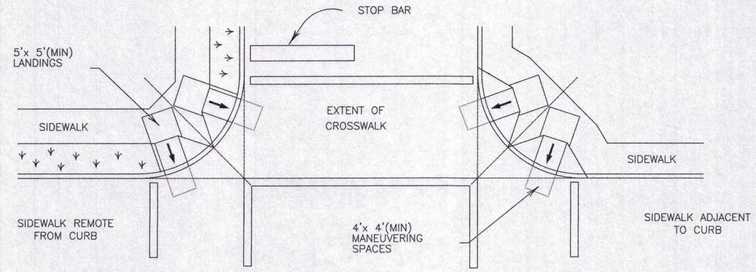
General Note:

Ramps are shown here without detectable warnings for simplicity. Detectable warnings are required at the locations shown on Sheet ADA1 and in accordance with the details shown elsewhere herein below.

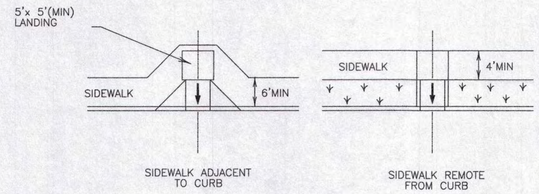
Striping (Crosswalks and stop bars) is shown for reference only.

See PM1 for Striping Layout.





NORMAL INTERSECTION



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

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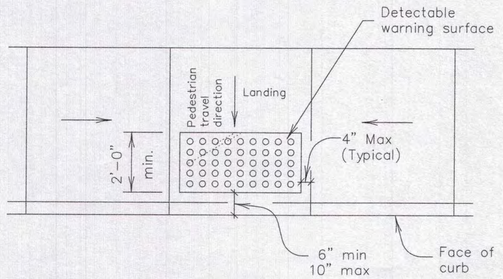
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

INTERSECTION LAYOUT FOR STREET CONSTRUCTION

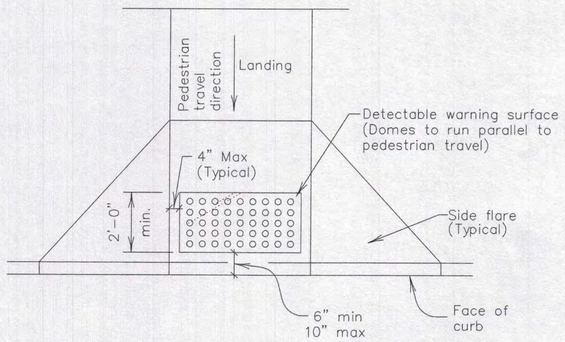
DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
J. LARMEU	A.Y. L.H. N.S.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

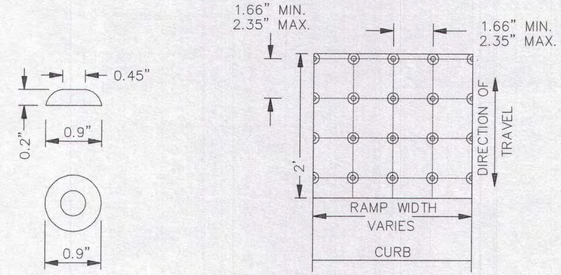
ADA3



Typical placement of detectable warning surface on landing at street edge.



Typical placement of detectable warning surface on sloping ramp run.

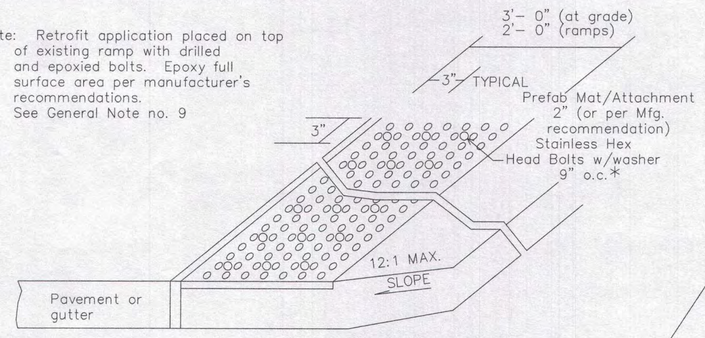


TRUNCATED DOME DETAIL

TRUNCATED DOME TEXTURE PATTERN DETAIL

Note: Place truncated domes detectable warning texture in the lower 2' of throat of ramp only and a 3' wide pattern at "at-grade" sidewalk intersections with roadways. Domes shall be arranged in a square in-line pattern only as shown.

* Note: Retrofit application placed on top of existing ramp with drilled and epoxied bolts. Epoxy full surface area per manufacturer's recommendations. See General Note no. 9

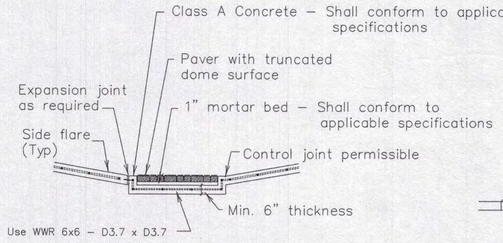


PREFABRICATED MAT OPTION (INLAID)

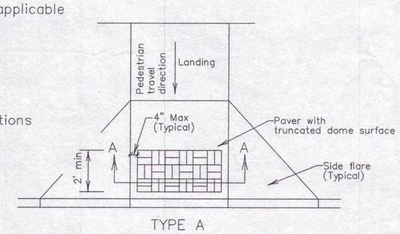
Expansion material
Pavement or gutter

Detectable Warnings General Notes

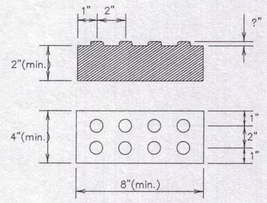
1. For PROWAG compliance, detectable warning surfaces must be provided on all pedestrian curb ramps, medians and pedestrian refuge islands, railroad crossings and at grade sidewalk intersections with roadways.
2. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with ADA guidelines. The surface must contrast visually with adjoining surfaces, including side flares, in accordance with applicable sections of the Standard Specifications. Color for detectable warning surface shall be gray unless otherwise specified in the plans or by the project engineer.
3. Detectable warning surfaces must be slip resistant and not allow water to accumulate.
4. Align truncated domes in the direction of pedestrian travel when entering the street.
5. Detectable warning surfaces shall be a minimum of 24" in depth in the direction of pedestrian travel and extend the full width of the throat of the curb ramp or landing where the pedestrian access route enters the street.
6. Detectable warning surfaces shall be located so that the edge nearest the curb line is a minimum of 6" and maximum of 10" from the extension of the face of curb. Detectable warning surfaces may be curved along the corner radius. On flush median openings or depressed corners, truncated domes to be located along face of curb.
7. Detectable warning surfaces (truncated domes) may be stamped, constructed of brick pavers or inlaid prefabricated mats attached by epoxy adhesive and mechanical attachment.
8. For stamped applications, the detectable warning surface will be stamped and stained in accordance with manufacturer's recommendations. However, the following criteria shall be used for the concrete mix design in the overall construction of handicap ramps:
   - –Average compressive strength: 4000 psi
   - –Aggregate gradation: Type B pavement gradation
   - –Minimum cement content: 600 pounds per cubic yard
   - –Maximum water/cement ratio: 0.40
   - –Total air content: 5% (+/– 2%)
   - –Maximum slump: 6 inches
   - –Curing: The exposed plain concrete (non–color stained concrete) surface should have a white pigment curing compound applied in such a manner that the surface and any exposed sides are evenly and uniformly covered to resemble a white sheet of paper. In no case should the application of curing compound be less than 1 gallon per 100 square feet.
9. Any retrofit application must have beveled edges on the sides with approach pedestrian traffic.
10. Where the ends of the bottom grade break are behind the back of curb and distance from either end of the bottom grade break to the back of curb is more than 5'–0", detectable warning surfaces shall be placed on the lower landing at the back of curb.



Section A–A



TYPE A
Truncated Dome Pattern Curb Ramp



Paver with truncated dome surface

DETECTABLE WARNINGS (Paver Option)

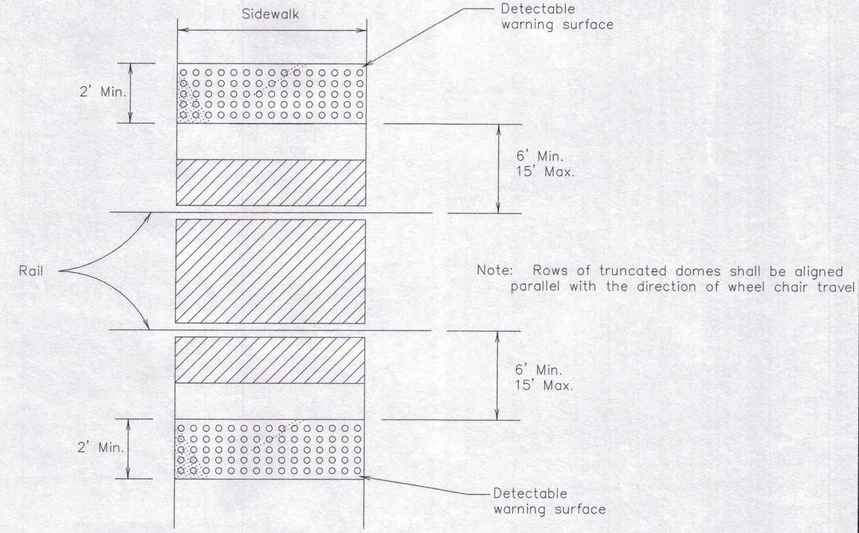
General Notes for Paver Option

Paver units shall meet all requirements of the applicable ASTM standards. Layout pattern shall be appropriate for size paver used. 4" x 8" pavers shall be laid out in a 2 x 2 basket weave pattern. 12" x 12" pavers shall be laid out in a block pattern.

Paver units shall have a truncated dome top surface for detectable warning to pedestrians.

Paver units shall be saw cut only and any cut unit shall not be less than 25 percent of a full unit.

Truncated Dome System shall be paid for in accordance with the applicable sections of the Standard Specifications.



Note: Rows of truncated domes shall be aligned parallel with the direction of wheel chair travel

LOCATION OF DETECTABLE SURFACE AT RAILROAD CROSSINGS

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CITY OF NEW ORLEANS
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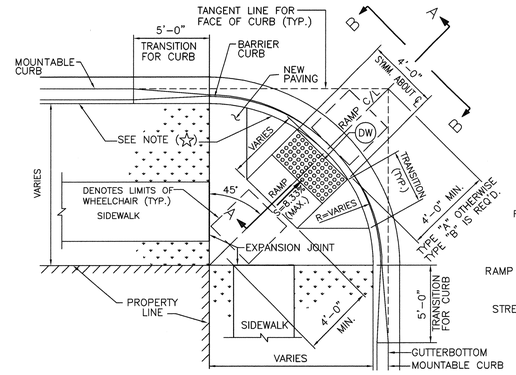
CURB RAMPS FOR STREET CONSTRUCTION

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
J. LARMEU	A.Y. L.H. N.S.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

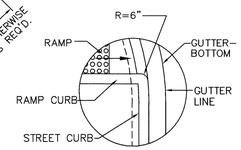
DRAWING No.

ADA4



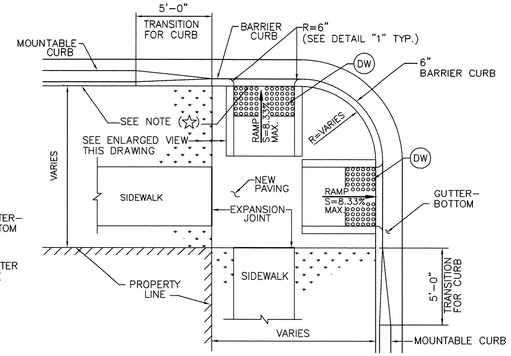
CONCRETE HANDICAPPED RAMP
TYPE "A"

N.T.S.



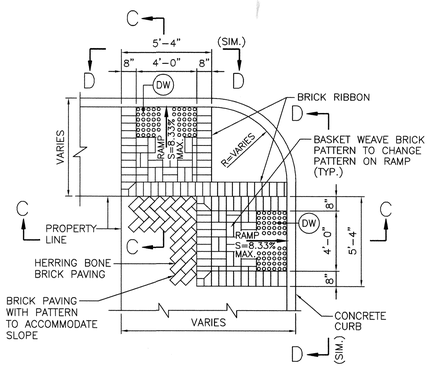
DETAIL "1"

N.T.S.



CONCRETE HANDICAPPED RAMP
TYPE "B"

N.T.S.



BRICK HANDICAPPED RAMP
TYPE "B" SIMILAR EXCEPT AS NOTED

N.T.S.

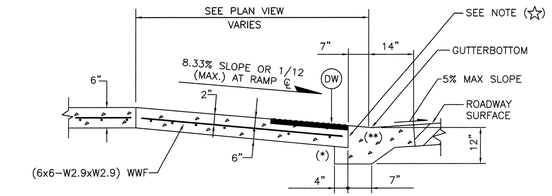
NOTES:

(A) LOCATION
(1) STREET INTERSECTIONS AS SHOWN ON DRAWINGS.
(2) ACTUAL LOCATION OF RAMPS MAY VARY AS DIRECTED. BY THE ENGINEER TO ACCOMMODATE EXISTING SITE CONDITIONS.
(3) THE CONTRACTOR SHALL COORDINATE RAMP LOCATIONS WITH UTILITY POWER POLE RELOCATIONS. RAMP LOCATIONS MAY SHIFT AS DIRECTED BY THE ENGINEER TO AVOID CONFLICT.
(4) ALL HANDICAPED RAMPS SHALL INCLUDE DETECTABLE WARNINGS AND BE CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF PUBLIC WORKS STANDARD PLAN AND THE LATEST ADA REQUIREMENTS.
(5) DETECTABLE WARNINGS, i.e. RAISED TRUNCATED DOMES, SHALL BE USED BETWEEN PEDESTRIAN CIRCULATION AREAS AND VEHICULAR CIRCULATION OR PARKING AREAS FOR COMMERCIAL DRIVEWAYS ONLY.
(6) RAISED TRUNCATED DOMES SHALL BE 0.9 INCHES IN NOMINAL DIAMETER, 0.2 INCHES IN NOMINAL HEIGHT, AND CENTERED 2.35 INCHES APART. THE AREA REQUIRED TO HAVE A DETECTABLE WARNING SHALL VISUALLY CONTRAST IN COLOR AND SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. (ADAAG, 1994 ED.)
(7) RAISED TRUNCATED DOMES SHALL BE 24" x 48" (MIN.) SYSTEMS. THE TILE TYPE, SIZE, SHAPE, INSTALLATION METHODS, ETC., MUST BE APPROVED BY THE D.P.W. BEFORE THE CONTRACTOR ORDERS HIS MATERIALS.

(B) CONSTRUCTION
(1) THE SLOPE OF THE RAMP SHALL NOT EXCEED 8%.
(2) THE SLOPE OF THE SIDEWALK AND SIDEWALK TRANSITION SHALL NOT EXCEED 8%.
(3) THE WIDTH OF THE RAMP SHALL NOT BE LESS THAN 4'-0" BUT MAY EXCEED THIS WHERE NECESSARY.
(4) SURFACE TEXTURE OF THE CONCRETE RAMP SHALL BE COMPLIED WITH ADA, THE LATEST EDITION.
(5) ALL CONCRETE SIDEWALK TO BE MINIMUM 3000 psi EXCEPT AS OTHERWISE INDICATED.

(☆) EXPANSION JOINT IS REQUIRED WHEN THE ENTIRE AREA IS PAVED. DOWEL BARS MAY BE USED AS AN OPTION AT THE DIRECTION OF THE CITY ENGINEER.

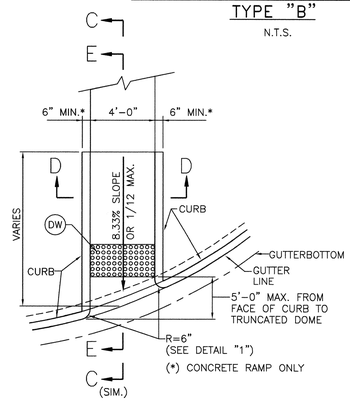
(DW) DETECTABLE WARNINGS MUST MEET 70% CONTRAST LIGHT REFLECTANCE AS REQUIRED BY THE LATEST ADA TRUNCATED DOME TILE (TYP.) SEE NOTES (4) THRU (7).



(*) DOWELED EXPANSION JOINT MAY BE USED AS ALTERNATE OF KEYWAY (SEE SECTION E-E, STD7)

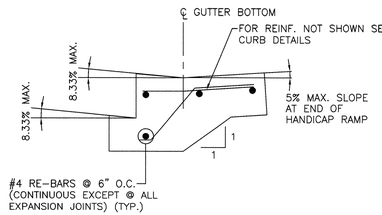
SECTION A-A
(TYPE "A" RAMP)
N.T.S.

(**) SEE DETAIL "2"



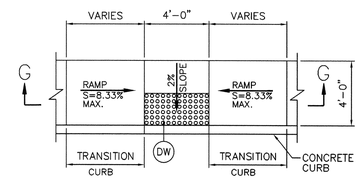
ENLARGED VIEW OF HANDICAPPED RAMP
TYPE "B"

N.T.S.



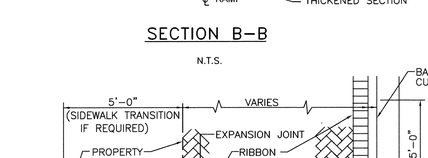
DETAIL "2"

N.T.S.



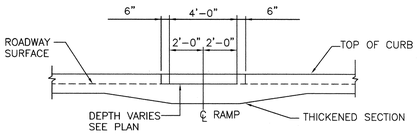
TYPICAL
MIDDLE BLOCK HANDICAPPED RAMP

N.T.S.



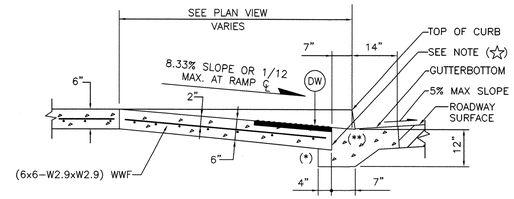
SECTION B-B

N.T.S.



SECTION D-D

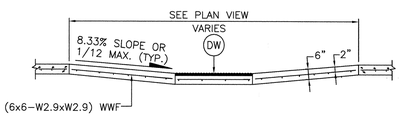
N.T.S.



(*) DOWELED EXPANSION JOINT MAY BE USED AS ALTERNATE OF KEYWAY (SEE SECTION E-E, STD7)

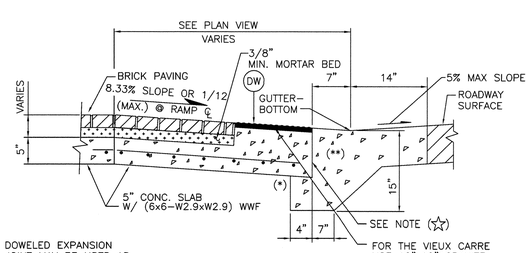
SECTION E-E
(TYPE "B" RAMP)
N.T.S.

(**) SEE DETAIL "2"



SECTION G-G

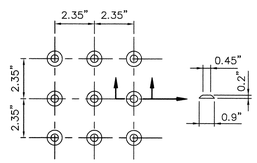
N.T.S.



(*) DOWELED EXPANSION JOINT MAY BE USED AS ALTERNATE OF KEYWAY (SEE SECTION E-E, STD7)

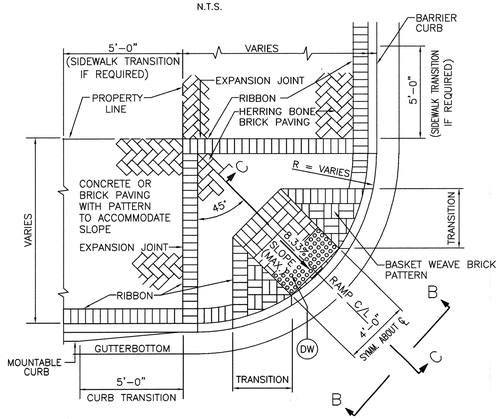
(**) SEE DETAIL "2"

SECTION C-C
(BRICK RAMP)
N.T.S.



TRUNCATED DOME
SQUARE PATTERN

N.T.S.



BRICK HANDICAPPED RAMP
TYPE "A"

N.T.S.

CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

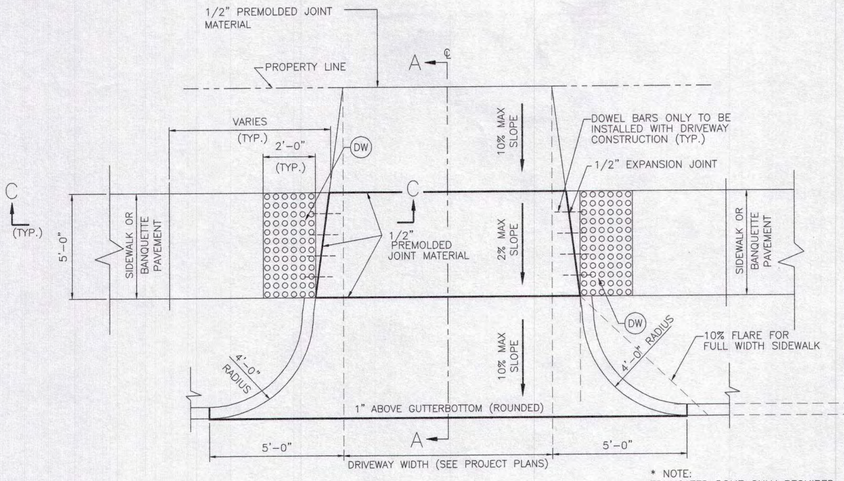
CONCRETE & BRICK HANDICAPPED RAMPS FOR STREET CONSTRUCTION

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
R. FERGUSON	M.T. B.V. R.S. R.H. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 12-16-2009	SCALE: AS NOTED	APPROVED: ROBERT C. MENDOZA, DIRECTOR 12.11.09

DRAWING No.

STD6

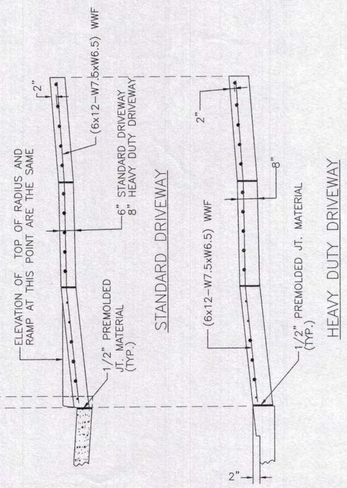


DETAIL OF STANDARD DRIVEWAY FOR CONCRETE VERTICAL CURB

N.T.S.

* NOTE:
TRUNCATED DOME ONLY REQUIRED AT SIGNALIZED COMMERCIAL DRIVE CROSSING ONLY!

* SEE ADA2 FOR LAYOUT.



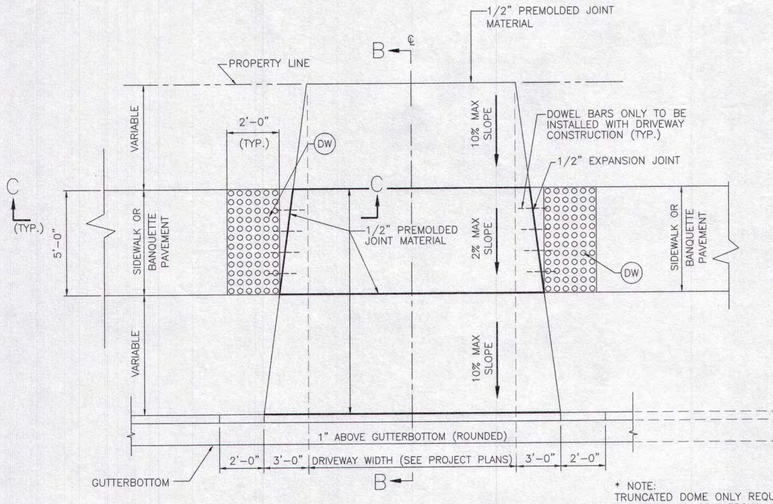
SECTION A-A

N.T.S.

NOTES (*):

(1) FOR STANDARD DRIVEWAYS: DEPRESS ONLY WHEN DIRECTED BY THE FIELD ENGINEER.
(2) FOR HEAVY DUTY DRIVEWAYS: DEPRESS 3" AS SHOWN.
(3) MAXIMUM DRIVEWAY SLOPE IS 10%. ANYTHING EXCEEDING 10% SHOULD BE APPROVED BY THE DEPARTMENT.
(4) DETECTABLE WARNINGS, i.e. RAISED TRUNCATED DOMES SHALL BE USED AT SIGNALIZED COMMERCIAL DRIVEWAYS ONLY.
(5) RAISED TRUNCATED DOMES SHALL BE 0.9 INCHES IN NOMINAL DIAMETER, 0.2 INCHES IN NOMINAL HEIGHT, AND CENTERED 2.35 INCHES APART. THE AREA REQUIRED TO HAVE A DETECTABLE WARNING SHALL VISUALLY CONTRAST IN COLOR AND SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. (PROWAG, LATEST ED.)
(6) RAISED TRUNCATED DOMES SHALL BE 24" x 48" (MIN.) SYSTEMS. THE TILE TYPE, SIZE, SHAPE, INSTALLATION METHODS, ETC., MUST BE APPROVED BY THE D.P.W. BEFORE THE CONTRACTOR ORDERS HIS MATERIALS.
(7) MAINTAIN SIDEWALK ELEVATION THRU DRIVEWAYS.

(DW) DETECTABLE WARNINGS (DARK GREY) (ADA) TRUNCATED DOME TILE (TYP.) AS PER APPROVAL OF D.P.W. SEE NOTES (4) THRU (6).

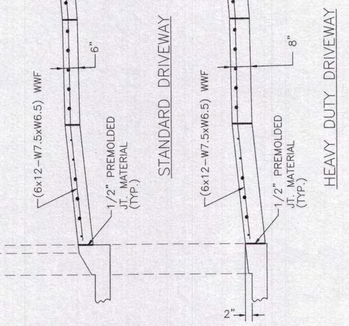


DETAIL OF STANDARD DRIVEWAY FOR MOUNTABLE CURBS

N.T.S.

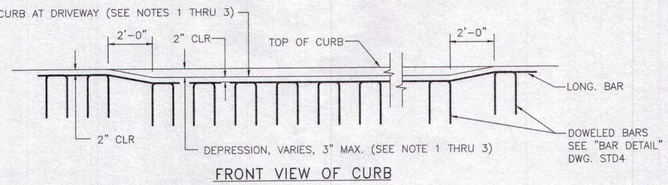
* NOTE:
TRUNCATED DOME ONLY REQUIRED AT SIGNALIZED COMMERCIAL DRIVE CROSSING ONLY!

* SEE ADA2 FOR LAYOUT.



SECTION B-B

STANDARD & HEAVY DUTY DRIVEWAYS
N.T.S.



FRONT VIEW OF CURB

DETAIL OF HEAVY DUTY DRIVEWAYS FOR MOUNTABLE CONCRETE CURB

N.T.S.

SECTION C-C

N.T.S.

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

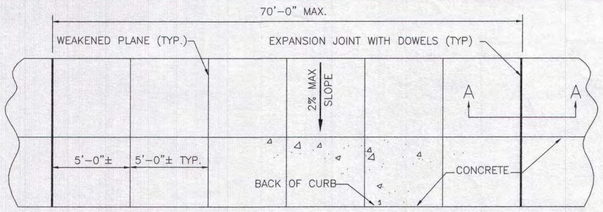
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

STANDARD DRIVEWAYS FOR STREET CONSTRUCTION

DRAWN BY:	REVIEWED BY:		RECOMMENDED BY:
J. LARMEU	M.T.	B.V. R.S. B.J. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR	

DRAWING No.

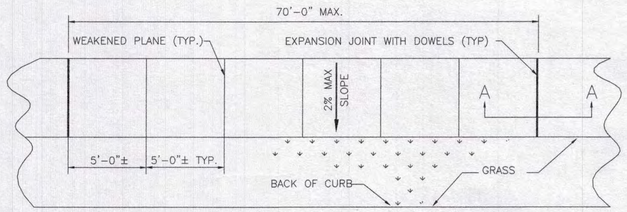
DW1



CROSS SLOPE = 2% MAX

PLAN PORTLAND CEMENT CONCRETE SIDEWALK PAVEMENT (FULL)

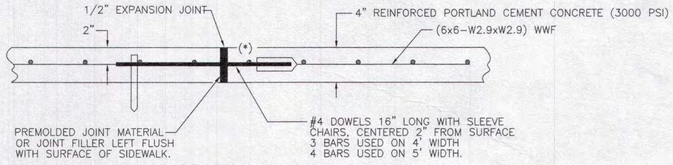
N.T.S.



CROSS SLOPE = 2% MAX

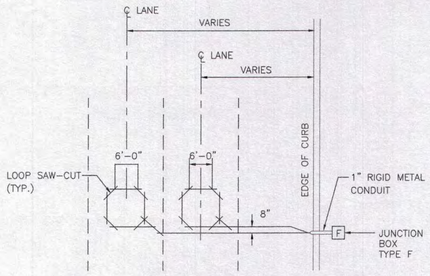
PLAN PORTLAND CEMENT CONCRETE SIDEWALK PAVEMENT (RIBBON)

N.T.S.

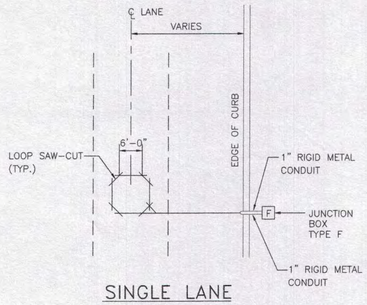


SECTION A-A

(*) THIS HALF OF DOWEL SHALL BE GREASED



DOUBLE LANE

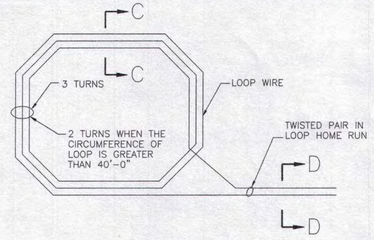


SINGLE LANE

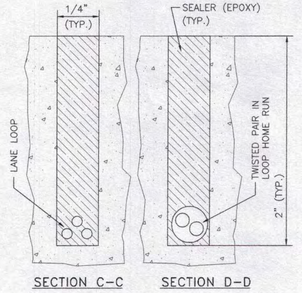
NOTE:

THE CONTRACTOR SHALL PROVIDE ONE INCH CONDUIT FROM JUNCTION BOX OR EQUIPMENT CABINET AND TERMINATE BELOW TOP OF PAVEMENT SO THAT IT DIRECTLY RECEIVES LOOP LEAD-IN WIRE.

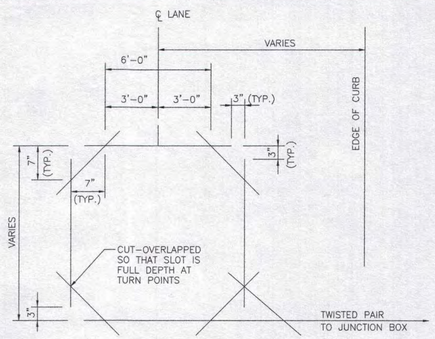
TYPICAL LOOP SAW-CUT LAYOUT



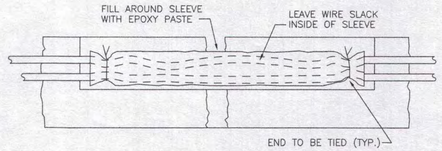
LOOP WIRE INSTALLATION



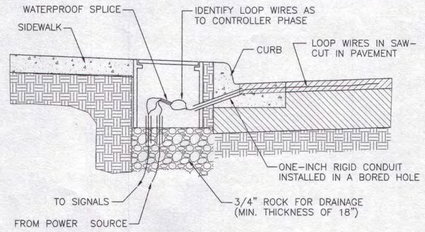
VEHICLE LOOP INSTALLATION



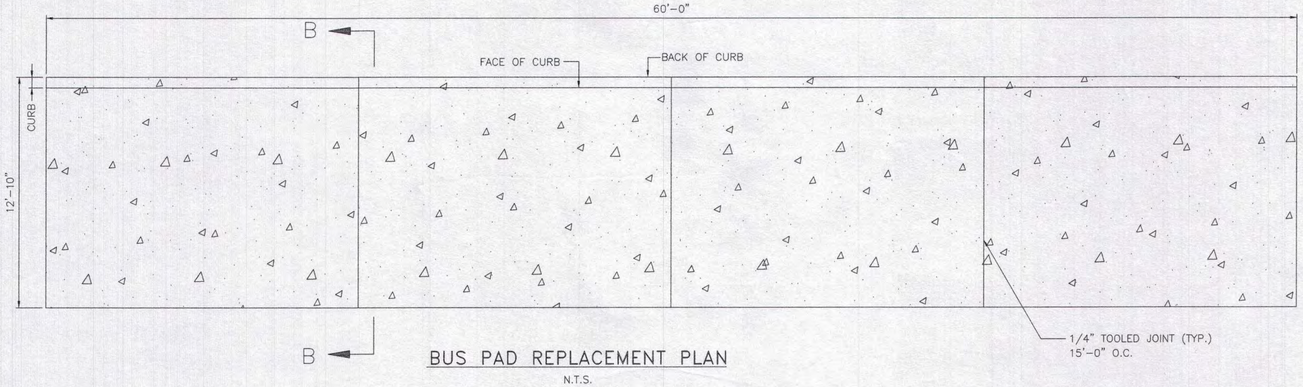
LOOP SAW-CUT CONFIGURATION



SECTION OF PLASTIC SLEEVING AT PAVEMENT JOINTS AND CRACKS

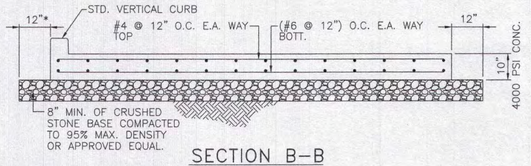


TYPICAL LOOP LEAD-IN INSTALLATION



BUS PAD REPLACEMENT PLAN

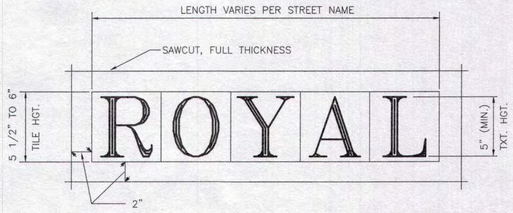
N.T.S.



SECTION B-B

N.T.S.

(*) DELETE WITHIN DRIPLINE OF TREES



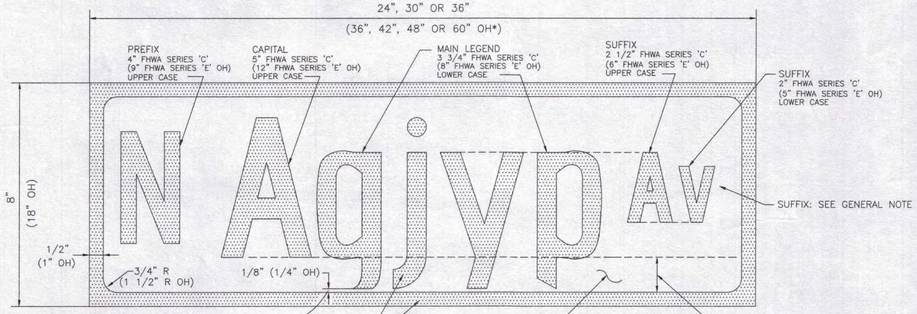
STREET NAME TILE

N.T.S.

GENERAL NOTES:

(1) IF STREET NAME SUFFIX IS "STREET", SUFFIX IS OMITTED FROM SIGN.

(2) REPLACEMENT STREET NAME TILES SHALL BE SET IN A 1/4"-1/2" MORTAR BED WITH A 1/4" (MAX. SPACING) BETWEEN LETTERS.



* OH = OVERHEAD MOUNTED STREET NAME SIGN

STREET NAME SIGN - LEGEND & BORDER

N.T.S.

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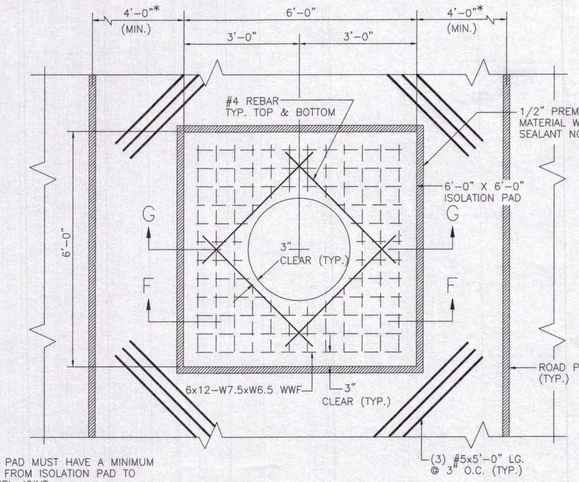
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

MISCELLANEOUS DETAILS FOR STREET CONSTRUCTION

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	M.T. B.V. R.S. A.Y. L.H.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

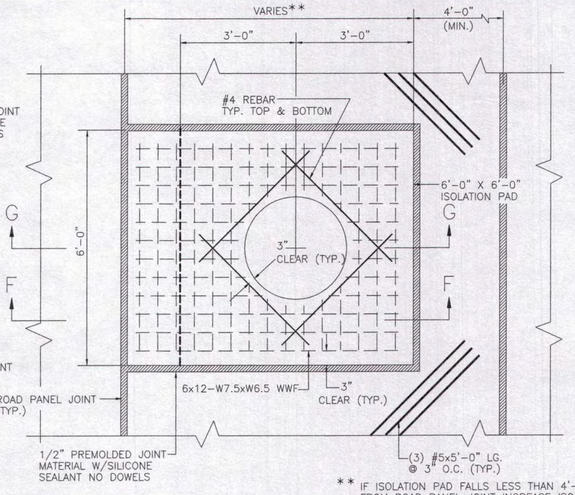
DRAWING No.

MC1



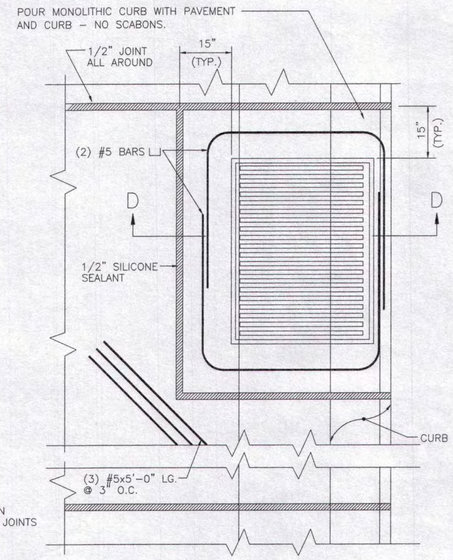
* ISOLATION PAD MUST HAVE A MINIMUM OF 4'-0" FROM ISOLATION PAD TO ROAD PANEL JOINT.

MAN-HOLE CASE (1)
N.T.S.

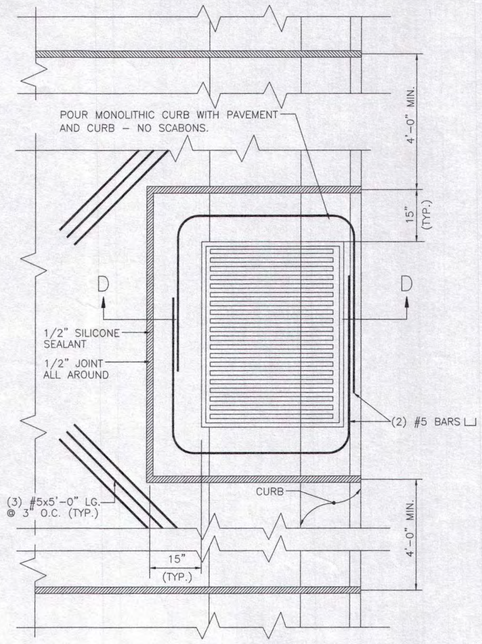


** IF ISOLATION PAD FALLS LESS THAN 4'-0" FROM ROAD PANEL JOINT INCREASE ISOLATION PAD LENGTH AS REQUIRED TO COMBINE THE JOINTS

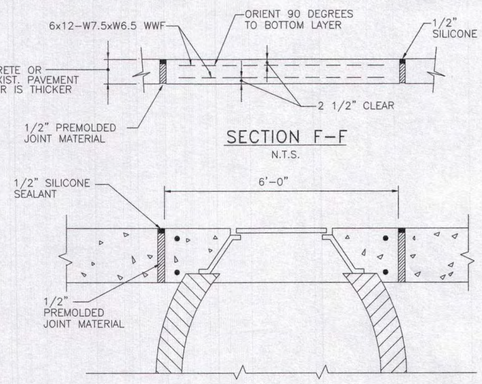
MAN-HOLE CASE (2)
N.T.S.



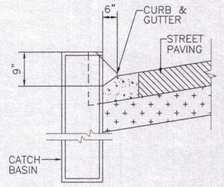
ROLL-OVER CATCH BASIN PLACEMENT CASE (1)
N.T.S.



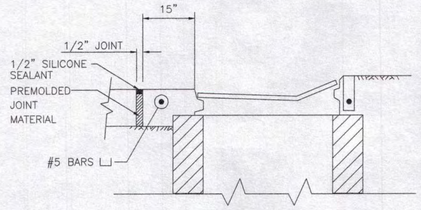
ROLL-OVER CATCH BASIN PLACEMENT CASE (2)
N.T.S.



SECTION F-F
N.T.S.

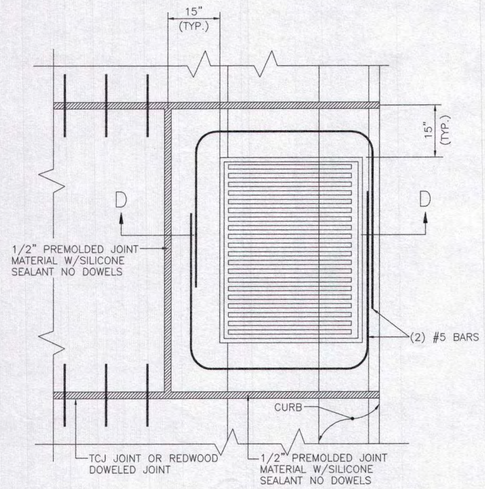


SECTION C-C
N.T.S.

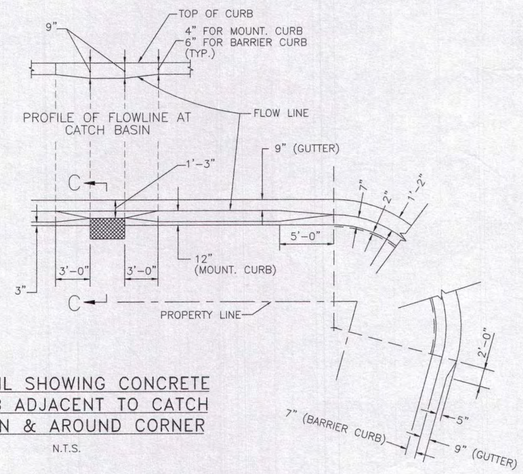


SECTION D-D
JOINT DETAIL AT ROLL-OVER BASIN
N.T.S.

SECTION G-G
MANHOLE ISOLATION PAD
N.T.S.



ROLL-OVER CATCH BASIN PLACEMENT CASE (3)
N.T.S.



DETAIL SHOWING CONCRETE CURB ADJACENT TO CATCH BASIN & AROUND CORNER
N.T.S.

NOTES:

1.) EACH UTILITY STRUCTURE WITHIN THE ROADWAY SHALL HAVE IT'S ISOLATION PAD.

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

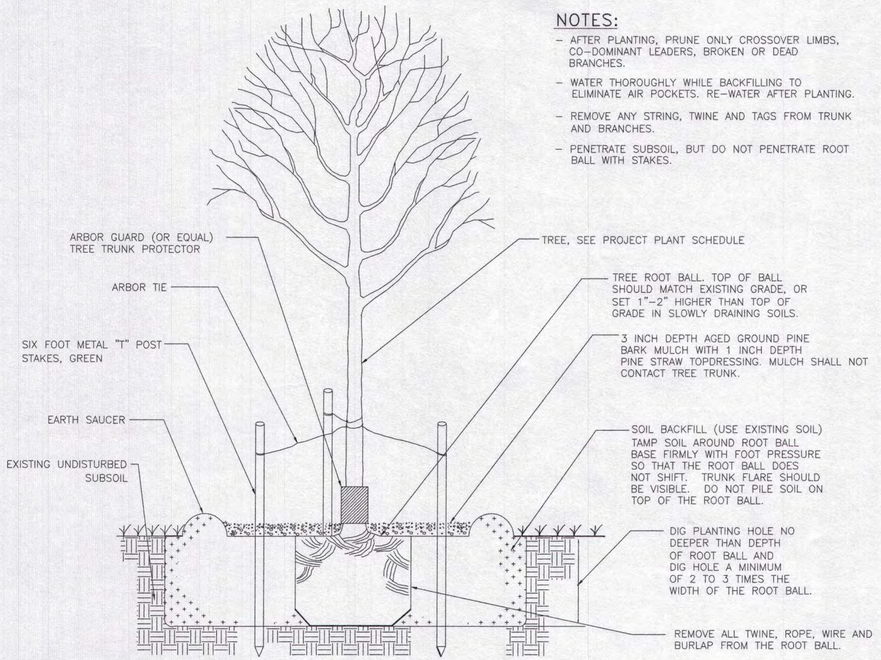
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

MISCELLANEOUS DETAILS FOR CATCH BASIN, MANHOLE & UTILITIES INSTALLATION

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	M.T. B.V. R.S. B.J. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

MC2

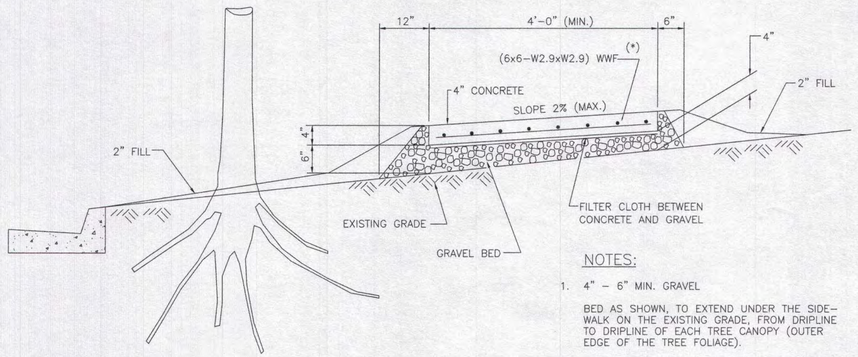


NOTES:

- AFTER PLANTING, PRUNE ONLY CROSSOVER LIMBS, CO–DOMINANT LEADERS, BROKEN OR DEAD BRANCHES.
- WATER THOROUGHLY WHILE BACKFILLING TO ELIMINATE AIR POCKETS. RE–WATER AFTER PLANTING.
- REMOVE ANY STRING, TWINE AND TAGS FROM TRUNK AND BRANCHES.
- PENETRATE SUBSOIL, BUT DO NOT PENETRATE ROOT BALL WITH STAKES.

TREE PLANTING DETAIL

N. T. S.



NOTES:

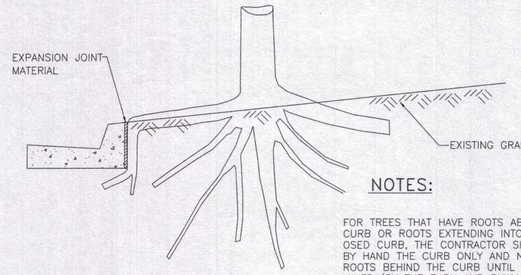
1. 4" – 6" MIN. GRAVEL BED AS SHOWN, TO EXTEND UNDER THE SIDE–WALK ON THE EXISTING GRADE, FROM DRIPLINE TO DRIPLINE OF EACH TREE CANOPY (OUTER EDGE OF THE TREE FOLIAGE).
2. NO MORE THAN 1.5" – 2.0" OF FILL TO BE PLACED UNDER ANY TREE CANOPY.
3. NO EXPANSION JOINTS TO BE PLACED OVER ROOTS. ONLY "WEAKENED PLANES" SHALL BE ALLOWED.

(*) WITH 1.5" – 2.0" COVER

SIDEWALK GRAVEL BED

REQ'D. AT EACH TREE LOCATION

N. T. S.



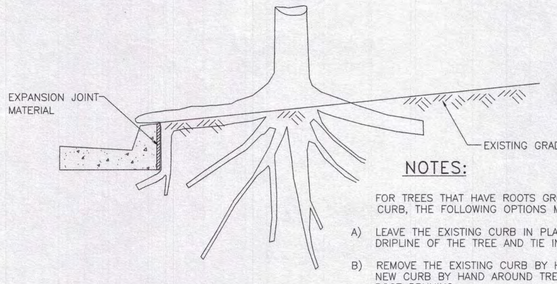
NOTES:

FOR TREES THAT HAVE ROOTS ABUTTING THE CURB OR ROOTS EXTENDING INTO THE PROP–OSED CURB, THE CONTRACTOR SHALL REMOVE BY HAND THE CURB ONLY AND NOT DISTURB TREE ROOTS BEHIND THE CURB UNTIL IT IS DETER–MINED (BY THE PARK AND PKWY. DEPARTMENT) HOW MUCH OF THE ROOTS CAN BE PRUNED. ONCE MARKED, THE ROOTS CAN BE PRUNED BY A LICENSED ARBORIST.
ELIMINATE 12" OF ROADWAY BASE BEHIND NEW CURB WHERE ROOTS ARE ENCOUNTERING THE CURB. (SEE DETAIL "A")

TYPICAL DIAGRAM NO. 1

TREE ROOTS GROWING BEHIND EXISTING OR PROPOSED CURBS

N. T. S.



NOTES:

FOR TREES THAT HAVE ROOTS GROWING OVER THE CURB, THE FOLLOWING OPTIONS MAY BE POSSIBLE:

A) LEAVE THE EXISTING CURB IN PLACE UNDER THE DRIPLINE OF THE TREE AND TIE INTO THE NEW CURB.

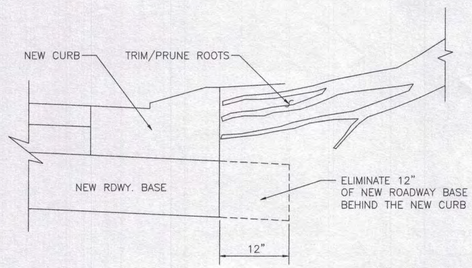
B) REMOVE THE EXISTING CURB BY HAND AND FORM NEW CURB BY HAND AROUND TREE ROOTS WITHOUT ROOT PRUNING.

C) REMOVE THE EXISTING CURB BY HAND, PRUNE ROOTS AS MARKED BY THE DEPARTMENT OF PARKS & PARKWAYS. FORM AND POUR NEW CURB.

TYPICAL DIAGRAM NO. 2

TREE ROOTS GROWING OVER CURB

N. T. S.

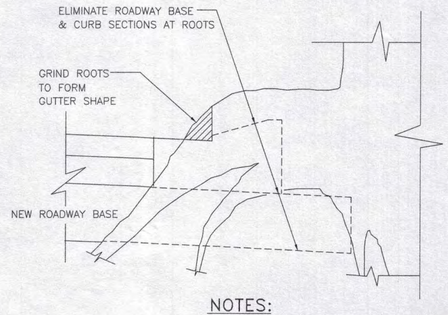


DETAIL "A"

DETAIL FOR ROOT PRUNING AT CURBS

REFER TO "TYPICAL DIAGRAM NO. 1"

N.T.S.



NOTES:

WHERE BIG ROOTS EXTEND INTO ROADWAY SECTION, ELIMINATE ROADWAY BASE AND CURB SECTIONS AT ROOTS, AND GRIND ROOTS TO FORM GUTTER SHAPE MATCHING ADJOINING CONCRETE GUTTERS AS PER DIRECTION OF THE DEPARTMENT OF PARKS & PARKWAYS

TYPICAL DIAGRAM NO. 3

TREE ROOTS EXTENDING INTO PROPOSED ROADWAY SECTION

N. T. S.

GENERAL NOTES:

(1) THE CONTRACTOR IS RESPONSIBLE FOR HIRING A LICENSED ARBORIST TO PRUNE TREE ROOTS ON CITY TREES. ALL TREE ROOTS OF CITY OWNED TREES, DAMAGED DURING REMOVAL OF CURBS, SIDEWALKS AND DRIVEWAYS SHALL BE ROOT PRUNED. ALL TREE ROOTS DAMAGED DURING ANY EXCAVATION OPERATIONS, YARD DRAINS, COLLECTOR LINES, ETC. SHALL BE ROOT PRUNED.

(2) ALL PROJECTS REQUIRE ON–SITE INSPECTION BY THE DEPARTMENT OF PARKS & PARKWAYS AND THE ARBORIST TO DETERMINE THE EXTENT OF ROOT PRUNING THAT WILL BE REQUIRED OR ALLOWED.

(3) FERTILIZATION – ONLY IF SPECIFIED BY DEPARTMENT OF PARKS & PARKWAYS ARBORIST, THE TREE ROOTS PRUNED DUE TO CONSTRUCTION SHALL BE FERTILIZED USING A WATER SOLUBLE FERTILIZER INJECTED INTO THE SOIL. THE MINIMUM ACCEPTABLE N–P–K RATIO SHALL BE 30–5–5. THE NUTRIENT COMPLEX AND RATIO (GAL/SQ. FT.) MUST BE APPROVED BY THE URBAN FORESTER OVERSEEING THE PROJECT.

(4) ONLY IF SPECIFIED BY THE DEPARTMENT OF PARKS & PARKWAYS, MYCOORHIZAL FUNGAL INOCULATE TREATMENT SHALL BE APPLIED TO CONSTRUCTION DAMAGED TREE ROOT ZONES AS APPROVED BY THE URBAN FORESTER FROM THE PARK AND PARKWAYS DEPARTMENT.

(5) TERMITE TREATMENT – ALL TREE ROOTS PRUNED DUE TO CONSTRUCTION SHALL BE TREATED FOR TERMITES WITH A TERMITICIDE APPROVED BY THE URBAN FORESTER.

(6) ALL TREES SHALL BE IRRIGATED AND MULCHED AS INDICATED IN THE SECTION 02480, "LANDSCAPE PROTECTION DURING CONSTRUCTION".

(7) ONLY IF SPECIFIED BY THE DEPARTMENT OF PARKS & PARKWAYS, CAMBISTAT GROWTH REGULATOR OR EQUIVALENT SHALL BE APPLIED TO THE TREES AS PER THE DIRECTION OF THE URBAN FORESTER OVERSEEING THE PROJECT.

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

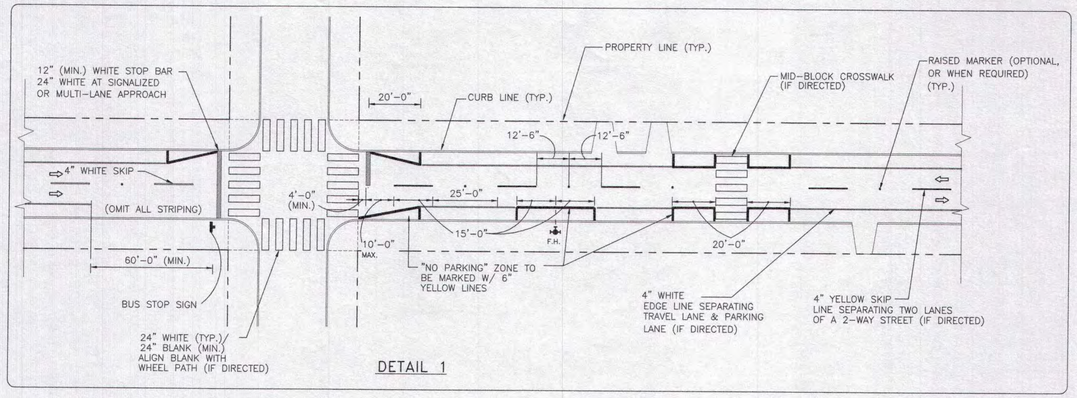
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

MISCELLANEOUS DETAILS FOR TREE PLANTING & ROOT PRUNING

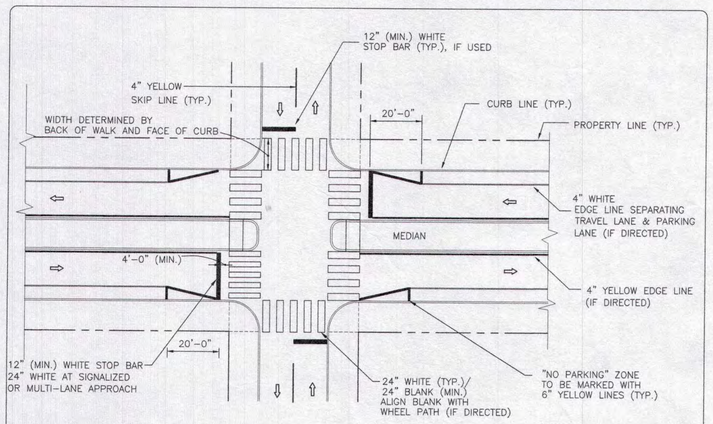
DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	M.T. B.V. R.S. B.J. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JENKINS, DIRECTOR

DRAWING No.

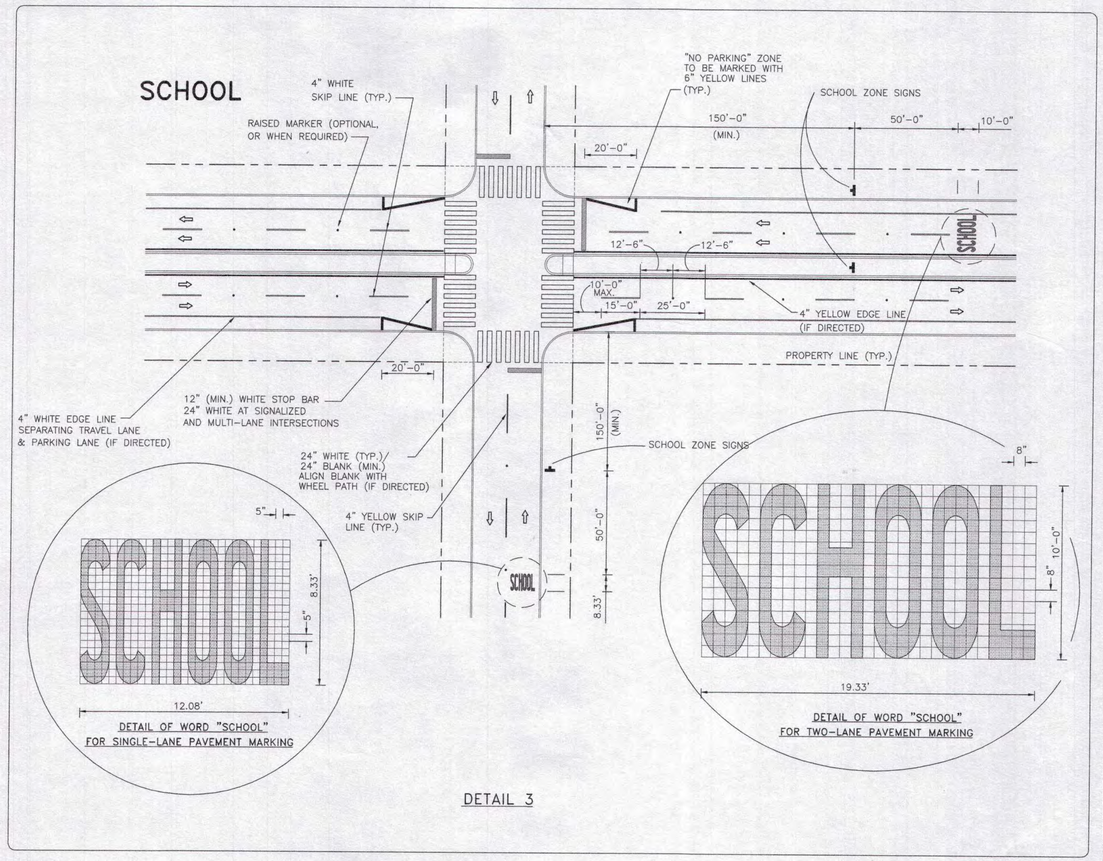
MC3



DETAIL 1

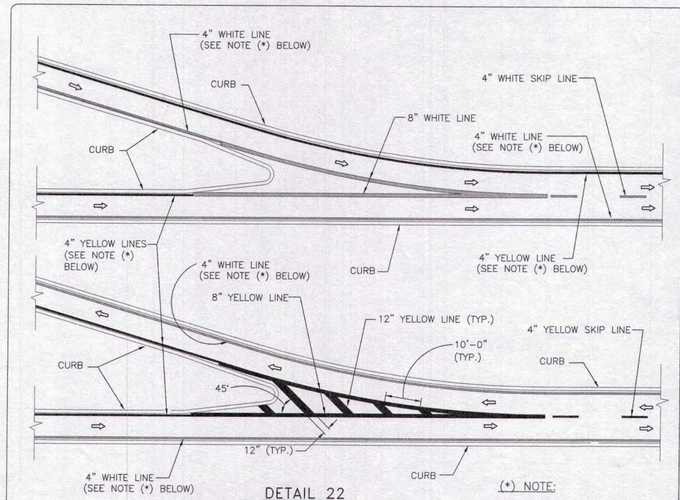


DETAIL 2



DETAIL 3

DESCRIPTION	COLOR	WIDTH	APPLICATION
SINGLE BROKEN	WHITE	4"	SEPARATION OF TRAVEL LANES IN THE SAME DIRECTION; INDICATE THAT IT IS PERMISSIBLE TO CROSS THE LINE TO CHANGE LANES; i. e., LANE LINES ON MULTILANE ROADWAYS.
	YELLOW	4"	SEPARATION OF TRAVEL LANES IN OPPOSITE DIRECTIONS; INDICATE THAT PASSING IS ALLOWED IN BOTH DIRECTIONS; i. e., CENTERLINE ON TWO LANE, TWO WAY ROADWAYS.
SINGLE SOLID	WHITE	4"	SEPARATION OF TRAVEL LANES OR SEPARATION OF TRAVEL LANE AND SHOULDER; INDICATE THAT CROSSING THE LINE IS DISCOURAGED; i. e., LANE LINES AT INTERSECTION APPROACHES OR RIGHT EDGE LINES.
		6"	SEPARATION OF A MOTOR VEHICLE TRAVEL LANE FROM A BIKE TRAVEL LANE.
		8"	DELINEATION OF LOCATION WHICH INDICATES CROSSING IS STRONGLY DISCOURAGED; i. e., SEPARATION OF TURN LANES FROM THROUGH LANES OR GORE AREAS AT RAMP TERMINALS.
	YELLOW	4"	DELINEATION OF LEFT EDGE LINES ON DIVIDED ROADWAYS, ONE-WAY ROADS AND RAMPS.
DOUBLE SOLID	WHITE	4"-4"-4"	SEPARATION OF TRAVEL LANES IN THE SAME DIRECTION; INDICATE THAT IT IS PROHIBITED TO CROSS THE LINES; e. g., PROHIBIT LANE CHANGES ON THE APPROACH TO AN OBSTRUCTION IN THE ROADWAY BETWEEN TWO LANES IN THE SAME DIRECTION
	YELLOW	4"-4"-4"	SEPARATION OF TRAVEL LANES IN OPPOSITE DIRECTIONS, WHICH INDICATE THAT PASSING IS NOT ALLOWED IN EITHER DIRECTION. LEFT TURN MANEUVERS ACROSS THIS MARKING ARE PERMITTED. ALSO USED IN ADVANCE OF OBSTRUCTIONS WHICH MAY BE PASSED ONLY ON THE RIGHT SIDE.
SOLID PLUS BROKEN	YELLOW	4"-2"-4"	SEPARATION OF TRAVEL LANES IN OPPOSITE DIRECTIONS; INDICATE THAT PASSING IS ALLOWED FOR VEHICLES ADJACENT TO THE BROKEN LINE, BUT PROHIBITED FOR VEHICLES ADJACENT TO SOLID LINE. USED ON TWO-WAY ROADWAYS WITH TWO OR THREE LANES. ALSO USED TO DELINEATE EDGES OF A TWO-WAY LEFT TURN LANES (SOLID ON THE OUTSIDE, BROKEN LINES ON THE INSIDE).
DOUBLE BROKEN	YELLOW	4"-4"-4"	DELINEATES THE EDGES OF REVERSIBLE LANES.
SINGLE DOTTED	BOTH	4"	AN EXTENSION OF A LANE LINE OR CENTERLINE THROUGH AN INTERSECTION OR A CURVED DOTTED LINE THROUGH AN INTERSECTION TO HELP GUIDE TURNING VEHICLES AS THEY MOVE THROUGH THEIR TURN. MAY EXTEND AN EDGELINE, ESPECIALLY WHERE THE ROAD WIDENS FOR AN ADDED LANE FOR DECELERATION OR FOR TURNING.
	WHITE	8"	SEPARATION OF THROUGH LANE AND AUXILIARY LANE OR DROPPED LANE.
TRANSVERSE	WHITE	6"	CROSSWALK EDGE LINES AT MINOR INTERSECTIONS, IF DIRECTED
		12"	STOP BARS AT MINOR INTERSECTIONS CROSSWALK EDGE LINES AT MAJOR INTERSECTIONS, IF DIRECTED
		24"	STOP BARS AT MAJOR INTERSECTIONS HIGH-VISIBILITY, LONGITUDINAL CROSSWALK STRIPING
DIAGONAL	WHITE	12"	CROSSHATCH MARKINGS, PLACED AT AN ANGLE OF 45° AT VARYING DISTANCES APART, ON SHOULDERS OR CHANNELIZATION ISLANDS TO ADD EMPHASIS TO THESE ROADWAY FEATURES.

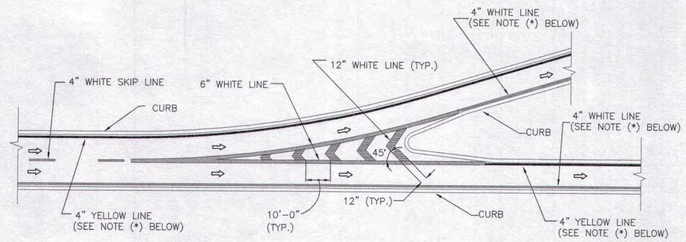


DETAIL 22

TYPICAL GORE MARKINGS
FOR ONE-WAY AND TWO-WAY STREETS

(*) NOTE:

4" WHITE & YELLOW EDGE LINES ARE OPTIONAL FOR CITY'S STREETS



THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

TYPICAL APPLICATION OF PAVEMENT MARKINGS

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	A.Y. L.H.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

PM1

APPENDIX C

TM001 Sixth Street Transmission Main Specification

SEWERAGE and WATER BOARD

of

NEW ORLEANS

SPECIFICATIONS

FOR

CONTRACT **TM001**

SIXTH STREET TRANSMISSION MAIN

Proposals To Be Opened

11:00 O'Clock A.M., Local Time on, _____

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00 730.A	Special Conditions for FEMA Contracts	1- 26

SPECIFICATIONS

01 200 Special Provisions, Part I – Special Provisions
01 200 Special Provisions, Part II – Supplemental Technical Specifications
01 200 Special Provisions, Part III – Special Items
01 300 DPW Standard Drawings
01 400 SWB SWPPP & BMP Requirements
01 410 SWB Standard Drawings

DRAWINGS (BOUND SEPARATELY)

END OF SECTION

SECTION 00730

ATTACHMENT: FEDERAL CONTRACT CLAUSES

Since the parties anticipate that federal funding will be applied to this Agreement, the following federal contract clauses must be complied with, where applicable, in addition to the clauses already mentioned.

EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: *Provided,* That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted

construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon

contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

COMPLIANCE WITH THE CONTRACT WORK HOURS AND SAFETY STANDARDS ACT.

(1) *Overtime requirements*. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) *Violation; liability for unpaid wages; liquidated damages*. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $27 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) *Withholding for unpaid wages and liquidated damages*. The (write in the name of the Federal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) *Subcontracts*. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

CLEAN AIR ACT

(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C.§ 7401 *et seq.*

(2) The Contractor agrees to report each violation to the GOHSEP and understands and agrees that the GOHSEP will, in turn, report each violation as required to assure notification to FEMA, and the appropriate Environmental Protection Agency Regional Office.

(3) The Contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FEMA.

ENERGY POLICY AND CONSERVATION ACT

The Contractor hereby recognizes the mandatory standards and policies relating to energy efficiency which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (P.L. 94-163).

CLEAN WATER ACT

The Contractor hereby agrees to adhere to the provisions which require compliance with all applicable standards, orders, or requirements issued under Section 508 of the Clean Water Act which prohibits the use under non-exempt Federal contracts, grants or loans of facilities included on the EPA List of Violating Facilities.

FEDERAL WATER POLLUTION CONTROL ACT

(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. § 7401 *et seq.*

(2) The Contractor agrees to report each violation to the GOHSEP and understands and agrees that the GOHSEP will, in turn, report each violation as required to assure notification to the FEMA, and the appropriate Environmental Protection Agency Regional Office.

(3) The Contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FEMA.

SUSPENSION AND DEBARMENT

(1) This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such, the contractor is required to verify that none of the contractor's principals (defined at 2 C.F.R. § 180.995) or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935).

(2) The contractor must comply with 2 C.F.R. pt. 180, subpart C and2 C.F.R. pt. 3000, subpart C, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.

(3) This certification is a material representation of fact relied upon by (**insert name of recipient/subrecipient/applicant**). If it is later determined that the contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in addition to remedies available to (**insert name of recipient/subrecipient/applicant**), the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.

(4) The bidder or proposer agrees to comply with the requirements of2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

BYRD ANTI-LOBBYING ACT

The Contractor will be expected to comply with Federal statutes required in the Anti-Lobbying Act.

Contractors who apply or bid for an award shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any Agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient.

PROCUREMENT OF RECOVERED MATERIALS

In the performance of this Contract, the Contractor shall make maximum use of products containing recovered materials that are EPA-designated items unless the product cannot be acquired—

i. Competitively within a timeframe providing for compliance with the Contract performance schedule;

ii. Meeting Contract performance requirements; or

iii. At a reasonable price.

Information about this requirement, along with the list of EPA-designate items, is available at EPA's Comprehensive Procurement Guidelines web site, https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program.

CONTRACTING WITH SMALL AND MINORITY BUSINESSES, WOMEN'S BUSINESS ENTERPRISES, AND LABOR SURPLUS AREA FIRMS.

(a) Any party to this contract must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. These steps are required for the hiring of any subcontractors under this contract.

(b) Affirmative steps must include:

(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;

(4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and

(5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT.

Any procurement of telecommunications and video surveillance services or equipment must comply with the provisions of 2. C.F.R. §200.216.

DOMESTIC PREFERENCES FOR PROCUREMENTS.

As appropriate and to the extent consistent with law, the parties should, to the greatest extent practicable, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.

ACCESS TO RECORDS

The following access to records requirements apply to this contract:

(1) The Contractor agrees to provide (insert name of state agency or local or Indian tribal government), (insert name of recipient), the FEMA Administrator, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions.

(2) The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

(3) The Contractor agrees to provide the FEMA Administrator or his authorized representatives access to construction or other work sites pertaining to the work being completed under the contract.

(4) In compliance with the Disaster Recovery Act of 2018, the (write in name of the non-federal entity) and the Contractor acknowledge and agree that no language in this contract is intended to prohibit audits or internal reviews by the FEMA Administrator or the Comptroller General of the United States.

DHS SEAL, LOGO, AND FLAGS

The contractor shall not use the DHS seal(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials without specific FEMA pre-approval.

COMPLIANCE WITH FEDERAL EXECUTIVE ORDERS

This is an acknowledgement that FEMA financial assistance will be used to fund the Contract only. The Contractor will comply will all applicable federal law, regulations, executive orders, FEMA policies, procedures, and directives.

NO OBLIGATION BY THE FEDERAL GOVERNMENT

The Federal Government is not a party to this Contract and is not subject to any obligations or liabilities to the non-Federal entity, Contractor, or any other party pertaining to any matter resulting from the Contract.

PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS

The Contractor acknowledges that 31 U.S.C. Chap. 38 (Administrative Remedies for False Claims and Statements) applies to the Contractor's actions pertaining to this contract.

END OF SECTION 00730

SECTION 00 730.A

SPECIAL CONDITIONS FOR FEMA CONTRACTS

These special conditions are for use on designated City construction projects that have FEMA Public Assistance funding.

1. TERMINATION FOR CAUSE. City and Contractor shall each have the right to terminate this Agreement for cause, effective immediately upon the giving of written notice to the other party of its intent to terminate and the reasons therefore. If the termination for cause is subsequently challenged in a court of law and if the challenging party prevails, the termination for cause shall be deemed to be a termination for convenience and shall be effective thirty (30) days from the date that the original written notice of termination for cause was given to the challenging party and no further notice shall be required.

2. TERMINATION FOR CONVENIENCE. City shall have the right to terminate this Agreement without cause by giving the Contractor written notice of its intent to terminate at least thirty (30) days prior to the date of termination. In the event City elects to terminate for convenience, City shall be obligated to pay Contractor only for those Services performed up to and through the date of termination.

3. RECORDS RETENTION AND ACCESS:

    a. The Contractor shall grant the City, the State of Louisiana, the Federal Emergency Management Agency, the Comptroller General of the United States, or any of their duly authorized representatives, access to any books, documents, papers, and records of the contractor which are pertinent to this contract for the purpose of making audit, examination, excerpts, and

    b. The Contractor shall retain all required records for five (5) years or until such time as the State of Louisiana or the City of New Orleans make final payments and all other pending matters related to the contract are closed.

4. COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS: As applicable, the Contractor shall comply with each of the following, all of which are incorporated herein by reference.

    a. Executive Order 11246 of September 24, 1965, entitled "Equal Employment Opportunity," as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR chapter 60),

    b. The Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3);

    c. Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327–330) as supplemented by Department of Labor regulations (29 CFR Part 5);

    d. Standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR part 15);

    e. Mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94–163, 89 Stat. 871)

f. Unless duly suspended or revoked, the Davis-Bacon Act (40 U.S.C. 276a to 276a-7) as supplemented by Department of Labor regulations (29 CFR Part 5).

g. Any and all applicable requirements as required by Federal Uniform Administrative Requirements (as formally codified in the 2004 edition 44 CFR Part 13).

5. NOTICES: Except as otherwise provided, this contract contains no requirements pertaining to reporting, patent rights, copyrights, or rights in data.

6. DEBARMENT, SUSPENSION, AND INELIGIBILITY: The Contractor represents and warrants that it and its sub-recipients are not debarred, suspended, or placed in ineligibility status under the provisions of 24 CFR 24 (government debarment and suspension regulations).

7. REMEDIES AND SANCTIONS AGAINST CONTRACTOR DEFAULT: The City retains all rights and recourse under Louisiana law to enforce this contract or recover damages in connection with any Contractor breach or violation hereof.

8. PROJECT CONDITIONS: The following conditions and mitigation measures must be met as part of the implementation of the project. Failure to comply with these conditions and mitigation measures will jeopardize funding for this Project. The Contractor and its subcontractors (collectively referred to below as "Contractor") must:

    a) Follow applicable state, territory, tribal, and local permitting requirements for construction;

    b) Control fugitive dust from earth moving activities, storage piles, disturbed surface areas, unpaved areas and other construction related activities using one or more of the following measures: watering, coverings, wind fencing, covering of haul beds, wheel washers, vegetation, restricted site access, and/or street sweeping;

    c) Enclose or water down exposed dirt storage piles;

    d) Minimize the disturbed area and preserve vegetation to the maximum extent possible;

    e) Maintain topsoil whenever possible;

    f) Prepare and maintain a Storm Water Pollution Prevention Plan (SWPPP), which describes in specific details the Contractor's program to prevent contamination of the storm water collection system for this project. The SWPPP that is consistent with the Municipal Separate Storm Sewer System (MS4) Permit for the Orleans Parish area and the Contractor will be required to take every reasonable precaution to prevent fuels, oils, asphalts, concrete, chemical, and other harmful materials from entering the drainage system and/or ground water table in accordance with the Section C204 of the DPW General Specifications. Storm Water Control Measures (SCMs) may include storm drain system protection, spill prevention, and clean-up, employee training, project site housekeeping, and temporary erosion controls. Contractor must dispose of residue from dust collectors, concrete mixers, vehicles wash racks, and entrance/exits debris in an approved disposal facility;

    g) Establish stabilized construction entrances/exits (e.g. large crushed rocks, stone pads, steel wash racks, hose-down systems, and pads);

    h) Perform the Work primarily between 7:00am and 5:00pm, Monday through Friday. Contractor will be required to conform to noise level restrictions as established in Section

66-202 of the City of New Orleans Municipal Code (50-75 dBA, depending on the zoning of the area). All construction machinery and vehicles shall be equipped with practical sound muffling devices and operated in a manner to cause the least noise, consistent with efficient performance of work. Activities near noise and vibration sensitive areas such as churches, hospitals, and schools will be minimized as much as practically possible.

i) Ensure adequate maintenance of equipment, including proper engine maintenance, adequate tire inflation, and proper maintenance of pollution control devices;

j) Protect existing trees and other vegetation within the construction area that may be impacted within the public right of way on a location-by-location basis. In general, the Recovery Roads Program will attempt to maintain the existing healthy canopy in place. Protective measures may include fencing and signage. Any trimming, root pruning, or removal of any tree or stump within the public right of way due to construction will be minimized as much as possible and be conducted under the supervision of a licensed arborist. Any trees removed from the construction site within the public right of way will be relocated if possible to an area in close proximity to the project site. Trenching within the critical root zone of a tree of a tree will not be permitted on tree roots or within the canopy limits unless approved by Parks & Parkways. The Contractor will seed and fertilize any existing vegetation or cover disturbed by construction activities;

k) Provide at least 48 hours advance notice of any street closures and anticipated areas of low water pressure to residents and emergency response agencies;

l) Assist the City with documentation of compliance with applicable Nationwide Permit (NWP), exemption from requirements, or obtain individual permits from U.S. Army Corps of Engineers prior to construction, unless exempt by the NWP from pre-construction notification. The Contractor will assist the City in complying with all conditions of the required permit. All coordination pertaining to these activities should be documented and part of the permanent project files;

m) Take care to ensure that any potentially hazardous or toxic materials used for, generated, or encountered during pressure washing, cleaning, or any other construction activities, do not impact groundwater, waterways, wetlands, or nearby stormwater conveyance systems. Contractor must ensure that potentially hazardous and toxic wastes generated or encountered during these processes are isolated, contained, and disposed of in an approved manner. This condition includes petroleum products and by-products use in machinery and equipment. The Contractor shall assist the City in complying with all relative rules of the Clean Water Act (CWA). No activity performed should have any impact on waters of the state;

n) Initiate appropriate measures for the proper assessment, remediation, management, and disposal of any contamination discovered in the course of construction activities in accordance with applicable federal, state, and local regulations. The Contractor is required to take appropriate actions to prevent, minimize, and control the spill of hazardous materials at the proposed site;

o) Properly handle, package, transport, and dispose of hazardous materials and/or waste in accordance with all local, state, and federal regulations, laws, and ordinances, including all Occupational Safety and Health Administration worker exposure regulations covered within 29 C.F.R. Parts 1910 and 126;

p) Undertake all work affecting the Agriculture Street Landfill Superfund Site in accordance with the Consent Decree between the City and USEPA including the Technical Abstract for Utility Operations within the Agriculture Street Landfill Superfund Site;

q) Provide a spill prevention and emergency response plan (SPERP). At a minimum, the SPERP must identify: emergency contact numbers for local, state and federal environmental and public health agencies, material safety data sheets (MSDS) for all hazardous substances, hazardous material inventory, spill prevention plan, spill response plan/emergency response plan, spill response equipment (e.g. absorbent pads, disposal containers) and reporting requirements;

r) Comply with all federal, state, and local abatement and disposal requirements under the National Emissions Standards for Hazardous Air Pollutants (NESHAP) and Louisiana Administrative Code 33:III 5151, if any asbestos containing materials (ACM) and/or other hazardous materials are found during remediation or repair/replacement activities. Demolition activities related to possible asbestos-containing materials (PACM) must be inspected for ACM/PACM where it is safe to do so. Should ACM be present, the Contractor is responsible for ensuring proper disposal in accordance with the previously referenced administrative orders. Regardless of the asbestos content, the Contractor is responsible for ensuring that all renovation or demolition activities are coordinated with the LDEQ to the extent required prior to initiating work. All documentation pertaining to these activities and Contractor's compliance with any conditions should be forwarded to the City for inclusion in the permanent project files;

s) Dispose of any unusable equipment, debris, and material in an approved manner and location. The Contractor must handle, manage, and dispose of petroleum products, hazardous materials, and/or toxic waste in accordance with all local, state, and federal agency requirements. All coordination pertaining to these activities should be documented and copies forwarded to the City as part of the permanent project files;

t) Maintain, secure, and protect any staging area, containers, or bins set up for construction purposes. The storage of any equipment or materials will not be permitted immediately adjacent to canals or other water bodies, trees, transportation or utility servitudes, or private property without prior approval from the respective owner or regulatory agency. The Contractor must ensure all equipment arriving at or departing from the construction limits remains clean and to take any necessary measures to ensure foreign materials or debris is not tracked or deposited on opened streets or outside the construction site limits. The Contractor will also be required to store and handle any fuels or other hazardous material in accordance with OSHA requirements, and ensure any such materials required at a construction site be adequately secured and protected at all times;

u) Ensure compliance with all local, state, and federal requirements related to sediment control, disposal of solid waste, control and containment of spills, and discharge of surface runoff and stormwater from the site in order to minimize indirect impacts (erosion, sedimentation, dust, and other construction-related disturbances) to nearby waters of the U.S. and surrounding drainage areas. All documentation pertaining to these activities and Contractor compliance with any conditions should be forwarded to the City for inclusion in the permanent project files;

v) Ensure that best management practices are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to prevent erosion and sedimentation to ensure that wetlands are not adversely impacted per the clean water act and executive order 11990;

w) Assist the City in complying with all conditions and documentation requirements of the required Coastal Use Permit (CUP);

x) Coordinate with the appropriate local levee district(s) and USACE would be required for work within 1,500 feet of Mississippi River levees and/or within 300 feet of hurricane protection levees. The City and SWBNO are responsible for obtaining any required permits from these districts and following any conditions imposed;

y) Avoid engaging in construction activities within 660 feet of a bald or golden eagle nest during nesting and fledging where there is no visual buffer or 330 feet where there is a visual buffer, as nesting eagles are quite sensitive to human activities during these times;

z) No project may be built to a floodplain management standard that is less protective than what the community has adopted in local ordinances through their participation in the NFIP. FEMA PA-funded projects carried out in the floodplain must be coordinated with the local floodplain administrator for a floodplain development permit prior to the undertaking, and the action must be carried out in compliance with relevant, applicable, and required local codes and standards and thereby, will reduce the risk of future flood loss, minimize the impacts of floods on safety, health, and welfare, and preserve and possibly restore beneficial floodplain values as required by E.O. 11988. Coordination pertaining to these activities and Subgrantee compliance with any conditions should be documented and copies forwarded to the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) and FEMA for inclusion in the permanent project files;

aa) Minimize any adverse effects in accordance with FEMA's minimization standards in 44 C.F.R. § 9.11, which includes (a) potential harm to lives and the investment at risk from the base flood, or, in the case of critical actions, from the 500-year flood; (b) potential adverse impacts the construction action many have on others; and (c) potential adverse impact the construction action may have on floodplain and wetland values. Treatment measures would be required to reduce adverse impacts below the level of significance;

bb) Louisiana law (Part VII of Chapter 8 of Title 40, and the sections as R.S. 40:1749.11 to 40:1749.26) requires excavators and demolishers to call a regional notification center prior to beginning work. Prior to any excavation or demolition, each excavator or demolisher, including cable television owners or operators, shall serve telephonic notice of the intent to excavate or demolish to the regional notification center serving the area in which the proposed excavation or demolition is to take place. Such notice shall be given to the notification center at least 96 hours, but not more than 120 hours (excluding weekends and holidays) prior to the commencement of any excavation or demolition activity. See entire laws at www.laonecall.com or call 1-800-272-3020 for more information;

cc) Obtain and/or comply with all federal, state and local permits, ordinances and/or requirements for the collection, handling, storage, transportation and disposal of any medical, hazardous, biological, radiological, pharmaceutical or toxic related waste or debris. Equipment such as ice machines, refrigerators, generators, air conditioning units, computers, and televisions may contain chlorofluorocarbons (CFCs), used oil, diesel and other petroleum products, mercury switches, used oil filters, fuel filters, and batteries. The Contractor shall handle, manage, and dispose of damaged materials and equipment that may be hazardous waste, universal waste, and hazardous materials in accordance with the requirements of local, state, and federal regulations;

dd) If the Project results in a discharge to waters of the state, the Contractor may be required to submit a Louisiana Pollutant Discharge Elimination System (LPDES) application;

ee) Transport all waste via an entity maintaining a current "waste hauler permit" specifically for the waste being transported, as required by Louisiana Department of Transportation and Development (DOTD), LDEQ, and other regulations;

ff) Dispose of demolition debris in accordance with all federal, state, and local laws, regulations, and rules. Prior to disposal, the Contractor must identify and provide to the City the waste disposal site, including the complete name, location, telephone number, and contact person of the facility. Due to the presence of the Agriculture Street Landfill Superfund site and the potentially hazardous nature of material to be removed from the site, all construction and demolition debris must be disposed in a Type I Industrial Landfill. The disposal facility must be permitted by the State of Louisiana Department of Environmental Quality Permit Support Division to receive Regulated Asbestos Containing Material. Waste must be packaged, labeled, manifested, and transported in accordance with LDEQ regulations and requirements. Further, the Contractor must comply with Best Management Practices for Demolition, Construction, and Renovation Sites Under Five Acres:

gg) Ensure that all construction and closure work must be done using qualified personnel trained in the proper use of construction equipment, including all appropriate safety precautions, in order to minimize worker and public health and safety risks from project construction and closure. Additionally, Contractor must conduct all activities in a safe manner in accordance with the standards specified in OSHA regulations;

hh) Erect appropriate signage and barriers prior to construction activities in order to alert pedestrians and motorists of project activities and traffic pattern changes. The Contractor will implement traffic control measures, as necessary. This shall include ensuring that the City's 24-hour emergency contact information is visible;

ii) Maintain construction site perimeter fencing where possible;

jj) Take all reasonable precautions to control construction site access during project implementation, including posting appropriate signage and fencing, where possible, to minimize foreseeable potential public safety concerns. All activities shall be conducted in a safe manner in accordance with OSHA work zone traffic safety requirements. Truck and equipment routes must be kept free of construction debris;

kk) Implement all traffic controls and warnings in accordance with the Manual of Uniform Traffic Control Devices, including placing signs and signals in advance of construction activities in order to alert pedestrians and motorists of the upcoming work and traffic pattern changes. Contractor is responsible for compliance with Section C129, Temporary Signs, Barricades Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety;

ll) If in an area where archaeological monitoring is deemed necessary, then contractors are responsible for notifying the City Archaeologist of construction schedules on chosen segments (see Appendix A, JIRR Archaeological Map). If the project is within the highlighted area on the map then archaeological monitoring is probably necessary. An archaeological monitor must be on site for excavation of water, sewer, and drain lines on these projects. Segments adjacent to cemeteries may also need a monitor even if excavation does not reach the depths of the aforementioned utility lines. Segments of the projects are a dynamic entity and the list is subject to change; If you have a utility line within the Archaeological Sensitive Area on the map and it is not on the list, contact the CNO Archaeologist for clarification:

CNO Archaeologist
Michael Godzinski
Cell (504)655-3679
Office (504)658-8632
Michael.Godzinski@nola.gov

Monitoring below grade demolition/construction activities is necessary in areas sensitive for archaeology, as defined by the Abbreviated Consultation Process (ACP). Projects that have sewer/water line replacement or full reconstruction have been flagged for monitoring when they overlap with the sensitive areas or are near cemeteries. When monitoring is necessary, the CNO Archaeologist will watch the excavations and occasionally will need to look closer at the soil. We will be looking for archaeological artifacts and features. An artifact is any item that has a cultural origin, i.e., manufactured by a human. This even includes bricks, which are everywhere in this city. But work will not be stopped to look at a brick unless it is attached to many other bricks (aka, articulated). For federally subsidized projects there is a cutoff date of fifty years of age to assess the significance of artifacts in their cultural context. However, for the purposes of the JIRR projects, that cutoff date has been set at the colonial period, which ended 215 years ago with the Louisiana Purchase. So the CNO archaeologist will be looking for these items that were generally deposited before the road grid was constructed. The great majority of deposits found will date to post-1803, however, many items of later origin will still need to be looked at to identify them as a later artifact or cluster of artifacts. Clusters of artifacts are generally defined as middens. Later artifacts or middens may still be recorded but no further excavation other than to do a brief documentation of the deposit will be undertaken and construction will be allowed to proceed with only a few minutes to determine that the artifacts are too new for further assessment.

If brick, wood, or stone is encountered, there will be a need to investigate these items to see if they are part of intact archaeological features. Features are clusters of artifacts arranged in a meaningful way, such as a pit dug and filled with trash or a foundation of a building. In the great majority of instances that these items are encountered they will be out of place and not part of some intact feature. This will be especially true in road right-of-ways where numerous excavations have taken place over the years. Because the street grids are approximately 75 to 200 years old or older, any foundations that are discovered in the street must predate the grid and could be colonial.

Observations of artifacts and features during utility work will necessitate a short break in digging. Most breaks from digging will only be for 30 seconds up to 5 minutes. When an intact feature or midden is found that dates to after 1803, then the recordation of that could take as much as a half hour to a couple hours. The archaeologist will need to enter the excavation area and observe/excavate the artifacts/feature. Sometimes the machine excavating will need to be employed to clear areas around the discovery. This need for a machine only takes a few minutes at a time. During this time, if digging proceeds in another area of the construction site (as is allowed in the ACP, pg. 11), then another monitor needs to be present.

If a midden or feature is found that predates the 1803 end of the colonial period, then longer stoppage times will be necessary. A full excavation of the midden or feature will likely be necessary, but first enough must be excavated to assess the National Register of Historic Places (NRHP) eligibility of the deposit. In order for the discovery to be NRHP eligible it has to be able to yield information important

to the interpretation of New Orleans history and possess the quality of integrity (36CFR 60.4 [d]). The NRHP eligibility of the deposit will be assessed in consultation with FEMA, SHPO, Tribes, and GOHSEP. Even if a pre-1803 deposit is found, the integrity of this deposit is likely to have been compromised. In other words, being in a street right-of-way may indicate that the numerous excavations for utilities over the years has disturbed the archaeological deposit, thus diminishing its significance.

Archaeology is about the relationships of artifacts to their surroundings; context is everything. Even if it is a cool arrowhead or liquor bottle from ca. 1700, if it is in a disturbed context it has little value to yield information important to history. The arrowhead has to be in a context with other items from the Native American encampment or village; things like the refuse from the food they ate and other discarded items tell the story of the people who left them. Similarly, the liquor bottle in and of itself is cool, but will not stop work unless it is in an intact context with other items that can give us a snapshot of how people were living during a certain period. That having been said, it will be a rare case indeed where intact deposits are found that predate the Louisiana Purchase.

If those prehistoric/colonial period deposits are found, work in that particular segment could be stopped for a few days or more depending on the discovery. Because the area being assessed is necessarily limited by the expanse of the excavation for a utility line, the NRHP assessment will be limited to small strips and pockets of important archaeological deposits. This limitation will make for a speedy recovery of the archaeological deposit and should keep that segment of the project from being delayed for more than a few days. In many of these rare cases, the amount of excavation necessary to make an NRHP evaluation will be enough to "clear" the right-of-way for construction. Therefore, in many cases, the NRHP evaluation process (with FEMA and the tribes, etc) will be moot as the deposits will have already been excavated, at least to the point that the utility line can be implemented without creating a problem for the archaeology.

Perhaps more likely than intact prehistoric or colonial deposits will be the discovery of human remains near one of the cemeteries. The ACP explains under Appendix 4. If human bone or unmarked grave(s) are present within the project area, compliance with the Louisiana Unmarked Human Burial Sites Preservation Act (R.S. 8:671 et seq.) is required. All work in the vicinity must cease immediately and contractors will take all measures to protect such remains. The CNO Archaeologist or the archaeological contractor will notify FEMA EHP and the Louisiana Division of Archaeology as soon as is feasible, but must notify NOPD immediately. The CNO coroner's office via NOPD shall be notified immediately so that the burial is ruled out as a recent crime scene. As in any discovery of archaeological remains on a JIRR project (whether it is a prehistoric site or a site from 1965), the contractors and the CNO can always avoid the discovery by burying it in place and redesigning the construction to avoid these deposits. Many times this is an easy avoidance in the field and the pipes can be placed over the items in question. But if they cannot be avoided then excavation and possibly consultation will be necessary.

Segments/city blocks to be monitored for this project are:

[List Segments]

For projects where an archaeological monitor is not necessary: If archaeological artifacts (prehistoric or historic) are discovered during the course of work, the Contractor must stop work in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. The Contractor will not proceed with work until the City Archaeologist is called;

Applicable if human bone or unmarked grave(s) are discovered within the project area. Assist the City in complying with the Louisiana Unmarked Human Burial Sites Preservation Act (R.S. 8:671 et seq.) is required. The City shall notify the law enforcement agency of the jurisdiction where the remains are located within twenty-four (24) hours of the discovery. The City shall also notify FEMA and the Louisiana Division of Archaeology at 225-342-8170 within seventy-two (72) hours of the discovery.

mm) If the project results in a discharge of wastewater to an existing wastewater treatment system, Contractor may need to modify its LPDES permit before accepting the additional wastewater that wastewater treatment system;

nn) Observe all precautions to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one acre. It is recommended that the Contractor contact the LDEQ Water Permits Division at (225) 219-9371 to determine if the proposed project requires a permit.

oo) Obtain a Sewage Sludge and Biosolids Use or Disposal Permit if the project will include a sanitary wastewater treatment facility. An application or Notice of Intent will be required if the sludge management practice includes preparing biosolids for land application or preparing sewage sludge to be hauled to a landfill. Additional information may be obtained on the LDEQ website at http://www.deq.louisiana.gov/portal/tabid/ 2296/Default.aspx or by contacting the LDEQ Water Permits Division at (225) 219- 9371;

pp) Observe all precautions in order to protect the groundwater of the region;

qq) *Applicable if your water system improvements include water softeners*. Contact the LDEQ Water Permits to determine if special water quality-based limitations will be necessary, as water softeners generate wastewaters that may require special limitations depending on local water quality considerations;

rr) Notify the LDEQ's Single-Point-of-Contact (SPOC) at (225) 219-3640 if any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project. Additionally, precautions should be taken to protect workers from these hazardous constituents;

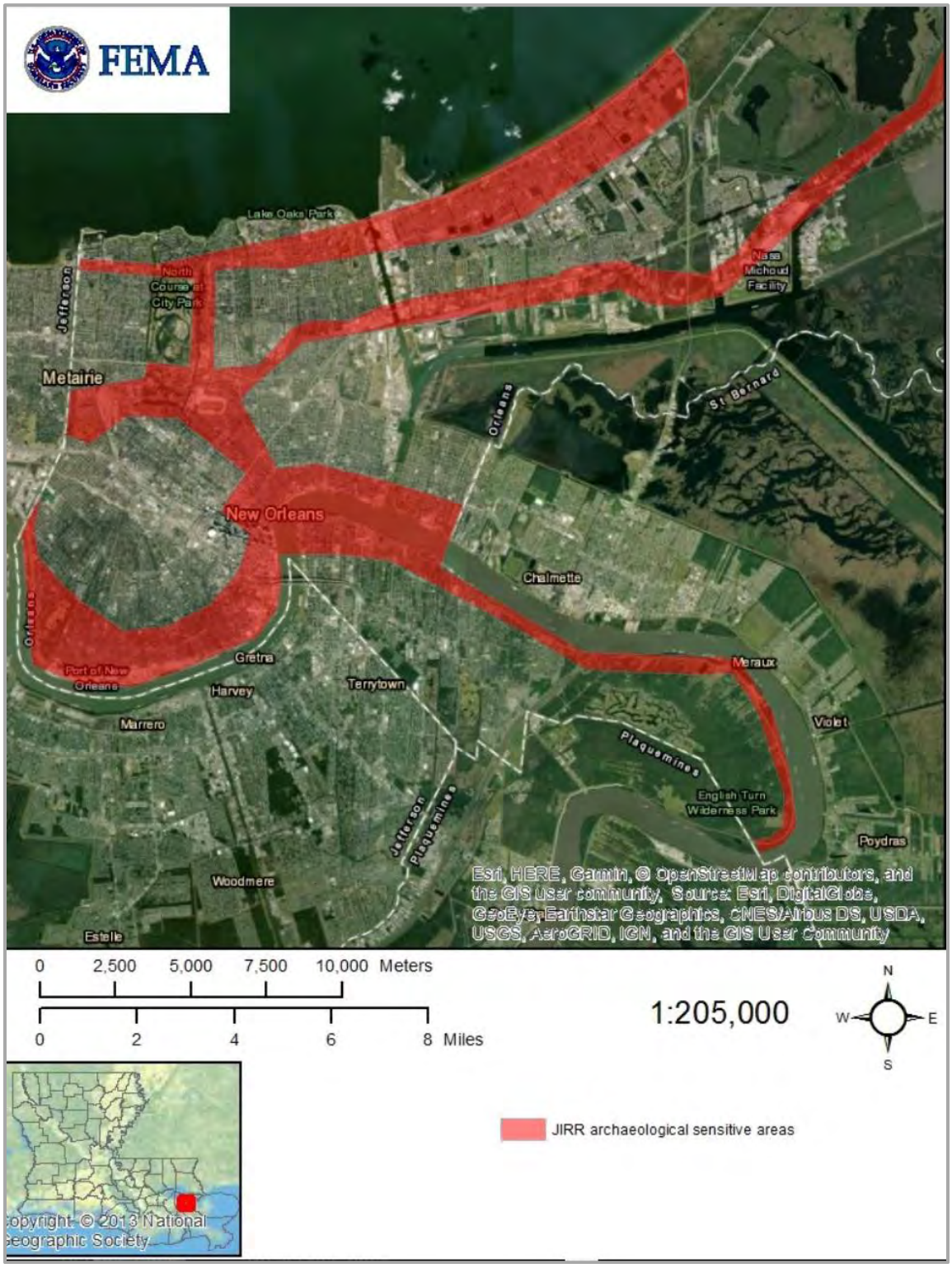
ss) Any renovation or remodeling must comply with LAC 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions.

tt) *Applicable if project is located within a National Register Historic District, or is either within or adjacent to a National Historic Landmark.* Through the Abbreviated Consultation

Process (ACP), FEMA identified Character Defining Features (CDFs) in streetscapes typically found in National Register Historic Districts (NRHDs) and National Historic Landmarks (NHLs) of New Orleans. As per the ACP, the Contractor must implement the required avoidance/minimization efforts for CDFs as defined in Appendix (B). For a map of historic districts in Orleans Parish, refer to Appendix (C). For questions related to CDFs, contact the Department of Public Works' Project Manager or the City of New Orleans' Historic Preservation Specialist, Philip Gilmore at (504) 655-3902.

APPENDIX A

Map of Archaeologically Sensitive Areas (Orleans Parish)



APPENDIX B

Character Defining Features (CDFs) of streetscapes found in the National Register Historic Districts (NRHDs) and National Historic Landmark Districts (NHLs) of New Orleans; and avoidance/minimization efforts.

Protocol for Removal of Select Character Defining Features

Contractors shall give 72-hour advance notice to the CNO Historic Preservation Specialist, Engineer of Record, and DPW Construction Manager prior to removal of the following character defining features (CDF):

> Brick or stone street pavers (including driveways and driveway aprons): brick or stone parking boundaries; brick or stone crosswalks; brick or stone curbs; brick or stone open gutters; brick or stone gutter bottoms; inlaid decoration in sidewalks, footlaps, driveways, or driveway aprons; streetcar tracks or pavers; mounting blocks or steps (aka carriage steps, footbridges over open gutters); and abandoned fire hydrants.

In addition, Contractor shall clean and remove all debris from the feature prior to being photographed by the Historic Preservation Specialist.

Protocol for Removing and Resetting Street Name Tiles

An inventory of all locations, within the project footprint, containing street name tiles shall be prepared by the Engineer including photos of existing conditions. Street name tiles shall be carefully removed, when included in the scope of work, by saw cutting full depth, with a minimum distance of two inches (2") around the street name to avoid damage to the tiles. The removed concrete block(s) containing the tiles shall be marked on the bottom or sides to denote the exact corner it was removed from along with the CNO GIS designation and securely stored in a manner to prevent theft or damage. The concrete block(s) containing the tiles shall be reset in the original corner, outside of the ADA truncated mat area, in the same direction and orientation as the street.

Contractor to notify CNO DPW of any cracked and/or damaged tiles not documented in the contract documents. Failure of the Contractor to notify CNO DPW after initial walkthrough with CNO DWP, will constitute Contractor acceptance of existing tile conditions.
Any tiles installed with a substance (grout/mortar/concrete/etc.) adhered to the tile face will be considered damaged.

Typically, any street name tiles with over 25% missing/damaged tiles will be salvaged and replacement tiles will be installed. Any street name tiles not in the scope to be reset (damaged), shall be saw cut full depth, removed, and turned over to CNO DPW for salvage and restoration efforts.

NOTE: "Technically infeasible" as used in the Special Conditions (Specifications) is defined as not meeting required design criteria and/or cost reasonableness.

Contractor shall safely secure and protect street name tiles at all times, All street name tiles not reinstalled in the existing condition will result in a $ 10,000.00 damage compensation

per street name and the Contractor shall be responsible for the cost to supply and install new street name tiles.

Approved Street Name Tile material vendors are:

-Derby Pottery & Tile,
2029 Magazine St, New Orleans, LA 70130,
(504) 586-9003

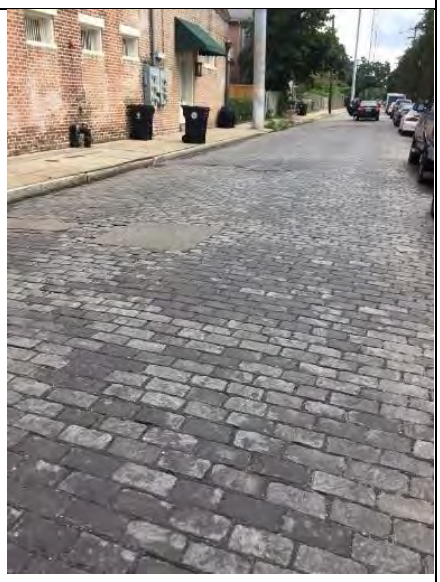
https://www.derbypottery.com/index.php?page=water-meter-clocks

- New Orleans Tile Co.

http://www.neworleanstileco.com/

Or an approved equal (by submittal).

Any historic materials and/or features damaged by the Contractor during the execution on the work, the Contractor shall be responsible for the cost of the repair (in-kind) with CNO DPW approval.

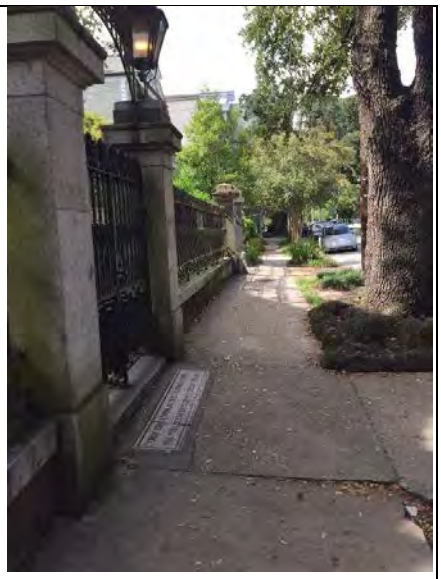
Character Defining Feature (CDF)	Avoidance/ Minimization Effort	Photograph Example and Location
Brick or stone street pavers (including driveways, driveway aprons, and crosswalks)	Retain in place except where technically infeasible. Historic materials will be reinstalled if salvageable.	 Felicity Street, between Baronne Street and Laurel Street

Brick or stone sidewalks (including footlaps)	Retain in place except where technically infeasible. Historic materials will be reinstalled if salvageable. If replacement is necessary, new materials and design will match historic.	 NE corner Milan Street and Dryades Street

		 1400 block Prytania Street
Brick or stone parking boundaries	Retain in place except where technically infeasible.	 Laurel Street, between Exposition Boulevard and Jefferson Avenue

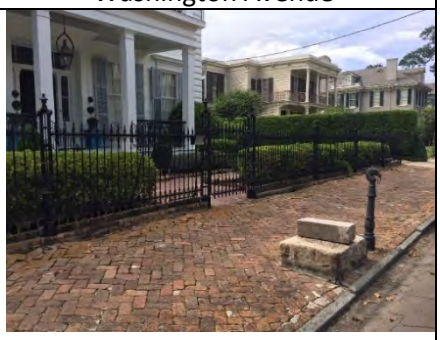
Brick or stone curbs	Retain in place except where technically infeasible. Historic materials will be reinstalled if salvageable.	 Granite curb, 800 block Taft Place Basalt curb, 100 block First Street
Distinctive concrete curbs	Retain in place except where deemed technically infeasible.	 1900 block Marengo Street
Timber curbs	No minimization measure.	 SE corner Coliseum Street and Milan Street

Brick or stone open gutters	Retain in place except where technically infeasible.	 Euterpe Street between Robert C. Blake Sr. Dr. and St. Charles Ave.
Brick or stone gutter bottoms	Retain in place except where technically infeasible.	 800 block Taft Place
Steel curb guards	Retain in place except where technically infeasible.	 SE corner Taft Place and Dumaine Street

Inlaid decoration in sidewalks, footlaps, driveways, and driveway aprons	Retain in place except where technically infeasible.	 1410 Jackson Avenue
Construction company stamped impressions in sidewalks	No minimization effort.	 (stock photo)
Utility covers	Salvage and reset or replace in-kind.	 800 block Taft Place
Catch basins and grates	Salvage and reset or replace in-kind.	 800 block Taft Place

Street name ceramic tiles	Retain in place except where technically infeasible due to ADA requirements. Historic materials will be salvaged and reinstalled in their original locations and orientation, or as close to their original locations as possible. Damaged or missing elements will be replaced with salvaged or in-kind material.	 Corner of Taft Place and Dumaine Street
House number ceramic tiles	Retain in place except where technically infeasible.	 938-940 Taft Place
Streetlights	Avoid.	 NE corner Taft Place and Dumaine Street

Streetcar catenary standards (incl. light mechanism)	Avoid.	 St. Charles Avenue and Marengo Street
Streetcar tracks and pavers	Retain in place except where technically infeasible.	 Erato Street between Magazine Street and Tchoupitoulas Street
Traffic bollards	Avoid.	 Gilmore Park, Laurel Street and State Street

Hitching posts	Avoid.	 SE corner Prytania Street and Third Street
Signage (e.g., wayfinding, historical markers)	Avoid.	 NE corner Prytania Street and Washington Avenue
Mounting blocks or steps (aka carriage steps, footbridges over open gutters)	Avoid. If removal is necessary, the feature will be temporarily moved and returned to original location. If this is technically infeasible, City will work with property owners to relocate mounting block as close to their original location as possible.	 1408 First Street

Horse troughs	Avoid.	 NE corner Hagen Avenue and Dumaine Street
Boundary markers and land monuments	Avoid.	 SE corner St. Charles Avenue and Marengo Street
Sculpture/statuary	Avoid.	 SE corner Tchoupitoulas Street and Alonzo Street

Commemorative monuments	Avoid.	 1134 First Street
Fences/walls/gates	Avoid. If not technically feasible to avoid, these features will be removed and reset in original location.	 1806 Milan Street
Two-track driveways	Avoid. If not technically feasible to avoid, this feature will be patched in-kind with similar materials and design.	 1416-1418 Marengo Street
Retainer gardens	Avoid.	 SE corner of Marengo Street and Carondelet Street

Abandoned (historic) fire hydrants	If no longer operable, disconnect and leave in place.	 NE corner Grand Route St. John Street and Moss Street
CDFs within footprint of ADA ramps	For construction of new ADA ramps, curbs, and crosswalks within a National Register listed or eligible historic district, the work shall meet the following: i. Cutting and removal of historic materials is limited to the footprint of the proposed ramp; ii. Historic materials are re-used if feasible; iii. New paving materials match the physical characteristics of the historic materials (size, configuration, color, texture, and material type); i.v. Truncated dome mats will be neutral in color to the extent consistent with ADA requirements; and v. Character-defining identification or wayfinding features (e.g., signage, street tiles, historical markers), shall be salvaged and reinstalled in their original locations and orientation, or as close to their original locations as possible. Damaged or missing elements will be replaced with salvaged or in-kind materials.	 SW corner Taft Place and Dumaine Street SE corner Hagen Avenue and Dumaine Street

APPENDIX C

Map of historic areas (Orleans Parish).

END OF SECTION 00730

SECTION 01 200

SPECIAL PROVISIONS

PART I **SPECIAL PROVISIONS**

SECTION 1.01 General Specifications and Intent of Contract

SECTION 1.02 Scope of Work

SECTION 1.03 Special Project Requirements

SECTION 1.04 Interpretation of Documents

SECTION 1.05 Special Safety Precautions

SECTION 1.06 Safety and Health Regulations

SECTION 1.07 Safety Protection & Security

SECTION 1.08 Coordination with Utility Companies

SECTION 1.09 Cooperation with Utilities

SECTION 1.10 Aboveground Utilities

SECTION 1.11 Existing Underground and Other Installations

SECTION 1.12 Utilities Exploration

SECTION 1.13 Security

SECTION 1.14 Temporary Utilities

SECTION 1.15 Inclement Weather Days

SECTION 1.16 As-Built Drawings

SECTION 1.17 Progress Meetings & Schedule Requirements

SECTION 1.18 Pre-Construction Video Surveys

SECTION 1.19 Contractor Progress Payment Invoicing and Documentation

SECTION 1.20 Sequence of Construction

SECTION 1.21 Sewer System Evaluation and Rehabilitation Program Requirements

SECTION 1.22 Water Point Repairs

SECTION 1.23 Contract Task Orders

SECTION 1.24 Procore Collaboration Software

SECTION 1.25 Environmental Protection & Storm Water Pollution Prevention

PART II **SUPPLEMENTAL TECHNICAL SPECIFICATIONS**

SECTION 2.01 Removal of Existing Pavement

SECTION 2.02 Curbs or Curb and Gutter Bottoms

SECTION 2.03 Removal of Existing Sidewalks, Driveways, and Footlaps

SECTION 2.04 Excavation

SECTION 2.05 Construction Routing and Maintenance

SECTION 2.06 Sheeting and Bracing

SECTION 2.07 Sanitary Sewer System Rehabilitation
SECTION 2.08 Gravity Sewer Pipebursting
SECTION 2.09 Pre- and Post-Rehabilitation CCTV Inspection and Cleaning
SECTION 2.10 Sanitary Sewer Manhole Rehabilitation
SECTION 2.11 Cured in Place Pipe Lining
SECTION 2.12 Water Point Repairs
SECTION 2.13 Geotextile for Stabilization
SECTION 2.14 Geogrid
SECTION 2.15 Vibrations Due to Construction Activities
SECTION 2.16 Superpave Asphaltic Concrete Requirements
SECTION 2.17 Interim Asphalt Pavement
SECTION 2.18 Base Course

PART III **SPECIAL ITEMS**

SECTION 3.01 Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety
SECTION 3.02 Mobilization
SECTION 3.03 Clearing and Grubbing and Disposal of Materials
SECTION 3.04 Construction Layout
SECTION 3.05 Traffic Control Plan
SECTION 3.06 Saw Cutting (Sidewalk, Driveway and Curbs)
SECTION 3.07 Pavement Saw Cutting Adjacent to Existing Pavement and at Patches and Utility Trenches
SECTION 3.08 Removal of ADA-Accessible Ramps, Curb and Gutter, and Concrete Sidewalk at intersections including saw cutting
SECTION 3.09 ADA-Accessible Ramps, Curb and Gutter, and Concrete Sidewalk at intersections
SECTION 3.10 Driveways and Sidewalks (Special Finish)
SECTION 3.11 Sidewalk Transition Adjacent to ADA-Accessible Curb Ramp Areas
SECTION 3.12 ADA-Accessible Curb Ramp Retrofit
SECTION 3.13 Concrete Pavement (8” Thick)
SECTION 3.14 Root Pruning, Tree Protection, Landscaping, and Sidewalk Gravel Bed
SECTION 3.15 Granular Material and Fill Material
SECTION 3.16 Catch Basin and Manhole Repairs and Vertical Adjustments

SECTION 3.17 Drain Line Repairs / Replacement
SECTION 3.18 Timber Curb
SECTION 3.19 Type-A Dead End Installation
SECTION 3.20 Concrete Barrier or Mountable Curb with Laying Strip
SECTION 3.21 Project Sign
SECTION 3.22 Non-Standard Sewer Rehabilitation Items
SECTION 3.23 Non-Standard Water Point Repair Items
SECTION 3.24 Well Point System
SECTION 3.25 Pre and Post Rehabilitation CCTV Inspection and Cleaning Drain Structure(s)
SECTION 3.26 Waterline Pipe Bursting
SECTION 3.27 Non-Standard Bid Items

PART I - SPECIAL PROVISIONS

SECTION 1.01 - GENERAL SPECIFICATIONS AND INTENT OF CONTRACT

A. The General Specifications entitled, "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, 2015 Edition (adopted 11/5/2015), shall be the General Specifications for this Contract and shall govern except as otherwise revised or supplemented by the provisions contained in these Special Specifications. The City Standard Drawings shall apply except as revised or supplemented by the project specific Construction Plans. In the event of discrepancy or conflict in provisions of the various contract documents, precedence shall be given to the provisions as contained in the document which appears first in the following list: Proposal, Construction Specifications, Construction Plans, General Specifications and Standard Plans for Street Paving, Sewerage and Water Board General Specifications and Standard Drawings, 2006 Edition LaDOTD Standard Specifications for Roads and Bridges. In the event of discrepancy or conflict in provisions of these Construction Specifications then precedence shall be given to the requirements of the Proposal, then to the Special Items.

B. The Sewerage and Water Board of New Orleans General Specifications, General Notes (DWG. NO. 7260-S, 7260-W, and 7260-D) and Standard Drawings, shall govern for the construction of all sewer, water, and drainage systems except as otherwise approved by the properly authorized officer of the Sewerage and Water Board. All sewer, water, and drainage work when complete, must be inspected and accepted by the Sewerage and Water Board of New Orleans before final payment can be approved.

C. The intent of the contract is to provide performance of the work described. The Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, project specifications and terms of the contract.

D. When an item in the proposal and contract contains a choice to be made by the Contractor and of the type material to be furnished, the Contractor, before the work is initiated, shall indicate his choice in accordance with the specifications for that item. Such notification shall be submitted to the Director in writing.

E. Payment for all bid items shall include all incidental materials, labor, supervision, and equipment required for installation in place according to the plans and specifications or as directed by the Director.

F. There shall be no direct pay for any work that is not listed in the bid proposal but is required to complete the construction of this project in accordance with the project plans and specifications. All costs thereof shall be included in the bid price of other items.

G. Prior to bidding, the Contractor is to examine the contract documents and visit the site to determine the extent of the work. Should the Contractor have any doubts or questions regarding Pay Items, he should, before submitting his bid, contact the Department of Finance, Purchasing Bureau.

H. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used and interpretation of these Specifications shall be made upon that basis.

I. The Director reserves the right to accept or reject any and all bids. The Director reserves the

right to reduce, delete or increase the quantity of any item in the proposal.

J. Section C121.01 of the General Specifications for Street Paving, 2015 Edition shall be amended to include the following language:
"The contractor shall not sublet any portion of the contract, excluding material, without the prior written consent and approval of the Director, including work sublet to an authorized Disadvantaged Business Enterprise. If such consent is given, the contractor will be permitted to sublet a portion of the work but shall perform with the contractor's own organization work amounting to at least 50 percent of the total contract cost.
A subcontractor shall not further subcontract to a third party any portion of this authorized work, excluding material, without written consent, including work sublet to an authorized Disadvantaged Business Enterprise."

K. Section C135 Changes in the Work of the DPW 2015 General Specifications For Street Paving (2015 edition) is hereby deleted in its entirety and replaced with the following:

The Director shall have the right to make alterations in the line, grade, plan, form, or dimensions of the work herein contemplated, either before or after the commencement of the work and without notice to the sureties. If such alterations diminish the quantity of work to be done, they shall not constitute a claim for damages for anticipated profits for the work deleted.

SECTION 1.02 - SCOPE OF WORK

{ A/E to customize this section to be project specific }
Sample (dele te this text box after revising this section:

A. It is the intent of this project to install waterlines and remove and reconstruct the streets specified in the proposal.
B. Removal and reconstruction work shall be accomplished in accordance with the construction documents and shall include but is not limited to the following:
   1. Installing drainage, sewer and water main systems as shown on the plans.
   2. Removing existing pavement and excavating to as shown on the plans. Hauling and legally disposing of existing pavement and surplus materials from the project site.
   3. Constructing new concrete curbs or curbs and gutters.
   4. Constructing asphalt pavement or Portland cement concrete pavement.
   5. Replacing concrete sidewalks and driveway aprons.
   6. Constructing concrete handicap ramps at locations shown on the plans.
   7. Other work incidental to the project as shown on the plans.
C. The Director reserves the right to reduce, delete or increase the quantity of any item in the proposal.

SAMPLE

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SECTION 1.03 - SPECIAL PROJECT REQUIREMENTS

A. All utility frames, covers, and boxes shall be tilted to generally conform to the slope of the ramp or walk. Where frames, etc. fall at the edge of a ramp or slope, adjust the tilt halfway between ramp slope and original elevation and warp the surface of ramp to blend into the edge of utility frames. Covers and boxes are to be adjusted by the Contractor. Private utility frames, covers and boxes are to

be adjusted by the respective private utility company.

B. Temporary Barricades and Sidewalks: The Contractor shall provide and maintain construction fences, barricades, tree protection fencing, warning lights and temporary sidewalks as required by the Director or other authorities in approved locations affording complete protection to the public and providing security to the premises during the construction period. The Contractor shall provide all necessary items to insure pedestrian access to properties during construction. When required, flashing lights shall be installed at required locations.

C. Compliances: The Contractor shall comply with safety standards and governing regulations for cleaning operations. Waste materials shall not be burned at the site. Debris or excess materials shall not be buried on the Owner's property. Volatile or other harmful or dangerous materials shall not be discharged into drainage systems. The Contractor shall remove waste materials from the site and dispose of such waste in a lawful manner.

D. Salvageable Materials: Before the Contractor shall remove any items from the site, the Owner reserves the right to retain in his possession any demolished items that the Owner deems salvageable. All other items, after review by Owner, may be salvaged by the Contractor. All salvage materials as determined by the Director shall be delivered at the Contractor's expense to the related locations listed below and must provide forty-eight (48) hour notice to these locations before delivering the salvaged material.

1. Materials such as stone curbs, cobble stone, etc. to the Public Works/Maintenance yard at 838 South Genois Street.
2. Materials such as Traffic Control devices (signs and signals) to the DPW sign shop at 2700 Lafitte St.
3. Materials such as CB, MH frames, covers, hydrants, valves, etc. to the S&WB Central Yard at 2900 Peoples Ave.
4. Materials such as tree grates to the Department of Parks &Parkway Nursery at 2829 Gentilly Blvd.
5. Recycled asphalt product

E. The Contractor shall remove existing sidewalks, driveways, and pavement to full depth in areas shown on drawings, or as directed by project engineer, and shall take care not to damage existing pavement and existing curbing that is to remain. The use of "STOMPERS" and similar gravity equipment is prohibited in order to preserve the structural integrity of the adjacent buildings and adjoining property. All excavation is to be done from the street.

F. The Contractor shall be required to protect all adjacent properties, buildings, walls, fences, steps, etc., from damage due to demolition, removal, and construction of items required by the Contract Documents. Removal of material adjacent to adjoining structures should be done in such a manner so as not to cause damage by direct blows, vibrations, or other methods of demolition or construction. The Contractor shall promptly repair damages caused to adjacent facilities by demolition and construction operations at no cost to the property Owner or City.

G. The Contractor shall clean adjacent structures and improvements of dust, dirt and debris caused by demolition and construction operations, as directed by the Director or governing authorities. The Contractor shall return adjacent areas to condition existing prior to the start of the work.

H. The Contractor shall, before removing any signpost, etc., coordinate such removal with all of the

appropriate City agencies and companies involved. Existing signposts, light standards, and all other items penetrating the sidewalk shall be straightened and reset in accordance with the Director's requirements, at no direct payment. All traffic control devices and their associated hardware (sign, signal, conduit, and marking) removed or damaged during execution of this contract, other than as provided for in this contract, shall be replaced by the Contractor at no cost to the City.

I. No sign, or signal shall be removed without the approval of the Director. The Contractor accepts all liabilities during the time of removal. Contractor will notify the DPW Traffic Engineer in writing when controls are removed and reinstalled. All signs, signals and markings removed during construction, shall be restored and in place prior to the final inspection.

J. It shall be the responsibility of the Contractor to maintain all public roadways, sidewalks, driveways, etc. in a clean condition during the construction project. All mud, trash, debris, etc. deposited on said areas by the Contractor shall be removed daily, before the end of work or more frequently, as necessary to maintain a clean condition. The Contractor shall return adjacent areas to condition existing prior to the start of the work.

K. The Contractor shall ensure that mail and trash pickup services can be provided on a continuous basis during construction of the project. If necessary, the Contractor shall relocate or provide curb side mailboxes for use during the construction period. No direct payment will be made for this work. Any costs incurred by this work will be included in project bid items.

L. For daily work on projects the City and/or RoadworkNOLA shall provide the Contractor with a project specific "We Are Working" notification template that shall include the start and end date, not exceeding a thirty (30) day duration, and detailed scope of work to be performed. New notifications shall be distributed if the end date exceeds thirty (30) days from the time of distribution.

M. The Contractor may be allowed to work on the weekend but shall first request permission from the City no later than seventy-two (72) hours prior to beginning that work. Notification flyers, provided by the City and/or RoadworkNOLA, must be distributed at least forty-eight (48) hours before any weekend work begins in an area.

N. The Contractor shall notify the RoadworkNOLA office at least seventy-two (72) hours for all water valve closures. Water valve closures for businesses, schools/colleges/universities, and medical facilities that require specialized advanced coordination must be provided one week prior. Notification flyers, provided by the City and/or RoadworkNOLA, must be distributed at least forty-eight (48) hours before the valve closures.

O. The Louisiana Department of Health and Hospitals requires at least twenty-four (24) notification of all test valve closures. Notification flyers, provided by the City and/or RoadworkNOLA, must be distributed at least twenty-four (24) hours before the valve closures. Test valve closures for businesses, schools/colleges/universities, and medical facilities that require specialized advanced coordination must be provided 72 hours in advance.

P. The Contractor must obtain approval from the City and/or RoadworkNOLA prior to distribution of notifications and is responsible for distributing all notifications, as required above. Failure to properly notify, based on these requirements, will result in a stop work order issued.

Q. It shall be the responsibility of the Contractor to distribute and obtain all Construction

Authorization forms during the construction project. If necessary, a Construction Authorization form will be provided to the Contractor by the City. The Construction Authorization form is to be signed by the homeowner and a witness. All signed Construction Authorization forms are to be furnished to the Director prior to any work on the property listed on the Construction Authorization form. The Contractor shall return all disturbed areas to the condition existing prior to the start of the work.

R. The Contractor shall contact all utility companies prior to starting work to verify utility locations, depths of lines, etc., prior to starting demolition. Care should be taken in excavation around all utility lines. Utility service shall be maintained at all times for adjacent property owners, etc.

S. UTILITY SERVICES: Maintain existing utilities, keep in service, and protect against damage.

1. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to the governing authorities with no direct payment.

2. Note: Locations of existing utilities shown on the drawings are approximate. The Contractor shall verify their locations in the field with the appropriate agency in order to avoid conflicts and damage to utilities. Should damage occur to any existing utility lines or equipment, the Contractor shall be responsible for all cost repairs or replacements.

SECTION 1.04 - INTERPRETATION OF DOCUMENTS

No oral interpretation will be made to any bidder as to the meaning of any of the Contract Documents which in effect would modify any of the provisions of the same. Every request for an interpretation of the Documents shall be made in writing and delivered to the Director, at least seven (7) days (excluding weekends and holidays) before the time fixed for opening of bids. Any addenda shall be issued by the Director a minimum of 72 hours (excluding weekends and holidays) in advance of the time fixed for opening of bids. All bidders are requested to direct all questions about the contract documents promptly to the Director.

SECTION 1.05 - SPECIAL SAFETY PRECAUTIONS

In addition to the requirements of the General Specifications, it shall be the Contractor's responsibility to verify with the utility owners (electric, gas, telephone, communications, cable, etc., and New Orleans Sewerage and Water Board) having facilities within the project area, that the use of the Contractor's equipment (weights, configurations, characteristics, etc. provided by the Contractor) within the project area will not adversely affect their facilities.

SECTION 1.06 - SAFETY AND HEALTH REGULATIONS

The Code of Federal Regulations, Title 29, Occupational Safety and Health Administration (OSHA) shall apply. Safety and Health Provisions of the State of Louisiana shall apply where more stringent and where not covered by OSHA. The Contractor shall notify the Director within 24 hours of any reportable injury.

SECTION 1.07 - SAFETY PROTECTION & SECURITY

The Contractor shall be responsible for initiating, providing, maintaining, and supervising all safety precautions and programs in connection with the work. He shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

a. All Employees on the work and other persons who may be affected thereby,

b. All the work and all materials or equipment to be incorporated herein, whether in storage on or off the site, and

c. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, drives, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

The Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss. He shall erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for its safety and protection. He shall notify owners of adjacent utilities when prosecution of the work may affect them.

The Contractor shall develop and provide an effective safety and health plan for inspection and training required and communicates the work practices to be applied to the work site(s). The Contractor must develop and implement a comprehensive health and safety plan for his or her employees, which covers all aspects of onsite construction operations and activities associated with the contract. This plan must comply with all applicable health and safety regulations and any project-specific requirements.

The Contractor must provide a copy of this plan to the Department of Public Works prior to issue of the NTP. Acceptance of the Contractor's health and safety plan only signifies that the plan generally conforms to the requirements of the contract; it does not relieve the Contractor of the responsibility for providing employees with a safe and healthful work environment.

The Control measures outlined in the site-specific safety plan, provides each worker assigned to the job the opportunity to complete his/her task safely. Summary of this document should include but not limited to the following:

Description	Summary	Reference
Contractor Name	Self-Explanatory	29 CFR 1910-OSHA General Industry Safety and Health
Contract No.	Self-Explanatory	
Project Name	Self-Explanatory	
Responsibility and lines of Authority	Include the identification and job responsibilities of personnel responsible for safety and the lines of authority for each level of responsibilities.	
Responsible Member (Competent Person)	Designated by employer to identify hazards that are dangerous to employees	29 CFR 1926.32 (f) Section 01 200 Special Provisions, Section 1.07

General safety and health provisions	List the steps to be taken to control the hazards	29 CFR 1926.20
Safety training and education	All employees shall be trained in the recognition and avoidance or unsafe conditions, standards, to control or eliminate any hazards or other exposure	29 CFR 1926.21(B)(2)
Housekeeping	Work areas, walkway clear of debris; garbage and flammable /hazardous waste disposed, frequently and regularly	29 CFR 1926.25
Illumination	Construction areas, roadways, trenches, ditches, and storage areas where work is in progress shall be lighted with either natural or artificial illumination	29 CFR 1926.26
Personal protective equipment	Employers are to ensure all personnel wear of protective equipment in all operations where there is an exposure to hazardous conditions	29 CFR 1926.28
Site Inspection	Designated person to make frequent and regular documented inspections of the job site/sites, materials, and equipment. Provide proof of inspector's qualifications and or training certificates	29 CFR 1926.20(b)(3)
Lockout/tagout	Procedures established for unsafe equipment identified or made inoperable by tagging, locking, or removing	29 CFR 1926.20(b)(1)&(b)(2)

Representatives of the Contractor shall meet with the DPW and Engineers representative prior to the start of construction for the purpose of reviewing safety requirements and discussing implementation of all health and safety provisions pertinent to the work under the assigned contract.

The representative will review the Contractor's site-specific safety and health plan with the Contractor as well as review all required safety data sheets (SDS) submitted for proposed products to be used by the Contractor. Due to the nature of the project/contract, the Contractor may be required to provide additional written comprehensive safety and health plans for the specific contract to include but not limited to the following:

Confined Space	Entry into any Manholes,	29 CFR 1910.146

	Sewer, and Storm drains must be cleared for entry.	
Excavation and Shoring	Safe access and egress to all excavations, including ladders, steps, ramps, or other safe means of exit for employees working in trench excavations 4 feet (1.22 meters) or deeper.	29 CFR 1926 Subpart P
Lift Plan	Jobsite lifting with hydraulic excavators and backhoes is routine and lift capacity with rigging of each lift must be established.	29 CFR 1926.252 29 CFR 1926.601 29 CFR 1926.1400

Review and Acceptance of the Contractor's health and safety plan only signifies that the plan generally conforms to the requirements of the contract; it does not relieve the contractor of the responsibility for providing employees with a safe and healthful work environment.

The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Director for approval.

It shall be the Contractor's responsibility to maintain safety in the construction and maintenance zones within the project's vicinity. If the Contractor hires law enforcement during the project's duration, it shall be funded as an element in the Contractors Indirect Cost buildup presented at time of bid.

All damage, injury or loss to any property referred to in paragraphs b and c caused, directly or indirectly, in whole or in part, by the Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by the Contractor at no direct payment. The Contractor's duties and responsibilities for the safety and protection of the work shall continue until such time as all the work is completed and the Director has issued the Notice of Project Acceptance.

In emergencies affecting the safety of persons or the work or property at the site or adjacent thereto, the Contractor without special instructions or authorization from the Director, is obligated to act, at his discretion, to prevent threatened damage, injury, or loss.

The Contractor must protect and support all water, sewer, drain, and gas pipes or other conduits and buildings, walls, fences, or other properties which are liable to be damaged during the execution of his work. He shall take all reasonable and proper precautions to protect persons, animals, and vehicles of the public from injury, and shall erect and maintain a fence or railing around all excavation and place a sufficient number of warning lights about the work and keep them burning from twilight until sunrise and shall employ one or more watchmen as an additional security. He must, as far as practicable and consistent with good construction, permit access to private and public property and leave fire hydrants and catch basins free from encumbrances. He must restore, at his own expense, all injured property caused by any act of omission on his part, or on the part of his agent, including but not limited to sidewalks, curbing, pipes, conduits, sewers and other public or private property, to a condition as good as it was when he entered upon the work.

In case of failure on the part of the Contractor to restore such property or make good such damage, the City may upon forty-eight (48) hours' notice proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary, and the cost thereof, will be deducted from any monies due, or which may become due, under this contract.

Safety is the responsibility of the Contractor. There will be no direct payment for erecting and maintaining a fence or railing around excavations, placing warning lights and providing watchmen and supporting and protecting utilities as prescribed herein and the cost thereof shall be included in the prices bid for pay items in the Contract. There will be no direct payment for providing and supervising all safety precautions and programs in connection with the work and the cost thereof shall be included in the prices bid for pay items in the contract.

SECTION 1.08 - COORDINATION WITH UTILITY COMPANIES

A. All utility companies, including the Sewerage and Water Board, shall be contacted three working days prior to starting work to verify utility locations, depth of lines, etc., prior to starting demolition.

B. Contractor is responsible for contacting all utility companies so the utility companies can coordinate their efforts to move into the area to make whatever revisions they have to make to their utility installation.

C. Care shall be taken in excavation around all utility lines. Utility service shall be maintained at all times for adjacent property owners.

D. The Contractor shall notify the electric, gas, telephone, communications, and cable utility companies, utility owners, etc., three working days in advance of digging near or across their conduits or buried cables.

E. The Sewerage and Water Board must be notified three working days in advance of laying sewer and water lines called for in this contract.

F. Damage that may occur to any utility shall be repaired and paid for by the Contractor, except as noted to be paid for as a Bid Item.

G. The Contractor shall notify Entergy, S&WB and all other utility companies before any demolition takes place. The utility companies and the Contractor's representative should open all covers in the area and inspect and note any damage to frames, lines, manhole walls, etc. Any additional damage that occurs during demolition shall be repaired at the Contractor's expense. The utility companies have the option of repairing items and back charge the Contractor for such repairs.

H. UTILITY SERVICE: Maintain existing utilities, keep in service, and protect against damage during demolition operations.

Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to the governing authorities.

The Contractor is hereby cautioned that many of the underground utility pipes, lines, conduits,

cables, etc., are located immediately below the existing grade. Location and elevation of all utility lines have been established based on information furnished to the Engineers by the respective utility companies. However, location and depth of utility lines may vary from those shown on the Plans and Profiles.

The Contractor shall be required to provide property owners a minimum forty-eight (48) hours advanced notice for any foreseen or planned interruption of utility service(s).

SECTION 1.09 - COOPERATION WITH UTILITIES

A. The Contractor shall cooperate with officials of utility companies to avoid delays in completion of work due to non-removal or non-adjustment of utilities.

B. Some utility facilities will be removed, relocated, or adjusted in accordance with agreements between the City and utility companies. Such work may be underway concurrently with the Contractor's work and within construction limits covered by this contract.

C. Contractor shall consider in his bid all permanent and temporary utilities lines and appurtenances in their present or relocated positions and that no additional compensation will be allowed for delays, inconvenience or damage sustained by him due to interference from the said utility lines and appurtenances or the operation of moving them.

SECTION 1.10 - ABOVE GROUND UTILITIES

A. The Contractor shall exercise due care and caution to prevent damage to Fire Hydrants, Traffic Lights, Street Light Standards, Parking Meters, Utility Poles, Guy Poles, etc., whenever it is necessary to remove any type of pavement around such items. The Contractor shall repair and/or replace any such item damaged by his operations to the satisfaction of the utility's owner.

B. It shall be the responsibility of the Contractor to notify the appropriate owners of such facilities in the way of construction so that they can have representatives present, if they so desire, when the Contractor is performing such work around their facilities.

SECTION 1.11 - EXISTING UNDERGROUND AND OTHER INSTALLATIONS

Existing underground installations are indicated on the drawings only to the extent such information was made available to or discovered by Engineer in preparing the drawings. There is no guarantee as to the accuracy or completeness of such information, and all responsibility for the accuracy and completeness thereof if expressly disclaimed.

The Contractor shall be responsible for the preservation of all public and private property, monuments, highway signs, telephone lines, other utilities, etc., along and adjacent to the Work; shall use every precaution necessary to prevent damage to pipes, conduits, and other underground structures; and shall protect carefully from disturbance or damage all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their locations and shall not remove them until directed by the property owners. The street and highway signs and markers, that are to be affected by the Work, shall be carefully removed when the work begins and stored in a manner to keep them clean and dry. The Contractor must obtain all necessary information in regard to existing utilities, and shall give notice in writing to the owners of the property or the authorities in charge of streets, gas,

water, pipes, electric, sewers and other underground structures, including conduits, railways, poles and pole lines, manholes, catch basins, fixtures, appurtenances, and all other property that may be affected by the Contractor's operations, at least three (3) working days before his operations will affect such property or as specified elsewhere. The Contractor shall not hinder or interfere with any person in the protection of such work or with the operation of utilities, at any time. When property or the operation of railways, telephone lines, telegraph lines or other public utilities are endangered, the Contractor shall at his own expense, maintain flagmen or watchmen and any other necessary precautions to avoid interruption of service or damage to life or property, and shall promptly repair, restore, or make good injury or damage caused by his operations in an acceptable manner.

SECTION 1.12 - UTILITIES EXPLORATION

Utilities exploration shall include all labor, materials, and equipment necessary for the Contractor to conduct a field investigation including exploratory excavations in advance of construction for the purpose of determining the existing location, size, and depth of all underground utilities shown or identified on the Drawings, any and all meetings with representatives of each utility, and furnishing the information to the Engineer. In addition to those utilities indicated on the Drawings, the Contractor shall also make exploratory excavations of all utilities which could impact the construction. This work shall include all test pit excavations including backfilling with sand, compaction, dewatering, pavement removal and replacement, and other related items. No direct payment shall be made for utility exploration.

SECTION 1.13 - SECURITY

Contractor shall be responsible for protection of the site, and all work, materials, equipment, and existing facilities thereon, against vandals and other unauthorized persons.

No claim shall be made against the City by reason of any act of an employee or trespasser, and Contractor shall make good all damage to the City's property resulting from his failure to provide security measures as specified.

Security measures shall be at least equal to those usually provided by the City to protect his existing facilities during normal operation, but shall also include such additional, security fencing, barricades, lighting, watchman services, and other measures as required to protect the site.

SECTION 1.14 – TEMPORARY UTILITIES

A. Temporary Lighting: Contractor shall provide, at his expense, temporary lighting facilities for prosecution and inspection of the work. These facilities shall be installed and maintained by the Contractor. Locate in such a manner as to result in the least interference with work upon the Project site and existing facilities. Contractor shall also provide temporary street lighting where the existing street lighting is disrupted due to construction activities.

B. Temporary Power: Contractor shall provide, at his expense, temporary power facilities required for prosecution and inspection of the Work. These facilities shall be installed and maintained by the Contractor. Locate in such a manner as to result in the least interference with work upon the Project site and existing facilities.

C. Temporary Water: The Contractor shall make the necessary arrangements, at his expense, for

securing and transporting all water required in the construction, including water required for the mixing of concrete, sprinkling, flushing, flooding, or jetting, and including any temporary pipeline or equipment which may be necessary to make use of such water.

D. Temporary Sanitary Facilities: The Contractor shall provide, at his expense, adequate portable sanitary facilities on the site and shall be obscured from public view to the greatest extent possible. They shall be cleaned, deodorized, and disinfected each day construction is in progress, all at the Contractor's expense. If toilets of the chemically tested type are used, at least one toilet will be furnished for each 20 workers, in addition to the above requirement. Contractor shall enforce the use of such sanitary facilities by all personnel at the site.

SECTION 1.15 – INCLEMENT WEATHER DAYS

For this Contract, an Inclement Weather Day shall be defined as any day on which construction operations were unable to proceed for at least five (5) continuous hours of the day or 65% of the regular working hours, whichever is greater. Should the Contractor prepare to begin work on any given day in which inclement weather, or the conditions resulting from inclement weather, prevent work from beginning at the usual starting time, and the crew is dismissed as a result thereof, the day will be declared an Inclement Weather Day, whether or not conditions change during the day, resulting in the rest of the day becoming suitable for work. The Contractor shall notify DPW within 48 hours of an Inclement Weather Delay listing the critical path tasks affected by the delay.

SECTION 1.16 - AS-BUILT DRAWINGS

Contractor shall provide manually marked-up "red line" drawings to the project engineer for use in creating "as-built" AutoCAD® record drawings of the project. The original contract drawings shall be modified to show all additions, deletions, and other changes made during construction. Drawing modifications shall include both a markup of the graphics and a brief written explanation describing any changes. Wherever applicable, revisions shall include updates to details, sections, index, notes, drawing callouts, plan, and plan & profile views.

Each Sheet of the red line drawings shall include a stamp showing: RED-LINE DRAWINGS, name of Contractor, Superintendent's signature, and Date. Drawings shall also include: All field changes, any change in line or grade from the original drawings, location of mains and house service connections, and the limits of pavement removal and replacement.

To promote accuracy; red line drawings shall be updated on a bi-weekly basis with copies provided to the Director as work is completed for each block. Redlines shall be jointly reviewed/developed by the Contractor and Resident Inspector and discussed at each construction progress meeting. The Contractor shall furnish a final set of redline drawings prior to final inspection. The Contractor shall furnish redline drawings at no direct payment.

SECTION 1.17 - PROGRESS MEETINGS & SCHEDULE REQUIREMENTS

A. Progress meetings shall be scheduled biweekly or as requested by the Director.

B. Location of Meetings: The project field office of the Contractor or as approved by the Director.

C. Attendance: Director's Representative, Contractor, subcontractors, and suppliers as appropriate to the agenda, others as required.

D. Requirement: In addition to an updated approved schedule, the Contractor shall also provide a detailed two week look ahead schedule demonstrating the block locations along with the scope to be performed and present it to the Project Team as shown on the agenda. The Project Team shall review the requested schedule at the progress meeting and agree on an approved list of locations and scope of work. Contractor to provide CPM schedule, two-week look ahead schedule, RFI log, Plan Change Log, Submittal Log, and invoice status at each progress meeting.

E. Format: The Department will provide a two week look ahead schedule template at the Pre-Construction meeting, which shall be completed prior to all progress meetings. The Contractor's CPM schedule shall include the following criteria:

1. Schedule shall have a title that includes the DPW Project ID and name.
2. The project schedule shall depict all field activities necessary to complete the work.
3. Activities shall be sufficiently detailed to include the block number, and a start/end date.
4. All schedule activities should be fully integrated, having predecessors and or successors.
5. Gantt chart shall show the predecessors and successors of each activity.
6. Critical Path Activities should be uniquely identified in the Gantt chart legend.
7. Schedules shall have a progress line in the Gantt chart that represents contractors progress to the date of the request.

F. Obligation: The Contractor shall abide by the schedule shown on the approved two week look ahead schedule. The Contractor shall not deviate from the approved schedule at any time, without obtaining prior approval. Shall deviations of the approved schedule be required, the Contractor shall submit deviations, in writing, requesting approval of the new locations and scope of work.

G. Repercussion: Failure to adhere to the approved two week look ahead will put the contractor in default and may result in a stop work order or termination of the contract for cause. This includes all work deviated from the approved schedule, including subcontractor work.

SECTION 1.18 – PRE-CONSTRUCTION VIDEO SURVEYS

Section C126.05 of the "General Specifications for Street Paving" is amended to include the following requirements:

Pre-Construction Video Surveys are optional and be performed at the Contractor's discretion. There shall be no direct payment for the Pre-Construction Video Surveys.

SECTION 1.19 – CONTRACTOR PROGRESS PAYMENT INVOICING AND DOCUMENTATION

Contractor shall be required to provide a detailed breakdown of each payment request that includes a summary of the work completed for each bid item by each municipal block. Additionally, a summary of the work completed for each bid item for each intersection, identified as "Intersection of (insert street name) Street and (insert cross street name) Street" shall be provided for quantification purposed blocks begin/end at the apparent right-of-way line of intersecting streets as shown on the plans. Contractor shall be required to provide separate invoices for the following categories when applicable:

- A.1.1 City of New Orleans Department of Public Works FEMA Eligible work items,
- A.1.3 City of New Orleans Department of Public Works FEMA ADA Eligible work items,
- A.2 City of New Orleans Department of Public Works non-FEMA Eligible work items,
- B.1.1 Sewerage and Water Board of New Orleans FEMA Eligible work items,
- B.1.2 Sewerage and Water Board of New Orleans FEMA ESSA Eligible work items,
- B.1.3 Sewerage and Water Board of New Orleans ADA Eligible work items,
- B.1.4 Sewerage and Water Board of New Orleans additional FEMA Eligible waterline work items,
- B.2.1 Sewerage and Water Board of New Orleans Water non-FEMA Eligible waterline work items,
- B.2.2 Sewerage and Water Board of New Orleans Water non-FEMA Eligible SSERP work items,
- B.2.3 Sewerage and Water Board of New Orleans non-FEMA Eligible sewer work items,
- B.2.4 Sewerage and Water Board of New Orleans non-FEMA Eligible drainage work items

The Director will provide invoice and form templates, and direction to the Contractor on which work is non-FEMA Eligible.

Each contractor payment request shall include:

1. Two (2) original invoices certified by the Engineer and SWB (if applicable) signed in blue ink. All invoices shall include the FEMA PW number and the DPW reference number. Invoices shall be submitted monthly and shall include the billing period.
2. Two (2) original DPW STS-651 and PWC-15 forms certified by the Engineer and SWB (if applicable) signed in blue ink.
3. Two (2) Compact discs with all invoice forms and backup including but not limited to:
    a. Cover letter containing: Date, project ID, project name, invoice No., pay Period, Invoice amount, company logo, Purchase Order No., Service Contract No., FEMA PW No. 21032 and SWB PW No. 21031 (if appliable).
    b. Pre and post construction photographs for all completed work
    c. ADA ramp breakdown by location per funding source
    d. DPW cost estimate STS-651 and PWC-15 Excel workbook.
    e. Certified payroll (if required)
    f. Updated approved CPM Schedule
    g. Approved Weather and Working Days report
    h. BMP/SCM Inspection Report with weather conditions noted and if rain occurred, appropriate photographs documenting Stormwater Pollution Prevention Plan Stormwater Control Measures in place.

SECTION 1.20 - SEQUENCE OF CONSTRUCTION

A. Section 1.05 of these Construction Specifications and Section C126 of the General Specifications are hereby supplemented as follows:

B. The Contractor shall submit construction sequence and schedule to the Director for approval prior to the start of construction in accordance with Section C126. Contractor shall be required to follow the approved sequence and schedule unless he has first obtained written approval from the Department for a deviation.

C. Contractor shall, within three (3) days of initiating any work on a street, prepare and submit to the Department for review, a practical critical path schedule and phasing plan showing the order in which the Contractor proposes to carry on the work, the dates on which he will start the phases of the work, and the anticipated dates for completion of the same. The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion at any time. The Contractor shall enter on the chart the actual progress and present the updated information at each bi-weekly contractor/owner construction meeting or at such intervals as validated by the Director and shall provide electronically to the Director.

D. To facilitate Director testing and inspection requirements once Contractor starts utility work the utility installations shall be executed on a continuous basis until substantial completion of all of the utility work. Contractor shall substantially complete all work, including pavement restoration, for any continuous roadway segment with water and/or sewer work prior to initiating operations on roadway segments consisting of only roadway pavement restoration work, unless approved in writing by the Director. Once Contractor mobilizes to start work on a roadway segment Contractor must complete all approved work, including any necessary utility repairs or relocations in a continuous fashion within the approved scheduled time and shall maintain adequate personnel and equipment on site until such time all work is substantially complete. Work to be substantially completed includes, but is not limited to, utility replacement or rehabilitation, including all services, connections, and tie-ins; roadway repairs; curbs and gutters; drive aprons; sidewalks; ramps; proper backfilling of all cavities; and other incidental work in accordance with the project plans and specifications. Any work restricting access to any street, drive, or sidewalk shall be completed prior to substantial completion being granted. If to meet the approved schedule the contractor elects to work on multiple sites simultaneously the contractor must ensure the proper resources are available in order to adequately handle all the work in progress as specified. Contractor is responsible for performing all tasks to substantially complete all work in a concentrated area prior to moving onto another work area.

E. When scheduling work Contractor shall phase limits of construction to allow completion of all pavement work within ten (10) working days unless otherwise approved by the Director. The Contractor shall use traffic aggregate or steel plates for pavement activities exceeding ten (10) working days to minimize impacts to traffic flow in accordance with Section C402 in the General Specifications. Pavement repair shall commence immediately following the acceptance of the waterline installation on each block. In addition, Contractor shall only perform utility trenching operations ahead a distance sufficient for the length of pipe installation planned for the current workday, plus a reasonable additional distance ahead to reveal any obstructions that may necessitate changing the line or grade of the pipe. All other associated work within the scheduled work limits shall be completed in accordance with the approved critical path schedule and phasing plan.

F. Contractor shall phase all roadway construction including intersections to allow for the

maintenance of traffic and emergency vehicle access.

G. Contractor shall notify the Sewerage & Water Board and the Director in writing at least two (2) working days prior to mobilizing and starting any utility work, including trenching, and at least two (2) working days prior to the day utility tie-ins to the existing system will be made and service will be transferred to the new main. These notifications shall be in addition to any other notification in accordance with Sewerage & Water Board requirements and per the project plans and specifications. Contractor shall notify the Director in writing at least two (2) working days prior performing any roadway restoration work detailed on the plans or include in approved plan changes, including removal operations.

H. Contractor shall receive no additional compensation for any work related to the means, methods, techniques, scheduling, sequences, or procedures that are required to complete the project in accordance with the project plans and specifications.

I. DELETED

J. [DELETED

K. [DELETED

SECTION 1.21 – SEWER SYSTEM EVALUATION AND REHABILITATION PROGRAM REQUIREMENTS

A. This contract does not include work commissioned by the Sewerage & Water Board of New Orleans under their Sewer System Evaluation and Rehabilitation Program in response to an EPA Consent Decree. However, any sewer rehabilitation work fulfilled under this contract shall meet the sewer rehabilitation requirements included herein this section. Contractor shall refer to sections 2.07 through 2.12 and Section 3.22 for additional sewer rehabilitation requirements for consent decree and non-consent decree sewer rehabilitation work.

SECTION 1.22 – WATER POINT REPAIRS

A. The Contractor shall furnish all labor, supervision, materials, and equipment required to complete items in this section.

B. All workmanship and materials shall conform to Section C741 of the Department of Public Works General Specifications for Street Paving, S&WB Dwg. No. 7260-W, and S&WB Standard Drawings, except as noted herein.

C. The Contractor shall examine the locations of every plan sheet, well in advance of any planned construction within that block, and report all leaks to the S&WB by calling in 52-WATER (529-2837).

D. Damages to the water distribution system caused by the Contractor, shall be repaired by the

Contractor at no direct pay, or repaired by the S&WB at the Contractor's expense. If in the opinion of the Engineer that damages to the water distribution system were not a result of the Contractors normal construction activities, the contractor will be paid at the unit prices of the appropriate bid item.

E. All lead service lines (LSL) exposed within the project limits, regardless of status of utility replacement at the location of the LSL, shall be reported to the S&WB project representative immediately. Resident must receive S&WB-approved written notification at the time any LSL is located and/or replaced." The LSL shall be replaced once written approval is provided by S&WB representative.

F. If directed to replace the LSL, the service connection must be replaced from the water main to the meter box. Temporary splices or repairs of leaking or damaged LSLs are not allowed. If directed by S&WB project representative to relocate water meter location, the pipe material must be identified between the meter box and property line. If the service line between the meter and the property line is of lead material, the Contractor and S&WB shall coordinate with the property owner to ensure the entire LSL is replaced between the water main and the property.

J. Contractor shall refer to section 2.12 and section 3.23 for technical specifications and special pay items specific to the work in this section.

SECTION 1.23 – CONTRACT TASK ORDERS

The successful bidder shall be awarded the work for a period of **Not Applicable** working days starting from the day after the Overall Notice to Proceed, which shall constitute the overall duration or contract period. The contract prices are firm during the entirety of the project.

The quantities given in the proposal form are approximate for the comparison of bids only. The City of New Orleans Department of Public Works (DPW) reserves the right to purchase only such items and in such quantities as needed for the duration of this contract after acceptance of the lowest responsible bid. Additional unit price quantities will be in accordance with Section C136. The City also reserves the right to perform part of the work with its in-house forces or hire other contractors for similar work in the project area during the contract period.

The overall project scope shall be broken down and delineated as individual Task Orders in contract documents. Each Task Order may consist of one or multiple plan sheets, which will serve as the scope for that specific Task Order to include all utilities, roadway, and associated infrastructure work per the associated plan sheets.

Contract Task Orders shall be issued to the Contractor individually or grouped with multiple Task Orders at once, at the discretion of the Engineer and DPW. Prior to issuance of a Task Order, Contractor, Engineer and DPW will hold a Pre-Task Order Meeting to discuss scope, schedule, and delivery strategy. Task Order durations shall be determined by the Contractor during the Pre-Construction Meeting. Exhibit 1, attached at the end of this section, is a sample Task Order to be utilized for this process.

All work within the limits of each Task Order shall be shown to the Contractor by a representative of the Department of Public Works and/or Engineer prior to commencing work. Appropriate drawings and details will be furnished to the Contractor with each Task Order. Work sites

may be non-continuous blocks for an individual task order; however, every effort will be made to consolidate the work to minimize scattered work sites.

Each Task Order will be issued with appropriate drawings or other attachments and will designate a specific Task Order number. All correspondence, billing, etc., pertaining to the work should reference the Task Order number and the current job number designation.

The Contractor shall begin the work within Ten (10) days after issuance of an executed task order and a corresponding Task Order Notice to Proceed. If the Contractor fails to start a task order within Ten (10) days of the Notice to Proceed date or leaves the work incomplete for over a 30-day period, the City shall proceed in accordance with Sections C123 and C126 or shall approach the next lowest bidder to start and/or complete the Task Order(s) or utilize other contractors to perform the work. However, if the Contractor has a valid reason for the lack of progress or delayed start of an issued Task Order that is beyond the Contractor's control, he must obtain written permission from the Engineer or DPW for the stipulated delay.

DPW reserves the right to put a Task Order on hold at any time as needed, without reason. If the scope of work is discontinued, the Contractor will be compensated only for the completed and accepted items of work. DPW reserves the right to modify, add, or remove scope within an issued Task Order as needed to best serve the Project. Temporary waterline tie-ins shall be abandoned, removed, and tied into the adjacent mainline in accordance with Section C741 in the General Specifications at no direct pay.

Beyond the initial Task Order issued for said Project, additional Task Orders shall be issued only when the previously issued Task Order is deemed Substantially Complete by the Engineer and DPW. The Contractor can request additional task orders to be issued and approved by DPW Director. Substantial Completion, as defined for this purpose, shall be determined by one or more of the following criteria:

- Issued work within a given Task Order is 95% complete by the planned scope and cost or agreed upon scope and cost;
- All Utilities, Roadways & Driveways within the Task Order are complete and open to traffic;
- Any minor incomplete work or Punch List items which typically consist of addressing areas in need of minor backfilling, completion of pavement striping, necessary yard restorations, patching, site cleanup, etc.

Additional Task Orders on the project shall only be issued when the preceding task orders are either complete or substantially complete, as defined above. The Contractor can request additional task orders to be issued and approved by DPW Director. If the Contractor fails to complete a task order

within the agreed time frame or leaves the work incomplete or inactive for a period of Thirty (30) days, absent any previously agreed upon stipulated delay claim, DPW shall proceed in accordance with Sections C123 and C126 and reserves the right to complete the remainder of that task order, as well as all additional remaining work included in the overall project scope by either the use of City work forces or other contractors. The Contractor shall notify DPW within 48 hours of a critical path task delay listing the critical path tasks affected by the delay.

It is understood by the Contractor that the quantities provided in the schedule of bid prices are a fair approximation of the amount of work to be done, and that the sum of the products of the approximate quantities multiplied by the unit price bid constitutes the base bid price, which sum shall be used in the comparison of bids and the awarding of the respective contracts. The unit cost quantities represent a complete cost total, representing all work required to provide a completed project scope. The actual constructed quantities may vary from the quantities listed in the proposal form.

EXHIBIT 1
JIRR FEMA
Department of Public Works Project No. RRXXX
New Orleans, LOUISIANA
TASK ORDER 01

City of New Orleans
Department of Public Works

1300 Perdido St. – Suite 6W03
New Orleans, LA 70112

Estimated Cost: $ 3,874,648.57

Date Issued: February 25, 2021

Plan Sheets: 1-10, W01-W10, S-1 – S-10

Contractor: XX Construction, L.L.C.

Project No. FEMA RRXXX

You are hereby directed to commence work within 10 days of the date of this work order and complete all work, including restoration, within XX days, in accordance with project specifications. If this task order is not substantially completed within XX days, no further task orders will be issued.

See attached Plan Sheets for details of **Task Order 01**.

Description:

Task Order 01 contains XX sheets located within XX Neighborhood in Orleans Parish. **Special attention shall be given to the roadway elevations to ensure positive drainage to the adjacent catch basins.** All work described in the attached plan sheets is subject to field verification. Variations shall be approved by the Engineer. The following is a list of the plan sheets associated with Task Order 01.

Site Location	DPW Sheet(S)	SWB Sheet(s)
XXX	XX	XX
XXX	XX	XX
XXX	XX	XX

SIGNED:

Contractor.:_____DATE: _____

Engineer.:_____DATE:_____

CNO DPW.: _____DATE:_____

Attachments

SECTION 1.24 – PROCORE COLLABORATION SOFTWARE

COLLABORATION SOFTWARE

1. SUMMARY
    a. Utilize City-provided Procore construction management software (www.procore.com) to submit, track, distribute and collaborate on project documentation and action items.
    b. The intent of utilizing Procore construction management application is to reduce cost and schedule risk, improve quality and safety, and maintain a healthy team dynamic by improving information flow, reducing non-productive activities, reducing rework and decreasing turnaround times.
2. SOFTWARE USES
    a. Daily Log
        i. Daily log entry from web and mobile with automatic capture of daily weather conditions.
        ii. Attach photographs to entries directly from mobile.
        iii. Reporting capabilities to easily report on man-hours and activities for a certain time frame and contractor.
    b. Dashboards
        i. Dashboards that show the status of all currently assigned items with drill down capability to see the subject, assignee and due date of each item.
    c. Deficiency Tracking
        i. A means for recording, assigning and confirming completion of any deficiency or observation noted during the course of construction. Is accessible from web and mobile.
    d. Directory
        i. All team member's contact information that is accessible from web and mobile.
    e. Documents
        i. Storage location for miscellaneous project documents with the ability to have a folder hierarchy and privacy settings on folders.
        ii. No storage limit.
        iii. Download tracking.
        iv. Ability to revise and check out files, with access to all previous revisions.
    f. Drawings
        i. A system maintained current set of drawings on web and mobile, with access to all previous revisions as well.
        ii. Automatic hyperlinking capability for detail callouts.
        iii. Drawing markup capabilities on web and mobile.

iv. Ability to link RFIs, Submittals, Punchlist Items, Photos and Project Documents to the drawings.

v. Drawing Markups should be carried forward when new revisions are uploaded.

vi. Markups and linked documentation should be able to be public or private based on desired level of user accessibility.

g. Financial Management

i. Manage contracts, payment applications and change orders through the software.

ii. View contracts and change orders from web and mobile.

h. Inspections

i. Create inspections from web and mobile.

ii. Create a deficiency item from an inspection that can be assigned and tracked to completion.

i. Meetings

i. Create, edit and view meeting minutes from web and mobile.

ii. Create action items with assignees and due dates from a meeting item.

j. Mobile Accessibility

i. Native mobile applications for iOS and Android phones at a minimum that provide access to relevant project documentation, including as-built versions of Drawings and Specifications, even when there is no internet access.

k. Photos

i. Upload and view photos from web and mobile.

ii. Markup photos from mobile to clarify anything important in the photo.

iii. Link photos to specific locations on drawings.

l. Punchlist

i. Create punch-list items from web and mobile and link them to specific locations on the drawings.

ii. Distribute punch-list items to all contractors, for contractors to mark them as resolved with photographic proof of resolution via mobile, and for the items to be marked as complete via mobile or web.

m. Requests for Information (RFIs)

i. Create RFIs with assignees, due dates and attachments.

ii. Assignees can respond to RFIs both via the software and by responding to the system generated email.

iii. Auto-generated log of all RFIs.

n. Schedule

i. Display schedules from typical scheduling software such as Microsoft Project, Primavera P3, Primavera P6 or Asta Powerproject.

o. Specifications

i. Upload project specifications and manage them at the individual specification level.

ii. View and search specifications on web and mobile.

iii. Upload revisions to individual specifications and maintain all revision history.

iv. Auto-generated current specification log that provides access to the current version of each specification.

v. Link specifications to submittals and view the specification from the submittal.

p. Submittals

i. Upload a submittal register of all expected submittals.

ii. Create multi-step approval workflows for submittals, with reminder notifications for the current assignee.

iii. Upload any file type without size restrictions.

iv. Auto-generated submittal log.

3. TECHNOLOGY

a. Fully web based with mobile apps for Windows, iOS and Android phones.

b. Accessible without logging in through a virtual private network (VPN).

c. Works on the current version of Internet Explorer, Google Chrome, Mozilla Firefox and Apple Safari browsers.

d. Can generate emails automatically, and all attachments are included in the emails via download links to avoid emails not being delivered due to size.

e. PDF output of forms such as RFIs, Submittals, Meetings, Change Orders, etc. should be available and customizable.

4. TRAINING AND SUPPORT

a. Support to all parties via email, phone and live chat at no additional charge.

b. Training in the form of self-paced learning videos as well as interactive webinars.

c. The contractor shall hold a kickoff meeting with the Owner and applicable consultants at the beginning of the project to discuss how the software will be used, routing & naming protocols, etc.

5. PROCEDURES

a. RFIs and Submittals

i. The Contractor will be responsible for submitting all RFIs and Submittals through the software and assigning them to the appropriate parties.

ii. The City's Architects, Engineers, Consultants, etc. are responsible for reviewing, approving, and posting all responses to RFIs and submittals via the software, including all relevant attachments.

iii. Responses to all RFIs shall be reviewed, accepted, or rejected by the Director of Public Works and or the Sewerage and Water Boards appointed representative.

iv. The Contractor will distribute approved and accepted responses to all affected subcontractors and confirm agreement with the response by closing the item.

b. Construction Documentation

i. The Engineer will manage Drawings, Specifications and Documents in the software to ensure that the current version of all applicable construction documentation is available to the entire team via web and mobile.

ii. The Engineer will ensure that all RFIs which modify the current drawings are posted to the drawings and available via web and mobile within 24 hours of the RFI being responded to.

c. The Engineer will record and distribute meeting minutes and action items via the software.

d. The Engineer's Resident Inspector will create daily reports, take daily site photos, and make them publicly available. Daily reports shall include but not limited to: Report number, days used on the contract, quantities per pay item, personnel and equipment on site, Construction start and end time, and construction activities per block.

e. Punchlist

i. All punch-list items will be managed through the software.

ii. Punchlist items will be created by the Engineer during the substantially complete project site walk-through with the Owner, Contractor and Owner's Representatives.

iii. It will be at the Owner's discretion whether Punchlist Items can be closed while a representative from the Owner or applicable consultant is not present.

f. General

i. It is intended that the contractor will utilize the software for at least all functions identified in "Section 2 – Software Uses."

6. PRICING

a. The cost of Procore Technologies services has been paid in full by the Owner

b. The software allows for unlimited users to ensure that all parties have access to the system.

7. HARDWARE

a. The Contractor will ensure all necessary users have access to devices compatible with Procore

b. The Contractor will maintain at least one Procore compatible device on site with a screen of 7" or larger for ease of viewing, sharing, and discussing plans in the field.

SECTION 1.25 – ENVIRONMENTAL PROTECTION AND STORM WATER POLLUTION PREVENTION

Environmental Protection and Storm Water Pollution Prevention Plan shall be in accordance with Section C204 Environmental Protection and Stormwater Pollution Prevention Plan from the General Specifications except as modified here-in.

The Contractor certifies under penalty of law that he understands and will abide by the terms and conditions of the following:

1. Permit LAR10M21: Orleans Parish-wide coverage for Storm Water Discharges Associated with Construction Activities five (5) acres or more for the JIRR Program
2. Sewerage & Water Board of New Orleans Plumbing Code
3. The Joint Infrastructure Recovery Request (JIRR) Program is authorized under LPDES Permit LAR10M215 that encompasses all of Orleans Parish for Storm Water Discharges Associated with Construction Activities five (5) acres or more. The permit had an effective date of June 8, 2020 and expiration date is March 28, 2024. This permit coverage alone automatically mandates that all JIRR projects regardless of the project size will be part of a "larger common plan of development" Since the entire program is covered, the contractor does not have to obtain a state-issued permit from LDEQ; regardless, an adequate Stormwater Pollution Prevention Plan shall be developed and maintained regardless of the size of the project.
4. Compliance with JIRR Permit LAR10M21.

PART II – SUPPLEMENT TECHNICAL SPECIFICATIONS

SECTION 2.01 - REMOVAL OF EXISTING PAVEMENT

A. All existing pavement designated to be removed shall be removed and disposed of beyond the limits of project by the Contractor.

B. Payment for concrete and asphaltic concrete pavement removal shall include removal, hauling and disposing of pavement off of the project site.

C. Pavement consisting of asphaltic concrete over Portland cement concrete shall be considered Composite Pavement. Composite Pavement shall be removed, without regard to thickness, at the price bid per square yard for REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT. There will be no additional payment if the Contractor elects to cold mill or remove the existing asphalt surface prior to removal of the concrete pavement.

D. Payment for the pay item C202(52)(C) REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT shall be made at the contract unit price, including removal and disposal of existing curb at no direct pay.

SECTION 2.02 - CURBS OR CURB AND GUTTER BOTTOMS

The Contractor shall remove and dispose of all existing curb or curb and gutter bottoms in accordance with the plans. Existing stone curb to be removed shall be delivered to the Department of Public Works Maintenance Yard located at 838 South Genois Street unless directed by the Owner (No additional pay for disposal).

Price for new dowel curbs in new concrete pavement shall include horizontal dowels and longitudinal reinforcement as detailed on the standard plan by the City of New Orleans Department of Public Works (DPW).

Price for new curb shall include transitions, depression or hand forming curbs at obstructions as may be directed by the Director or required by the Department of Parks and Parkways.

The Contractor shall backfill and compact behind curb with select material obtained from roadway excavation or other approved sources and install the top 4 inches with batture sand behind the curb for dressing and beneath sidewalks and driveways at no direct pay. Payment shall be included in the unit price bid for curbs, sidewalks, or driveways as applicable.

Price for new curb and gutters associated with new asphalt pavement shall include all transverse and longitudinal reinforcement in conformance with the details on standard plan by DPW included with these specifications.

Price for new curb or curb and gutters associated with Handicapped Ramp construction shall be measured and paid for as subsidiary to unit price bid for ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS.

SECTION 2.03 - REMOVAL OF EXISTING SIDEWALKS, DRIVEWAYS, AND FOOTLAPS

Existing concrete sidewalk, driveway, and footlaps shown to be removed shall be removed and properly disposed of by the Contractor. At locations where sidewalk, driveway, or footlaps are to be removed but are not to be replaced, the contractor shall backfill the area with selected excavated or other suitable approved material at no direct payment.

SECTION 2.04 - EXCAVATION

A. Limits of roadway excavation are shown on the plans and are measured from the bottom of the existing pavement to the bottom of the base course, and/or sub-base (where applicable). All excavated material shall be hauled and disposed of off the project site.

B. The quantity shown in the proposal form is approximate and is included for information purposes only. Partial payments for excavation will be made on a percentage basis computed from the ratio of linear foot of roadway excavation completed to the total length of roadway in the project.

SECTION 2.05 - CONSTRUCTION ROUTING AND MAINTENANCE

The Contractor must minimize damage to streets used for access to the project for the delivery of materials and equipment by observing weight and speed limits as defined in the City Code in Section 38-169 and 38-73 (h) respectively. Access routes to the work site from designated "truck routes" will be established at the preconstruction meeting. The Contractor and his subcontractor(s) will be required to adhere to these routes to and from the project site. The routes may be revised by the Director to accommodate the work as it progresses. The Contractor is required to keep the work site clean, particularly the roadways adjacent to the work site. The Contractor shall clear such roadways of dirt, silt sand or other such material as often as necessary, or as specified by condition at the close of each workday.

SECTION 2.06 - SHEETING AND BRACING

A. Sheeting and bracing shall meet the design, material, installation, and maintenance requirements of all SAFETY AND HEALTH REGULATIONS.

B. The cost of sheeting and bracing shall be included in the unit price bid per linear foot for drain, sewer, or water lines.

C. The Contractor shall provide design services, materials, and labor necessary for sheeting, shoring, and bracing of excavations as required for trenches in a safe working condition. The Contractor shall provide for protections and supports of utilities, roadways, buildings, and structures, etc. when performing project work. The Contractor shall provide an adequate system to withstand lateral pressure in trenches, in accordance with local, state, and federal regulations. Where required to be designed by a licensed engineer, the sheeting and shoring plan must be submitted to the Engineer for his records.

SECTION 2.07 - SANITARY SEWER SYSTEM REHABILITATION

A. The supplemental specifications within this section are applicable to all sewer rehabilitation work within the scope of the SSERP or FEMA sewer rehabilitation program as per paragraphs 1.21A and 1.21B. Any general conditions, materials or methods not discussed within this section shall be governed by the SPW standard specifications section C742 and the S&WB standard details and specifications.

B. Sewer Flow Control

1. Contractor is responsible for all sewer flow control. There will be no direct pay for flow isolation, flow diversion (bypass) pumping or any other outreach and coordination required as part of flow isolation.

2. Contractor is responsible to determine the method of sewer flow control for any pipe size and flow quantity. S&WB cannot provide any guarantees to draw the system down to reduce surcharging.

3. Contractor shall ensure that sewer does not back-up into private property and shall have a plan to prevent sewer back-ups prior to start of work in case of unforeseen delays. A sewer flow control plan is required to be submitted prior to start.

4. Where it becomes necessary to shut down a private sewer service line while work in progress, and before the service lines are reconnected, the residents are to be notified by the Contractor at least one week prior to work and again 24 hours prior to shut down. Sewer service shutdowns shall be limited to 8 hours in duration and between the hours of 8:00 am and 6:00 pm, otherwise an alternate means of sewer flow shall be provided, including but not limited to by-pass pumping.

5. Under no circumstances shall sewer be removed from the system or discharged onto the ground or into the drainage system or other waterway. Refer to section 1.21G in cases of accidental spills or discharges.

6. Only pneumatic (inflatable) pipe plugs, specifically designed for municipal sewer applications, shall be installed in the gravity sewer system for flow control or diversion. Each plug shall bear a permanent identification tag with the installer's emergency contact information. A photo of a typical plug, showing the attached identification tag, must be submitted to the Engineer for approval. Plugs without ID tags will not be permitted on the jobsite or inside vehicles on the jobsite. The Engineer may direct the immediate suspension of work and removal from the worksite of unapproved flow control devices.

a. Under no circumstances shall any plug be left inside a pipe or manhole overnight. Pipe plugs are to be removed from the jobsite at the end of each workday.

7. Flow diversion pumping shall be performed to the satisfaction of the S&WB networks engineering representative, shall be complete with all pumps, piping and other appurtenances required to pump the required sewer flow around the work site continuously with capacity for unforeseen wet weather flows and shall not adversely impact upstream or downstream sewer flow conditions or levels. Flow diversion pumping setups shall be always manned by an experienced operator the pump is required to operate or sit in standby. Flow diversion pumping

equipment and piping shall be drained back into the sanitary sewer system prior to disassembly. Contractors are required to submit a flow diversion plan to the engineer 5 business days prior to setting up a flow diversion pumping setup.

8. Any sewerage removed from the gravity system, such as dewatering of surcharged manholes or line segments shall be disposed into the sanitary sewer system.

9. When sewer flow control is used to perform CCTV inspection, the following depths of flow shall be maintained at a maximum:

a. For 10" and smaller diameter pipe, flow depth shall be maintained at or less than 10% of the pipe diameter.

b. For 12" through 24" diameter pipe, flow depth shall be maintained at or less than 15% of the pipe diameter.

c. For pipes larger than 24" diameter pipe, flow depth shall be maintained at or less than 20% of the pipe diameter.

10. For every location where flow diversion is required, the Contractor shall submit a site-specific flow diversion plan to the Engineer at least five (5) business days prior to mobilizing flow diversion equipment. The plan shall include pipe sizes and lengths, pump make/manufacturer, pump capacities, pump curves, a scaled drawing or diagram showing limits of the work, location of suction and discharge hoses, adjoining sewer segments and manholes, flow direction and plug locations, and any additional information requested by the Engineer.

11. The Contractor must conduct sewer flow control, isolation, and diversion in accordance with the approved plan and must have a Competent Person at the site throughout the flow control operation. Flow diversion pumps shall be always manned by and experienced operator.

C. Gravity Sewer and Service Lateral Rehabilitation

1. Contractor is responsible to obtain sewer service location records from the S&WB and to verify the location sewer service connections prior to excavation.

2. Contractor shall perform gravity sewer and service lateral rehabilitation in accordance with the sewer rehabilitation sheets.

3. Any service connections located within the limits of an excavated point repairs, or mainline replacement (excavated or otherwise) shall be fully replaced, including the wye and the 6" service lateral from the main line sewer to the property line. Abandoned service connections shall not be replaced unless directed by the S&WB.

4. All service line replacements shall include replacement of the tee or wye fitting at the main line sewer at no additional cost. The contractor shall perform a standard mainline point repair to replace the service tie-in, which will be paid for separately under the respective bid item price.

5. Sewer service laterals and main line sewers shall be installed at the same grades and elevations of the pipe being replaced. However, in cases where the sewer service lateral

provides less than 2% slope, the contractor shall re-grade the service lateral from the property line to the main line sewer to provide a 2% slope where possible.

6. Contractor shall provide rigid non-shear couplings or flexible elastomer couplings with stainless steel shear bands where a mainline point repair or a service later replacement results in the connection between dissimilar pipe materials. These couplers shall conform to ASTM C425 for connections to vitrified clay pipe and otherwise ASTM C1173. The bands shall be stainless steel 316 and on conformance to ASTM A240. The shear rings shall be in conformance to ASTM A240. There will be no direct pay for these provisions; contractor shall include this cost in their respective bid items of work.

7. All tees, wyes, cleanouts, plugs and other fittings shall be of the same material as the mainline pipe and/or service repair piping used in the rehabilitation.

8. Trenching for gravity sewer and service lateral rehabilitation shall be in accordance with the S&WB standard drawings, unless additional requirements are necessary for compliance with local, state, or federal regulations pertaining to health and safety. Any existing foundation or trenching lumber shall remain in place.

9. Contractor shall completely close the sewer system prior to the end of his workday. The Contractor may not leave any open main line repairs or service laterals with the site unattended. The Contractor is responsible to complete all opened work or to provide temporary piping prior to leaving the site at no additional cost.

10. The Contractor shall not begin backfilling operations over excavated sewer rehabilitation until the work has been inspected by a representative of the S&WB.

11. The S&WB reserves the right to request a mandrel test of any mainline sewer replacements at no additional cost in accordance with DPW standard specifications section C742.03(b).

12. All mainline sewer point repairs and replacements shall be recorded via CCTV immediately after completion of the rehabilitation, backfilling, compaction but prior to final pavement restoration of the site. The site is defined as the full work zone contained to a mainline sewer line segment bound by two manholes inclusive of the full length of main line sewer and all connecting service laterals.

D. Backfill Requirements for Work Near Mississippi River Levee. All sewer rehabilitation excavations within 1,500-ft Mississippi River Levee (MRL) centerline shall be limited within the following US Army Corps of Engineers (USACE) restrictions itemized below:

1. All excavation work within 400-feet of the Mississippi River levee is performed, completed, and backfilled while the stage of the Mississippi River is below +11.0 feet on the Carrollton Gage, at New Orleans, Louisiana.

2. All excavation work more than 400-feet but less than 1,500-feet from the Mississippi River levee is performed, completed, and backfilled while the stage of the Mississippi River is below +15.0 feet on the Carrollton Gage, at New Orleans, Louisiana.

3. Information concerning current river stages may be obtained on our website at www.mvn.usace.army.mil.

4. Sewer pipe bedding must be grouted after compaction. The grout shall meet the following criteria: The slurry shall consist of one part cement, two parts bentonite, and six parts sand mixed with enough water to produce a slurry viscous enough to thoroughly fill the voids. The resulting slurry shall have no less than 12 pounds of solids per gallon.

5. All non-bedding backfill must be impermeable clay – no sand at no direct pay.

6. All work must be coordinated with the Orleans Levee District (OLD) in advance and will be subject to OLD inspection and approval prior to S&WB acceptance.

7. Any damage to the levee or floodwalls resulting from the applicant's activities is repaired at the applicant's expense.

8. The contractor shall provide a detailed schedule for all sewer rehabilitation excavations for coordination with the OLD and USACE. This schedule shall be updated and resubmitted at any time the work dates for these sites has changed.

SECTION 2.08 – GRAVITY SEWER PIPEBURSTING

A. General requirements

1. This Specification covers the work necessary to furnish and install, complete and in-place, high–density polyethylene pipe (HDPE) by the pipe bursting method specified herein. The CONTRACTOR shall provide all materials, labor, equipment, and services necessary for bypass pumping diversion of sewage flows, installation of HDPE pipe, reconnection of all service connections, and closed-circuit television (CCTV) pre- and post-inspection and air testing of the completed pipe system.

2. The CONTRACTOR shall locate receiving/insertion pits to suit the pipe bursting operation. Pits located in areas where new manholes are not being installed shall be excavated, backfilled, and compacted at no additional cost to the owner. This includes providing a new manhole at no additional cost to the owner if an existing manhole is removed or damaged.

B. Qualifications

1. The pipe bursting contractor shall be certified and satisfactorily trained by the pipe bursting system manufacturer that such company is fully trained and is a licensed installer of their pipe bursting system.

2. Polyethylene pipe joining shall be performed by personnel trained in the use of butt-fusion equipment by the specific manufacturer of said equipment and recommended methods for new pipe connections. Personnel directly involved with installing the new pipe shall receive training in the proper methods for handling and installing the polyethylene pipe. Training shall be performed by a qualified and certified representative of the equipment and pipe manufacturer.

3. The CONTRACTOR shall hold the BOARD and ENGINEER whole harmless in any legal action resulting from patent infringements.

C. Reference specifications, codes, and standards

1. The following references are part of this Specification. In case of conflict between the requirements of this Specification and those of the listed documents, the requirements of this Specification shall prevail.

2. The latest edition of the following references shall be used:

a. ASTM D1248 - Polyethylene Plastics Molding and Extrusion Materials

b. ASTM D2657 - Heat Joining of Thermoplastic Pipe and Fittings
ASTM D3035 - Polyethylene Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter

c. ASTM D3261 - Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

d. ASTM D3350 - Polyethylene Plastic Pipe and Fittings Materials
e. ASTM F714 - Standard Specification for Polyethylene Plastic Pipe Based on Outside Diameter

D. Contractor submittals

1. Shop Drawings:

a. The CONTRACTOR shall submit catalog cuts, specifications, dimensioned drawings, installation details and sketches, and other pertinent information for the HDPE pipe installation work. All materials provided shall be fully in accordance with the requirements of the reference specifications specified above.

b. The CONTRACTOR shall verify with the pipe manufacturer all connection details.

c. The CONTRACTOR shall submit detail drawings and a written description of the construction procedure and sequence including its locations to bypass insertion and receiving bypass sewage flow of the host sewer and service laterals, install new hose sewer and service laterals, and disconnection and reconnection of the sewer service lateral connections.

2. Certification: The CONTRACTOR shall furnish a certified affidavit of compliance for all HDPE pipe and fittings furnished confirming that the materials supplied fully conform to the requirements specified herein.

3. Warranty as specified in Paragraph 1.06 Warranty of this Specification

4. The CONTRACTOR shall submit a complete plan for a sewage bypass pumping system in accordance with Section 2.07.

5. The CONTRACTOR shall perform trial fusion welds in the field for both main line and lateral connections and submit samples to the ENGINEER for review prior to installation of the pipe. Full penetration welds shall provide a homogeneous material across the cross section of the weld. The fusion machine employed for the trial welds shall be the same machine to be utilized for the complete project installation work.

6. Fusion equipment shall be operated only by technicians who have been certified by the pipe manufacturer or supplier and who have a minimum of 2 years' experience of fusion welding 8 inches or larger diameter pipelines. The technician's experience and verifiable references shall be documented in the HDPE pipe submittal.

E. Quality assurance

1. Quality assurance procedures shall be performed by the pipe manufacturer fully in accordance with the requirements of this Specification. The certification shall include certified laboratory data confirming that said tests have been performed on a sample of the pipe to be provided under this contract, or pipe from that production run, and that satisfactory results were obtained prior to any installation of said pipe.

2. Fusion joining and other procedures necessary for correct assembly of the polyethylene pipe shall be done only by personnel trained in those skills to the satisfaction of the ENGINEER and the pipe supplier.

3. Only those tools designed for the aforementioned procedures and approved by the pipe manufacturer or supplier and the ENGINEER, shall be used for assembly of pipe fittings to ensure proper installation. The heater plate shall be equipped with suitable means to measure the temperature of plate surfaces and to assure uniform heating such as thermometers or pyrometers.

4. Pipe (bursting) insertion equipment shall be operated only by technicians who have a minimum of 2 years' experience in the installation of the polyethylene pipe, using pipe bursting lining technology as specified herein. The technician's experience and references shall be documented in the HDPE pipe submittal.

5. The CONTRACTOR shall televise the installed pipe after existing services have been reconnected and manhole reconnection and sealing procedure work has been completed. The original post-television inspection video tape shall be provided to the ENGINEER for final approval.

F. The CONTRACTOR shall provide to the OWNER a warranty to be in force and effect for a period of 1 year from the date of final acceptance by the OWNER. The warranty shall require the CONTRACTOR to repair or replace the pipe should leakage, separation, collapse, or other failure result from faulty materials or installation as determined by the ENGINEER.

G. Materials

1. The CONTRACTOR shall provide polyethylene pipe as specified. The pipe shall be made to diameter and tolerances in accordance with ASTM D3035. The minimum ratio of orthogonal diameters prior to installation shall be 0.95. All pipes shall be made from virgin grade material. The pipe shall be of the diameter and class shown or specified and shall be furnished complete with all fabricated fittings, and other appurtenances as necessary for a complete and functional system.

2. Markings: Pipe materials shall be legibly marked by the pipe manufacturer. The following shall be printed on the pipe:

a. Name and trademark of manufacturer.

b. Nominal pipe size.

c. Dimension ratio.

d. The letters PE followed by the polyethylene grade per ASTM D1248, followed by the Hydrostatic Design Basis in hundreds of psi.

e. Manufacturing Standard Reference.

f. A production code from which the date and place of manufacture can be determined.

H. Pipe Material

1. Pipe: Pipe shall be high molecular weight, high-density polyethylene pipe. The material shall be listed by the Plastic Pipe Institute (PPI) with a designation of PE 3408 and have a minimum cell classification of 345434C, D, or E (inner wall shall be light in color) as described in ASTM D3350. The pipe material shall meet the requirements for Type III, Class B or C, Category 5, Grade P34 material as described in ASTM D1248. The pipe shall contain no recycled compound except that generated in the manufacturer's own plant from resin of the same specification from the same raw material pipe. Pipe (excluding black colored pipe) stored outside shall not be recycled. Pipe and fittings shall be made in conformance with ASTM F714 and ASTM D3261 as modified for the specified material. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, or other injurious defects. It shall be uniform in density and other physical properties. Any pipe not meeting these criteria shall be rejected.

2. Pipe Color, Pipe shall conform to the following color scheme:

a. Inside: The inner wall shall be soft white only (Opticore or equal),

b. Outside: The outer wall shall be black only.

3. Standard Dimension Ratio (SDR): Pipe shall conform to the following:

a. Nominal Size: 8 to 12 inches.

b. Outside Diameter: 8 to 12 inches.

c. SDR: Minimum 17.

I. Polyethylene pipe shall be joined by butt fusion welding, as specified in Paragraph O, Pipe Joing, herein.

J. Connection of new service lateral to the sewer main shall be accomplished by use of electrofusion saddle type fittings. The service connection shall be specifically designed for connection to the HDPE sewer main being installed, and shall be Central Electrofusion System, as manufactured by Central Plastics Company, Shawnee, Oklahoma.

K. The CONTRACTOR shall protect existing and new facilities including utilities, road pavement, and private property from damage by forces generated by the pipe bursting equipment. Any damage to any existing facilities as a result of the pipe bursting operation shall be the responsibility of the CONTRACTOR. If it is found that the damage is a result of the pipe bursting operation, the cost to repair or replace the damage facility shall be the responsibility of the CONTRACTOR.

L. Preparation

1. All work shall be performed as specified herein and supervised by personnel experienced in the installation of the pipe.

2. All sewer service connections shall be identified and located by CCTV prior to the start of any pipe bursting operation and pipe insertion. Upon commencement, pipe insertion shall be continuous and without interruption from one manhole to another, except as approved by the ENGINEER. Upon completion of the insertion and installation of the new pipe, the CONTRACTOR shall expedite the reconnection of lateral service connections so as to minimize any inconvenience to the customers.

3. The project foreman assigned to the project by the CONTRACTOR shall be onsite at all times from the time of inception to the time of completion.

M. Handling and storage

1. The CONTRACTOR shall exercise special care during the unloading, handling, and storage of all polyethylene pipe to ensure that the pipe is not cut, gouged, scored, or otherwise damaged. Any pipe segment, which has cuts in the pipe wall exceeding 10 percent of the wall thickness, shall be cut out and removed from the site at the CONTRACTOR's cost. The pipe shall be stored so that it is not deformed axially or circumferentially, which may hinder pipe installation. After the unloading of any pipe material ordered to the project site and before installation of the pipe, the CONTRACTOR shall inspect all pipe to verify its condition prior to installation with the ENGINEER and/or the project inspector. A pipe condition inspection report provided by the CONTRACTOR shall be filed with and approved by the ENGINEER prior to installation.

2. All polyethylene pipe, without an ultraviolet inhibitor, shall not be stored unprotected against the outside elements.

N. Repairs to the existing line

1. If the pre-installation video inspection reveals a sag in the existing sewer greater than one-half the diameter of the existing pipe, the CONTRACTOR shall take necessary measures to eliminate these sags by the system of pipe replacement, digging a sag elimination pit and bringing the bottom of the pipe trench to a uniform grade in line with the existing pipe invert or by other measures that shall be approved by the ENGINEER. There is no additional pay for this work.

2. The CONTRACTOR shall repair the pipe where point repairs are identified on the Drawings. If not shown, it will constitute extra work when approved by the ENGINEER. Any required point repairs shall be performed as per these specifications and will be paid for separately under the respective bid items for the work.

O. Pipe joining

1. Sections of polyethylene pipe shall be joined into continuous lengths on the jobsite above ground. The joining method shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. Fusion equipment used in the joining procedure shall be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, fusion temperature, alignment, and fusion pressure. Electrofusion may be used for field closures as necessary when appropriate fusion equipment can be utilized in a trench type environment. For end sections or "tail" pipe, the use of electrofusion couplings as manufactured by Central Plastics Company can be utilized.

2. A fire-retardant bag or suitable enclosure shall be used with the heater plate to facilitate control of heating process and to protect the heater plate surfaces from dirt and other debris when not in use. The heater plate surfaces shall be cleaned regularly as needed to prevent accumulation of fusion welding residues or other substances that may result in faulty pipe joining.

3. Butt fusion shall conform to ASTM D2657 and pipe manufacturer's criteria for the type of joining. Joint strength shall be equal to that of the adjacent pipe.

4. The inside and outside of pipe ends shall be cleaned with a cotton or non-synthetic cloth to remove dirt, water, grease, and other foreign materials. The pipe ends shall be cut square and carefully aligned just prior to heating.

5. After achieving the proper melt pattern, the pipe ends shall be brought together in a firm, rapid motion applying sufficient pressure to form a pipe bead (1/8 inch to 3/16 inch in height) around and inside the entire circumference of the pipe.

P. Pipe installation

1. The CONTRACTOR shall excavate, expose, and isolate all sewer service connections prior to replacing the existing sewer. The existing service connections may be encased in mortar, concrete, or reinforced concrete. There will be no additional compensation for demolition of this concrete.

2. The CONTRACTOR shall install the pipe by utilizing a constant tension system with a hydraulic or pneumatic bursting device that breaks away the existing pipe. A static "cone cracking" method may be used, but only by advancing the mole bursting head with a "solid steel tow rod" pulled by a constant tension hydraulic pulling wrenching system. The advancement of the bursting mole head with a "chain" shall be prohibited. The void created by the bursting device shall be sufficient in size to accommodate the HDPE pipe, which shall be installed immediately after the void has been formed. The CONTRACTOR shall be responsible to provide adequately designed pipe bursting equipment to accomplish the replacement of the existing pipe under all adverse conditions.

3. The CONTRACTOR may utilize existing manholes where practical. Location of pits outside of existing manholes should be considered as replacement of existing manholes that are not designated to be replaced shall be at the sole cost of the CONTRACTOR. Manhole inverts and benches and channels shall be removed to permit access for installation equipment as appropriate. When installing through an existing manhole, the input and output pipe openings shall be enlarged as appropriate to accommodate to the maximum OD size of the bursting device. At no time shall the bursting device and/or the installation process put any undue stress on the existing surface. Benches and channels shall be reconstructed to proper elevations after the new pipe is in–place.

4. The CONTRACTOR shall secure the pipe to concrete structures or manholes after the pipe has been installed along the length of sewer replaced. The CONTRACTOR shall use a water stop or flange adapter, as supplied by the pipe manufacturer, that is fused and seated perpendicular to the pipe axis, around the pipe exterior, and grouted into the structure wall to create a watertight seal. The new pipe shall be installed 12 inches inside of the manhole opening. The structure or manhole connections shall be made a minimum of 12 hours after pipe insertion.

Q. Low pressure air testing

1. After a manhole-to-manhole section of sanitary sewer has been pipe bursted and prior to any service lines being connected to the replacement pipe, the pipe shall be plugged at each manhole with pneumatic plugs. The design of the plugs shall be such that they will hold against the test pressure without requiring external blocking or bracing. One of the plugs shall have three air hose connections; one for inflating of the plug; one for reading the air pressure in the sealed line; and one for introducing air into the sealed line.

2. Low pressure air shall then be introduced into the sealed line until the interlay air pressure reaches 4.0 psig greater than the average back pressure resulting from any groundwater that may be over the pipe. At least 2 minutes shall elapse to allow the pressure to stabilize.

3. The time required for the internal pressure to decrease from 3.5 to 2.5 psig greater than the average backpressure resulting from any groundwater that may be over the pipe, shall not be less than the time shown for a given diameter in the following table:

Carrier Pipe Diameter (inches)	Minimum Elapsed time (minutes)
8	4
10	5
12	6
15	7

R. Reconnection of sewer service connections

1. The CONTRACTOR shall successfully test the installed pipe prior to reconnecting sewer services.

2. All sewer service laterals shall be replaced from the new main line to the respective property line and will be paid for separately under the respective unit bid items.

3. Service connections shall be connected to the new pipe and installed in a hole that shall be drilled the full inside diameter of the outlet or as recommended by the connection manufacturer. Service connections shall only be connected to the mainline with the use of fused service fittings as per the requirements in this section.

S. Final cleaning and television inspection

1. Prior to final acceptance and final inspection of the pipe by the ENGINEER, the CONTRACTOR shall flush and clean all parts of the system by removing all accumulated construction debris, rocks, gravel, sand, silt, and other foreign material from the pipe.

2. After completion of the pipe installation, service reconnections, finish work at the manholes and final cleaning, the sewer shall be televised with a color CCTV tilt-head camera recorded in VHS format. The original tape shall be provided to the ENGINEER.

SECTION 2.09- PRE- AND POST-REHABILITATION CCTV INSPECTION AND CLEANING

A. Scope of work

1. Cleaning: The Contractor shall furnish all labor, materials, equipment, and incidentals required to clean sanitary sewer line segments and manholes to remove all debris, solids, sand, grease, grit, etc. as specified herein.

2. Sewer Flow Control: The Contractor shall provide all the labor, materials, equipment, and incidentals necessary to divert wastewater flow in accordance with Subsection 2.07.B of this specification.

3. Contractors shall perform line cleaning and CCTV inspection of sewer lines for the following conditions. There is no direct pay for CCTV inspections unless noted otherwise.

a. Pre-rehabilitation of Find and Fix lines, at direct pay.

b. Pre-rehabilitation of sewer line segments requiring full length CIPP lining.

c. Pre-rehabilitation of sewer line segments requiring full length replacement via pipe bursting or other trenchless methods.

d. Post-rehabilitation of any sewer line segments inclusive of all rehabilitation methods (replacement, point repair, lining, etc.).

e. Upon written request by the engineer to perform additional CCTV inspections, at direct pay.

f. In the case of a CCTV performed as a Pre-rehabilitation inspection for a full length CIPP and then the CIPP is canceled as a result of the CCTV findings, the Contractor will be reimbursed for the line cleaning and CCTV at direct pay.

g. For pre-rehabilitation of sewer service laterals requiring CIPP lining see Paragraph G.

h. For post-rehabilitation of sewer service laterals requiring CIPP lining see Paragraph G.

B. Submittals

1. The Contractor shall maintain a master copy of all DVD's and CCTV inspection reports submitted, until final acceptance of contract. All DVDs, and CCTV inspection reports submitted by the Contractor will become the property of the Board.

2. The Contractor shall submit two (2) DVD's, one (1) hard copy, and one (1) electronic copy of corresponding CCTV inspection reports on a weekly basis for all work accomplished the previous week.

3. For pre-rehabilitation and post-rehabilitation CCTV inspection, the Contractor shall submit to the Engineer for review two (2) DVD's, one (1) hard copy, and one (1) electronic copy of the CCTV inspection reports on-line segments identified herein as requiring pre-rehabilitation CCTV inspection.

4. Where defect coding is required, the Contractor shall provide the defect coding in the Microsoft Access database provided by the Board. Defect coding shall be performed in accordance with the Sewerage & Water Board of New Orleans' Sewer Condition Classification Manual.

5. The Contractor shall submit documentation that the CCTV inspection equipment to be utilized meets the requirements in these specifications.

6. Forms and reports the Contractor proposes using to document cleaning work.

C. Camera distortions, inadequate lighting, dirty lens, blurred/hazy or unsteady video will be grounds to reject pre- and post-rehabilitation CCTV inspections. If quality of the pre- and post-rehabilitation CCTV inspections and inspection reports is not adequate as determined by the Engineer,

the Contractor shall provide a new pre- or post-rehabilitation CCTV inspection or inspection report. No additional payment shall be made for pre- and post-rehabilitation re-inspections.

D. When water from the public water supply is needed to meet the cleaning requirements of the equipment and the sewer, the Contractor shall obtain transient water meters from the Board with payment of a deposit. The Contractor shall be billed monthly by the Board for water usage. As a general rule, prior written approval from the Board is not needed to use fire hydrants located within this project area under this contract. However, fire hydrant keys are required and are available from the Sewerage and Water Board's Networks Department with payment of a deposit. The Contractor will be responsible for payment of deposit and payment of a monetary fine should the hydrant key(s) not be returned.

E. All high velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a variety of high velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 degrees to 45 degrees in all size lines to be cleaned. In addition to conventional nozzles, use a nozzle or series of nozzles which direct the cleaning force to the bottom of the pipe for sewers 18 inches and larger. The equipment shall include a water tank, auxiliary engines, pumps, and hydraulically driven hose reel all contained within one single unit. All controls shall be located so the equipment can be operated above ground. A gauge shall be installed to indicate working pressure on the discharge of high-pressure water pumps.

F. CCTV inspection

1. The Contractor shall supply camera skids and floating skids or rafts as required to complete pre- and post- rehabilitation CCTV inspection as required in the Contract. The Contractor shall inspect sewer lines with pan and tilt conventional television equipment. The operation of the television equipment shall be controlled by a skilled technician or supervisor who shall be located at the control panel in the mobile television studio. The CCTV equipment including reels and the television studio are to be contained within a single vehicle.

2. The camera system shall be able to navigate around minor objects, roots, and debris. The camera cable shall be retracted to remove slack and to ensure an accurate footage reading.

3. The distance between manholes shall be verified by measuring tape. If the counter distance and the taping distance differ by more than 2 feet per 100 feet, the run shall be re-televised by CCTV Contractor.

G. Pre-rehabilitation CCTV

The Contractor shall perform pre-rehabilitation CCTV inspection as required herein.

1. The Contractor shall perform cleaning activities prior to pre-rehabilitation CCTV inspection.

2. The purpose of the pre-rehabilitation CCTV inspection is to provide defect coding data to the Engineer to determine the extent of rehabilitation for line segments identified as find and fix line segments. In addition, pre-rehabilitation CCTV inspection is intended to verify the location of service connections and to verify that additional repairs are not required for line segments and service laterals identified to receive full length CIPP liners.

3. Defect coding for line segments identified as find and fix line segments is required. The Contractor shall submit defect coding of find and fix line segments in the Microsoft Access database provided by the Board

4. The Engineer will make the final determination of rehabilitation for line segments identified as find and fix line segments.

5. The Contractor shall determine if a change or addition in the rehabilitation method(s) is necessary for line segments identified to receive a full length CIPP liner. If the Contractor determines that a change or addition in the rehabilitation method(s) is necessary, the Contractor shall provide the pre-rehabilitation CCTV inspection, DVD, and inspection report to the Engineer for review and approval.

H. Post-rehabilitation CCTV

1. The Contractor shall perform post-rehabilitation CCTV inspection as required herein.

2. Sewer line segments repaired by full-length replacement or by full-length lining will require cleaning prior to CCTV inspection and will require defect coding in accordance with the Board's Sewer Condition Classification Manual, latest edition.

3. Sewer line segments repaired by excavated point repair will require cleaning prior to CCTV inspection. The Contractor shall inspect the main from manhole to manhole, but defect coding of the line segments is not required.

4. Service laterals repaired by CIPP lining shall receive post-rehabilitation CCTV inspection. Defect coding of the service lateral is not required.

I. Cleaning

1. All interior surfaces of sewer lines shall be cleaned adequately to provide for a camera used in internal inspection to discern structural defects, misalignment, and infiltration and inflow sources. Cleaning shall be performed prior to internal inspection to preclude the buildup of debris from infiltration and inflow sources and discharges from upstream sewer line segments sections.

2. Cleaning: Cleaning shall be defined as the use of high velocity jet nozzle cleaning equipment to clean the line to the satisfaction of the Engineer.

3. Specialty cleaning: Specialty cleaning is defined as removal of obstructions such as roots and intruding connections. Obstruction removals may require the use of special equipment such as rodding or bucket machines, and/or expanding cutters. The Contractor will obtain authorization from the Engineer prior to conducting any specialty cleaning. Authorization shall be required for each individual sewer reach. No payment shall be made for specialty cleaning without prior approval by the Engineer.

4. No fire hydrant shall be obstructed so as to prevent its use in case of a fire in the area served by the hydrant.

5. The Contractor shall provide the Board with monthly readings of water consumption for billing purposes. All cleaning equipment must be equipped with a backflow preventer to prevent any contamination to the public water supply. When utilizing water from the public water supply, the Contractor shall remove water meters, fitting, and piping from fire hydrants at the end of each working day. The Contractor shall not waste water from public water supplies due to poor connections to hydrants.

6. If cleaning of an entire line segment cannot be successfully performed from one manhole, the equipment shall be re-setup at the manhole on the opposite end of the pipe segment being cleaned and cleaning shall be re-attempted.

7. The Contractor shall use a nozzle that directs the cleaning force to the full circumference of the pipe.

8. When using hydraulically propelled devices, the Contractor shall take necessary precautions to ensure that the water pressure created does not cause damage or flooding to public or private property.

9. The Contractor is responsible for the disposal of waste from cleaning operations at a permitted disposal site. The Board's East Bank Sewage Treatment Plant is available for disposal of waste from cleaning operation under this Contract. The Contractor shall abide by the operational policies and normal administrative working hours for the East Bank Sewage Treatment Plant when used for disposal.

10. Acceptance of sewer cleaning work is contingent upon the successful completion of the television inspection. If television inspection shows debris, solids, sand, grease, or grit remaining in the line, the cleaning is considered unsatisfactory. The Contractor, at no additional cost to the Board, shall repeat the cleaning, inspection, and televising of the sewer line until cleaning is acceptable by the Engineer.

J. Television equipment

1. Closed Circuit TV Equipment: The Contractor shall select and use closed-circuit television equipment that will produce color video recordings. The Contractor shall supply camera skids and floating skids or rafts as required to complete the CCTV portion of the Contract.

2. Pipe Inspection Camera

a. The television camera used for the sewer line inspection shall be one specifically designed and constructed for sewer pipeline inspection. The camera shall be waterproof and shall be operative in any conditions that may be encountered in the inspection environment. The camera shall be operative in 100% humidity conditions. The Contractor shall produce video recordings using a pan-and-tilt, radial viewing pipe inspection camera that pans ±275 degrees and rotates 360 degrees.

b. Television inspection of an entire line segment cannot be successfully completed from one manhole; a reverse set-up must be performed to obtain a complete television inspection. If successful televising of the entire line segment cannot then be accomplished, the inspection effort shall be abandoned. The Contractor will be paid for the inspection of the actual length of line segment televised. There will be no additional payment for reverse set-ups.

c. The camera shall be moved through the line segment in either direction at a rate not to exceed 30 feet per minute. Any means of propelling the camera through the sewer line which would produce non-uniform or jerky movement of the camera, will not be acceptable, Stop the camera at all defects so that a clear picture of the defect remains on the video screen for the operator to verbally describe the defect on the tape. Record a full 360^{O} pan view at all service lateral lines.

3. Wherever prevailing conditions allow, the CCTV camera head shall be positioned to reduce the risk of picture distortion. In circular sewers, position the television camera lens centrally (in prime position) within the sewer. In non-circular sewers, camera location shall be at mid-height of the sewer, unless otherwise agreed, and centered horizontally. In all instances, orient the camera along the longitudinal axis of the sewer when in prime position. A positioning tolerance of plus or minus 10% of the vertical sewer dimension shall be allowed when the camera is in prime position.

4. The adjustment of focus and iris shall provide a minimum focal range from 2 inches in front of the camera's lens to infinity. The distance along the sewer in focus from the initial point of observation shall be a minimum of twice the vertical height of the sewer. The illumination must be such as to allow an even distribution of the light around the sewer perimeter without the loss of contrast, flare out of picture, or shadowing.

5. The Contractor shall use a camera with camera height adjustment so that the camera lens is always centered at one-half the inside diameter or higher in the pipe being televised. The Contractor shall provide remote and/or automatic focus and aperture control.

6. The television inspection equipment shall be of such high quality as to enable the following to be achieved:

a. Color: With the monitor adjusted for correct saturation, the six colors plus black and white shall be clearly resolved with the primary and complementary colors in order of decreasing luminance.

b. Resolution: The live picture must be displayed on a monitor capable of providing a clear, stable image free of electrical interference with a minimum horizontal resolution not less than 450 lines.

7. The Closed-Circuit Television monitor display shall incorporate an automatically updated record in feet and tenths of a foot of the distance along the line from the cable calibration point to the center point of the camera. The Contractor shall use a suitable metering device that enables the cable length to be accurately measured; this shall be accurate to ±2%. The Contractor shall demonstrate that the tolerance is being complied with, by tape measurement between manholes on the surface. This taped measurement must be included on each television inspection log both written and electronic. If the Contractor fails to meet the

required standard of accuracy, the Engineer shall instruct the Contractor to re-survey those lengths of sewer at no additional cost to the Board.

8. Video recordings shall be high quality. The video recording shall reproduce clearly discernable sound and video information on the television monitor. The recording shall be free of interference and shall produce a clear, stable image.

9. The audio portion of the recording shall be clear and complete, and easily discernible. The audio portion shall record the location or identification of the line segment, the manhole-to-manhole direction of travel, and the distance traveled on the specific inspection. The audio portion shall record and identify all visible defects and include the information required by the Sewerage and Water Board of New Orleans' Sewer Condition Classification Manual, latest edition.

10. The video recording equipment shall be continuously connected to the television inspection and monitoring equipment. The video recording and monitoring equipment shall have the built-in capability to allow the Engineer and the Contractor to instantly evaluate both the audio and video quality of the video recording at all times during the television survey. Video recordings shall be enclosed in plastic containers which shall clearly indicate the date the tape was recorded, the designated section(s) of sewer lines contained on the tape, and the referenced sewer inspection report covering the sections of the sewer lines so included.

11. Lateral Inspection Camera

a. The television camera used for the lateral inspection shall be one specifically designed and constructed for lateral inspection. The Contractor shall provide a portable "mini-cam" CCTV inspection system. This system shall provide a color video satisfactory to the Engineer and contain footage readings displayed on the monitor and videotape at all times. The accuracy of the distance meter shall be checked by the use of tape measurement and the accuracy shall be within 2%.

b. When the cleanout for a service line is inaccessible, the Contractor shall perform CCTV inspection of the service lateral from the mainline utilizing a lateral camera launcher system. A sewer main line television camera shall be used to position the lateral camera launcher.

12. DVD

a. The Contractor shall provide video recordings with audio comments in the DVD format, recorded at Standard Play (SP).

b. Complete sewer line segments shall be included on the same video recordings (i.e., CCTV inspections for sewer line segments shall not be divided among videotapes).

c. The video format shall be an MPEG-1 compressed video, and resolution video format shall be QSIF (Quarter-size Standard Image Format) of 176 x 112 pixels for NTSC video format.

d. Two labels are required on each DVD. One label shall be placed on the DVD Case and the other on the face of the DVD. The Contractor shall permanently label each as follows:

DVD Case

PRECONSTRUCTION AUDIO-VIDEO SURVEY
Contract No. Tape No.

Face of DVD

Project Title: Contractor:

Date Televised (MM/YY): Date Submitted

Manhole No. From	Manhole No. To	Pipe Diameter	Pipe Length	Street	Starting Counter No.

K. Television Inspection Report

1. The Contractor shall complete a Television Inspection Report covering the television inspection work and the information acquired, as described in the Sewerage and Water Board of New Orleans' Sewer Condition Classification Manual, latest edition.

2. The same television inspection code sheet shall be used throughout the Contract. The code sheet shall include abbreviations for specific defects as detailed in the Sewer Condition Classification Manual. Submit all electronic data files for the previous week's work to the Engineer weekly CD-ROM. Include hard copy printouts of the correlating inspection reports with each submittal. Submit electronic files on CD-ROM and DVDs for corresponding lines concurrently. Submit all electronic data files in a Microsoft Access database format provided by the Board. The manual and data entry database are available for review at the office of the SSERP Program Manager.

3. At the start of each line segment video recording, record and report the measured length of the sewer line being inspected. Begin with zero at the inside face of the start manhole, and end at the inside face of the end manhole.

4. At the start of each line segment video recording, electronically generate and clearly display, on the viewing monitor and video recording, a record of data in alphanumeric form containing the following information:

a. Size and Length of Line;

b. Automatic update of the camera's position, in feet and tenths, in the sewer line from adjusted zero;

c. Type of pipe material;

d. Upstream manhole name and downstream manhole name;

e. Date of inspection;

f. Road name or line segment location description;

g. Direction of inspection (upstream or downstream);

h. Starting time of the inspection.

5. Once the survey of the sewer line is under way, continuously display specific data on the viewing monitor and video recording. The size and position of the data display shall not interfere with the main subject of the picture yet shall be easily readable when the recording is replayed. At a minimum, the following data should be displayed:

a. Automatic update of the camera's position, in feet and tenths, in the sewer line from adjusted zero.

b. Upstream manhole name and downstream manhole name.

6. Each sewer length, i.e., the length of sewer between two consecutive manholes, shall be entered on a separate coding sheet. Thus, where a Contractor elects to "pull through" a manhole during a CCTV Survey, he shall start a new coding sheet at the manhole "pulled through" and shall re-set the distance to zero on the coding sheet.

7. The Contractor shall make submittals as required herein, on a weekly basis for all work accomplished the previous week.

L. Camera operation

1. All efforts should be made to prevent damage to the sewer conduit during the television inspection. In the case where damage is caused by the Contractor, for any reason, such as would be caused by incorrect deployment of bonds or retrieval of lodged equipment, the cost of repair or remedy shall be absorbed by the Contractor and shall be considered an incidental part of the Work. No separate measurement or payment will be made.

2. The CCTV operator shall accomplish simultaneous video and audio recording of defects, services, on site.

3. The camera shall be moved through the line in either direction at a uniform rate, stopping when necessary to insure proper documentation of the sewer's condition. Manual winches, power winches, TV cable, powered rewinds, and crawler devices or other devices that do not obstruct the camera view and do not interfere with proper documentation of the sewer conditions shall be used to move the camera through the entire sewer line section. The

Contractor shall reposition his equipment as necessary so that the inspection can be performed from manhole on the opposite end of the pipe segment being viewed.

4. The lateral inspection camera video shall contain the forward and backward movement of the camera up to the mainline and back to the cleanout. If an attempt to video the service lateral line cannot be completed to the sewer main line, the blockage will be reported to the Engineer in writing and the service lateral line CCTV inspection will be abandoned.

5. When utilizing a lateral camera launcher system from the mainline, a maximum of 100 linear feet of the lateral or to the property cleanout, whichever is closer to the sewer main line, shall be inspected. Actual footage inspected may vary depending on lateral condition, bends, roots, launcher limitations, etc.

SECTION 2.10 - SANITARY SEWER MANHOLE REHABILITATION

A. Scope of work

1. The Contractor shall furnish all labor, materials, equipment, and incidentals required for the purpose of restoring structural integrity, eliminating water infiltration, repair of voids, and providing corrosion protection of the sanitary sewer manholes as shown on the Drawings and specified herein and assumed to be approximately 48” in diameter.

2. Sanitary sewer manhole rehabilitation shall include the following:

a. Leak-proofing of deteriorated, leaking, or structurally unsound manholes by lining with lightweight structurally reinforced concrete systems.

b. Repair and sealing of the manhole base, benches, channel, walls, corbel/cone, and chimney of brick, block, or precast manholes, including the removal of any unsound material.

c. Injection of chemical grout.

d. Cleaning and preparatory patching of manholes receiving liners.

e. Removal of flush valves and water service lines.

3. Sanitary sewer manhole rehabilitation for frames and covers replacement or adjustments shall be performed in accordance with section 3.16 of these special provisions (Items CF-371 through CF-378).

B. Submittals

1. The Contractor must submit for approval the manufacturers’ specifications for all products that will be used for manhole rehabilitation. Only materials approved by the Engineer shall be on the job site.

2. The Contractor must, upon request by the Engineer, submit all other product information deemed necessary by the Board.

3. The Contractor must submit a written Vacuum Test Report for each test location of the concrete lining system indicating pressures, duration, actual leakage amounts, and other data to the Engineer for approval as a condition of acceptance. Testing is to be performed only when the Board inspector is present.

4. For the installation of the lightweight spray applied structural concrete lining system the Contractor shall submit a Warranty Certificate showing that the Contractor, the Applicator, and the Manufacturer will warrant the installed cementitious lining system against infiltration and corrosion for a minimum of 1 year from Final Acceptance of the Contract by the Board.

5. The Contractor shall provide certification from each product manufacturer utilized that the applicator is certified to apply the product and the manufacturer has witnessed and approved the application in the first manhole to be rehabilitated with the product.

C. Manhole rehabilitation materials

1. General

a. All materials shall be designed, manufactured, and intended for sewer manhole rehabilitation and the specific application in which they are used.

b. Each material shall be designed for application over damp surfaces (not wet surfaces or surfaces with actively running water) without degradation of the final product or the bond between the product and the manhole surface.

2. Infiltration Control: Stopping active leaks in concrete and masonry manholes shall be achieved by using the following:

a. Hydraulic Cement:

i. The hydraulic cement shall be a fast-setting, volume-stable, waterproofing, cementitious plugging material. The material shall consist of hydraulic cement, graded silica aggregates, and special plasticizing/accelerating agents. It shall not contain chlorides, gypsum, plasters, iron particles, aluminum powder or gas-forming agents, nor shall it promote the corrosion of steel.

ii. The material shall meet the following physical property requirements:

Set time (max)	ASTM C403	60 to 90 sec
Compressive strength (1hr)	ASTM C109	1000 psi
Bond strength (1hr)	ASTM C321	50 psi.

iii. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

b. Chemical Grout:

i. The chemical grout shall be a hydrophilic liquid that is water reactive

and will change from a free-flowing liquid to a water impermeable elastomeric gel upon injection to stop excessive infiltration to a manhole. The reaction (curing) shall produce a chemically stable and non-biodegradable, tough, flexible gel. The chemical grout shall be a urethane liquid in uncured form with a moderate viscosity suitable for pumping and variable curing times. ii. The polyurethane chemical grout shall be Scotch-Seal 5610 by 3M, Avanti AV-254, or approved equal.
The material shall meet or exceed the following requirements:

- The liquid shall have a solids content of 80% and a specific gravity of 1.04 to .11.
- The liquid shall have a viscosity of 300 to 1000 centipoise at 70-degree Fahrenheit.
- Gel times shall be in accordance with the manufacturer's recommendations.
- The grout shall have the ability to increase viscosity, density, gel strength and resistance to shrinkage by the use of additives in the reaction water.

iii. A reinforcing agent shall be added to the reaction water at the manufacturer's suggested rate. This agent is intended to increase the polyurethane gel's resistance to wet/dry cycles, freeze/thaw cycles, and solid movement stresses. The reinforcing agent shall be appropriate for the specific grout product that is to be used.

iv. Additional chemical grout additives, such as catalysts or accelerators, needed to make the grout function properly shall be as manufactured by 3M, Avanti, or approved equal and shall be used in a manner approved by the manufacturer.

3. Patching

a. Material - Patching, repointing, filling, and repairing nonleaking holes, cracks, and spalls in concrete and masonry manholes, including trough repair shall be achieved by using the following material:

b. A premixed non-shrink, cement-based, patching material. The material shall consist of hydraulic cement, graded silica aggregates, special plasticizing/accelerating agents, which has been formulated for vertical or overhead use. It shall not contain chlorides, gypsums, plasters, iron particles, aluminum powder, or gas-forming agents, nor shall it promote the corrosion of steel.

i. The material shall meet the following physical property requirements:

Set time (max)	ASTM C403	30 min
Compressive strength (1 hr.)	ASTM C109	800 psi
Compressive strength (28 day)	ASTM C109	3000 psi.

ii. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

D. Spray applied and centrifugally cast lining materials

1. The material applied to the surface of the manhole shall be a lightweight structurally reinforced cementitious blend of siliceous aggregates, non-metallic fibers, and other additives. The material shall produce a monolithic liner that is impervious to the flow of water, resistant to sulfide attack, and restores structural integrity to the existing manhole walls. The material shall be Permacast MS-10,000, Quadex QM-1s, SCM Reliner MSP, Strong Seal MS-2A, or approved equal.

2. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

3. The cementitious lining system shall result in a monolithic structure conforming to the interior shape and contour of the existing manhole and covering all interior surfaces. The lining system shall be completely watertight and free of any joints or openings other than pipe inlets, pipe outlets, and the rim opening. The junction of the lining material with the pipe material at the inlets and outlets shall be watertight.

4. The cementitious lining system shall allow rehabilitation of a concentric, eccentric, or flat top manhole without removing the manhole frame casting and top section or corbel.

5. For manholes greater than 12 feet in depth, the lining shall withstand the pressures associated with a groundwater depth equal to the manhole depth. Linings for all other manholes shall withstand the pressures associated with a minimum depth of 12 feet. The manufacturer's recommended lining thickness dimensions to withstand groundwater pressure shall be submitted to the engineer for review.

6. The material shall have the following minimum requirements:

Compressive Strength (28 days), psi	ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars	3,000
Tensile Strength, psi	ASTM C496 - Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens	300
Flexural Strength, psi	ASTM C293 - Standard Test Method for Flexural Strength of Concrete	600
Bond Strength, psi	ASTM C321 - Standard Test Method for Bond Strength of Chemical-Resistant Mortars	130
Shrinkage, %	ASTM C596 - Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement	0

Density, lb/cf	(when applied)	105

7. The material shall be designed for the selected method of application.

E. Wall cleaning material

1. Pressure Washing Equipment shall have the following minimum requirements:

a. Operating Pressure – 3,000 psi with the capability to produce a continuous flow of water at a minimum temperature of 210-degree Fahrenheit at a minimum force of 3,000 psi.

2. Cleaners: Detergent or muriatic acid capable of removing dirt, grease, oil, and other matter which would prevent bonding of the sealing material to the manhole wall. The Contractor shall refer to the lining material manufacturer's recommendations for preparatory surface cleaning.

F. New manhole frames and covers shall be East Jordan Iron Works (Vulcan) V-1501, or approved equal, as detailed on S&WB STD Drawings 3143-E-1. Work shall be performed and will be paid for as per section 3.16.

G. Manhole casting embedment sealant

1. The sealant shall be a premium, extruded, bituminous, tacky rubber sealant in rope form for use on manholes as an embedment material for the frame to adjusting brick/mortar corbel. Work shall be performed and will be paid for as per section 3.16.

2. Sealant shall conform to the latest version of ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants and Federal Specification SS-S-210A – Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints, Type I.

3. The sealant shall have the following properties:

Physical Properties	REQUIRED
Initial Elongation, %, min.	300
Elongation, %, min., at two weeks in total water immersion	300
Storage Life	Indefinite
Service Temperature Range, ^{0}F	-20 to 200

H. The Contractor shall perform all work needed to structurally repair manholes, improve sewer flow, prevent entrance of inflow or groundwater, and prevent entrance of soil or debris.

I. Delivery, storage, and handling

1. The materials shall be delivered to the job site in original unopened packaging and clearly labeled with the manufacturer's identification and printed instructions. The Contractor shall handle and store all material in accordance with manufacturer instructions and shall dispose of all wastes in accordance with applicable regulations.

2. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods.

J. Project conditions

1. Manholes Containing Flow Monitoring Equipment:

a. Drawings may not show locations of flow monitoring equipment. If a manhole contains any mechanical hardware or electrical flow monitoring equipment, the Contractor shall immediately notify the Engineer.

b. Work in such manholes shall be rescheduled at no additional cost to the Board until the Board has removed the equipment and the Contractor has been given further instructions.

c. Manholes with mechanical hardware or electrical equipment shall not be subjected to diversion pumping.

d. Any damage to installed equipment, resulting from the Contractor's failure to adhere to the above, shall be repaired by the Board at the Contractor's expense.

2. Field Location of Manholes:

a. The Contractor shall be responsible for locating and uncovering all manholes. If the Contractor is unable to locate a manhole after due diligence with measuring tapes, metal detectors, and probing, the Contractor shall notify the Engineer in writing for Board assistance.

b. The Contractor is cautioned that manholes that are not part of the subsystem being rehabilitated may be located within the project limits. No payment will be made to the Contractor for work in manholes not indicated on the Drawings or as directed in writing by the Engineer.

K. Manhole covers, frames, and adjusting rings from abandoned, broken, or adjusted castings shall remain the property of the Board. The Contractor shall deliver salvaged items at a time and to a property location designated by the Board.

L. Rehabilitation of manhole structure

1. Disposal Sites: The Contractor may dispose of sludge, sand, debris, grit, and liquid wastes resulting from performance of operations in this contract at the East Bank Sewage Treatment Plant (6501 Florida Avenue). There will be no charge for disposal at this location. The Contractor may utilize and coordinate other licensed disposal sites at no additional cost to the Board, upon approval by the Engineer.

2. Cleaning: All concrete and masonry surfaces to be rehabilitated shall be cleaned prior to the application of rehabilitation products. All grease, oil, laitance, coatings, loose bricks,

mortar, unsound brick, or concrete and other foreign materials shall be completely removed. Water blasting utilizing 210-degree Fahrenheit steam unit and proper nozzles shall be the primary method of cleaning; however, other methods such as wet or dry sandblasting, acid wash, concrete cleaners, degreasers and/or mechanical means may be required to properly clean the surface. All surfaces on which these methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products. Debris resulting from cleaning shall not be washed downstream but shall be removed from the manhole.

3. Infiltration Control: After surface reparation and prior to the application of mortars and coatings, infiltration shall be stopped by use of an approved water stop compound or chemical grout. All large holes or voids around steps, joints or pipes, all spalled areas and all holes caused by missing or cracked brick shall be patched and all missing mortar shall be removed from the area to be patched or repointed, exposing a sound subbase. All cracks not subject to movement and greater than 1/16 inch in width shall be grouted with approved non-shrink-patching mortar.

4. Channel Repair: The Contractor shall remove all loose grout and rubble from existing channel. The Contractor shall rebuild channel if required by reshaping, repairing slope of shelves or benches. Work shall include aligning inflow and outflow ports in such a manner as to prevent the deposition of solids at the transition point. All inverts shall follow the grades of the pipe entering the manhole. Changes in direction of the sewer and entering branch or branches shall have a true curve of as large a radius as the size of the manhole will permit, but will be shaped to allow easy entrance of maintenance equipment including buckets, CCTV, etc.

5. Manhole Steps: All existing non-stainless-steel manhole steps shall be cut smooth with the wall or be removed completely prior to lining.

6. Full Depth Wall Liner: The lining system shall be installed in accordance with the manufacturer's recommendation to withstand groundwater pressures. Cementitious lining shall be applied to manhole wall, bench, and channel surfaces. All cementitious linings shall have a minimum thickness of 5/8 inch. All multi-component polymeric lining shall have a minimum thickness of 1/2 inch.

a. Application of all products shall be by manufacturer certified applicators.

b. Manholes requiring lining shall be cleaned no more than 2 hours before lining. The surface prior to lining shall be damp without noticeable free water droplets or running water. Materials shall be applied to a minimum uniform thickness ensuring that all cracks, crevices, and voids are filled, and a smooth surface remains after light troweling.

c. For spray applied lining, the first application shall take an initial set (disappearance of surface sheen which could be 15 minutes to 1 hour depending on ambient conditions) before the second application, if necessary, to assure a minimum total finished thickness of 5/8 inch. For centrifugally cast lining, the rotating casting applicator shall be positioned to evenly apply the material and shall be withdrawn at a rate to ensure a final minimum thickness of 5/8 inch. A depth gauge shall be used during application, at various locations, to verify the required thickness.

d. The Contractor shall apply light troweling to compact the material into voids and set the bond. The surface shall be troweled to a smooth finish with care taken not to over

trowel and bring additional water to the surface.

e. The bench covers used to catch debris shall be removed and the bench and channel lined to produce a gradual slope from the walls to the channel with the thickness at the edge of the channel being no less than 5/8 inch. The wall and channel intersection shall be rounded to a uniform radius along the circumference of the intersection.

f. No application shall be made to a frozen surface or if freezing is expected to occur within the manhole for 24 hours after application. If ambient temperatures are in excess of 90-degree Fahrenheit, precautions shall be taken to keep the mix temperature at the time of application below 90-degree Fahrenheit.

g. The application shall have a minimum cure time as recommended by the manufacturer before being subjected to active sewer flow.

h. Liner samples shall be taken by the Board assigned testing laboratory on a weekly basis or as directed by the Engineer.

M. Testing and acceptance of full depth liners

1. Cementitious Liners

a. All rehabilitated manholes utilizing a full depth comprehensive lining system shall be tested by using a vacuum method. This testing shall follow the manufacturer's recommendations for proper and safe procedures. Vacuum testing of manholes and structures shall be performed following proper curing of the lining. Any visible leakage in the manhole or structure, before, during, or after the test shall be repaired regardless of the test result at no additional cost to the Board.

b. All pipes for vacuum testing shall be installed at the top access point of the manhole. A vacuum of 10 inches of mercury (5.0 psi) shall be drawn on the manhole and the time for the pressure vacuum to drop 9 inches of mercury (4.5 psi) shall be measured. Manholes will be considered to have failed the air test if the time to drop 1 inch of mercury is less than the value shown in the following table.

Vacuum Test Timetable

Depth - feet	48" Diameter	60" Diameter	72" Diameter	96" Diameter
4	10 sec.	13 sec.	16 sec.	19 sec.
8	20 sec.	26 sec.	32 sec.	38 sec.
12	30 sec.	39 sec.	48 sec.	57 sec.
16	40 sec.	52 sec.	64 sec.	76 sec.
20	50 sec.	65 sec.	80 sec.	95 sec.
24	60 sec.	78 sec.	96 sec.	114 sec.
+ Each 2'	+ 5 sec.	+ 6.5 sec.	+ 8.0 sec.	+ 9.5 sec.

c. When testing, manhole depths shall be rounded to the nearest foot. Testing times for intermediate values of manhole depth shall be interpolated. For manhole depths greater than 24 feet, the values shown in the last line of the table shall be added to the 24-foot value for each additional 2 feet of depth.

d. If the manhole or structure fails the vacuum test the Contractor shall perform additional repairs and repeat the test procedures until satisfactory results are obtained at no additional cost to the Board.

e. After the manhole rehabilitation work has been completed, the Contractor shall allow the manhole to be visually inspected by the Engineer. The finished surface shall be free of blisters, "runs", "sags", or other indications of uneven lining thickness. There shall be no evidence of visible leaks.

N. Manhole benches and channels

1. The Contractor shall remove obstructions and all loose materials from benches, troughs, and pipe inverts prior to shaping the channel. The Contractor shall form a smooth, U-shaped channel having a minimum depth of one-half exiting pipe diameter and connecting the inlet and exiting pipes of the manhole using an approved manhole rehabilitation material. The Contractor shall control flow to allow sufficient setting time for material used.

2. The Contractor shall form a smooth transition between the reshaped channel and a raised manhole bench to eliminate sharp edges of pipe, concrete bench, and channel. The Contractor shall make finished benches and channels smooth and without defects which would allow for accumulation of debris.

O. Removal of Flush Valve Apparatus and Water Service Lines

1. For each sewer manhole with a flush valve present, the Contractor is required to remove the flush valve apparatus from the manhole (ITEM NO. CSS742(X10) below). Prior to starting this work, Contractor must send written notification, including manhole ID numbers, to the Engineer. The Engineer's inspector must witness all work performed.

2. Remove the service line from the manhole to a distance of two (2) feet beyond the exterior face of the manhole wall as directed by the Engineer's inspector. [See SSERP Detail for Flush Valve Removal]. The water line penetration hole shall be filled from both inside and outside of the manhole with non-shrink grout, (ITEM NO. CSS742(X11) below). The Engineer's inspector must witness all work performed.

3. For each sewer manhole with a water service line present, locate and disconnect the service line at the water main (ITEM NO. CSS742(X12) below). [See SSERP Detail for Flush Valve Removal]. Prior to starting this work, Contractor must send written notification, including manhole ID numbers, to the Engineer. The Engineer's inspector must witness all work performed.

4. The Contractor shall refer to the S&WB unit sheets to find the closest water main. To locate the point of connection at the water main, identify the shortest distance between the water main and the point where the service line penetrates the manhole. [See SSERP Detail for Flush

Valve Removal]. Typically, the actual connection is within six feet in either direction of the theoretical connection point. On the manhole side of the water main, and at approximately twelve (12) inches clear from the outside of the water main, carefully sawcut any pavement and excavate parallel to the main until the water service line is located. Once located, trace the service line to the main. Limits of pavement saw cutting and removal shall be limited to within panels and not extend beyond panel joints without engineer's approval.

5. At the water main, the service line may or may not be connected to the water main with a corporation cock. If a corporation cock is present, the corporation cock should be turned off and the service line disconnected. The cock should be inspected to determine if it is leaking. If there is no corporation cock, or if the corporation cock is leaking, it will be necessary for the S&WB to shut down the water main. The Contractor shall then remove the direct connection or leaking corporation cock and seal the tap hole using a full circle stainless steel repair clamp approved by the Engineer (ITEM NOS. CSW741-01 or CSW741-02).

6. The remainder of the water service line shall be abandoned in place.

7. Restore the site to pre-construction condition in accordance with the restoration specifications and pay items in this contract.

P. Final Acceptance of the Contract will be granted via Sewerage and Water Board Resolution. All Contract work is not considered final accepted until the Resolution has been passed by the Board of Directors.

SECTION 2.11 – CURED-IN-PLACE PIPE LINING

A. The Contractor shall provide all labor, materials, equipment, and incidentals to accomplish the Cured-In-Place Pipe (CIPP) Lining of all existing sewer pipe and service laterals as shown on the Drawings and specified herein.

B. The Contractor shall furnish an extended warranty for liner materials from the liner manufacturer for a total of 5 years from the date of Final Acceptance.

C. The Contractor shall have a minimum of two (2) years' experience in sewer line repairs by CIPP liner installation. The CIPP liner product manufacturer shall have a minimum installation history of two (2) years and 100,000 linear feet of furnished product including the sizes applicable for this project. Verifiable experience shall be submitted to the Board upon request.

D. Liner

1. All CIPP lining products shall comply with the latest versions of ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube, or ASTM F1743 - Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP). The Contractor shall furnish a general purpose unsaturated, polyester, or thermosetting vinyl ester resin and catalyst system that provides cured physical strengths specified herein.

2. The flexible tube shall consist of one or more layers of needled felt or equivalent woven or non-woven material manufactured under quality-controlled conditions set by the manufacturer and be capable of carry resin and withstanding installation pressures and curing temperatures. The tube shall be compatible with the resin system used and shall contain no intermediate layers that delaminate after resin curing. It shall not be possible to separate any layers with a probe or knife blade such that the layers separate cleanly or the probe or knife blade moves freely between the layers.

3. The flexible tube material shall be able to stretch to fit irregular pipe sections and negotiate bends. The tube shall be fabricated to a size that when installed will neatly fit the internal circumference and length of the existing sanitary sewer main lines and service lateral lines when installed. Allowance shall be made for circumferential stretching during insertion so that the final cured product is snug against the wall of the host pipe and free of fins and buckles.

4. The resin used shall be a thermoset resin system that is compatible with the CIPP installation. The resin shall be able to cure in the presence of water and the initiation temperature for cure shall not be more than 180o F.

5. The liner thickness shall be sized for a minimum hydrostatic and earth load of 8 feet. The earth load and hydrostatic load shall be increased to the manhole depth for bury depths in excess of 8 feet unless otherwise noted.

6. The wall color of the interior pipe surface of the CIPP after installation shall not be of a dark or nonreflective nature that could inhibit proper CCTV inspection.

7. The liner shall be structurally designed for a fully deteriorated host pipe/direct bury condition, prism loading, and AASHTO Standard Specification for Highway Bridges HS-20-44 live loading due to traffic. The liner shall be designed for the following conditions:

DESIGN PARAMETER	VALUE
Minimum Service Life	50 years
Soil Density	120 pounds per cubic foot (lb/cf)
Soil Modulus	1000 pounds per square inch (psi)
Minimum Safety Factor	2.0
Ovality Factor	2%
Maximum Deflection	5% in vertical axis
Long Term Modulus Reduction Factor	50%

8. The final CIPP liners shall conform to the minimum structural standards as listed below in accordance with the latest versions of ASTM D790 - Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials and ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube:

FINAL CIPP	MINIMUM REQUIRED
Flexural Stress	4,500 psi

Short Term Flexural Modules	250,000 psi
Long Term Flexural Modules	125,000 psi

9. The liner shall be fabricated from materials which when complete are chemically resistant to and will withstand internal exposure to domestic sewage having a pH range of 5 to 11 and temperatures up to 125o F. CIPP liners shall meet the minimum chemical resistance requirements in accordance with the latest version of ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.

10. The liner shall be furnished to the following minimum thickness, or the thickness based upon design criteria as specified herein, whichever is greater:

Pipe Diameter (inch)	Depth of Sewer Invert (feet)	CIP Nominal Thickness (millimeter)_	(inches)
6	to 20	4.5	0.177
8	to 20	6.0	0.236
10	0 to 15	6.0	0.236
10	15.1 to 20	7.5	0.295
12	0 to 10	6.0	0.236
12	10.1 to 20	7.5	0.295
15	0 to 10	7.5	0.295
15	10.1 to 15	9.0	0.354
15	15.1 to 20	10.5	0.413
18	0 to 10	9.0	0.354
18	10.1 to 15	10.5	0.413
18	15.1 to 20	12.0	0.472

Pipe Diameter (inch)	Depth of Sewer Invert (feet)	CIP Nominal Thickness (millimeter)_	(inches)
21	0 to 10	10.0	0.374
21	10.1 to 20	15.0	0.555
24	0 to 10	12.0	0.472
24	10 to 22	15.0	0.590
27	0 to 10	12.0	0.465

27	10.1 to 20	18.0	0.705
30	0 to 10	15.0	0.590
30	10 to 22	21.0	0.817
36	0 to 20	24.0	0.921

E. Expanding hydrophilic rubber joint seal

1. The rubber joint seal shall be an extended hydrophilic rubber compounded from chloroprene (Neoprene) rubber and hydrophilic resin, which expands on contact with water.

2. The rubber joint seal shall be bonded with adhesive on one face to hold it in place during assembly.

3. On contact with water, the rubber shall swell a minimum of 8 times its original volume, if necessary, and mold itself to completely fill any gaps and exert pressure evenly to ensure the seal. High compression or bolt up forces shall not be necessary to affect a complete and watertight seal.

F. Chemical grout - Chemical Grout in accordance with SECTION 2.10 - SANITARY SEWER MANHOLE REHABILITATION, Subsection C, Paragraph 2, Subparagraph b.

G. Delivery, storage, and handling

1. The Contractor shall comply with the pipe manufacturer's printed recommendations for delivery, storage, and handling of all products.

2. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods at no additional cost to the Board.

H. All required flow isolation of private services shall be in accordance with section 2.07.B of these special provisions.

I. Preparation

1. The Contractor shall carry out his operations in accordance with all OSHA and manufacturer’s safety requirements. Particular attention is drawn to those safety requirements involving the entering of confined spaces.

2. The Contractor shall take field measurements to verify the existing pipe diameter, ovality and length prior to manufacturing liners. The manufacturer shall incorporate these measurements into the manufacturing process of the liner. The outside of the flexible tube shall be marked along its full length at regular intervals not to exceed five (5) feet. It shall be the responsibility of the Contractor to remove all internal debris such as solids and roots and clean the existing sewer line prior to installation of the liner in accordance with Section 2.09 Pre-and Post-Rehabilitation CCTV Inspection and Cleaning.

3. Inspection of existing sewer lines shall be performed by experienced personnel trained in locating breaks, obstacles, and service connections by CCTV. The interior of the line shall be carefully inspected to determine the location of any conditions which may prevent proper installation of the CIPP liner into the main lines or service lateral lines, and such conditions shall be noted so they can be corrected. A videotape and log shall be kept as specified in Section 2.09 Pre-and Post-Rehabilitation CCTV Inspection and Cleaning.

4. The Contractor shall provide for the flow of sewage around the section or sections of pipe designated for lining as specified in Section 2.07B, Sewer Flow Control. The Contractor shall be completely responsible for preventing service line back-ups during the CIPP liner installation and curing periods.

5. The Contractor shall clear the line of obstructions such as solids, protruding gaskets, dropped joints, protruding service connections, or collapsed pipe that will prevent the insertion of the liner, as noted during pre-rehabilitation CCTV inspection. If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment, the Contractor, upon approval from the Engineer, shall make a point repair to uncover and remove or repair the obstruction prior to lining.

6. Location and distance from the upstream and downstream manholes of all internal and external point repairs shall be determined before rehabilitation commences.

7. Only those sewer services that are live and active shall be repaired or reinstated after the sewer main has been lined or replaced. The Contractor shall note that not all sewer lines segments have been televised in their entirety due to obstructions blocking further entry, etc. These obstructions shall be cleared to allow CCTV viewing of the entire segment length before lining is commenced. The number of service connections on some sewer segments may exceed the number of buildings actually served. It is the Contractor's responsibility to determine through dye testing, CCTV inspection or other acceptable methods, the services that are live and require reinstatement prior to commencing lining of the sewer main. Services that are confirmed to be inactive shall not be reinstated. Services that are inactive, but reinstated, shall be plugged at no additional expense to the Board.

J. Installation

1. Installation shall be accomplished by inversion or winched-in-place methods and cured in place by ambient temperature or circulating hot water or steam to produce a hard, jointless, impermeable pipe repair. Installation procedures shall be in accordance with the latest versions of ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube or ASTM F1743 - Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP), and the manufacturer's recommendations.

2. The Contractor shall designate a location where the reconstruction tube will be vacuum impregnated prior to installation. The Contractor shall allow the Engineer to inspect the materials and "wet out" procedure. Sufficient excess resin shall be used in accordance with the latest version ASTM F1216. A roller system shall be used to uniformly distribute the resin throughout the tube.

3. Before installation begins, the tube manufacturer shall provide the minimum pressure required to hold the tube tight against the existing conduit, and the maximum allowable pressure so as not to damage the tube. Once the installation has started the pressure shall be maintained between the minimum and maximum pressures until the installation has been completed.

4. The curing of the CIPP must take into account the existing pipe material, the resin system, and ground conditions (temperature, moisture level, and thermal conductivity of soil). The post-cure temperature should be held for a period as recommended by the resin manufacturer, during which time the recirculation of the water and cycling of the head source to maintain the temperature continues.

5. The bond between all CIPP layers shall be strong and uniform. All layers, after cure, shall be completely saturated with resin.

6. The CIPP shall be cooled to a temperature below 100oF before relieving the hydrostatic head. Care should be taken in release of the static head so that a vacuum will not be developed that could damage the newly installed liner.

7. Where practicable, liners can be installed in continuous runs through manholes where there are two of more continuous sewer segments requiring lining, especially to connect several short segments with continuous lining.

8. The temperature of water discharged to the sewer system from processing liners shall not exceed 125o F maximum, or the level allowed by State or local standards if less than 125o F.

9. The Contractor shall furnish on-site on a continuous basis one (1) additional operational robotic cutter assembly train and key spare components as a "stand-by" unit in the event of primary equipment breakdowns.

K. Post installation

1. After installation of the liner in a full segment pipe, a minimum of one (1) inch of the liner material shall be left to protrude from the wall of the entrance and the exit manhole.

2. The Contractor shall install a joint seal at all manhole inlet and outlet connections to seal the area where the line enters or leaves each manhole. The Contractor shall use grout to dress up around the end of the liner. This space may be sealed with a mechanical seal, chemical seal, or combination of both. The method used shall be as approved by the Engineer.

3. The upstream and downstream manholes shall be inspected and any holes or voids in the manhole wall immediately surrounding the new liner shall be sealed with a hydrophilic rubber joint seal and chemical grout as specified herein. The Engineer shall approve the seal.

4. Where liners of any type are installed in two or more continuous manhole segments, the liner invert through the trough of intermediate manholes shall be left intact. Final finishing of the installation in those intermediate manholes shall require removal of the top of the exposed liner with a horizontal cut and neat trimming of the liner edge along the top edge of the bench and any cut portions removed from the system.

5. Portions of any piece of liner material removed during installation shall be available for inspection and retention by the Engineer. Any unrestrained samples shall not be used for testing purposes.

6. The Contractor shall reinstate openings for all drop assemblies after relining the mainline sewer.

7. Service connections shall be reinstated without excavation, utilizing a remotely controlled cutting device monitored by a CCTV camera. The coupons from this action shall be collected downstream and submitted to the Engineer. The Contractor shall provide certification that he has the required equipment to reinstate the service connections as specified herein.

8. After the liner has been installed, in the event that the Contractor chooses to temporarily reinstate service lines, all active existing services may be temporarily reinstated by punching through the liner from the interior of the pipeline. Temporary reinstatements shall allow normal flow from the service line into the mainline. Final reinstatement of all active services within a rehabilitated line segment shall be performed internally using a robotic cutter within 48 hours of curing and buffed to a minimum of 95% of the original service opening size. The finished opening shall contain no jagged edges.

L. Testing

1. During the cool down process, after installation and curing of the liner, the Contractor shall perform tests on the sewer line to determine if it is watertight. No separate payment will be made for testing.

2. The Contractor shall furnish all necessary equipment to conduct the test.

3. The sewer shall be tested using either exfiltration test methods in accordance with the latest version of ASTM F1216 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated tube or air test methods as specified herein.

4. After completing lining and service reinstatement, every liner shall be CCTV inspected in accordance with Section 2.09 of the Special Provisions. Segments not fully conforming to these Specifications must be immediately brought to the Engineer's attention. The Contractor shall furnish a written proposed method of correction within 24 hours for approval by the Engineer.

5. The Board will have a certified independent testing lab analyze finished liner samples taken from the restrained sample located at the manhole invert. The Contractor shall furnish samples directly to the Engineer within 2 days after installation.

a. A minimum of one (1) sample shall be taken from every four (4) segments installed. The restrained samples shall be a minimum of one (1) foot in length. The Contractor shall place a sample mold aligned with and the same size as the existing sewer in such a manner as to allow the installation of the liner material through the restraining sample mold. This sample mold shall be made of SDR 35 PVC, or an Engineer approved equal.

b. The resin-impregnated tube shall be installed and cured through this restraining mold in order to obtain a liner sample representative of the actual liner physical characteristics. The sample shall be removed from the mold and shall be labeled with the project number, date of installation, pertinent manhole numbers, nominal thickness, flow direction, and location of installation. The Contractor and Engineer shall acknowledge receipt and transfer of all samples.

c. Tests in accordance with the latest versions of the ASTM standards for flexural strength, flexural modulus and wall thickness will be conducted by the independent testing lab.

d. A sample will be provided by the Contractor to the Engineer for all CIPP installation over 18" inches in diameter to be tested in accordance with ASTM standards.

M. Acceptance

1. The finished CIPP liner shall be fully rounded and free from visible defects, including but not limited to damage, deflection, holes, delamination, ridges, cracks, uncured resin, foreign inclusions, or other objectionable defects as determined by the Engineer.

2. There shall be no visible infiltration through the liner, or around the liner at manhole or service line connections. The Contractor shall be required to repair any visible leaks in a manner approved by the Engineer.

N. Non-conforming work

1. If either the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP liner are less than 80% of the approved design values, the product is considered unacceptable. A method of repair or replacement shall be submitted for review and approval by the Engineer. All work required to remedy non-conforming work shall be at no additional expense to the Board.

2. For all instances, as described in this Subsection, other than thickness, flexural strength, and flexural modulus of elasticity, where the CIPP liner is deemed unacceptable, the Contractor shall submit a method of repair or replacement for review and approval by the Engineer. All work required to remedy non-conforming work shall be at no additional expense to the Board.

3. Where post-installation thickness measurements and/or physical property testing is performed, payment for installed cured-in-place pipe shall be made in accordance with the following:

a. If the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP are 90% or greater than the approved design values, full payment shall be made accordingly.

b. If the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP are between 90% and 80% of the approved design values, with all at least 80% of the approved design values, payment shall be based on:

Adjusted Unit Price = Unit Price Bid X Value Factor, where:

Value Factor = [__*__ thickness + __*__ flexural strength + __*__ flexural modulus of elasticity] / 3.

* Insert actual measured or tested result expressed as a percentage of specified value. Maximum allowable percentage is 100%.

4. If a defect repair is required after the liner has cured, a short segment tube shall be used to splice across the defect repair. The overlap on each defect shall be twice the diameter, or 12 inches, whichever is greater.

O. Measurement and payment for Cured In Place Liners shall be in accordance with the DPW Standard Specifications Section C742.05(k).

SECTION 2.12 – WATER POINT REPAIRS

A. The supplemental specifications within this section are applicable to water related work not listed as a standard bid item in Section C741. Any general conditions, materials or methods not discussed within this section shall be governed by the DPW Standard Specifications Section C742 and the S&WB standard details and specifications.

B. Water point repairs shall be completed in accordance with this section as well as DPW General Specifications Section C741.02.2 and Special Provisions Section 1.22.

C. Point repairs of an existing water main shall consist of recaulking an existing lead bell joint and installing a bell joint clamp, repairing a leak on the water main by installing a full circular stainless steel repair clamp, or replacing a section of existing water main.

D. Point repairs of an existing water house connections 5/8" to 2" shall consist of replacing the entire service connection from the water main to the meter. Existing 5/8" and ¾" services shall be replaced with 1" Polyethylene (PE) tubing. There shall be no splices allowed in repair of the existing water house connection, unless directed by the Engineer.

E. Point repairs of an existing water house connection greater than 2" shall consist of replacement of existing pipe with polyvinyl chloride (PVC) of equal diameter from the main to the shut-off valve where practical. Couplings used to make connections between existing and new pipe shall be AWWA approved and pressure rated as required by S&WB.

F. New water mains sized 2-inch shall be Polyethylene plastic tubing (PE4710, DR 9) conforming to ASTM D2737 and AWWA C901-17, latest edition, and shall be compliant with NSF/ANSI 61. All bronze and brass fittings, connectors, corporation stops, and any other appurtenance used to complete the installation of the water main shall be of domestic manufacture and be lead free. Polyethylene pipe shall be jointed by thermal butt-fusion , flange assemblies, or polyethylene mechanical joint adapters. Installation shall be in accordance with manufacturer's recommendation.

G. All new water mains shall be polyethylene plastic tubing (PE4710, DR 9) conforming to ASTM D2737 and AWWA C901-17, latest edition, and shall be compliant with NSF/ANSI 61. All bronze and brass fittings, connectors, corporation stops, and any other appurtenance used to complete the

installation of the water main shall be of domestic manufacture and be lead free. Polyethylene pipe shall be jointed by thermal butt-fusion, flange assemblies, or polyethylene mechanical joint adapters. Installation shall be in accordance with manufacturer's recommendation.

H. All pipe joints shall be installed watertight under all service conditions. Any leaks from improperly installed or defective joints discovered at any time prior to the one-year maintenance period following substantial completion will be repaired by and at the expense of the Contractor.

I. Before the water service is interrupted, the Contractor shall:

a) Expose the existing water main at the repair point location and verify the type, size, and elevation of the existing service.
b) Have sufficient materials, equipment, and manpower available at the job site.
c) Verify materials on hand will meet the job needs after uncovering the existing mains.
d) Request a water test closure through the S&WB Networks Department (942-3891) a minimum of thirty (30) working days in advance of the scheduled repair.
e) Have notified all residents and the New Orleans Fire Department a minimum of seventy-two (72) hours in advance of interruption of service.
f) Any damage caused by the Contractor, will be at the Contractor's own expense.

SECTION 2.13 – GEOTEXTILE FOR STABILIZATION

A. General: This work consists of furnishing and placing geotextile fabric in accordance with these specifications and in conformance with the details shown on the plans.

B. Materials: The geotextile fabric shall conform to Section 1019, Class D.

C. Construction Requirements: Rolls of geotextile fabric shall be kept covered at all times until used. Geotextile fabric that has been installed shall be covered with embankment within 7 calendar days. When ultraviolet damage occurs, the geotextile fabric shall be removed and replaced. The geotextile fabric shall be placed at the locations shown on the plans or as directed. Adjacent rolls of geotextile fabric will be overlapped or sewn. When rolls are overlapped, the overlap shall be a minimum of three (3') feet, including the ends of the rolls. The top layer of the geotextile fabric shall be parallel with adjacent rolls and in the direction of construction.

1. Geotextile fabric shall be placed as smooth as possible with no wrinkles or folds, except curved road sections. For curved road sections, the geotextile fabric shall be folded to accommodate the curve. The fold shall be in the direction of construction and pinned or stapled. Ruts that occur during construction shall be filled and compacted prior to placement of geotextile fabric.

2. Damaged geotextile fabric shall be either removed and replaced with new geotextile fabric or covered with a second layer of geotextile fabric extending three (3') feet in each direction from the damaged area.

SECTION 2.14 – GEOGRID

These items shall be governed by the requirements of the "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, latest edition, Section C203 Geogrid, shall be the General Conditions for this Contract and shall govern except as modified here-in. Acceptable geogrid, when approved by the Engineer, shall meet the required material properties, geometry, and characteristics listed below.

PROPERTY	TEST METHOD	UNITS	GEOGRID OPTION VALUES	
Geometry				
Aperture Shape			Square	Equilateral Triangular
Aperture size	I.D. Calipered or Observed	in (mm)		1.6 (40) (nom)
MD		in (mm)	1.3 (33) (nom)	
CMD		in (mm)	1.3 (33) (nom)	
Thickness				
Ribs	Calipered	in (mm)		0.05 (1.2) (nom)
MD	Calipered	in (mm)	0.09 (2.4) (nom)	
CMD	Calipered	in (mm)	0.06 (1.5) (nom)	
Junctions	Calipered	in (mm)	0.125 (3.2) (nom)	0.13 (3.3) (nom)
Physical Characteristics				
Tensile Strength @ 2% Strain				
MD	ASTM D6637	lb/ft (kn/m)	650 (9.5)	
CMD	ASTM D6637	lb/ft (kn/m)	685 (10)	
Tensile Strength @ 5% Strain				
MD	ASTM D6637	lb/ft (kn/m)	1164 (17)	
CMD	ASTM D6637	lb/ft (kn/m)	1300 (19)	
Ultimate Tensile Strength				
MD	ASTM D6637	lb/ft (kn/m)	1713 (25)	
CMD	ASTM D6637	lb/ft (kn/m)	1775 (26)	
Overall Flexural Stiffness	ASTM D7748	mg-cm	2,150,000 (min)	
Radial Stiffness at 0.5% strain	ASTM D6637	lb/ft	38,500 (min)	18,495 (min)
Aperture Stability	ASTM D7864	m-N/deg	0.80 (min)	
Junction Efficiency	ASTM D6637 & D7737	%	93 (min)	93 (min)
Material				
Polypropylene	ASTM D-4101 Group 1/Class 1/Grade 2	%	98 (min)	98 (min)
Carbon Black	ASTM 4218	%	0.5 (min)	0.5 (min)

SECTION 2.15 – VIBRATIONS DUE TO CONSTRUCTION ACTIVITIES

Section C126 of the "General Specifications for Street Paving" is amended to include the following requirements:

The vibration monitoring is optional and be performed at the Contractor's discretion. There shall be no direct payment for vibration monitoring services.

SECTION 2.16 – SUPERPAVE ASPHALTIC CONCRETE REQUIREMENTS

All Superpave asphaltic concrete placement shall conform to Section C502 except where modified here within.

Roadway quality control, roadway acceptance, and surface tolerance shall apply to this project and shall conform to Section C501.

Superpave asphaltic concrete binder course placement shall consist of ¾ inch (0.75") maximum nominal aggregate size. Superpave asphaltic concrete wearing course mixture shall consist of ½ inch (.5") maximum nominal aggregate size. Grade of Asphalt Cement shall be at minimum a PG 67-22. The Engineer shall verify the correct material is used and ensure that roadway density requirements are met in accordance with the contract documents.

The thickness of Superpave binder course shall be placed with a 5" section. Two (2) lifts shall be used: one at 3" and then one at 2". The thickness of Superpave wearing course shall be placed with a 2" section using one single lift.

NTSS-1HM (trackless tack) shall be considered as an acceptable prime coat when requested by the Contractor, approved by the Engineer, and follows the requirements of Section 505 from the latest version of LaDOTD Louisiana Standard Specifications for Roads and Bridges.

When the Owner determines that a core sample shall be obtained, the samples will be drilled by the Contractor at the locations determined by the Director at no direct pay and those samples shall be provided to the Department.

SECTION 2.17 – INTERIM ASPHALT PAVEMENT

Temporary asphalt pavement shall be same mix as asphaltic concrete wearing course; shall be a minimum of two (2) inches thick; shall be placed over a minimum of six (6) inches of compacted crushed stone or crushed concrete and encapsulated in a layer of geotextile fabric.

Measurement and payment for interim asphalt pavement shall be made at the unit price bid per square yard for Special Bid Item No. CF-501 INSTALL TEMPORARY PAVEMENT, 2" THICK when listed on the Unit Price Form.

SECTION 2.18 – BASE COURSE

All Base Course materials shall conform to section C302 except where modified here within.

Gray Limestone stone conforming to section C302.03 part C is the acceptable material for base course.

Recycled Portland Cement Concrete is not acceptable as a base course material. This is acceptable as a Traffic Maintenance Aggregate.

PART III – SPECIAL ITEMS

SECTION 3.01 – TEMPORARY SIGNS, BARRICADES, PAVEMENT MARKINGS, CONSTRUCTION SIGNING, TRAFFIC MAINTENANCE AND PUBLIC SAFETY

This item shall be governed by the provisions of General Specifications Section C129 Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety except as follows:

There shall be no direct payment for Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety. All costs associated with Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety shall be included in other major items of the proposal.

SECTION 3.02 – MOBILIZATION

For this project mobilization will be considered as a subsidiary obligation of the contractor under other bid proposal items. There shall be no direct payment for mobilization, or for any items that may be referenced as subsidiary to or included in mobilization. All costs associated with mobilization shall be included in other major items of the proposal.

SECTION 3.03 – CLEARING AND GRUBBING AND DISPOSAL OF MATERIALS

There shall be no direct payment for any required Clearing and Grubbing and removal and disposal of material not listed for removal in the proposal. There shall be no direct payment for removal and disposal of culverts, metal curb protection at intersections, metal plates at driveways, existing drain lines or drainage structures and other materials other than Portland Cement Concrete Pavement and Asphaltic Cement Concrete Pavement. All costs associated with Clearing and Grubbing, and removal and disposal of other material shall be considered subsidiary to and included in Roadway Excavation or other major bid items of the proposal.

SECTION 3.04 – CONSTRUCTION LAYOUT

A. This item shall be governed by the requirements of Standard Specification Item C740(51) except as modified here-in. The Contractor will be responsible for laying out the work prior to beginning of construction and establishing grades for all roads to maintain positive drainage when the profile of the road is altered. The Contractor shall initiate a Request for Information to the Engineer for review if any changes to the existing road profile are to be made. The Contractor shall provide elevations to the Engineer in order to evaluate the effect of grade changes to the adjacent driveways, sidewalks, and residential lots. The Contractor shall submit a detailed sketch to the Engineer that shows existing roadway elevations and the proposed gutter line. This effort shall consist of adjusting catch basins or drop inlets as the low points of this profile. Any change to the existing road profile shall be approved by the engineer and DPW prior to making any changes. The Engineer shall review and approve the proposed gutter line to assert that the road is laid out adhering to City Standards. Any changes made to the existing road profile without the City's approval may be rejected and replaced at the Contractor's expense.

B. Prior to starting construction in each block, the Contractor shall be required to mark using survey marking paint the limits of the pavement, driveway, sidewalk, and handicapped ramp removal as shown on the plans, and mark using a contrasting color any areas the contractor recommends as additional removal/replacement due to constructability concerns.

C. There shall be no direct payment for Construction Layout. All costs associated with the requirements included in Section C740 of the General Specifications shall be included in other major items of the proposal.

SECTION 3.05 – TRAFFIC CONTROL PLAN

The requirements of General Specifications Section C128 PERMITS AND REGULATIONS shall apply except a detailed traffic control plan shall be required for this project.

A. The Contractor shall maintain fifty (50%) percent of the roadway accessible to vehicular traffic at all times, and for major streets shall maintain 100% of roadway accessible to vehicular traffic between the hours of 7-9 A.M. and 4-6 P.M. A traffic control plan indicating, in detail, the location of all signs, lights, and barricades must be prepared by the Contractor for the written approval of the Director, no less than two, nor more than ten working days in advance of implementation. It shall be the Contractor's responsibility to obtain these approvals in writing. There is no direct pay for this requirement.

B. The Police Department, Fire Department, all affected utilities as well as any and all residents and/or businesses affected must be informed a minimum of twenty-four (24) hours in advance of anticipated closures and the duration thereof.

C. Construction traffic control signs, barricades, warning lights, devices, and methods, shall comply with Part VI of Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) unless otherwise directed by the Director. There is no direct pay for this.

D. All traffic control devices (roadway markings, signs, signals, signal controls, etc.) destroyed as a result of construction shall be replaced at the Contractor’s expense.

E. The Contractor shall notify the Director immediately if the project requires changes or modifications to existing traffic control signs, parking meters, etc.

The Contractor performing work under this contract shall be required to coordinate and cooperate in scheduling his operations with the Director and S&WB prior to finalizing pavement repairs to accommodate other contractor’s activities. There shall be at no direct payment for traffic control plans.

SECTION 3.06 – SAW CUTTING (SIDEWALK, DRIVEWAY AND CURBS)

A. This item shall be governed by the requirements of General Specification Item C202 (55) except as modified here-in. To ensure against ragged connections between old and new work, saw cutting will be required at sidewalks, driveways, curbs, and/or at other paved construction areas as may be designated by the Engineer.

B. The saw cuts in sidewalks shall be full depth with an appropriate saw to ensure the straight vertical edge for the upper portion on the patch. After the edges have been cut, the areas to be removed are broken in small pieces with pneumatic chisels or drills and the pieces removed. The resulting broken edge of the concrete below the saw cut is left fairly rough and irregular but in approximately vertical plane so that it will provide aggregate interlocks between the patch and existing concrete. Joints and typical joint spacing within the repair area shall be established or reestablished in accordance with the details shown on City of New Orleans Department of Public Works Standard Drawings.

The saw cuts in driveways and curbs shall be full depth with an appropriate saw to ensure the straight vertical edge for the upper portion on the patch. After the edges have been cut, the areas to be removed are broken in small pieces with pneumatic chisels or drills and the pieces removed. The resulting broken edge of the concrete below the saw cut is left fairly rough and irregular but in approximately vertical plane so that it will provide aggregate interlocks between the patch and existing concrete. When breaking the concrete driveway pavement an attempt shall be made to save a minimum twelve (12) inches of the existing welded wire fabric on each side.

Joints and typical joint spacing within the repair area shall be established or reestablished in accordance with the details shown on City of New Orleans Department of Public Works Standard Drawings.

C. Measurement and payment for saw cutting required to establish joints interior to the work area as required by the DPW Standard Details and General Specifications shall not be allowed.

D. Measurement and payment for saw cutting of sidewalks, driveways, or curbs along the ends or perimeter of removal areas as required to protect existing concrete that is to remain in-place shall be made at the unit price bid per linear foot for Special Bid Item No. CF-3 SIDEWALK, DRIVEWAY AND CURB SAW CUTTING when listed on the Unit Price Form.

E. There shall be no Measurement and payment for the depth of saw cutting of sidewalks, driveways, or curbs along the ends or perimeter of removal areas. The depth of saw cutting shall follow the plan drawings regarding the pavement section thickness.

SECTION 3.07 – PAVEMENT SAW CUTTING ADJACENT TO EXISTING PAVEMENT AND AT PATCHES AND UTILITY TRENCHES

A. This item shall be governed by the requirements of Standard Specification Item C202 (56) except as modified here-in. The cut in roadway pavement adjacent to existing pavement that is to remain in place, and for patching, and for utility trenches shall be made prior to demolition of the paved area to be removed and shall be sawcut full pavement depth to ensure the adjacent paved areas that are to remain in place are protected from damage during the demolition process. If the contractor damages the edge of sawcut pavement the contractor shall be required to re-sawcut the entire concrete panel, or as approved by the engineer, to remove the damaged area. Any saw cutting, pavement, and related items that are required due to Contractor damage of existing pavement shall be at no direct cost.

B. This item shall include saw cutting for both Portland cement concrete and asphaltic concrete pavement along the ends or perimeter of removal areas as required to protect existing pavement that is to remain in-place. The pavement saw cut, assuming a full pavement-depth saw cut up to a 10" maximum depth, shall be made with an appropriate saw to ensure the straight vertical edge for the upper portion on the patch. After the edges have been cut, the areas to be removed shall be broken in small pieces with pneumatic chisels or drills and the pieces removed.

C. Measurement and payment for saw cutting required to establish or reestablish contraction and expansion joints interior to the work area as required by the DPW Standard Details and General Specifications shall not be allowed.

D. Measurement and payment for saw cutting existing pavement along the ends or perimeter of removal areas adjacent to patches and utility trenches shall be made at the unit price bid per linear foot for Special Bid Item No. CF-4 PAVEMENT SAW CUTTING ADJACENT TO EXISTING PAVEMENT AND AT PATCHES AND UTILITY TRENCHES when listed on the Unit Price Form.

SECTION 3.08 - REMOVAL OF ADA-ACCESSIBLE RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS INCLUDING SAW CUTTING

A. This item shall be governed by the requirements of Standard Specification Item C202 except as modified here-in. The unit price bid per Square Yard for this item shall include all saw cutting of curb, curb and gutter bottom, sidewalk, and pavement, removal and proper disposal of existing pavement, curb, curb and gutter bottom, sidewalk, ramps, and curb transitions, including all excavation, associated with handicapped ramp removal and at the locations shown on the plans.

B. Measurement and payment for Handicap Ramps and Concrete sidewalks at intersection shall be made at the unit price bid per square yard for Special Bid Item No. CF-5 REMOVAL OF HANDICAPPED RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS INCLUDING SAW CUTTING when listed on the Unit Price Form.

SECTION 3.09 - ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS

A. This item shall be governed by the requirements of General Specification Item C706 (54) except as modified here-in. Concrete sidewalks at intersection shall include the handicap ramp Type B as detailed on the Construction Documents, and the latest ADA standards, unless otherwise approved by the Director in writing on a case-by-case basis. Concrete shall be 3000 psi compressive strength at 28 days reinforced with 6x6 - W2.9xW2.9 reinforcing mesh weighing forty-two (42) lbs. per 100 sq. ft. placed at 2” from the top of slab.

B. Breaking out and removing existing pavement, curb, and sidewalk will be paid for under another item. Transitional sidewalk, where required, will be paid for under for under other items of the proposal.

C. Measurement and payment for Handicap Ramps and Concrete sidewalks at intersection shall be made at the unit price bid per square yard for Special Bid Item No. CF-6 ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS, when listed on the Unit Price Form, and shall include: detectable warning surfaces, all necessary sand, backfill, concrete, transitional flares, transitional curbs, the curb with thickened section and gutter bottom, and all additional curb transitions required for ramp construction in accordance construction requirements of the Standard New Orleans DPW details.

All non-compliant ADA Handicap Ramps within the limits of construction shall be replaced with ADA compliant ramps unless otherwise approved by the Director.

Price shall include all backfill and compaction behind curb and along the edges of walk with select material obtained from roadway excavation or other approved sources and installation of the top 4 inches with batture sand for dressing and beneath sidewalks and curbs as required.

Price shall include removal and replacement of adjacent roadway pavement as required to form curb, gutter, and ramp transition areas, where adjacent pavement is not included on the drawings and quantified in other items of the proposal.

Price shall include all dowelling and transverse and longitudinal reinforcement in conformance with the Standard New Orleans DPW details.

Price for new curb or curb and gutters associated with Handicapped Ramp construction shall be measured and paid for as subsidiary to Square Yard unit price bid for ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS.

SECTION 3.10 - DRIVEWAYS AND SIDEWALKS (SPECIAL FINISH)

This work consists of furnishing and constructing specially finished concrete driveways, sidewalks, and incidental paving slabs. Special finish sidewalks and driveways in this section shall be in conformance with the requirements of C706 of the DPW General Specifications.

A. SUBMITTALS

1. Product Data: Submit manufacturer's complete technical data sheet for the following:

   a. Colored admixture.
   b. Powder antiquing release agent.
   c. Imprinting/Texturing tools.

2. Samples for initial selection: Manufacturer's color charts showing full range of colors available.

3. Pea Gravel concrete mix shall be submitted in addition to standard concrete mixes for sidewalks and driveways. Pea Gravel Mix shall be in conformance with the requirements of Section C706 of the DPW General Specifications.

B. QUALITY ASSURANCE

1. Manufacturer Qualifications: Manufacturer with 5-years experience in production of specified products.

2. Installer Qualifications: An installer with 5-years experience with work of similar scope and quality.

3. Comply with the requirements of ACI 301.

4. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout the Project.

5. Notification of manufacturer's authorized representative shall be given at least 1-week before start of Work.

6. Integrally Colored Concrete Mockups:

7. Provide under provisions of Section "Submittals".

8. At location on Project selected by Owner and Engineer, place and finish 10 feet by 10 feet area.

9. For accurate color, the quantity of concrete mixed to produce the sample should not be less than 3 cubic yards or not less than 1/3 the capacity of the mixing drum on the ready-mix truck and should always be in full cubic yard increments. Excess material shall be discarded according to local regulations.

10. Construct mockup using processes and techniques intended for use on permanent work, including curing procedures. Include samples of control, construction and expansion joints in sample panels. Mockup shall be produced by the individual workers who will perform the work for the Project.

11. Retain samples of cements, sands, aggregates and color additives used in mockup for comparison with materials used in remaining work.

12. Accepted mockup provides visual standards for work of Section.

13. Mockup shall remain through completion of the work for use as a quality standard for furnished work. Remove mockup when directed.

C. DELIVERY, STORAGE, AND HANDLING

Colored Admixture: Comply with manufacturer's instructions. Deliver colored admixtures in original, unopened packaging. Store in dry conditions.

D. PROJECT CONDITIONS

Integrally Colored Concrete Environmental Requirements:

1. Schedule placement to minimize exposure to wind and hot sun before curing materials are applied.

2. Avoid placing concrete if rain, snow, or frost is forecast within 24-hours. Protect fresh concrete from moisture and freezing.

3. Comply with professional practices described in ACI 305R and ACI306R.

E. PRODUCTS

1. MATERIALS

a. Colored Admixture for Integrally Colored Concrete:

Admixture shall be a colored, water-reducing, admixture containing no calcium chloride with coloring agents that are lime proof and UV resistant.

b. Stamping/Imprinting Tools and Materials:

Stamping/Imprinting Tools and Materials shall be furnished by the Color Admixture manufacturer.

c. Powder antiquing release agent shall be recommended by pattern tool manufacturer and compatible with integral color additives.

2. COLORS AND PATTERNS

a. Concrete Color:

Provide cement, sand, aggregate and colored admixture as required to match existing stamped/colored concrete.

b. Curing Compound: Color to match colored concrete.

c. Surface Texture: Stamped concrete finish.

d. Stamp/Imprinting Pattern:

As required to match existing stamped driveway. The Contractor shall submit imprinting pattern to Engineer for review and approval before construction.

F. MEASUREMENT

The area of driveways will be determined by surface measurements and no extra allowance will be made for shoulders. Sidewalk pavements will be paid for by surface measurements and no deduction will be made for subsurface structures occupying less than five (5) square feet of area. Areas under structures encroaching on Public Property not paved will not be included in the surface measurement.

G. PAYMENT

Payment for special finish concrete driveways and sidewalks shall be made at the contract price per square yard, which includes excavation, installation of expansion joint and welded wire fabric. Granular material for adjustment and removal of existing driveways, sidewalk or banquette pavement shall be paid for in other items.

ITEM NO.	PAY ITEM	PAY UNIT
CF-7	4” Concrete Sidewalk (Special Finish)	Square Yard
CF-8	6” Concrete Driveway (Special Finish)	Square Yard
CF-9	6” Concrete Driveway (Special Finish) (Pea Gravel)	Square Yard

SECTION 3.11 - SIDEWALK TRANSITION ADJACENT TO ADA-ACCESSIBLE CURB RAMP AREAS

A. This item shall be governed by the requirements of Standard Specification Item C706 (51) Concrete Sidewalk, C706 (57) Brick Sidewalk, and C706 (59) Stone Sidewalk except as modified herein. This item shall include all necessary work associated with transitioning line and grade of existing sidewalk and non-roadway paved transition areas adjacent to proposed handicapped ramp locations.

B. The unit price bid per Square Yard for SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS shall include all saw cutting, removal and proper disposal of existing sidewalk and non-roadway paved transition areas, all excavation, subgrade preparation, setting bed, concrete foundation, grading, compaction, tamping, and furnishing and placing all necessary fill material, backfill, dressing, sand for adjustment, joints, reinforcement, grout, finishing, curing, and sidewalk or non-roadway paved transition area constructed of a material to match the existing type and surface course unless otherwise directed by the Director. Where existing sidewalk or non-roadway paved transition areas to be removed is Portland Cement Concrete the new surface course shall be 4 inches thick 3,000 psi concrete at 28 days reinforced with 6x6 - W2.9xW2.9 reinforcing mesh. Where existing sidewalk or non-roadway paved transition areas to be removed is Brick or Stone the new surface course shall be replaced in-kind and compliant with the construction requirements of the General Specifications for the type material removed. Where feasible and accepted by the Director existing salvaged material, if reusable, can be removed, properly cleaned, and re-installed. Price shall include all backfill and compaction behind curb and along the edges of walk with select material obtained from roadway excavation or other approved sources and the installation of the top four inches with Batture sand for dressing as required. The Contractor is solely responsible for coordinating with the respective utility for any required adjustments or relocations as required. If approved by the respective utility any necessary utility box adjustments shall be performed by the contractor in accordance with the appropriate standards and requirements at no direct payment.

C. When SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS has been shown on the unit price proposal the extent of transition area allowable for measurement and payment shall be a maximum of 8’-0” in length in each direction from proposed handicapped ramps where existing sidewalk requires replacement to meet line and grade dictated by compliance with the latest ADA standards. The width of the sidewalk transition shall match the width of the material to be removed to meet line and grade dictated by compliance with the latest ADA standards. Locations eligible for use of this pay item shall be recommended by the contractor to the project engineer’s Resident Inspector (RI) for submission to the Director of an approved amount per each location proposed. The Contractor shall consult directly with the RI and provide field measurements, recommendations, and existing and proposed grades as needed to install ADA compliant sidewalk transitions to proposed handicapped ramp locations. Only locations and extents specifically pre-approved by the Director during construction will be eligible for payment. SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS shall not be considered a material part of the work contemplated, and only amounts specifically approved in writing from the Director shall be measured and paid for at the contract unit price bid with no adjustment to the unit price for an increase or decrease in the final quantity approved.

D. Measurement and payment:

1. SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS, not shown on the Construction Drawings but included in the unit price proposal, shall only be measured and paid for each location and specific quantity approved in writing by the Director for Special

Bid Item No. CF-13 SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS.

2. All sidewalk areas that are shown on the Construction Drawings are measured and paid for in other applicable pay items of the proposal.

SECTION 3.12 - ADA-ACCESSIBLE CURB RAMP RETROFIT

A. DESCRIPTION

1. This item shall include all necessary work associated with adding ADA compliant tactile / detectable warning surface tiles to existing curb ramps. This Section includes Specifications for furnishing and installing Surface Applied Tactile / Detectable Warning Surface Tiles (SA) in an inline truncated dome pattern on all curb ramps and walking surfaces at the locations and to the dimensions shown on the Drawings, in accordance with the Contract Documents and as directed by the Director. (Surface Applied Tactile is also known as Surface Mount Tactile Warning Tiles or Retrofit Tactile Warning Tiles).

B. RELATED DOCUMENTS

1. Drawings and general provisions of the Contract Documents.

2. Americans with Disabilities Act (ADA) Title 49 CFR Transportation, Part 37.9 Standards for Accessible Transportation Facilities, Appendix A, Section 4.29.2 Detectable Warnings on Walking Surfaces. FHA Memo (5-06-02) titled Truncated Domes. Federal Register Volume 71, No. 209, 49 CFR Part 37 (10-30-06), ADA Standards for Transportation Facilities (11-29-06, DOT): Sections 406, 705, and 810. ADA Standards for Accessible Design – 2010 (9/05/11, DOJ), ADAAG: Sections 705 and 810. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board), PROWAG: Sections R208, R304, R305, R308, and R309.

3. American Society for Testing and Materials (ASTM) Test Methods B117, C501, C1028, D543, D570, D638, D695, D790, G151, G155, and E84.

4. American Association of State Highway and Transportation Officials (AASHTO): Test Method AASHTO-H20

C. SUBMITTALS

1. Product Data: Submit manufacturer's literature describing products, installation procedures and maintenance instructions.

2. Samples for Verification Purposes: Submit two (2) Tactile Warning Surface samples minimum 8" x 8" of the kind proposed for use. Samples shall be properly labeled and shall contain the following information: Name of Project, Submitted by, Date of Submittal, Manufacturer's Name, and Catalog Number.

3. Shop Drawings: Submit Standard Manufacturer Shop Drawings showing all pertinent characteristics of the Surface Applied Tactile Warning Tile (SA) including profile,

sound on cane contact amplification feature, fastener locations and installation methods.

4. Material Test Reports: Submit current test reports from qualified, accredited independent testing laboratory in accordance with ASTM guidelines and indicating that materials proposed for use are in compliance with specification requirements and meet the properties indicated. All test reports submitted shall be representative of the Surface Applied Tactile Warning Tile (SA) delivered to the Project.

5. Maintenance Instructions: Submit copies of manufacturer's specified maintenance practices for each type of Tactile Warning Surface Tile and accessory.

D. GUARANTEE

1. SA Tiles shall be guaranteed in writing for a period of five (5) years from date of Contract's final completion. The guarantee includes manufacturing defects, breakage, and deformation.

E. MATERIALS

1. Composition: SA Tiles shall be manufactured using a matte finish exterior grade homogeneous (uniform color throughout thickness of product) glass and carbon reinforced polyester based Sheet Molding Compound (SMC) composite material. Truncated domes must contain fiberglass reinforcement within the truncated dome for superior structural integrity and impact resistance. A matte finish will be required on the Tactile Warning Surface for superior slip resistance performance superior to that offered by a gloss finish. Use of Tactile Warning Surface Products employing coatings or featuring layers of material with differing composition, performance, or color properties is expressly prohibited under this Section.

2. Color: Color shall be homogeneous throughout SA Tile, Dark Gray (G) per Federal Standard 595B Table IV, Color No. 36118.

3. Domes: Square grid pattern of raised truncated domes of 0.2" nominal height, base diameter of 0.9" and top diameter of 0.45". The Federal Code of Regulations permits a truncated dome spacing range of 1.6"-2.4." For superior wheelchair, walker and shopping cart mobility, the preferred truncated dome spacing shall have a center-to-center (horizontally and vertically) spacing of 2.35", measured between the most adjacent domes on square grid.

4. Configuration: SA Tile sizes shall be as indicated on the Contract Drawings. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry. At a minimum, the thickness of the body of SA Tile shall measure 3/16" (nominal). The SA Tile thickness shall not exceed ½" maximum when measured from the curb ramp surface to the top of the truncated dome. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry.

5. In compliance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board, "PROWAG") Section R302.7.2 and

California Code of Regulations (CCR 2007) Section 1127B.5.5 and Section 1133B.8.5, the Composite Tactile Warning Surface Tiles shall have a perimeter beveled edge with a maximum slope of 1:2 in order to minimize the potential for a pedestrian tripping.

6. Radius SA Tile:

   a. Radius SA Tile measures 24”x 33.25” and features reverse score lines on each 24” dimension for a 10’, 15’, and 20’ radius condition. The Radius SA Tile out of the box measures 11’ - 6” radius.

   b. Truncated domes feature proper dome alignment for a radius application. Radius SA Tile shall be cut to the appropriate configuration using the reverse score lines as a guide.

7. Follow Tactile Warning Surface Manufacturer’s installation procedures.

8. Dimensions: SA Tiles shall be held within the following dimensions and tolerances:

   a. Length and Width:

      i. Rectangular SA Tile: 2.35” Dome Spacing

      ii. Radius SA Tile: 1.6” - 2.4” Dome Spacing

9. Fasteners: The Tactile Warning Surface Tile shall have minimum twelve (2’x3’ Tactile Warning Surface Tile) to twenty-four (3’x5’ Tactile Warning Surface Tile) countersunk fastening holes. Color matched, stainless steel 304, flat head drive anchor: ¼” diameter x 1 1/2” long.

10. Adhesive:

    a. Polyether Structural Adhesive/Sealant by Chem Link (M-1)

    b. Urethane Elastomeric Adhesive by Bostik (Hydroment Ultra-Set Advanced or Durabond D-818)

    c. Approved equal.

11. Sealants:

    a. Single Component Urethane Sealant:

       i. Sources: BASF NP1 by BASF Building Systems or Sikaflex 1A by Sika Corp.

       ii. Colors: Black, Limestone, Redwood Tan

    b. Polyether Structural Adhesive/Sealant by Chem Link (M-1)

i. Colors: Black, Gray, Limestone, White

c. Approved Equal

12. Available manufacturers, subject to compliance with these Specifications include, but are not limited to, the following:

a. ADA Solutions Inc. of Chelmsford, MA (Phone: 800-372-0519, Fax: 978-262-9125, Web Site: www.adatile.com, Email: info@adatile.com, or owner approved equal.

F. EXECUTION

1. Preparation

a. Transmit submittals and deliverables required by this Section.

b. Furnish products as indicated.

c. Substrate Condition: Ensure substrate is in suitable condition, and in compliance with the Tactile Warning Surface manufacturer recommendations, to receive work of this Section. Prior to construction, refer any and all discrepancies to the Engineer for further action.

2. Installation

a. Contractor will not be allowed to install Tactile Warning Surface Tiles until all submittals have been reviewed and approved by the Engineer.

b. SA Tile shall be installed per manufacturer's instructions.

c. To the maximum extent possible, the SA Tiles shall be oriented such that the rows of in-line truncated domes are parallel with the direction of the ramp. When multiple SA Tiles regardless of size are used, the truncated domes shall be aligned between the tactile warning surface tiles and throughout the entire tactile warning surface installation.

d. In accordance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board): Sections 304 + 305), Tactile Warning Surface Tile shall be located relative to the curb line as shown within Sections 304+305 of the Guidelines.

e. Cutting of SA Tiles may be required to accommodate specific site conditions. All possible attempts shall be made to minimize cutting of the SA Tiles. Minimum acceptable width of the cut SA Tile shall be 9".

f. Environmental Conditions: Air and substrate temperatures must exceed 40 degrees for at least 8 daytime hours for a sound and proper installation. A "weed torch" may be used to boost the substrate temperature to expedite cure of adhesives and sealants.

g. Immediately prior to installing the SA Tiles, the concrete surfaces must be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound with a minimum four (4) day concrete cure period (unless otherwise directed by the SA Tile manufacturer) and that the surface is flat. As necessary, substrate may be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material although a broom or leaf blower is usually adequate for cleaning of the substrate.

h. Apply adhesive on the backside of the SA Tiles following the perimeter border and internal cross pattern established by the SA Tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the 2-inch width of the adhesive locator.

i. Set the SA Tile(s) true and square to the curb ramp areas as detailed in the Drawings. Allow 1/8" separation between successive SA Tiles for expansion/contraction.

j. Drill holes true and straight to a depth of 2" by 1/4" using the recommended bit. As necessary, additional countersunk holes may be added to the SA Tile by using a 5-point ½" (82 degree) countersink to create the necessary holes.

k. Mechanically fasten SA Tile to the concrete substrate using a 32oz. to 48oz. hammer to set the composite sleeve anchors. Ensure that the fastener has been set to full depth, straight and true. Care should be taken when setting the fastener to avoid any advertent blows with the hammer to the SA Tile.

l. Following the installation of the SA Tile, the sealant system should be applied to the perimeter edge. Follow the Tactile Warning Surface manufacturer's recommendations when applying the sealant in a cove type profile to blend and seal the SA Tile edge to the adjoining surfaces.

m. Do not allow foot traffic on installed SA Tile until the perimeter edge sealant has cured sufficiently to avoid tracking. If the SA Tile must be placed into immediate pedestrian service, apply baby powder to the sealant to minimize the possibility of tracking while the sealant cures. Foot imprints may appear in the fully cured sealant application

n. A Urethane Sealant such as Sikaflex 1a or BASF NP1 shall be applied to the edge treatment for a watertight Tactile Warning Surface Tile installation.

3. Cleaning and Protecting

a. Protect SA Tiles against damage during construction period to comply with SA Tiles manufacturer's Specifications.

b. As necessary, while the Project remains under construction, protect SA Tiles against damage from rolling loads following installation by covering with plywood or hardwood.

c. If requested by the Director, clean SA Tiles not more than four (4) days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean SA Tile by method specified by Tactile Warning Surface Products manufacturer.

G. MEASURMENT AND PAYMENT

1. When the Surface Applied Tactile / Detectable Warning Surface Tiles pay item has been shown on the unit price proposal the final approved quantity for installation, measurement, and payment shall be determined by and subject to written approval of the Director and shall not be considered a material part of the work contemplated. Only locations specifically approved in writing by the Director during construction shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the final amount approved.

2. The unit price bid per square foot for Surface Applied Tactile / Detectable Warning Surface Tiles shall include all cost to prepare, furnish, install, clean, protect and warrant the tiles in accordance with the specifications and the manufacturer's recommendations.

3. Surface Applied Tactile / Detectable Warning Surface Tiles shall be measured based on approved actual square footage of installed final product in-place.

4. Surface Applied Tactile / Detectable Warning Surface Tiles, not shown on the Construction Drawings but included in the unit price proposal, shall only be measured and paid for at location approved in writing by the Director for Special Bid Item No. CF-14 SURFACE APPLIED TACTILE / DETECTABLE WARNING SURFACE TILES.

SECTION 3.13 - CONCRETE PAVEMENT (8" THICK)

A. This item shall be governed by the requirements General Specification Item C601 except as modified here-in.

B. The final finish and texture shall be obtained using a broom, or other acceptable methods approved by the Director, in accordance with the latest edition of LaDOTD Louisiana Standard Specifications for Roads and Bridges Section 601.

C. At all locations proposed concrete pavement abuts existing concrete pavement that is to remain in place:

All concrete pavement within the designated area is to be removed and the subgrade area prepared to receive an eight (8") inch compacted crushed stone base course as shown on the typical roadway cross sections contained in the Construction Drawings. Compacted pumped sand covered by a geotextile fabric as required shall be used to bring subgrade to the required elevation. It shall also be used to replace unsuitable subgrade or to fill voids as directed.

No. 5 (#5) dowels 24" long at 12" on center shall be drilled and epoxy grouted into the existing concrete to allow for a proper tie-in.

Just prior to placing the new concrete, the vertical faces of the old concrete pavement are to be

coated with an approved concrete epoxy per ASTM C 881 Type II. The new roadway pavement shall consist of four thousand (4,000) psi P.C.C.P. reinforced with 6 X 12 - W 7.5 X W 6.5 welded wire fabric, seventy-seven (77) pounds per one hundred (100) square feet. The new mesh shall be tied to the existing mesh where possible. Full width sheets are to be used and overlapped a minimum of 12", no partial or scrap pieces are to be used.

Wherever a joint (any type) or a part thereof falls within the affected area, the same shall be reestablished in kind and shall be incidental to the work included as concrete pavement.

After all roadway pavement repairs have been completed at a location, Bituminous Wearing Course material, if required, shall be placed in a continuous operation.

D. Unit Price bid shall include all preparation work and drilling and dowelling between existing and proposed pavement in accordance with the CONCRETE PAVEMENT REPAIR detail shown on City of New Orleans Department of Public Works Standard Drawing STD5, except epoxy grout shall also be required.

E. Measurement and payment for concrete pavement shall be made at the unit price bid per square yard for Bid Item No. C601 (54) REINFORCED CONCRETE PAVEMENT (8" THICK) when listed on the Unit Price Form.

SECTION 3.14 - ROOT PRUNING, TREE PROTECTION, LANDSCAPING, AND SIDEWALK GRAVEL BED

Landscaping shall be in accordance with Section C719 of the General Specifications for Street Paving Department of Public Works 2015 Edition (Revised 11/05/2015), Department of Parks and Parkways Specifications Section 02480 *Landscape Protection During Construction,* 02481 *Installation of Plant Materials* and Section 02485 *Seeding and Sodding,* and amended as follows:

A. Root Pruning – All tree roots, of City owned trees, damaged during removal of curbs, sidewalks and driveways shall be root pruned. All tree roots damaged during any excavation operations; yard drains, collector lines, etc. shall be root pruned. Tunneling and boring shall be required when working within the critical root zone. Trenching is prohibited from this area. Air spading may be required in order to reveal the roots under circumstances where construction occurs within the critical root zone as directed by the Parks & Parkways Department (PPD) arborist.

1. Air spading requirement - When working within the critical root zone, air spading is required to expose the top seven to ten inches of the critical root zone to reveal root conflicts.
2. Aerial pruning requirement – When root pruning occurs, aerial pruning is required as per the direction of the Chief Urban Forester to mitigate damage by reducing the canopy in proportion to the root reduction.
3. Lac Balsam is prohibited from use to dress severed roots as a tree wound treatment.
4. A living root that will be buried below grade following pruning shall be treated with a rooting hormone approved by the Chief Urban Forester.
5. A root flare that must be cut and remain exposed shall be treated with a copper paste approved by the Chief Urban Forester.
6. All root pruning shall occur prior to excavation.
7. When circumstance require that roots be exposed for more than 48 hours, the roots shall be re-cut to living tissue, re-treated, buried and irrigated promptly.

8. Approved root cutting tools – Sharp instruments that make clean cuts, including hand saw, loppers, snips or hand pruners, chain saw or reciprocating saw with unpainted blades. Dull blades are prohibited. Trenchers and excavators are prohibited.

B. Fertilization – All trees' roots pruned due to construction shall be fertilized using a water-soluble fertilizer injected into the soil. The fertilization plan shall be based upon soil lab test reports furnished by the Contractor. The minimum acceptable N-P-K ratio shall be 30-5-5. The nutrient complex and ratio (gal. /sq. ft.) must be approved by the Urban Forester overseeing the project.

C. Mycorrhizal Fungal Inoculate – Treatment equal to or better than Mycor Tree Saver, Cambistat, and mulching shall be applied to all construction damaged tree root zones per manufacturer's directions. Cost shall be included in the bid price for root pruning.

D. Termite Treatment – All tree roots pruned due to construction shall be treated for termites. A termiticide equal to or better than Premise manufactured by Bayer Corporation shall be used per manufacturer's directions. Cost shall be included in the bid price for root pruning.

E. Tree Permit Requirements – When necessary, the Contractor will be required to obtain a Tree Permit from the Department of Parks and Parkways.

1. Pre-Permit: In order to obtain a tree permit, the Contractor must satisfy the following conditions:

- The Contractor will ensure that the tree permit application will be made by a Louisiana Licensed Arborist certified by the International Society of Arboriculture
- A signed contract and a written detailed plan are required for issuance of the permit. The plan shall include the location of the proposed excavation, measurements of depth, length, and proximity to the main trunk of the tree, tools and methodology and exact time when work will be performed.

2. Post-Permit: Once PPD approves the tree permit, the Contractor must ensure the following on-going requirements are met:

- The Contractor will ensure that the Arborist is present on the construction site for all excavation and/or root pruning within protected areas of the tree.
- The Contractor will ensure that the Arborist visits the construction site for a minimum of one hour per day during active construction that is near to or involves trees.
- The Contractor will ensure that the Arborist will submit a weekly log of hours to the Chief Urban Forester with each invoice.

F. Canopy Pruning – When aerial pruning occurs, the resulting canopy shall be symmetrical and balanced as per the direction of the Chief Urban Forester.

G. Tree Replacement – Trees determined by the Chief Urban Forester to no longer be viable due to damage inflicted by the Contractor shall be replaced as directed by the Department of Parks and Parkways. At a minimum, trees shall be replaced on the basis of inch caliper per inch diameter lost. In the event that there is not sufficient space for planting, an alternative location may be designated off site, or the Contractor my donate a sum equal to the cost of replacement to the Department of Parks and Parkways Plant-A-Tree Trust Fund.

H. Tunneling and Boring Requirement – When work cannot be redirected away from the Critical Root Zone, tunneling and boring is required for the installation of lines. Trenching is prohibited within the

critical root zone. Air spading may be required in order to reveal the roots under circumstances where construction occurs within the critical root zone as directed by the Chief Urban Forester.

I. Root Barrier – When work includes installation of root barrier, the barrier may not be constructed from wood.

J. Restricted Use Instruments – Permission must be obtained from the Chief Urban Forester in advance for use of any machines intended for trenching or mechanical digging. When stump grinders are employed, it must be followed by the use of an approved cutting instrument that will remove any torn or shredded tissue back to a clean, living cut.

F. These items shall be governed by the requirements of General Specification Item C719 except as modified here-in.

G. When Root Pruning has been shown on the unit price proposal the extent of root pruning allowable shall be determined by the Parks & Parkways Department (PPD) and require written approval by the Director. The Contractor shall consult directly with the PPD and provide a licensed arborist as needed to perform root pruning. Only root pruning locations specifically approved by the Director during construction will be eligible for payment. Root Pruning shall not be considered a material part of the work contemplated, and only Root Pruning locations specifically approved in writing from the Director shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the number of items approved. Measurement and payment for Root Pruning shall be made for each approved location at the unit price bid per each tree for Special Bid Item No. CF-10 ROOT PRUNING. When Root Pruning has not been shown on the unit price proposal then any required Root Pruning shall be at no direct payment.

H. There shall be no direct payment for Root Trenching. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the engineer. All costs associated with Root Trenching shall be included in other major items of the proposal.

I. There shall be no direct payment for tree protection. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the Director. All costs associated with tree protection shall be included in other major items of the proposal. Tree protection shall be in place and approved by the PPD arborist prior to commencement of any work on site, including clearing and grubbing.

J. There shall be no direct payment for Sidewalk Gravel Bed as required for ramping over tree roots that interfere with placement of sidewalk. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the engineer. All costs associated with Gravel Bed and Filter Cloth over Tree Roots shall be included in other major items of the proposal.

K. There shall be no direct payment for Tree Trimming required to obtain needed clearance to perform the work. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the engineer. All costs associated with Tree Trimming shall be included in other major items of the proposal. There shall be no direct payment for air spading and tunnel and boring required to work within the critical root zone as directed by the PPD arborist.

SECTION 3.15 - GRANULAR MATERIAL AND FILL MATERIAL

A. Granular material shall be governed by the requirements of Standard Specification Item C723 except as modified here-in. The Contractor shall be responsible for importation and placement of granular fill material as required for placement of timber or concrete curb and structures. There shall be no direct payment for Granular Material or Batture Sand. Payment for Item C723 Granular Material item no. C723 (52) Batture Sand for Dressing, Granular Material for other Adjustments shall not be allowed. All costs for Batture Sand for Dressing, Granular Material for other Adjustments shall be included in the unit price bid for curbs, sidewalks, or driveways, roadways, or other major items of the proposal as applicable.

B. Fill material shall be required as fill, backfill or dressing material to ensure positive drainage within the limits of the area disturbed by construction, areas adjacent to sidewalk or driveway repairs, and between sidewalk repairs and the roadway to comply with the typical roadway cross sections shown on the plans or as directed. The fill material shall be suitable on-site excavated earth material, subject to approval of the Director, or borrow material compliant with the requirements Standard Specification Item C723 Granular Material with subsection 1003.07 referencing 2006 Edition LaDOTD Standard Specifications for Roads and Bridges. Fill and borrow materials shall be free from waste, rubbish, large rocks, or other unsuitable or foreign material.

Suitable excavated material is to be used if available as fill or dressing to comply with the typical roadway cross sections shown on the plans. In the absence of a sufficient amount of suitable on-site material the Contractor shall provide and import borrow material. There shall be no direct payment for Fill Material. All costs associated with furnishing, hauling, storing, placement and compaction of material used as fill, backfill, or dressing in accordance with the typical sections or as required to ensure positive drainage shall be included in the unit price bid for curbs, sidewalks, or driveways, roadways, or other major items of the proposal as applicable.

SECTION 3.16 - CATCH BASIN AND MANHOLE REPAIRS AND VERTICAL ADJUSTMENTS

A. This work consists of the replacement of components and repair or vertical adjustment of vertical catch basins, mountable catch basins, drop inlet catch basins, and drain manholes as described and in accordance with the details, dimensions, and grades shown on plans or as directed by the Director. These items shall be governed by the requirements of the latest addition of standard Sewerage and Water Board New Orleans (SWBNO) drawings for the type of structure described and Standard Specification Item C702 except as modified herein. When Catch Basin and Manhole Repairs and Adjustments pay items have been shown on the unit price proposal the final approved quantity for installation, measurement, and payment shall be determined by and subject to written approval of the Director and shall not be considered a material part of the work contemplated. Only locations specifically approved in writing by the Director during construction shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the number of items approved.

B. Measurement and payment for Catch Basin and Manhole Repairs and Vertical Adjustments items shall be made at the unit prices bid under Special Bid Item Numbers CF-301 through CF-378 for Vertical Catch Basin, Drop Inlet Catch Basin, Mountable Catch Basin, and Drain Manhole in conjunction with Cover or Grate; Frame; Front Grate; and Repair or Vertical Adjustment of Single or Double Basins or Manhole Reusing Existing Metal Castings or Repair or Vertical Adjustment of Single or Double Basins or Manhole Brick Work Only, for each type of Special Bid Item. Measurement shall be per each or per foot height, as specified for each type of repair or vertical adjustment item.

C. Unit prices bid for Catch Basin and Manhole Repairs and Vertical Adjustments items shall include any related preparation and finishing work, all excavation, soil and debris removal and proper disposal, sheeting, shoring, bracing, bedding material, granular backfill, backfill and compaction, cement, mortar, sealants, fabric, shagging, materials, castings, transitions to match adjacent improvements, protection and restoration of adjacent areas, labor and workmanship required to provide each individual repair or adjustment as described. All required removal and replacement of adjacent improvements and any damage caused by the contractor to the bordering roadway, adjacent non-paved area, sidewalk, driveway, ramp, curb, existing structure or components, or other existing assets shall be considered incidental to the unit price paid for the Catch Basin and Manhole Repairs and Adjustments items and the contractor shall be required to replace improvements or repair the damages to comply with SWBNO and DPW approved standards at no direct pay. Each Catch Basin and Manhole Repairs and Adjustments pay item may be required individually, or in combination with other Catch Basin and Manhole Repairs and Adjustments pay items, but the unit price bid shall prevail for each item individually.

D. Vertical Catch Basin items - At no time is a vertical catch basin is to be installed in a driveway, in the event that an existing vertical catch basin is located in the face of a drive apron within project limits and the scope of adjacent work includes full depth restoration, the catch basin will need to be converted to a mountable catch basin conforming SWBNO Std. Drawing No. D-3431-A. Curb inlet type vertical catch basins shall conform to the requirements shown on SWBNO Standard Drawings D-873 and D-873A for single or double vertical catch basins, except:

CF-301 Vertical Catch Basin Cover

Work to provide and install Catch Basin Cover shall include furnishing and installing a cover on the catch basin existing frame. Catch Basins shall receive new covers made of fiberglass material sized to properly to fit flush in the existing metal frame. Fiberglass covers for Catch Basins shall be Grate Glass "M" Solid Composite Plate by Road Masters International or approved equal and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing cover as identified by the Director, cleaning the existing frame, and to fit/retrofit a new cover in the existing frame, measured per each Vertical Catch Basin Cover.

CF-302 Vertical Catch Basin Frame

Catch Basin frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of catch basin repaired. This work will include removing the damaged/missing cover and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged cover or in conjunction with a new cover pay item(s) as directed by the Director. Work and materials for Catch Basin Frame includes the removal of the existing cover and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the basin for the new frame installation, measured per each Vertical Catch Basin Frame.

If no structural repair or vertical adjustment work is required, then Vertical Catch Basin Frame placement shall include any incidental brick and mortar work required for the installation of the frame.

If structural repairs or vertical adjustment are required, then the Vertical Catch Basin Frame pay item may be used in conjunction with other pay item(s) for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-303 Lockable Vertical Catch Basin Frame and Cover

Work to provide and install Lockable Catch Basin Frame and Cover shall include furnishing and installing the frame and cover on an existing Catch Basin. Lockable Catch Basin Frame and Cover shall conform to East Jordan Iron Works, INC. V-4300-7 or approved equal. Item installation requirements shall follow CF-302 description. CF-303 Lockable Vertical Catch Basin Frame and Cover will be measured per each.

CF-311 Vertical Catch Basin Front Grate No. 1,

CF-312 Vertical Catch Basin Front Grate No. 2, and

CF-313 Vertical Catch Basin Front Grate No. 3

No. 1, 2, or 3 Catch Basin Front Grate shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing grate and to fit/retrofit a new grate to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged frame and cover, or in conjunction with a new frame and/or cover pay item(s) as directed by the Director. Work and materials for Catch Basin Front Grate includes the removal and reinstallation of the existing cover and frame if necessary, and removal of the existing front grate and furnishing and installing a new front grate including and all components and any related preparation or finishing work to the basin for the new grate installation, measured per each Vertical Catch Basin Front Grate No. 1, 2, or 3. If no structural repair or vertical adjustment work is required then Catch Basin Front Grate placement shall include any incidental brick and mortar work required for the installation of the grate. If structural repairs or vertical adjustments are required, then the Catch Basin Front Grate pay item may be used in conjunction with other pay item for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-315 Single Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, and

CF-316D Double Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of catch basin reusing existing metal castings shall consist of: remove and salvage the existing frame and cover, or frame, cover and grate, remove all of the existing brick and mortar structure to the lowest elevation of brick area requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, and clean and reinstall the salvaged frame and cover, or frame, cover and grate, measured per each.

CF-317 Single Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only, and

CF-318D Double Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only

Work to repair or provide brick work only for vertical adjustment of Vertical Catch Basins shall consist of removing all or a portion of the existing brick and mortar structure down to the lowest brick course elevation requiring repair and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure, measured per each. Vertical Catch Basin Repair or vertical Adjustment Brick Work only shall be used in conjunction with a pay item for installing a new frame and/or a pay item for installing a new front grate.

E. Drop Inlet Catch Basin items - Drop inlet type Catch basins shall conform to the requirements shown on SWBNO Standard Drawings D-3264 for Standard 24”x30” Clear Opening Drop Inlet Catch Basins, except:

CF-331 Drop Inlet Catch Basin Grate

Work to provide and install Drop Inlet Catch Basin Grate shall include furnishing and installing a grate

on the drop inlet catch basin existing frame. Drop Inlet Catch Basins shall receive new grates made of fiberglass material sized to properly to fit flush in the existing metal frame. Fiberglass grate for Catch Basins shall be Grate Glass "M" Mesh Composite Drain by Road Masters International or approved equal and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing grate as identified by the Director, cleaning the existing frame, and to fit/retrofit a new grate in the existing frame, measured per each Drop Inlet Catch Basin Grate.

CF-332 Drop Inlet Catch Basin Frame

Drop Inlet Catch Basin frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of catch basin repaired. This work will include removing the damaged/missing grate and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged grate, or in conjunction with a grate pay item(s) as directed by the Director. Work and materials for Drop Inlet Catch Basin Frame includes the removal of the existing grate and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the basin for the new frame installation, measured per each Drop Inlet Catch Basin Frame. If no structural repair or vertical adjustment work is required, then Drop Inlet Catch Basin Frame placement shall include any incidental brick and mortar work required for the installation of the frame. If structural repairs or vertical adjustments are required, then the Drop Inlet Catch Basin Frame pay item may be used in conjunction with other pay item(s) for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-335 Drop Inlet Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of drop inlet catch basin reusing existing metal castings shall consist of: remove and salvage the existing frame or frame and grate, remove all of the existing brick and mortar structure to the lowest elevation of brick area requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, and clean and reinstall the salvaged frame or frame and grate, measured per each.

CF-336 Drop Inlet Catch Basin Repair or Vertical Adjustment Brick Work Only

Work to repair or provide brick work only for vertical adjustment of Drop Inlet Catch Basins shall consist of removing all or a portion of the existing brick and mortar structure down to the lowest brick course elevation requiring repair and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure. Drop Inlet Catch Basin Repair or vertical Adjustment Brick Work Only, measured per each, shall be used in conjunction with a pay item for installing a new drop inlet frame.

F. Mountable Catch Basin items - Mountable catch basin shall conform to the requirements shown on SWBNO Standard Drawings D-3431-A Standard Single Mountable Catch Basin and D-3431-B Standard Double Mountable Catch Basin, except:

CF-351 Mountable Catch Basin Grate

Work to provide and install Mountable Catch Basin Grate shall include furnishing and installing a grate in the mountable catch basin existing frame. Mountable Catch Basins shall receive new grates made of fiberglass material sized to properly to fit flush in the existing metal frame. Fiberglass grates for Catch Basins shall be Grate Glass "M" Mesh Composite Plate by Road Masters International or approved equal and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing grate as identified by the Director, cleaning the existing frame, and to fit/retrofit a new grate in the existing frame, measured per each Mountable Catch Basin Grate.

CF-352 Single or Double Mountable Catch Basin Frame

Mountable Catch Basin frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of catch basin repaired. This work will include removing the damaged/missing grate and frame and to fit/retrofit a

new frame to the structure including incidental removal and replacement of the bordering roadway and curb, transition to match the adjacent roadway and curb, and cleaning and reinstallation of the existing salvaged grate, or in conjunction with a grate pay item(s) as directed by the Director. On rigid pavement streets, after installation of mountable catch basin frame an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item. Work and materials for Single or Double Mountable Catch Basin Frame includes the removal of the existing grate and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the basin for the new frame installation, measured per each Single or Double Mountable Catch Basin Frame. If no structural repair or vertical adjustment work is required, then Mountable Catch Basin Frame placement shall include any incidental brick and mortar work required for the installation of the frame. If structural repairs or vertical adjustments are required, then the Single Mountable Catch Basin Frame or Double Mountable Catch Basin Frame pay item may be used in conjunction with other pay item(s) for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-353 Lockable Mountable Catch Basin Grate

Work to provide and install Lockable Mountable Catch Basin Grate shall include furnishing and installing a grate in the mountable catch basin existing frame. Mountable Catch Basins shall receive new grates which shall conform to the requirements of East Jordan Iron Works, INC. V4510-1L or approved equal and shall be installed to properly fit flush in the existing metal frame. This work will include removing the damaged/missing grate as identified by the Director, cleaning the existing frame, and to fit/retrofit a new grate in the existing frame, measured per each Lockable Mountable Catch Basin Grate.

CF-355 Single Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, and

CF-356D Double Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of single or double mountable catch basin reusing existing metal castings shall consist of: remove and salvage the existing frame(s) or frame(s) and grate(s), remove all of the existing brick and mortar structure to the lowest elevation of brick area requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, and clean and reinstall the salvaged frame or frame and grate, measured per each. On rigid pavement streets, after adjustment of the mountable catch basin an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings STD9 and included in the unit price bid for this item.

CF-357 Single Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only, and

CF-358 Double Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only

Work to repair or provide brick work only for vertical adjustment of Single or Double Mountable Catch Basins shall consist of removing all or a portion of the existing brick and mortar structure down to the lowest brick course elevation requiring repair and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure. Single or Double Mountable Catch Basin Repair or vertical Adjustment Brick Work Only, measured per each, shall be used in conjunction with a pay item for installing a new mountable catch basin frame.

G. Manhole items - Manhole items shall conform to the requirements shown on SWBNO Standard Drawings D-870 Standard Drain Brick Manhole and D-871 Drain Manhole Frame & Cover or 3143-E-1 Sewer and Water Manhole Castings to match the type utility repaired. Manholes that are approved as described here-in, shall be adjusted to match with the level of the new surface using brick and mortar. Only City of New Orleans Department of Public Works and Sewerage and Water Board manholes and

structures shall be adjusted to grade under this contract. Other manholes and structures shall be adjusted to grade by the respective utility company.

CF-371 Manhole Cover

Work to provide and install Manhole Covers shall include furnishing and installing a cover on the manhole existing frame. The new manhole cover shall be sized and installed properly to fit flush in the existing metal frame and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing cover as identified by the Director, cleaning the existing frame, and to fit/retrofit a new cover to the existing frame, measured per each Manhole Cover.

CF-372 Manhole Frame

Manhole frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of manhole repaired. This work will include removing the damaged/missing cover and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged grate, or in conjunction with a grate pay item(s) as directed by the Director. Work and materials for Manhole Frame includes the removal of the existing cover and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the manhole for the new frame installation, measured per each Manhole Frame. On rigid pavement streets, after installation of the frame an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

Manhole Frame placement shall include any brick-and-mortar work required for the adjustment of the frame to the existing or new road pavement grade, inclusive of the requirements of item CF-377 at no additional compensation. The Director and the S&WB will have authority in determining whether structural repairs or vertical adjustments are required.

CF-375, Manhole Repair or Vertical Adjustment up to 6” Reusing Existing Metal Castings

Work to repair or provide a vertical adjustment of manholes up to 6” reusing existing metal castings shall consist of: remove and salvage the existing frame or frame and cover, excavation, remove all of the existing brick and mortar structure requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, backfill, and clean and reinstall the salvaged frame or frame and cover, to repair or provide a vertical increase or decrease elevation adjustment to grade up to six inches (6”), measured per each (location). On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

CF-376, Manhole Repair or Vertical Adjustment over 6” Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of manholes over 6” reusing existing metal castings shall consist of: remove and salvage the existing frame or frame and cover, excavation, remove all of the existing brick and mortar structure requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, backfill, and clean and reinstall the salvaged frame or frame and cover, to repair or provide a vertical increase or decrease elevation adjustment to grade over six inches (6”),measured per foot height, or any fraction of a foot to the nearest 0.1’. On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

CF-377, Manhole Repair or Vertical Adjustment up to 6” Brick Work Only

Work to repair or provide brick work only for vertical adjustment up to 6" for manholes shall consist of excavation, removing all or a portion of the existing brick and mortar structure requiring repair or adjustment, and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, and backfill to repair or provide a vertical increase or decrease elevation adjustment to grade up to six inches (6"). Manhole Repair or Vertical Adjustment up to 6" Brick Work Only, measured per each (location). This item shall be used in conjunction with the appropriate pay items for installing a new manhole frame and cover. On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

CF-378, Manhole Repair or Vertical Adjustment over 6" Brick Work Only

Work to repair or provide brick work only for vertical adjustment over 6" for manholes shall consist of excavation, removing all or a portion of the existing brick and mortar structure requiring repair, and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, and backfill. Manhole Repair or Vertical Adjustment over 6" Brick Work Only, to repair or provide a vertical increase or decrease elevation adjustment to grade over six inches (6"), shall be measured per foot height or any fraction of a foot to the nearest 0.1'. This item shall be used in conjunction with the appropriate pay items for installing a new manhole frame and cover. On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

H. Measurement and payment of Special Bid Items for Catch Basin and Manhole Repairs and Vertical Adjustment:

ITEM NO. PAY ITEM PAY UNIT

CF-301, Vertical Catch Basin Cover, per each*
CF-302, Vertical Catch Basin Frame, per each*
CF-303, Lockable Vertical Catch Basin Frame and Cover, per each*
CF-311, Vertical Catch Basin Front Grate No. 1, per each*
CF-312, Vertical Catch Basin Front Grate No. 2, per each*
CF-313, Vertical Catch Basin Front Grate No. 3, per each*
CF-315, Single Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-316D, Double Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-317, Single Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-318D, Double Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-331, Drop Inlet Catch Basin Grate, per each
CF-332, Drop Inlet Catch Basin Frame, per each
CF-335, Drop Inlet Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-336, Drop Inlet Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-351, Mountable Catch Basin Grate, per each*
CF-352, Single or Double Mountable Catch Basin Frame, per each
CF-353, Lockable Mountable Catch Basin Grate, per each*
CF-355, Single Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-356D, Double Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal

Castings, per each
CF-357, Single Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-358D, Double Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-371, Manhole Cover, per each
CF-372, Manhole Frame, per each
CF-375, Manhole Repair or Vertical Adjustment up to 6" Reusing Existing Metal Castings, per each
CF-376, Manhole Repair or Vertical Adjustment over 6" Reusing Existing Metal Castings, per foot height
CF-377, Manhole Repair or Vertical Adjustment up to 6" Brick Work Only, per each
CF-378, Manhole Repair or Vertical Adjustment over 6" Brick Work Only, per foot height

*Note, double catch basins requiring two covers, frames, or grates each shall be paid for separately.

SECTION 3.17 - DRAIN LINE REPAIRS / REPLACEMENT

3.17.01 GENERAL

A. These items shall be governed by the requirements of the "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, latest edition, Section C701 Storm Drains shall be the General Conditions for this Contract and shall govern except as modified here-in. All workmanship, material and tests shall conform to Section E of the General Specifications of the S&WB and the S&WB Standard Drawing No. 7260-S or 7260-D for the type of pipe material installed. When Culverts and Storm Drains replacement or repair items have been shown on the unit price proposal the final approved quantity for installation, measurement, and payment shall be determined by and subject to written approval of the Director and shall not be considered a material part of the work contemplated. Only locations specifically approved in writing by the Director before or during construction shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the bid quantity for approved work.

B. The Contractor shall conduct his operations in such manner as to cause the least possible interruption to service. The Contractor shall maintain drainage and driveway access at the end of the day's pipe laying. Open trenches shall only be as long as the length of pipe to be laid that day. At the end of the day's work, the end of the last length of pipe laid shall be blanked with a cover to prevent intrusion of trash. The Contractor shall provide bracing at power poles as per instructions from the utility owner where the trench excavation is adjacent to the poles (no direct pay). The Contractor shall exercise caution when placing and compacting backfill and bedding material as not to damage the pipe or cause joints to move out of place. The Contractor shall replace, at his own expense, any pipe, fittings, and other materials in existing installation which are damaged due to his operations. All pipe installations shall be inspected by the engineer's field representative before backfilling operations commence.

C. New pipe between two existing structures and pipe used for point repairs shall match the alignment and elevations of the existing pipe to be replaced unless otherwise shown in the plans or directed by the Director or the S&WB.

3.17.02 REPLACEMENT

A Pipe used for the replacement of the entire length of existing drain lines between manholes or structures shall be new reinforced concrete pipe conforming to Section E of the S&WB General Specifications installed as shown on SWBNO Standard Drawing No. D-3809, D-3810, D-3933, or D-3934.

B. New Class IV Reinforced Concrete Pipe shall be required when the cover over the pipe within the roadway between 2.0-2.5 ft. The installation of reinforced concrete pipe shall be installed as shown on SWBNO Standard Drawing No. D-3809, D-3810, D-3933 or D-3934.

3.17.03 DRAIN LINE REPAIRS

A. Pipe used for Point Repairs of Existing Drain Lines may be new reinforced concrete pipe conforming to Section E of the S&WB General Specifications or solid wall polyvinyl chloride (PVC) pipe at the Contractors option unless otherwise noted.

B. New Class IV Reinforced Concrete Pipe shall be required when the cover over the pipe within the roadway is less than 2.5 ft.

C. Solid wall PVC pipe less than 18-inches in diameter, unless otherwise noted, shall be SDR 26 (PS115) Polyvinyl Chloride (PVC) pipe manufactured in accordance with ASTM D3034, latest edition, and shall be U.L. listed. Solid wall PVC pipe sizes 18-inches through 30-inches in diameter, unless otherwise noted, shall be PS115 Polyvinyl Chloride (PVC) pipe manufactured in accordance with ASTM F679, latest edition, and shall be U.L. listed. The elastomeric gaskets and retainer rings shall be installed in accordance with ASTM D3212 and F477, or per latest Sewerage & Water Board requirements. The fittings for solid wall PVC pipe shall be SDR 35 and shall have the same inside diameter as the solid wall PVC.

D. PVC pipe used for drain point repairs up to 30" diameter shall be installed as shown on SWBNO Standard Drawing No. 4697-E5-A. PVC pipe connecting to brick manholes shall be installed as shown on SWBNO Standard Drawing No. 6178_B_6.

3.17.04 PAYMENT

A. Payment for drain line replacement or repairs shall conform to the "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, latest edition, Section C701 Culverts and Storm Drains, C701.08 PAYMENT when listed on the Unit Price Form proposal.

SECTION 3.18 - TIMBER CURB

A. This item shall be governed by the requirements of Standard Specification Item C707 (64) Timber Curb except as modified here-in. The unit price bid per horizontal Linear Foot of finished timber curb for this item shall include removal and proper disposal of existing timber curb and posts, grading, furnishing, and installing all required timber posts and timber curb, and final grading.

B. Measurement and payment for Timber Curb, including posts, shall be made at the contract

unit price per Linear Foot (LF) of timber curb under Special Bid Item No. CF - 15 TIMBER CURB when listed on the Unit Price Form.

SECTION 3.19 - TYPE-A DEAD END INSTALLATION

A. The Dead-End Installation shall be governed by the requirements of 2006 Edition LADOTD Standard Specifications for Roads and Bridges section 729.06 except as modified here-in. The Contractor shall be responsible for providing all materials including guard rail, u-channel signposts and required signs and construction of guard rail and installation of signs as required by standard plan HS-03. Payment for Item CF-16, when listed on the Unit Price Form, shall include all material, equipment, and labor necessary to complete installation including guard rail as noted.

B. Dead end road installations shall be as specified and located as shown on the project plans. Posts shall be vertical. Guard rail shall be constructed in accordance with 2006 Edition LaDOTD Standard Specifications for Roads and Bridges section 704. Contractor shall re-grade and ensure positive drainage within the limits of the area disturbed by construction. Any fill material shall be placed at no direct pay and shall meet all requirements for fill material of this project. Fill material shall be suitable on-site excavated earth material, subject to approval of the Director, or borrow material compliant with the requirements Standard Specification Item C723 Granular Material with subsection 1003.07 referencing 2006 Edition LaDOTD Standard Specifications for Roads and Bridges. Fill and borrow materials shall be free from waste, rubbish, large rocks, or other unsuitable or foreign material.

SECTION 3.20 - CONCRETE BARRIER OR MOUNTABLE CURB WITH LAYING STRIP

A. This item shall be governed by the requirements of Standard Specification Section C707 except as modified here-in.

B. See details for Concrete Barrier Curb and Laying Strip and for Concrete Mountable Curb and Laying Strip on the Construction Drawings Typical Roadway and Section Details sheets for additional concrete strip required to be placed between the concrete pavement and concrete curb for construction of composite roadways.

C. There shall be no direct measurement and payment for the laying strip portion of the concrete barrier curb or concrete mountable curb. All associated costs shall be included in other major items of the proposal.

SECTION 3.21 – PROJECT SIGN

A. This item shall be governed by the requirements of Standard Specification Section C729 except as modified here-in.

B. The CONTRACTOR shall provide one project identification sign in accordance with the Contract Documents at no direct pay.

PROJECT SIGN CONSTRUCTION

B. The sign shall be constructed of 1/2-inch exterior plywood with 4-inch by 4-inch supports and 2-inch by 4-inch cross bracing.

C. The sign face shall be 4-feet vertical by 8-feet horizontal.

C. The sign will be printed in color on 10-mil Coroplast®.

SIGN CONTENT

A. The sign shall include the following information and graphic elements:

1) The City of New Orleans Fleur De Lis Logo at Left as shown on the Sign Example.
2) New Day New Orleans at top center as shown on the Sign Example.
3) The project name or title underneath New Day New Orleans as shown on the Sign Example.
4) Underneath project name: City Agency: Department of Public Works as shown on the Sign Example.
5) Underneath City Agency: Project Engineer: (company name) as shown on the Sign Template.
6) Underneath Project Engineer: Contractor (company name) as shown on the Sign Template.
7) Underneath Contractor: Track our progress at nola.gov, as shown on the Sign Example.
8) The Mayor's name underneath City of New Orleans at right as shown on the Sign Example.
9) Underneath the Mayors name, the Councilmembers at Large as shown on the Sign Example.
10) Underneath the Councilmembers at Large, Council District members as shown on the Sign Example.

B. The DPW PM shall provide the editable sign file (in full-size PDF format) to the Contractor at the Pre-Construction meeting. Sign template provided may require editing to reflect the Project Name and General Contractor. Contractor shall verify content of template and submit PROOF to the Director for approval of Copy & Placement.

SIGN LOCATION, MAINTENANCE, AND REMOVAL

A. The project sign shall be located on the site as directed by the Director.

B. The sign shall be set 4 feet above the ground, measured from grade to the lower edge of the plywood sheet.

C. The CONTRACTOR shall maintain the sign in excellent condition throughout the duration of the project.

D. The CONTRACTOR shall remove the project sign and restore the area when directed by the owner upon preparation of the Notice of Completion.

SIGN EXAMPLE

SECTION 3.22 – NON-STANDARD SEWER REHABILITATION ITEMS

A. This section identifies special pay items applicable to the sewer rehabilitation work outlined in section 1.21 and 2.07 through 2.10 above.

B. Sanitary sewer rehabilitation including adjustment to sewer manhole covers shall be performed, measured, and paid for in accordance with the standard DPW specifications section C702 or the Special Provisions (this section) paragraph 3.15 above, where the Special Provisions supersede the standard specifications.

C. Sanitary sewer rehabilitation including replacement of sanitary sewer manhole covers shall be performed, measured, and paid for in accordance with the standard DPW specifications section C742 or the Special Provisions (this section) paragraph 3.15 above, where the Special Provisions supersede the standard specifications.

D. Sanitary sewer rehabilitation including the replacement of main line sanitary sewers, replacement of sanitary sewer lateral service connections and the lining of main line sanitary sewers, including the reinstatement of lateral service connections, shall be performed, measured, and paid for in accordance with the standard DPW specifications section C742.

E. Sewer Line Replacement by Pipe Bursting. In cases where main line sanitary sewer lines cannot be fully replaced by conventional excavation (due to trees or obstructions), the S&WB may direct the contractor to perform sanitary sewer line replacement by means of pipe bursting. Replacement of the existing sewer house connections shall be performed in accordance with DPW standard specifications section C742.03.

1. CSS742(X1), Install Sewer Mains by Pipe Bursting (Size). Payment shall be made at the contract unit price per linear foot of the size specified for work including replacement of existing sewer main lines by pipe bursting as approved by the S&WB. Contractor shall include all labor materials and equipment to replace the main line sewer for the entire length from manhole to manhole. This work will be measured and paid for by the linear foot in the same manner as pay item C742(51) but without any provisions for depth.

2. CSS742(X2), Cut Pipe to Replace Existing Sewer House Connection from New Main to Back of Curb. Payment shall be made at the contract unit price per each for work including excavation and reinstatement of service connections disturbed from Install Sewer Mains by Pipe Bursting and the replacement of the service connection from the new main line to the back of the curb. Contractor shall include all labor materials and equipment to excavate, locate and expose each fitting, install a new fusible saddle, or tap for the appropriately sized main line sewer pipe, replace the sewer service lateral to the back of curb, including all required fittings and adjustments, and backfill and compact the excavation. With exception to the fusible saddle fitting, the work shall be performed as per DPW standard specification C742.03 and 742.05. This work will be measured and paid for by each in the same manner as pay item C742(60).

F. Sewer Line Point Repairs, Up to Twelve Feet. For the sewer rehabilitation work in this contract, sewer line point repairs shall be performed as specified in the DPW standard specification section C742.03 except that the length of the point repairs shall be twelve feet (12-ft).

1. CSS742(X3), Sewer Point Repair up to Twelve Feet (Size & Depth). Payment shall be made at the contract unit price per each of the size and depth specified for work including excavation, foundation lumber, bedding, drainage fabric, backfill, complete shoring, pumping as necessary and tie-ins. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

2. CSS742(X4), Sewer Point Repair beyond Twelve Feet (Size & Depth). Payment shall be made at the contract unit price per linear foot of the size and depth specified for work to including excavation, foundation lumber, bedding, drainage fabric, backfill, complete shoring, pumping as necessary and tie-ins. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

G. Find and Fix Lines. In some contracts the sewer rehabilitation work may include “Find and Fix” lines. These are line segments that were not locatable during inspection. The Contractor is responsible to locate the manholes for these line segments, perform sewer line cleaning and CCTV inspection. The manholes should then be secured to protect the safety of the public until the scope of rehabilitation has been determined. Manholes requiring vertical adjustment will be directed in the field and paid for under the respective bid unit item (Section 3.17.G above or Section C702). There is no direct payment for the coordination, locating or exposing of the manholes for lines identified as “Find and Fix” 2.09.E.

1. CSS742(X5), Sewer Main Line Cleaning (Size). Payment shall be made at the contract unit price per linear foot of the size specified for work including the cleaning of main line sewers in accordance with paragraph 2.09.E above in preparation for CCTV Inspection. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

2. CSS742(X6), Sewer Main Line CCTV Inspection (Size). Payment shall be made at the contract unit price per linear foot of the size specified for work including the CCTV inspection

of main line sewers in accordance with paragraph 2.09.E above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

H. Sewer Service Lateral CIPP Lining. In some cases, sanitary sewer lateral house connections will require replacement but not be accessible due to oak trees, construction, or other obstructions. In these cases, with authorization from the S&WB, the Contractor will perform rehabilitation on these house connections by means of lateral CIPP lining from the sanitary sewer main line. Work shall be performed in accordance with paragraph 2.09.D above.

1. CSS742(X7), Sewer Service Lateral CIPP Lining. Payment shall be made at the contract unit price per each lateral service house connection including cleaning, CCTV inspection prior to the lining, the CIPP lining and the CCTV inspection upon completion of the lining in accordance with paragraph 2.09.D above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

I. Sewer Manhole Lining Rehabilitation. The sewer rehabilitation included in this contract will include the rehabilitation of manholes via a cementitious grout liner for either a partial depth or full depth. This work shall be performed in accordance with paragraph 2.09.F above.

1. CSS742(X8), Manhole Rehabilitation, Cementitious Liner, Partial Depth (2-feet). Payment shall be made at the contract unit price per each manhole and include the cleaning and cementitious liner application in the top 2 feet of the manhole in accordance with paragraph 2.09.F above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

2. CSS742(X9), Manhole Rehabilitation, Cementitious Liner, Full Depth. Payment shall be made at the contract unit price per vertical foot height of interior manhole walls from the top of bench to the underside of the frame and include the cleaning and cementitious liner application for the full height of the manhole in accordance with paragraph 2.09.F above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

3. CSS742(X13), Sewer Service Lateral CCTV Inspection. Payment shall be made at the contract unit price per each lateral service house connection including CCTV inspection prior to the lining and CCTV inspection upon completion of the lining in accordance with paragraph 2.10 above. Contractor shall include all labor materials equipment and appurtenances required to complete this work.

J. Measurement and payment of Special Bid Items for Sewer Rehabilitation include:

ITEM NO.	PAY ITEM	PAY UNIT
CSS742(X1)	Install Sewer Mains by Pipe Bursting (Size)	Linear Foot
CSS742(X2)	Fuse Service Tee and Drill Pipe to Replace Existing Sewer House Connection from New Main to Back	

	of Curb	Each
CSS742(X3)	Sewer Point Repair up to Twelve Feet (Size & Depth)	Each
CSS742(X4)	Sewer Point Repair beyond Twelve Feet (Size & Depth)	Linear Foot
CSS742(X5)	Sewer Main Line Cleaning (Size)	Linear Foot
CSS742(X6)	Sewer Main Line CCTV Inspection (Size)	Linear Foot
CSS742(X7)	Sewer Service Lateral Lining (6" CIPP)	Each
CSS742(X8)	Manhole Rehabilitation, Cementitious Liner, Partial Depth (2-feet)	Each
CSS742(X9)	Manhole Rehabilitation, Cementitious Liner, Full Depth	Foot Height
CSS742(X10)	Removal of Cast Iron Flush Valve Apparatus from Sewer Manhole	Each
CSS742(X11)	Removal of water service line from sewer manhole	Each
CSS742(X12)	Locate and disconnect flush valve water service line from water main	Each
CSS742(X13)	Sewer Service Lateral CCTV Inspection	Each
CSS742(X14)	Well Point System	BLFT

K. Measurement and payment of for flush valve removal items CSS742(X10), CSS742(X11) and CSS742(X12) are specified in Section 2.10 above each item will be measured as a quantity of no more than one each per manhole containing a flush valve apparatus and/or water service connection.

SECTION 3.23 – NON-STANDARD WATER POINT REPAIR ITEMS

A. This section identifies special pay items applicable to the water point repairs work outlined in sections 1.22 and 2.12.

B. Payment for furnishing and installing water point repairs shall be made at the contract unit price including main line point repair installed as a complete system, including tie-ins, excavation, removal of existing pipe, pumping as necessary to prevent contaminating the existing system, bedding, complete shoring, backfilling material, hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.

C. Payment for furnishing and installing 1-inch through 2-inch Polyethylene Pipe for water house connections (LSL replacement) shall be made at the contract unit price per each, including excavation, backfilling, service saddles, corporation cock and removal of existing pipe and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for tie-ins to the main or meter.

D. Payment for furnishing and installing 2-inch Polyethylene Pipe watermain shall be made at the contract unit price per linear foot, including main line fittings (bends, tees, etc.), tie-ins, excavation,

removal of existing pipe (if any), pumping as necessary to prevent contaminating the existing system, bedding, complete shoring, backfilling material, hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for 2" valves as required per the plans.

E. The contractor may request reimbursement of monthly water hydrant meter fees paid to the Board that were used for SWBNO Testing and Flushing of new water mains. The Contractor shall record usage type and read meter on a daily basis. Contractor, Resident Inspector and Board Construction Manager will sign and certify each month's usage.

F. All other items of work necessary to the performance of the project, for which no specific unit price and/or lump sum pay item is established, shall be considered and designated part of the construction, and the existing pay items shall be full compensation. Items including but not limited to, trench safety, traffic control, contract closeout, shop drawings, submittals, and office support shall be merged into the prices bid.

G. There will be no direct payment for temporary water mains, temporary water service connections, and any related work including temporary tie-ins, removal of temporary work after installation of permanent work, and other incidentals. The cost of all work shall be included in the water point repair unit bid prices.

H. Measurement and payment of Special Bid Items for Water Point Repairs include:

ITEM NO.	PAY ITEM	PAY UNIT
CSW741-01	Repair Water Main with Full Circle Clamp (Pipe Size 4" – 8")	Each
CSW741-02	Repair Water Main with Full Circle Clamp (Pipe Size 12" – 16")	Each
CSW741-03	Repair Water Main with Bell Joint Clamp (Pipe Size 4" – 12")	Each
CSW741-04	Repair Water Main with Bell Joint Clamp (Pipe Size 16" – 24")	Each
CSW741-05	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 4" – 12")	Each
CSW741-06	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 16" – 24")	Each
CSW741-07	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 4" – 12")	LF
CSW741-08	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 16" – 24")	LF
CSW741-09	Replace 5/8" to 1" Lead Service Line Water House Connection with 1" Polyethylene Water House Connection (From Main to Meter)	LF
CSW741-10	Replace 1.5" Lead Service Line Water House Connection (From Main to Meter)	LF
CSW741-11	Replace 2" Lead Service Line Water House Connection (From Main to Meter)	
CSW741-12	2" New Water Main with Main Line Fittings	LF

SECTION 3.24 – WELL POINT SYSTEM

PART 1 – GENERAL

1. Scope of Work
    1. Furnish, install, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

    2. The Contractor shall be responsible for the satisfactory performance of the system and for correcting any disturbance of natural bearing of soils or damage to structures caused by the dewatering system or by interruption of the continuous operation of the system as specified.

    3. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures. Prevent surface water from entering excavations by grading, dikes, or other means.

    4. Remove dewatering system once construction is complete and no damage will be caused to the installed pipe or structure from the well point system.

    5. Reference Section 01 100 Boring Logs and Coring Data for site specific geotechnical information.

2. Submittals
    1. Prior to excavation, the Contractor shall submit detailed drawings and design calculations descriptive of the proposed well point system used in maintaining dry conditions to the Engineer. This submittal shall be prepared and sealed by a professional engineer licensed in the State of LA.
    2. Submit plan showing arrangement, locations, and details of wells and well points; locations of risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.
    3. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
    4. Include written plan for dewatering operations including sequence of well and well-point placement coordinated with excavation shoring and bracings and control procedures to be adopted if dewatering problems arise
    5. Existing Conditions: Using photographs or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.
    6. Record Drawings: Identify locations and depths of capped wells and well points and other abandoned-in-place dewatering equipment.

3. Installation
    1. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
    2. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways, if required, using approved traffic control plans by authorities having jurisdiction.
    3. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.
        1. Space well points or wells at intervals required to provide sufficient dewatering.
        2. Use slotted screen to prevent pumping of fine sands or silts from the subsurface.
        3. Provide two groundwater observation wells for each setup.
    4. Place dewatering system into operation to lower groundwater level to allow for dry working conditions within the excavation. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.
    5. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of the system becomes inadequate or fails.
    6. Dewatering shall be required until the pipes and structures to be built have been completed to the extent that they will not be floated or otherwise damaged by allowing water levels to rise or return to natural elevations.

4. Operation
    1. Operate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Drain water-bearing strata above and below bottom of foundation of utilities and other structures where required.
        1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
        2. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
        3. Maintain piezometric water level a minimum of 24 inches below bottom of excavation.
        4. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.

    2. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.

    3. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

    4. The dewatering system shall be operated so that the groundwater level outside the excavation is not altered to an extent that would damage or endanger adjacent structures or property.

5. Plug or fill well holes with sand or cut off and cap wells with a flowable fill of a grout or sane mixture a minimum of 36 inches below the existing ground surface. Where well points are installed within the section of roadway to be replaced, the wells must be capped a minimum of 36 inches below the base course of the pavement section.

5. FIELD QUALITY CONTROL

1. Observation Wells: Provide a minimum of two observation wells or piezometers

2. Observe and record daily elevation of ground water and piezometric water levels in observation wells.

3. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made.

4. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.

5. While dewatering for new construction in the vicinity of existing structures, depletion of the groundwater level underneath these existing structures may cause settlement of within the site footprint and at some distance beyond the footprint. To avoid this settlement, the groundwater level under these structures shall be maintained by appropriate methods.

6. Survey-Work Benchmarks: Resurvey benchmarks regularly during dewatering and maintain an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Engineer if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent structures.

7. The contractor shall ensure appropriate the before and after condition of nearby structures and ground surfaces is recorded using photo and video documentation prior to the installation of any well points. The time and date of the recordings shall be labeled within the file.

6. Measurement and Payment

1. Well-pointing measured in areas of drainage and/or sanitary sewer installation with excavations deeper than 5 feet. Well-pointing measured for payment only with engineer's or owner's field approval.

2. Measurement. Well point systems or dewatering systems shall be measured by the "block linear foot" (BLFT) of street block requiring the well point system. The measurement shall be taken along the centerline of the block for the length of the open trench.

3. Payment. Shall be made at the contract unit price, per BLFT, for bid item CSS742(X14) WELL POINT SYSTEM measured as outlined. Such payment shall be full compensation for all materials, equipment and labor necessary to furnish, install, operate and maintain the well point system, including any necessary traffic warning systems or any work necessary to restore the site to its original condition.

SECTION 3.25 – PRE AND POST REHABILITATION CCTV INSPECTION AND CLEANING DRAIN STRUCTURE(S)

SECTION 3.25.A – VIDEO RECORDING

A. The Contractor shall furnish all labor, equipment, supplies, and supervision and shall perform all work required in accordance with these specifications. CCTV inspection shall be performed in the areas selected and approved by the Owner.

B. It shall be the responsibility of the Contractor to schedule and perform investigations to prevent system overflows. If flows are such that they interfere with the Contractor's ability to collect accurate data, then the Contractor shall be responsible to schedule his work during low flow periods or to request written permission to perform by-pass pumping around the site. The Contractor may provide by-pass pumping only with specific approval from the City.

C. Inspection of storm drain infrastructure by means of CCTV equipment shall be performed to determine the location and extent of any obstructions and defects such as offset joints, protruding tees, broken pipe, and other pipe defects. Logs shall note the existence of any significant defects. Cleaning by the Contractor shall be performed prior to each CCTV inspection on each pipeline to be inspected.

D. CCTV inspections shall be performed on one drainage structure-to-drainage structure pipe segment at a time. The inspection shall be performed by moving the CCTV camera through the line along the axis of the pipe at a rate not to exceed 30 feet per minute. Any means of propelling the camera through the pipe that would exceed this rate of speed or produce non-uniform or jerky movements shall not be acceptable. The camera shall be stopped for a minimum of 5 seconds at each identifiable defect to ensure proper documentation of the line's condition. In addition, the camera shall be stopped at each service connection, and the camera shall pan the service connection to video inside the service line. CCTV inspection is performed from the upstream manhole/catch basin to the downstream manhole/catch basin when the conditions allow. If conditions do not allow an upstream to downstream inspection, the inspection will be performed in reverse (from the downstream to the upstream drainage structure).

E. A header screen showing tape number, segment number, and manhole number shall be taped for 10 seconds at the beginning of each televised line segment. All header information shall be recorded on the log forms.

F. At the Contractor's discretion the camera shall be stopped or backed up to view and analyze conditions that appear to be unusual or uncommon for a sound storm drain line. At all times, the operating technician shall be able to move the camera through the line in either direction without loss of quality in the video presentation on the monitor. The picture shall be free of electrical interference and provide a clear, stable image of the specified resolutions at all times. The camera lens shall be cleaned, as required, to provide a clear image within the storm drain lines.

G. In the event that equipment becomes lodged in the line segment, the Contractor shall notify the City immediately. The City will remove the camera at no cost to the Contractor. Timely excavation is necessary to maintain project schedules and to eliminate the possibility of overflows resulting from the lodged equipment creating a blockage.

H. Continuous video recordings of the inspection view as it appears on the television monitor shall be taken. It is intended that a video recording will be made of the complete television inspection of all storm sewer lines as part of this project. The video recording shall be one on which both sound and video information can be reproduced with a video image equal to or better than the quality of the original picture on the television monitor.

A pan tilt zoom (PTZ) camera shall be used to conduct the inspection. The camera shall be waterproof and corrosion resistant and able to operate in temperatures between 0-50 degrees C (32-122F). The sensor shall be ¼" color CCD with minimum 1.5 lux sensitivity for resolution of minimum 460 NTSC TV lines. A full 360-degree axial pan is required with a variable pan speed not to exceed 25 degrees/second. The camera shall have a minimum 40:1 zoom lens capable of 10X optical and 4X digital, with auto or remote manual focuses. The adjustment of focus and iris shall allow optimum picture quality to be achieved and shall be remotely operated. The illumination shall be such as to allow an even distribution of light around the pipeline perimeter without the loss of contrast or flare out of picture shadowing.

The replay of the recorded video information, when reviewed on a monitor-receiver, shall be free of electrical interference and shall produce a clear, stable image with a horizontal resolution equal to that of the television monitor in the television inspection studio. The audio portion of the completed signal shall be sufficiently free of electrical interference and background noise to produce an oral report that is clear and complete, and easily discernible. The audio portion of the tape report shall include the location or identification of the section, the manhole-to-manhole direction of travel, and the distance traveled on the specific run encountered. The audio portion of the tape shall also identify all defects. The video equipment shall be continuously connected to the television inspection or monitoring equipment. The video and monitoring equipment shall have the built-in capability to allow the technician to instantly review both the audio and video quality of the video productions at all times during the television survey. Playback speed shall be continuously adjustable from one-third normal speed for slow motion viewing to normal playback speed.

A suitable distance-reading device which uses cable length to accurately measure the location of the camera in the pipe shall be provided. This device shall be accurate to +/- 1% of the length of the inspection.

I. Laser Equipment Inspection: If determined necessary by DPW, 2-D Laser scanning shall be conducted continuously and simultaneously with other inspection technology for the entire length of the selected pipe segment. Laser equipment shall be moved through the pipe on a transport vehicle capable of supporting the laser inspection equipment above the water level. Tracked platforms must be capable of forward/stop/reverse mobility for detailed high-resolution scans to be collected at a specified interval.

The laser equipment shall be designed and manufactured to produce a high resolution of measurement resulting in 0.25% of internal diameter, with a laser sensor accuracy of 0.5% or greater (i.e., an accuracy of 0.5 inches at 100 inches in pipelines up to 30 inches in diameter and a repeatability of 0.10% or greater for pipelines from 15 inches to 30 inches in diameter). The laser equipment shall be properly calibrated per the manufacturer's documentation and the calibration shall be recorded for verification.

The laser equipment shall be capable of measuring the distances to objects and surfaces in drain lines and shall be capable of imaging drain lines less than 36" in diameter. The laser shall support 75 Hz scan rates or higher and be Class 1: eye-safe for operator safety. The laser sensor resolution shall be at least 1mm.

The laser equipment shall be operated in a manner to minimize measurement error sources attributable to the effects of the following:

1. Horizontal displacement from off-axis meander or pipeline alignment curvature that distorts cross-section measurement;
2. Vertical displacement due to sediment, debris, offset joints or other physical environment conditions that distorts cross-section measurement; and
3. Vertical displacement due to flow condition or other hydraulic environment factors that distorts cross-section measurement.

An overview of data collected by laser equipment is to be presented in a color-coded format as 2-D cross sections conveying pipe condition above the laser's centerline over the length of the inspection segment. The report shall provide a 2-D representation of an integrated overview of pipe wall thickness loss or increase data revealed from laser scanning and shall be presented in a color-coded format as an unrolled illustration of the pipe condition above the waterline over the length of the inspection segment. The pipe interior is to be flattened into a graphic whose y-axis represents pipe diameter, whose x-axis represents pipe length and whose color represents deviation from expected values indicating a gradation and severity of corrosion or buildup. Measured pipe internal diameter (ID) that coincides with expected values must be coded in a color that positively identifies and differentiates the measurement of the expected values from pipe wall loss or increase. Measured pipe ID that coincides with expected values must be coded green. Outward deformations, as measured by increasing pipe ID, must be colored on a yellow/red color scale, advanced deformation. Material gain (buildup) or inward deformation, as measured by decreasing pipe ID, must be on a blue color scale.

If DPW determines that Laser Inspection is necessary, it will negotiate a unit price for that inspection upon the first use of this type of inspection. The unit price developed will be entered into the contract and used for the duration of the contract at the fixed established unit price.

J. Video recordings shall be enclosed in plastic containers which shall clearly indicate the date the tape was recorded, the designated section(s) of storm sewer lines contained on the tape, and the referenced storm sewer inspection report covering the sections of the storm sewer lines so included. Two permanent labels are required. One label shall be placed on the spine and the other on the face of the video. Recording of a single segment shall not span more than one video. The recording of a segment between manholes shall be continuous and complete. The videos become the property of the City, once submitted. The Contractor shall maintain a master copy of all videos and associated Inspection Reports for one year after Contract completion. Additional copies of the videos, if requested, shall be made by the Contractor on professional duplication equipment. Two permanent labels are required. One label shall be placed on the spine and the other on the face of the video. Permanently label each tape with the following information:

Spine of DVD Case

Contract No. _____ Disc No. _____

Face of DVD Case

Start Manhole	Finish Manhole

K. CCTV inspection footage of service laterals shall be included on separate videos. The Contractor may include as many service lateral inspections as possible on each video provided that all service lines from the same mainline are on the same video. The DVD spine label shall be identical to those for mainline inspection. The face label of the video shall include the following information: mainline information (upstream manhole to downstream manhole), service line location, survey start point, and survey finishing point.

SECTION 3.25.B – DRAIN LINE CLEANING

A. Standard line cleaning shall be performed to remove foreign material and restore pipe capacity to 95%. Standard cleaning shall be defined as three (3) complete passes of the storm drain line with the cleaning equipment. The term "complete passes" shall mean cleaning from the upstream manhole all the way to the downstream manhole. Cleaning shall be performed with combination cleaning / vacuum trucks.

B. Heavy line cleaning shall be performed, only if required and approved by the City, to remove foreign material and restore pipe capacity to 95%. Heavy line cleaning shall be defined as four (4) or more complete passes of the storm drain line with the cleaning equipment. The term "complete passes" shall mean cleaning from the upstream manhole all the way to the

downstream manhole. Cleaning shall be performed with combination cleaning / vacuum trucks.

C. Conditions such as broken pipe and major blockages may prevent cleaning from being accomplished, especially where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered and the contractor is unable to clean the entire line from all reasonable points of access and directions, the Contractor shall not be required to clean those specific pipe sections unless the Owner removes the apparent obstruction.

D. During cleaning operations, satisfactory precautions shall be taken by the Contractor in the use of cleaning equipment. Precautions shall be taken to ensure that damage to or flooding of public or private property does not occur during the cleaning procedure.

E. Selection of the equipment shall be the sole discretion of the Contractor and based on the conditions of lines at the time the work commences. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the storm drain lines and manholes. There shall be no change in cost for use of additional or different equipment utilized at the discretion of the contractor to perform work. Contractor shall notify project engineer and Owner of equipment to be used prior to use or initiation of any work.

F. All sludge, dirt, sand, rocks, grease, and other solid or semi-solid materials resulting from the cleaning operation shall be removed at the downstream manhole/catch basin of the section being cleaned. Passing materials from pipe segment to pipe segment, which could cause line stoppages, accumulations of debris in wet wells, interference with in-line permanent flow monitoring equipment or damage to pumping equipment will not be permitted.

G. If the CCTV inspection shows the cleaning to be unsatisfactory, the Contractor shall re-clean and re-inspect the pipe segment at his sole expense until the cleaning is shown to be satisfactory.

H. All sludge, dirt, sand, rocks, grease, and other solid or semisolid materials removed from the storm drain lines during the cleaning operation shall be drained of water and transported to an approved licensed landfill facility. All costs associated with debris disposal will be the responsibility of the Contractor or as otherwise specified herein.

SECTION 3.25.C – LATERAL DRAIN LINE CLEANING

A. Contractor will use a lateral launch inspection system, consisting of a robotic tractor and a lateral launch CCTV camera, to remotely deploy a pan & rotate camera into lateral pipes connected to a mainline storm drainpipe. Should Contractor encounter multiple laterals converging in a single tap, Contractor shall utilize a steerable lateral camera with guide pin to inspect the adjoining laterals separately. Each pipe shall be identified as an independent inspection for data submittal and invoicing purposes.

B. A mainline television camera is used to position the lateral camera launcher. The lateral camera

is used to inspect each lateral from the mainline.

C. The television inspection of the lateral will be attempted from inside the mainline up into the lateral or attempted from the service manhole towards the mainline. Lateral lines inspected from the service manhole towards the mainline will be attempted by using a mini push camera if necessary.

D. In the event a lateral pipe segment cannot be fully inspected after reasonable attempts to remove obstructions or traverse because of poor structural condition is not successful, Contractor shall provide all the information to the City and the City will determine alternate possible solutions or whether enough information has been obtained to safely assess the proximity of uninspected portions of pipe.

E. Under no circumstances shall a lateral line be cleaned or inspected on private property or beyond public right-of-way of non-local City street (i.e., federal, federal-aid or state routes) limits. Any cleaning or inspection services performed outside the City approved scope of work, private property, or otherwise specified herein will not reimbursable and all associated costs contractor responsibility. The connections points for all laterals at the mainline or connecting structure shall be inspected at no direct cost. The limits of lateral lines cleaning and inspection operations for lateral lines connecting a drainage structure to the mainline may end at the drainage structure; however, where feasible the contactor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. For lateral lines not connected to a drainage structure the lateral line shall be cleaned and inspected from the connection point to the mainline to the extent feasible on the private property side (side opposite the mainline). If the contractor is unable to reasonably clean or inspection a lateral line beyond the connection to the mainline the contractor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. Field reports and video logs shall clearly document distinguish whether the line cleaned or inspected is a mainline or lateral.

SECTION 3.25.D – DRAINAGE STRUCTURE CLEANING

A. The Contractor shall furnish all labor, equipment, supplies, and supervision and shall perform all work required in accordance with these specifications. Drainage structure cleaning, including catch basins, drop inlets, conflict boxes, manholes, etc. shall be performed in the areas selected and approved by the City. Only manholes / catch basins with large debris such as rocks, bricks, trash, tree limbs, etc. will require cleaning. Also, cleaning will be required if small deposits or water has accumulated at greater than or equal to 1/3 of the depth of the manhole / catch basin (measured from rim to invert of the lowest pipe).

B. Selection of the equipment shall be the sole discretion of the Contractor and based on the conditions of drainage structures at the time the work commences. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the drainage structures.

C. All sludge, dirt, sand, rocks, grease, and other solid or semisolid materials removed from the storm drainage structures during the cleaning operation shall be drained of water and transported to an approved licensed landfill facility. All costs associated with debris disposal will be the responsibility of the Contractor or as otherwise specified herein.

SECTION 3.25.E – TELEVISION INSPECTION REPORTS

A. Television Inspection Report: The Contractor shall complete a television inspection report covering the television inspection work and the information acquired. The television inspection report shall be completed by the Contractor.

B. A television inspection code sheet shall be used consistently throughout the contract. All electronic data files shall be submitted on CD-ROM, or flash drive, as directed and approved by the City.

C. Video Data Display: At the start of each storm sewer length being surveyed, the length of pipeline from zero up to the cable calibration point shall be recorded and reported in order to obtain a full record of the storm sewer length. The length reading entered on to the data display at the cable calibration point must allow for the distance from the start of the survey is zero. In the case of surveying through a manhole where a new header sheet is required, the distance shall be set at zero with the camera focused on the outgoing pipe entrance.

D. Television Inspection Record: AT the start of each manhole length a data generator shall electronically generate and clearly display on the viewing monitor and video recording a record of data in alphanumeric form containing the following minimum information:

a. Automatic update of the camera's position, in feet and tenths, in the storm sewer line from adjusted zero;
b. Size and Length of Line, Type of material line composed of, etc.;
c. Upstream manhole and downstream drainage structure reference numbers;
d. Date of inspection;
e. Road name/location;
f. Direction of inspection (upstream or downstream);
g. Starting time of the inspection;
h. Pipe ID references;

Once the survey of the pipeline is under way, specific data should be continuously displayed on the viewing monitor and video recording. The size and position of the data display shall be such as not to interfere with the main subject of the picture yet shall be easily readable when the recording is replayed. At minimum, the following data should be displayed:

Automatic update of the camera's position, in feet and tenths, in the storm sewer line from adjusted zero; \

Upstream manhole and downstream manhole reference numbers

Each storm sewer length, i.e., the length of the storm sewer between two consecutive drainage structures, shall be entered on a separate coding sheet. Thus, where a Contractor elects to "pull through" a manhole during a CCTV Survey, he shall start a new coding sheet at the manhole "pulled through" and shall re-set the distance to zero on the coding sheet.

All blind drainage structures and buried drainage structures shall be noted in the inspection report and logged on a separate log with the GPS location and type of structure. The log shall be provided to the City with each pay request.

The videos and corresponding reports shall be submitted to the City on a weekly basis for all work accomplished the previous week.

E. Laser Inspection Reporting: Laser scan final reporting shall include the pipe's true diameter, ovality (per ASTM FI216), x/y diameter, and maximum diameter. Segments or areas revealing deflection in horizontal alignment greater than 2% must be identified in the report. Where the presence of flow in the pipeline requires interpolation and estimation calculations to fill data gaps and complete the full circumference view, the method and calculations used to support these assumptions must be presented. Other data sources such as as-built data, if used for these calculations, must be identified in the report. To support identified radial localization of defects, individual ID measurements as computed from the axis of the inspected pipe must be presented in an illustrated ovality and deflection graphs covering the length of the inspection segment. Laser scan results identifying ovality and deflection must be presented in 2-D cross-sections. The color coding is to be identical to the aforementioned requirements. Where the presence of fluids in the pipe necessitates interpolation and estimation, calculations to fill gaps and complete the full circumference view will be performed. The method and calculations used to support these assumptions must be presented. Any high-resolution scan obtained during the inspection are to be provided along with the report in a 3-D point cloud (VRML) format including software for viewing on a PC.

Precision Ovality Scans including but not limited to Sensor Error, Axis Alignment Error, and Processing Errors must be accurate to +/- 1%.

The report shall provide a 2-D representation of an integrated overview identifying concentricity, and deviation from concentricity resulting in ovality and eccentricity, presented in a color-coded format as an unrolled illustration of the pipe condition to include the entire pipe circumference (above the flow line) as well as a cross-section view. The pipe interior is to be flattened into a graphic whose y-axis represents pipe diameter, whose x-axis represents pipe length and whose color represents deviation from expected values indicating a gradation and severity of the deviation from concentricity. Measured pipe internal diameter (ID) that coincides with expected values must be coded in a color that positively identifies and differentiates the measurement of the expected values from actual concentricity measurements

The report shall provide a 3-D representation with variations in pipe wall shown in sharp relief for easy visual analysis for each of the aforementioned 2-D representations.

SECTION 3.25.F – SUBMITTALS

A. DATA: Data in CD-ROM, or flash drive, format shall be submitted to the City within ten (10) business days from time of inspection. Three (3) hard copies of the inspection report listed above shall be submitted.

B. CCTV Inspections: The Contractor shall provide videos with audio comments in DVD, or flash drive, format recorded at Standard Play (SP).

a. Complete storm sewer line segments can be included on the same video (i.e., CCTV inspections for storm sewer line segments shall not be divided among videos).
b. The video format shall be an MPEG-1 compressed video, and resolution video format shall be QSIF (Quarter-size Standard Image Format) of 176 x 112 pixels for NTSC video format.
c. Two labels are required on each DVD. One label shall be placed on the spine of the DVD Cover and the other on the face of the DVD.

C. Other Required Submittals: The Contractor shall provide the following backup information to support and document each location that has been cleaned/inspected:
   a. Brief narrative describing scope of work for location and any findings after inspection.
   b. Maps/GIS Data of each location showing work completed
   c. Field logs and misc. information generated during field investigation. A log shall be made by the Contractor when each drainage structure-to- drainage structure pipe segment is televised. The log shall include at a minimum:
      a. Street name with municipal address hundred block number, and any intersecting street
      b. Location of each point of leakage
      c. Location of each service connection or other pipe entering the televised line
      d. Location and degree of offsets
      e. Location of any damaged sections, and nature of damage
      f. Location of buried structures or blind junctions
      g. Location and amount of any deflection in alignment or grade of pipe; also, the total length of pipe sag
      h. Pipe ID reference number, materials, diameter, and distance between pipe joints
      i. Date, city, drainage structure-to- drainage structure segment, reference drainage structure ID number
      j. Name of operator, and inspector
      k. Direction of flow
      l. If a reverse-set up
      m. Video Filename
   d. Confined space entry form (when required) per industry standards and any applicable federal or state requirements.
   e. The Contractor shall prepare and submit a list of any encountered defects, obstructions, and blockage locations on a weekly basis. Any locations with defects which appear to require immediate corrective action based on their size and/or type on a daily and weekly basis.

D. Progress Reports: The Contractor will be required to provide a weekly progress report to the City showing, at a minimum, the status of all locations previously worked on in the prior week. The report shall include the location/address, size of drain line being inspected, date the notice to proceed was issued for the location, the status (complete, ongoing, etc.), and the anticipated completion date. A final overall project report shall also be provided upon completion of all work. A hard copy and CD with PDF copy of all reports within the billing period shall be

provided with each invoice submitted and the final report submitted with or prior to the final retainage invoice.

SECTION 3.25.G – MEASUREMENT AND PAYMENT

A. CCTV Inspection of Main Lines (and/or Laterals). Drain line laterals shall be considered any drain line or pipe connecting stubbed or otherwise tied into the main drain line. Laterals may originate from drainage structures or other connecting features to facilitate the flow of stormwater into the primary drainage system. Under no circumstances shall a lateral line be cleaned or inspected on private property or beyond public right-of-way of non-local City street (i.e., federal, federal-aid or state routes) limits. Any cleaning or inspection services performed outside the City approved scope of work, private property, or otherwise specified herein will not reimbursable and all associated costs contractor responsibility. The connections points for all laterals at the mainline or connecting structure shall be inspected at no direct cost. The limits of lateral lines cleaning and inspection operations for lateral lines connecting a drainage structure to the mainline may end at the drainage structure; however, where feasible the contactor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. For lateral lines not connected to a drainage structure the lateral line shall be cleaned and inspected from the connection point to the mainline to the extent feasible on the private property side (side opposite the mainline). If the contractor is unable to reasonably clean or inspection a lateral line beyond the connection to the mainline the contractor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. Field reports and video logs shall clearly document distinguish whether the line cleaned or inspected is a mainline or lateral.

   a. *Measurement:* CCTV Inspection of existing storm sewer pipe including drainage structures will be measured in place on a linear foot basis to the nearest foot. Measurement will be along the horizontal centerline of the pipe with no deductions for drainage structures and will be from center of drainage structures to center of drainage structures for the actual storm sewer line televised. CCTV of mainlines will include a view of the upstream and downstream drainage structures where possible to indicate the relative condition of said drainage structures. Measurement will be made for a various range of pipeline diameters listed under this item on the Proposal Form.
      i. The pipe segment length, with respect to the referenced drainage structure, shall be determined with a meter device, accurate to within ±2%. Markings on the cable, instruments requiring observation inside a drainage structure, or correction of each reading for the depth of the referenced drainage structure shall not be allowed. Accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape, or other suitable device.

   b. *Payment:* Payment for CCTV inspection of the existing storm sewer pipe and drainage structures will be made for the respective quantities as determined above at the unit price bid in the Proposal Form. This price and payment shall be full compensation for all material, labor, and equipment, required for television set-up, including, storm sewer flow, camera retrieval, hard copy report, electronic report, video recording, measurement, etc.

B. Cleaning of Main Lines (and/or Catch Basin Laterals)

a. *Measurement:* Cleaning of existing storm sewer pipe including drainage structures will be measured in place on a linear foot basis to the nearest foot. Measurement will be along the horizontal centerline of the pipe with no deductions for drainage structures and will be from center of drainage structures to center of drainage structures for the actual storm sewer line televised. Cleaning of mainlines will include a view of the upstream and downstream drainage structures where possible to indicate the relative condition of said drainage structures. Measurement will be made for a various range of pipeline diameters listed under this item on the Proposal Form.

    i. If cleaning of an entire section cannot be successfully performed from one manhole/catch basin, the equipment shall be set up at the other manhole/catch basin and cleaning again attempted. If successful cleaning still cannot be performed or the equipment fails to traverse the entire manhole-to-manhole or catch basin to catch basin pipe segment, it will be assumed that a major blockage exists, and the cleaning operation will be abandoned. The cleaning operator will note these occurrences in his daily cleaning log. The Contractor will be compensated for cleaning for only the length associated with the portions thereof pipe successfully cleaned should this occur.

b. *Payment:* Payment for cleaning of the existing storm sewer pipe and drainage structures will be made for the respective quantities as determined above at the unit price bid in the Proposal Form. This price and payment shall be full compensation for all material, labor, and equipment, required for television set-up, including, storm sewer flow, camera retrieval, hard copy report, electronic report, video recording, measurement, etc.

C. Heavy Cleaning of Main Lines (and/or Catch Basin Laterals)

a. *Measurement:* Heavy cleaning of existing storm sewer pipe including drainage structures will be measured in place on a linear foot basis to the nearest foot. Heavy cleaning is defined as making four or more complete passes in the specific line segment being cleaned. Measurement will be along the horizontal centerline of the pipe with no deductions for drainage structures and will be from center of manhole to center of drainage structures for the actual storm sewer line televised. Heavy cleaning of mainlines will include a view of the upstream and downstream drainage structures where possible to indicate the relative condition of said drainage structures. Measurement will be made for a various range of pipeline diameters listed under this item on the Proposal Form.

b. *Payment:* Payment for heavy cleaning of the existing storm sewer pipe and drainage structures will be made for the respective quantities as determined above at the unit price bid in the Proposal Form. This price and payment shall be full compensation for all material, labor, and equipment, required for television set-up, including, storm sewer flow, camera retrieval, hard copy report, electronic report, video recording, measurement, etc.

SECTION 3.25.H – OBSTRUCTIONS AND BLOCKAGES

A. The Contractor will notify the City of any obstructions and blockages preventing the Contractor from completing his/her work. The City shall be notified after an attempt for standard cleaning has taken place. The Contractor shall submit a partial inspection report as outlined above in Sections

3.25.E & 3.25.F. The City will review the submittal and provide further guidance to the Contractor on a case-by-case basis. City may authorize "Heavy Cleaning" as outlined herein or approve additional means, as requested by the contractor. Any additional costs associated with additional services to address obstructions and blockages shall be approved by the City prior to starting work, or incurring any mobilization or material, equipment, and labor costs. Contractor shall submit a request in writing for City approval complete with all necessary supporting backup and detailed estimate inclusive of all material, equipment, labor, and other incidental costs, in addition to any applicable taxes, fees, markup, profit, overhead, insurance, and bond, etc. costs in accordance with City requirements.

B. If a blockage or obstruction is encountered and conditions allow, the Contractor shall attempt to conduct the inspection and cleaning from the opposite end of the pipe and continue back towards the blockage or obstruction in order to ensure maximum data collection of the pipe segment. Any reverse set-up mobilization costs shall be at no direct pay.

   a. If a reverse set-up is required because the cleaning or CCTV in the downstream direction could not be completed, a new coding sheet shall be prepared for the start of the reverse set-up cleaning or CCTV. In no instance shall the pipe ID be altered so that the downstream drainage structure reference number is listed first and upstream drainage structure reference number listed. All reverse set-ups shall be logged on a separate log.

C. It shall be the responsibility of the Contractor to schedule and perform investigations to prevent system overflows. If flows are such that they interfere with the Contractor's ability to collect accurate data, then the Contractor shall be responsible to schedule his work during low flow periods or to request written permission to perform by-pass pumping around the site. The Contractor may provide by-pass pumping only with specific approval from the City.

D. Inspection of storm drain infrastructure by means of CCTV equipment shall be performed to determine the location and extent of any obstructions and defects such as offset joints, protruding tees, broken pipe, and other pipe defects. Field logs / reports shall note the existence of any significant defects. Cleaning by the Contractor shall be performed prior to each CCTV inspection on each pipeline to be inspected.

3. Measurement and Payment Bid Items:

ITEM NO.	PAY ITEM	PAY UNIT
CSD701-01	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15" diameter	Linear Feet
CSD701-02	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15" to 24" diameter	Linear Feet
CSD701-03	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27" to 30" diameter	Linear Feet
CSD701-04	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36" diameter and above	Linear Feet

CSD701-05	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	Linear Feet
CSD701-06	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	Linear Feet
CSD701-07	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	Linear Feet
CSD701-08	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	Linear Feet
CSD701-09	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	Linear Feet
CSD701-10	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	Linear Feet
CSD701-11	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	Linear Feet
CSD701-12	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	Linear Feet

SECTION 3.25.I – POST REHABILITATION CCTV AND INSPECTION

In accordance with Section C204 Environmental Protection and Stormwater Pollution Prevention Plan from the General Specifications, the Contractor is responsible for the long-term operation and maintenance of the related best management practices. Post rehabilitation CCTV and inspection is required, at no direct pay, to evaluate the storm sewer’s capacity and ensure that the restored pipe is free from debris, obstructions, or foreign material which would have been caused by construction activities of the Contractor. Post rehabilitation CCTV and inspection shall follow the requirements of Sections 3.25.A through Section 3.25.F.

SECTION 3.26 – WATERLINE PIPE BURSTING

These items shall be governed by the requirements of General Specification Section C741 except as modified here-in.

MATERIALS:

All new water mains 8 inch and greater installed via Pipe Bursting shall be high-density polyethylene pipe (HDPE) meeting the requirements of AWWA C906. The pipe shall be a minimum of SDR 11 wall thickness (pressure pipe) SDR 17 wall thickness (gravity pipe) unless noted otherwise. The pipe shall contain no recycled compound except that generated in the manufacturer’s own plant from resin of the same specification from the same raw material pipe. Butt fittings shall conform to ASTM D 3261 and ASTM F 714. Ductile Iron fittings shall conform to standards within this Section. Pipe material delivered to the job site must clearly display the manufacturer

information, nominal pip size, dimension ratio, the letters “PE” followed by the grade per ASTM D1248, and the hydrostatic design basis in pounds per square inch. There shall be a colored stripe along the length of the pipe indicating the pipe service type. Stiffener inserts used for all fittings and connections to HDPE pipe shall be of 304 stainless steel and be of wedge type design.

INSTALLATION:

The installation of the new water main shall conform to the manufacturer's recommendations.

Where called for in the Plans, the new water main shall be installed by replacing an existing water line with a new high-density polyethylene (HDPE) water line by means of pipe bursting and includes the excavation and restoration of water service house connections. The contractor is responsible for the excavation and restoration of receiving and insertion pits, including the removal and replacement of existing manholes. The contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all pipe bursting activities.

Prior to starting the Work, the Contractor shall submit construction sequence and staging plan (inclusive of proposed insertion and receiving pits), traffic control plan, temporary water supply layout, installation details and sketches, shop drawings, equipment catalog data, product specifications, and other pertinent information for the HDPE pipe installation work to be signed aand stamped by a Professional Engineering licensed in the state of Louisiana at no direct pay.

The Contractor shall install, test, and connect the temporary water supply line and the service connection lines prior to the start of pipe bursting. All testing requirements shall be in accordance with Section C741.05. The temporary water line shall be completed at no direct pay as described in Section C741.07. New service connections shall be in accordance with Section C741.03 and paid in accordance with Section C741.07.

Pipe material delivered to the job site must be properly stored to protect from damage and deformation, axially or circumferentially. All pipe is to be checked to verify its condition prior to installation. Any pipe segment, which has cuts in the pipe wall exceeding 10 percent of the wall thickness, shall be cut out and removed from the site at the Contractor’s cost.

Sections of polyethylene pipe shall be joined into continuous lengths on the jobsite above ground, or in a trench when required by worksite conditions. The joining method shall be the butt fusion method conforming to ASTM D2657 and be performed in strict accordance with the pipe manufacturer’s recommendations. The inside and outside of pipe ends shall be cleaned with a cotton or non-synthetic cloth to remove dirt, water, grease, and other foreign materials. The pipe ends shall be cut square and carefully aligned just prior to heating. The heater plate surfaces shall be cleaned regularly as needed to prevent accumulation of fusion welding residues or other substances that may result in faulty pipe joining. After achieving the proper melt pattern, the pipe ends shall be pressed together in a firm, rapid motion applying sufficient pressure to form a pipe bead (1/8 inch to 3/16 inch in height) around and inside the entire circumference of the pipe. Fusion equipment used in the joining procedure shall be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, fusion temperature, alignment and fusion pressure. Electrofusion may be used for field closures when appropriate fusion equipment cannot be utilized in a trench type environment.

When requested, the Contractor shall perform trial fusion welds in the field for both main line and lateral connections and submit samples to the Engineer for review prior to installation of the pipe.

The fusion machine employed for the trial welds shall be the same machine to be utilized for the complete project installation work.

The Contractor shall install the pipe by utilizing a constant tension system with a hydraulic or pneumatic bursting device that breaks away the existing pipe. A static "cone cracking" method may be used, but only by advancing the mole bursting head with a "solid steel tow rod" pulled by a constant tension hydraulic pulling wrenching system. The advancement of the bursting mole head with a chain shall be prohibited. At no time shall the bursting device and/or the installation process put any undue stress on the existing surface.

Stiffener inserts used for all fittings and connections to HDPE pipe shall be of 304 stainless steel and be of wedge type design.

After the completion of pipe bursting and installation of all fittings, offsets hydrant leads, valves, and service saddles but prior to the change over of service connections, the Contractor shall complete testing on the new main in accordance with Section C741.05. Following successful testing, the Contractor shall change over service connections from the temporary watermain to the new main.

Pipe bursting and fusion equipment shall be operated by personnel with minimum of 2 years of experience in the installation of the polyethylene pipe 8 inches or greater, using pipe bursting lining technology. The technician shall possess a certificate of training endorsed by the manufacturer of the pipe bursting equipment, a certificate of training endorsed by the manufacturer of thermal fusion equipment in butt fusing of HDPE pipe, and a certificate of training endorsed by the supplier or manufacturer of HDPE electro-fusion fusion couplers to be used in the method. In lieu of certificate, evidence of training may be substituted. The technician's experience and references shall be made available upon request by the Engineer.

The Contractor shall reference ASTM Standards:

ASTM F 2620 - Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings
ASTM D 3035 - Polyethylene Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter
ASTM D 3261 - Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
ASTM D 3350 - Polyethylene Plastic Pipe and Fittings Materials
ASTM F 714 - Standard Specification for Polyethylene Plastic Pipe Based on Outside Diameter
ASTM F 1055 – Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe and Tubing

MEASUREMENT AND PAYMENT:

Payment for furnishing and installing New Water Mains by Pipe Bursting shall be made at the contract unit price per linear foot, including fusing main line fittings (bends, tees, etc.), known offsets, fire hydrant leads, tie-ins, removal of existing pipe (if any), minor dewatering, excavation of insertion and receiving pits, complete shoring, backfilling material, and hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.

Payment for furnishing and installing water valves up to and including 12-inch shall be made at the contract unit price per each. The cost for valve boxes indicated on the plans shall be included in the bid price of the valves.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
CSW741(51)(C)(4)	8” HDPE New Water Main with Main Line Fittings by Pipe Bursting	Linear Foot
CSW741(51)(E)(3)	12” HDPE New Water Main with Main Line Fittings by Pipe Bursting	Linear Foot

SECTION 3.27 – NON-STANDARD BID ITEMS

ITEM NO	PAY ITEM	PAY UNIT
CF-3	Sidewalk, Driveway, and Curb Saw Cutting	LF
CF-4	Pavement Saw Cutting Adjacent to Existing Pavement and at Patches to Utility Trenches	LF
CF-5	Removal of Handicapped Ramps, Curb and Gutter, and Concrete Sidewalks at Intersections Including Saw Cutting	SY
CF-6	ADA-Accessible Curb Ramps, Curb and Gutter,, and Concrete Sidewalks at Intersections	SY
CF-7	4” Concrete Sidewalk (Special Finish)	SY
CF-8	6” Concrete Driveway (Special Finish)	SY
CF-9	6” Concrete Driveway (Special Finish) (Pea Gravel)	SY
CF-10	Root Pruning	EACH
CF-13	Sidewalk Transition Adjacent to Handicapped Ramps.	EACH
CF-14	Surface Applied Tactile / Detectable Warning Surface Tiles	EACH
CF-15	Timber Curb	LF
CF-16	Type-A Dead-End Installation	EACH
CF-301	Vertical Catch Basin Cover	EACH
CF-302	Vertical Catch Basin Frame	EACH
CF-303	Lockable Vertical Catch Basin Frame and Cover	EACH
CF-311	Vertical Catch Basin Front Grate No. 1	EACH
CF-312	Vertical Catch Basin Front Grate No. 2	EACH
CF-313	Vertical Catch Basin Front Grate No. 3	EACH
CF-315	Single Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-316D	Double Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-317	Single Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH
CF-318D	Double Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH
CF-331	Drop Inlet Catch Basin Grate	EACH
CF-332	Drop Inlet Catch Basin Frame	EACH
CF-335	Drop Inlet Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-336	Drop Inlet Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH

CF-501	Install Temporary Pavement, 2” Thick	SY
CF-351	Mountable Catch Basin Grate	EACH
CF-352	Single or Double Mountable Catch Basin Frame	EACH
CF-353	Lockable Mountable Catch Basin Grate,	EACH
CF-355	Single Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-356D	Double Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-357	Single Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH
CF-358D	Double Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH
CF-371	Manhole Cover	EACH
CF-372	Manhole Frame	EACH
CF-375	Manhole Repair or Vertical Adjustment up to 6” Reusing Existing Metal Castings	EACH
CF-376	Manhole Repair or Vertical Adjustment over 6” Reusing Existing Metal Castings	Foot Height
CF-377	Manhole Repair or Vertical Adjustment up to 6” Brick Work Only	EACH
CF-378	Manhole Repair or Vertical Adjustment over 6” Brick Work Only	Foot Height
CSD701-01	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	LF
CSD701-02	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	LF
CSD701-03	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	LF
CSD701-04	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	LF
CSD701-05	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	LF
CSD701-06	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	LF
CSD701-07	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	LF
CSD701-08	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36”	LF

	diameter and above	
CSD701-09	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	LF
CSD701-10	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	LF
CSD701-11	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	LF
CSD701-12	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	LF
CSS742(X1)	Install Sewer Mains by Pipe Bursting (Size)	LF
CSS742(X2)	Fuse Service Tee and Drill Pipe to Replace Existing Sewer House Connection from New Main to Back of Curb	EACH
CSS742(X3)	Sewer Point Repair up to Twelve Feet (Size & Depth)	EACH
CSS742(X4)	Sewer Point Repair beyond Twelve Feet (Size & Depth)	LF
CSS742(X5)	Sewer Main Line Cleaning (Size)	LF
CSS742(X6)	Sewer Main Line CCTV Inspection (Size)	LF
CSS742(X7)	Sewer Service Lateral Lining (6” CIPP)	EACH
CSS742(X8)	Manhole Rehabilitation, Cementitious Liner, Partial Depth (2-feet)	EACH
CSS742(X9)	Manhole Rehabilitation, Cementitious Liner, Full Depth	Foot Height
CSS742(X10)	Removal of Cast Iron Flush Valve Apparatus from Sewer Manhole	EACH
CSS742(X11)	Removal of water service line from sewer manhole	EACH
CSS742(X12)	Locate and disconnect flush valve water service line from water main	EACH
CSS742(X13)	Sewer Service Lateral CCTV Inspection	EACH
CSS742(X14)	Well Point System	BLFT
CSW741-01	Repair Water Main with Full Circle Clamp (Pipe Size 4” – 8”)	EACH
CSW741-02	Repair Water Main with Full Circle Clamp (Pipe Size 12” – 16”)	EACH
CSW741-03	Repair Water Main with Bell Joint Clamp (Pipe Size 4” – 12”)	EACH
CSW741-04	Repair Water Main with Bell Joint Clamp (Pipe Size 16” – 24”)	EACH
CSW741-05	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 4” – 12”)	EACH

CSW741-06	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 16” – 24”)	EACH
CSW741-07	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 4” – 12”)	LF
CSW741-08	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 16” – 24”)	LF
CSW741-09	Replace 5/8” to 1” Lead Service Line Water House Connection with 1” Polyethylene Water House Connection (From Main to Meter)	EACH
CSW741-10	Replace 1.5” Lead Service Line Water House Connection (From Main to Meter)	EACH
CSW741-11	Replace 2” Lead Service Line Water House Connection (From Main to Meter)	EACH
CSW741-12	2” New Water Main with Main Line Fittings	LF
CSW741(51)(C)(4)	8” HDPE New Water Main with Main Line Fittings by Pipe Bursting	LF
CSW741(51)(E)(3)	12” HDPE New Water Main with Main Line Fittings by Pipe Bursting	LF

- END OF SECTION -

EMAIL NOTIFICATION

RE: FEMA-1603-DR-LA, FIPS 071-55000-00 and 071-06A69-00
City of New Orleans, Project Worksheet 21032
Sewerage and Water Board of New Orleans, Project Worksheet 21031
Sixth Street Transmission Main Project No. TM001/Project ID TM001
Sandy Recovery Improvement Act/Joint Infrastructure Recovery Request Amendment
Alternate and Improved Database (AIDB) #2991

Dear Grantee/Subgrantee:

We received a letter from the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) dated August 31, 2022 (Attachment 1) on behalf of the City of New Orleans (CNO, Subgrantee) and the Sewerage and Water Board of New Orleans (SWBNO, Subgrantee) for an amendment to the scope of work (SOW) under large Project Worksheets (PWs) 21032 and 21031.

FEMA wrote PWs 21032 and 21031 to document approval of the Joint Infrastructure Recovery Request (JIRR), which is a consolidated subgrant under the Public Assistance (PA) Alternative Procedures Pilot Program for Permanent Work (Pilot Program) in accordance with the Sandy Recovery Improvement Act (SRIA) of 2013 (Public Law 113-2).

FEMA approved CNO to use funding under PW 21032 to repair or replace CNO roads, catch basins, curbs, gutters, drives, foot laps, curb ramps required under the Americans with Disabilities Act (ADA), sidewalks, storm water drainage lines, and other incidentals associated with CNO maintained infrastructure as outlined in the SRIA/JIRR. FEMA approved SWBNO to use funding under PW 21031 for repair or replacement of water distribution lines, sanitary sewer collection lines, and necessary curb ramps, required under the ADA.

In accordance with the requirements set forth under SRIA; FEMA, GOHSEP, CNO and SWBNO documented the agreements reached on the SRIA/JIRR projects in Letters of Undertaking for the Fixed Cost Estimate Agreement dated May 27, 2016, which GOHSEP and the Subgrantees signed on June 14, 2016 (Attachments 2 and 3). The Subgrantees agreed to its respective fixed estimate, to participate in the Pilot Program in accordance with the SRIA, and to accept responsibility for all costs above the fixed estimate. If the approved fixed estimate is less than the actual cost for the SRIA Subgrant, FEMA will not approve additional funds. In accordance with Section 428 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, FEMA concurs and agrees on the fixed estimates. Please advise the Subgrantees if they do not fulfill their obligations under the PA Pilot Program, FEMA will de-obligate the funding for the project. The Letters of Undertaking establish a period of performance (PoP) of seven years from the date the PWs were issued. As a result, the PoP for PW 21032 and 21031 expire on July 20, 2023.

In the letter dated August 31, 2022 (Attachment 1), the Subgrantees propose a SOW under the Sixth Street Transmission Main Project (Sewerage and Water Board Project TM001) to include roadway pavement mill (cold planing) and overlay, isolated patching, and/or full block reconstruction, inclusive of any base and subbase course work, engineering fabrics, curbs and gutters, driveways, sidewalks and foot laps, ADA ramps, associated utility (drainage, water, and/or sewer) repairs and/or replacements, and other incidental work within the public right-of-way.[1]

On September 23, 2022 (Attachment 4), FEMA sent a Request for Information (RFI) for information required by FEMA to complete the compliance review. On October 24, 2022 (Attachment 5), GOHSEP sent a response to the RFI which addressed the information needed.

FEMA has conducted the necessary reviews of the Subgrantees' request, including site visits, program eligibility determinations, and environmental and historical reviews under the National Environmental Policy Act (NEPA) and Section 106 of the National Historical Preservation Act (NHPA). Please advise the Subgrantees the Record of Environmental Consideration (Attachment 6) contains the related conditions and conclusions for the proposed work.

Estimated costs for the Sixth Street Transmission Main Project is $1,612,046.11. Of this amount, the Subgrantees allocated FEMA funding of $1,161,885.11 for CNO PW 21032 and $450,161.00 for SWBNO PW 21031. FEMA accepts the proposed project submitted under PWs 21032 and 21031. FEMA understands the SOW will extend beyond the FEMA eligible SOW. As such, any improvements or enhancements will need to be reconciled against the aggregate eligible grant and SOW under the consolidated grant at closeout.

Any balance of funds necessary for completing the consolidated subgrants will be the responsibility of the Subgrantees. If actual costs associated with the SOW are less than the capped amounts, the Subgrantees may use excess funding from the consolidated subgrants for PA program-related purposes. Requests to use excess funds must be approved by FEMA prior to commencing work. The project utilizing excess funds must meet all other PA Program requirements and must comply with other applicable Federal requirements, including environmental and historic preservation laws, regulations, and executive orders.

The proposed SOW is not covered by the National Flood Insurance Program general property policy and is considered uninsurable. The obtain and maintain requirement is not warranted.

If GOHSEP or the Subgrantees identify any discrepancies in the information provided in this correspondence, including but not limited to project description, SOW, or costs, please contact FEMA within 30 days with a list of specific items for resolution.

If you have any questions regarding this matter, please contact Ronnie Fairley, FEMA Task Lead, at (703) 463-6938.

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[1]The Sixth Street Transmission Main project lies within the Garden District neighborhood of New Orleans. The project blocks include the 1200 block of Sixth Street from Camp Street to Chestnut Street.

Approved by: Eddie Williams
Title: Louisiana Public Assistance Lead
Date:

Attachments:
1) GOHSEP letter dated Aug. 31, 2022 and SWBNO letter dated Aug. 30, 2022
2) CNO Letter of Undertaking dated May 27, 2016
3) SWBNO Letter of Undertaking dated May 27, 2016
4) FEMA RFI dated Sept. 23, 2022
5) GOHSEP RFI Response Letter dated Oct. 24, 2022
6) Record of Environmental Consideration dated Sept. 7, 2022

ATTACHMENT 1

Governor's Office of Homeland Security
and Emergency Preparedness
State of Louisiana

JOHN BEL EDWARDS
GOVERNOR

CASEY TINGLE
DIRECTOR

August 31, 2022

Mr. Arsany Thomas
Acting Director, Recovery Division
Federal Emergency Management Agency
FRC 800 North Loop 288
Denton, TX 76209-3698

SUBJECT: Joint Infrastructure Recovery Request
Project ID No.: TM001 Sixth Street Transmission Main Project
FEMA-1603-DR-LA; Sewerage & Water Board of New Orleans:
FIPS #071-06A69-00 Joint Infrastructure Recovery Program
Project Design (PW 20750)
SWBNO JIRR/SRIA Phase III Recovery Roads – Environmental Planning and Historic Preservation Request - Infrastructure Restoration Scope
Project Construction (PW 21031, PW 21032); AIDB # 2991

Dear Mr. Thomas:

This office received the attached August 30, 2022 correspondence from the City of New Orleans (CNO) Department of Public Works (DPW) and Sewerage & Water Board of New Orleans (SWBNO) requesting an Expedited Environmental Planning and Historic Preservation review of Project Worksheets (PWs) 20750, 21031 and PW 21032 Sandy Recovery Improvement Act (SRIA) Public Assistance Alternative Procedures Pilot Program Consolidated Fixed Sub-Grant Phase lll Recovery Roads Project- TM001 Sixth Street Transmission Main Project. The street reconstruction, drainage lines, sidewalks and ADA ramps over the utility lines lie within PW 21032. This request has been entered into the AI Database under AIDB # 2991.

Per the Applicant's request, the project will involve removal and replacement of water 332 LF of 24" TM, sewer, and drainage utilities and removal and replacement of base course and asphalt roadway, with associated incidentals, on Sixth Street between Camp Street and Chestnut Street.

The estimated cost of construction for Project TM001 Sixth Street TM Project is approximately $1,612,046.11 (PW 21031 = $450,161.00 and PW 21032 = $1,161,885.11) exclusive of any soft, direct administrative or closeout incentive costs.designed work scope and refer to PW 21032 v0 and PW 21031 v0 for the general programmatic scope of work.

Further, attachments 3.A - 4.3 referenced in the SWBNO letter have been uploaded to LouisianaPA.com in the relevant "Documents / Tasks" sections of PW 21031, and have previously been provided to FEMA.

If you have any questions, please do not hesitate to contact me via email at Lynne.Browning@la.gov.

Respectfully,

Lynne Browning
Assistant Deputy Director - State Public Assistance

LB: am

Attachments

Cc: Albert Walters, FEMA (via email)
Tiffany Spann, FEMA EHP (via email)
Mark Van Hala, PE, SWBNO (via email)
Khalid Saleh, CNO DPW (via email)
Donnell Bonnee, CNO PDU (via email)
Joe Threat, CNO Deputy CAO (via email)
Kelly Cryer, CNO PDU (via email)
Nguyen Phan, CNO PDU (via email)
Josh W. Hartley, CNO DPW (via email)
M. Ron Spooner SWBNO (via email)
Corwin Washington, SWBNO (via email)
Monique Rainey, SWBNO (via email)
Daniel Crothers, GOHSEP (via email)
Nathan Gary, GOHSEP (via email)
Anitra Adams, GOHSEP (via email)
Ellen Ibert, GOHSEP (via email)

"RE-BUILDING THE CITY'S WATER SYSTEMS FOR THE 21st CENTURY"

Sewerage & Water Board OF NEW ORLEANS

625 ST. JOSEPH STREET
NEW ORLEANS, LA 70165 • 504-529-2837 OR 52-WATER
www.swbno.org

August 30, 2022

Ms. Lynne Browning
Assistant Deputy Director
Governor's Office of Homeland Security
and Emergency Preparedness
7667 Independence Boulevard
Baton Rouge, Louisiana 70806

Subject: TM001 Sixth Street Transmission Main Project
FEMA-1603-DR-LA; Sewerage &Water Board of New Orleans
Joint Infrastructure Recovery Program
Project Design (PW20750)
Environmental Planning and Historic Preservation Request
Infrastructure Restoration Scope
Project Construction (PW21031 and PW 21032)

Dear Ms. Browning,

Sewerage & Water Board of New Orleans (SWBNO) is requesting an expedited Environmental Planning and Historic Preservation review of the Sandy Recovery Improvement Act (SRIA) Public Assistance Alternative Procedures Pilot Program Consolidated Fixed Sub-Grant Phase III Recovery Roads Project - Replacement of assorted transmission mains, water lines, and sewer lines, that lie within Project Worksheet (PW) 21031. The street reconstruction, drainage lines, sidewalks, and ADA ramps over the utility lines lie within PW 21032.

Project Scope of Work Summary - 1200 block of Sixth St. Transmission Main (TM) from Camp St. to Chestnut St. – The removal and replacement of water 332 LF of 24" TM, sewer, and drainage utilities and removal and replacement of base course and asphalt roadway, with associated incidentals, on Sixth Street between Camp Street and Chestnut Street.

The estimated cost of construction for Project TM001 Sixth Street TM Project is approximately $1,612,046.11 (PW 21031 = $450,161.00 and PW 21032 = $1,161,885.11) exclusive of any soft, direct administrative or closeout incentive costs.

Sewerage & Water Board of New Orleans Board Members:
LaToya Cantrell, President, Tamika Duplessis, Ph.D., President Pro Tem, Robin Barnes, Alejandra Guzman, Janet Howard, Carol Markowitz, Freddie King III, Joseph Peychaud, Lynes R "Poco" Sloss, Maurice G. Sholas, M.D., Ph.D., Nichelle Taylor

This project is located in the eligible geographic area meeting the criteria of the Sandy Recovery Improvement Act (SRIA) Public Assistance Alternative Procedures Pilot Program Consolidated Fixed Sub-Grant and Water Distribution and Sanitary Sewer collection Infrastructure guidance. If needed, the SWBNO is prepared to provide any additional information upon request to the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), the Federal Emergency Management Agency (FEMA) Public Assistance (PA), FEMA Environmental Planning and Historic Preservation (EHP) review group, and FEMA Alternate/Improved Project (A/I) review group in hard copy and electronic form. The final project bid package inclusive of the final plans and specifications, final construction cost estimate, and updated project schedule if needed will be provided following the conclusion the final design stage. Additionally, the SWBNO is requesting concurrent FEMA A/I review with the FEMA EHP review in expediting the approval process.

Please contact Mark D Van Hala, PE at (504) 930-7223 or via email at mvanhala@swbno.org, if you have any questions. Thank you for your continued support of the full recovery of the City of New Orleans and the Sewerage & Water Board of New Orleans from Hurricane Katrina.

Sincerely,

Kevin Johnson, deputy director
for Mark D Van Hala, PE
JIRR Program Administrator
Sewerage & Water Board of New Orleans

cc:
Albert Walters, FEMA PA
Tiffany Spann, FEMA EHP
Anitra Adams, GOHSEP
Ronnie Fairley, FEMA PA
M. Ron Spooner, PE, SWBNO GSO
E. Grey Lewis, SWBNO CFO
Monique T. Rainey, SWBNO PDU
Jovan Walker, SWBNO PDU
Josh W. Hartley, PE, CNO DPW
Khalid Saleh, PhD, CNO DPW
Joseph Threat, Deputy CAO
LaNitrah Hasan, CNO PDU
Donnell Bonnee, CNO PDU

Sewerage & Water Board of New Orleans Board Members:
LaToya Cantrell, President, Tamika Duplessis, Ph.D., President Pro Tem, Robin Barnes, Alejandra Guzman, Janet Howard, Carol Markowitz, Freddie King III, Joseph Peychaud, Lynes R "Poco" Sloss, Maurice G. Sholas, M.D., Ph.D., Nichelle Taylor

ATTACHMENT 2

U.S. Department of Homeland Security
FEMA Region VI
FRC 800 North Loop 228
Denton, TX 76209-3698

FEMA

LETTER OF UNDERTAKING
FOR FIXED COST ESTIMATE AGREEMENT

May 27, 2016

James B. Waskom, Director
GOHSEP, State of Louisiana
1500 Main Street
Baton Rouge, LA 70802

Mitchell J. Landrieu, Mayor
City of New Orleans
1300 Perdido St.
New Orleans, LA 70112

Re: City of New Orleans - Joint Infrastructure Recovery Request (JIRR) Consolidated Subaward

Dear Director Wascom and Mayor Landrieu:

This letter confirms the understanding that was reached on December 18, 2015, between the Federal Emergency Management Agency (FEMA), the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) (the "Recipient[1]"), and the City of New Orleans (the "Subrecipient"), regarding the restoration of the city's roads and storm water drainage system infrastructure. The facilities sustained flooding and other disaster-related damages from Hurricane Katrina. This project is to be funded under the Public Assistance Grant Program authorized for the major disaster declaration FEMA-1603-DR-LA declared on August 29, 2005.

Please sign a confirmation of the essential elements of the undertaking below no later than two (2) weeks from the date of this letter. Once I receive your signed confirmation, FEMA will work with the Recipient and the Subrecipient to develop and execute a Public Assistance alternative procedure pilot project for permanent work and supporting Project Worksheets ("PW") in accordance with 42 U.S.C. § 5189f and the terms of this letter of undertaking.

[1] The terms "recipient," "subrecipient," "award," and "subaward" are used in place of the terminology of the "grantee," "subgrantee," "grant," and "subgrant," respectively. This language has been changed in order to comport with the definitions provided in 2 CFR Part 200.

Essential Elements of Alternative Procedures Pilot Project for Restoration of the Roads and Storm Water Drainage Lines under FEMA-1603-DR-LA

1. FEMA agrees that due to damage sustained as a result of the declared event, the following elements of the damaged facilities are eligible for restoration pursuant to Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, codified in 42 U.S.C. § 5172. Further, FEMA, the Recipient, and the Subrecipient (collectively, the "Parties") agree upon the eligible scope of work description to repair the damage caused as a direct result of the declared event that will be captured in the new Sandy Recovery Improvement Act (SRIA) Project Worksheet (PW) (PW Ref# C2479) that FEMA will generate for the facilities. A summary of the agreed upon damages for the applicable facilities is described in the Damage Description and Dimensions section of the SRIA PW.

Facilities - Element by Neighborhood	***Linear Miles of Right-of-Way Damage*** (Including: road pavement, curb and gutter, drive aprons, sidewalk, storm water drainage lines, water distribution lines, sanitary sewer collection lines)
1) Milneburg	13
2) Lakeview	31
3) Lower Ninth Ward	36
4) St. Claude	25
5) Lakeshore/Lake Vista	16
6) Broadmoor	15
7) Bywater & Marigny	16
8) Marlyville-Fontainebleau	16
9) Filmore	19
10) St. Bernard Area	4
11) Dillard	9
12) Treme-Lafitte	11
13) Freret	6
14) Lakewood	5
15) Read Blvd East/Viavant/Venetian Isles	22
16) Milan/Touro	13
17) West End	11
18) Florida Area/Development	16
19) Central Business District/Lower Garden District	8
20) West Lake Forest	4
21) St. Roch	15
22) Holy Cross	11
23) Navarre	6
24) Little Words	25
25) Iberville & Tulane-Gravier	10
26) Plum Orchard	12
27) Pontchartrain Park	9

28) St. Anthony	18
29) French Quarter	5
30) Mid City	29
31) Gentilly Woods	9
32) City Park	4
33) Lake Terrace & Oaks	6
34) Pines Village	10
35) New Aurora-English Turn	0
36) Audubon, East Carrollton, Black Pearl, Uptown & West Riverside	57
37) Read Blvd West	12
38) Central City	25
39) East Riverside, Garden District, Irish Channel, and St. Thomas Development	16
40) Leonidas & Hollygrove	32
41) Village De L'Est	9
42) Seventh Ward, Bayou St. John, & Fairgrounds	37
43) Fischer Development, Algiers Point, McDonough, Behrman, Whitney, Old Aurora, Tall Timbers-Brechtel and US Naval Base	4
44) Dixon, B.W. Cooper, & Gert Town	17
45) Desire Area, Desire Development & Gentilly Terrace	28

a. The Parties agree this subaward contains partial funding from the Arbitration Agreement for United States Civilian Board of Contract Appeals (CBCA) case number CBCA 3344-FEMA dated April 25, 2014, and entered into by FEMA, GOHSEP, and the City of New Orleans on May 6, 2014. The funding from CBCA 3344-FEMA relates to funding requested by the City in conjunction with Americans with Disabilities Act (ADA) compliant curb ramps throughout the City of New Orleans. FEMA's Arbitration Agreement provides scope of work and funding in accordance with the requirements of the Americans with Disabilities Act and Department of Justice guidance.

b. The Parties agree the specific, FEMA-approved CBCA 3344-FEMA scope of work as originally documented in FEMA-1603-DR-LA Project Worksheet 20908 must be executed in full and in accordance with Section 5 (C) of the Arbitration Agreement. Specifically, the City of New Orleans agrees to include a separate line item in the contracts for the scope of work associated with the ADA compliant curb ramps to ensure it is tracked separately from any additional ramps funded under the JIRR between CNO and SWBNO.

2. The Parties agree that the Subrecipient will accept a fixed amount Public Assistance subaward for the agreed-upon disaster damage and eligible scope of work for the disaster-damaged facilities under the alternative procedures authorized under Section 428

of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. § 5189f, and implemented as a pilot program. The Parties further agree that the terms of this project will be subject to Section 428 of the Stafford Act, the *Public Assistance Alternative Procedures Pilot Program Guide for Permanent Work* (Version 3) dated March 29, 2016, and, except where specifically modified pursuant to Section 428 of the Stafford Act, all other laws, regulations, policies, and guidance applicable to FEMA's Public Assistance Program.

3. In accordance with 42 U.S.C. § 5189f (e), FEMA, working collaboratively with representatives from the Recipient and the Subrecipient, has accepted the total fixed cost estimate for eligible work to restore the damaged facilities in the amount of **$1,399,420,109.37**. This cost estimate includes architectural and engineering design and supplemental services, project management, and any costs resulting from environmental and historic preservation (EHP) compliance reviews.

    a. Direct administrative cost (DAC)/closeout incentive (COI) is authorized separate and apart from the fixed cost estimate subaward. The authority to provide funding for DAC/COI under FEMA-1603-DR-LA is authorized under Title VI, Chapter 2, Section 638(F) of the Public Law 109-295 (Post-Katrina Emergency Management Reform Act [PKEMRA] of 2006) and under sections 406 and 407 of the Stafford Act.

    b. FEMA will obligate a separate, capped DAC/COI subaward for DAC/COI tasks specifically associated with the additional eligible funding cited in FEMA's December 7, 2015 letter. The Subrecipient may be reimbursed for DAC/COI based on actual incurred costs up to **$33,626,483.00**, which is three (3) percent of the additional funding cited in FEMA's letter dated December 7, 2015.

    Likewise, any DAC/COI costs already incurred or to be incurred in the future for other scope of work being consolidated into this SRIA PW will continue to be reimbursable through the Subrecipient's roll-up DAC/COI PW 19920. DAC/COI will be reimbursed for eligible scope of work and costs that are adequately documented, reasonable, and attributed to a specific project worksheet as described in June 12, 2012 and February 13, 2013 letters to GOHSEP from FEMA's Assistant Administrator Recovery Directorate, Deborah Ingram; and a September 8, 2009 Direct and Indirect Administrative Task List attached to a memorandum to Regional Administrators from Elizabeth Zimmerman, FEMA's Assistant Administrator Disaster Recovery Directorate.

4. In agreeing to the fixed amount Public Assistance (PA) subaward:

    a. Fixed Amount Subaward. The Parties agree that the subaward will be capped at the amount of **$1,399,420,109.37** for restoration of the damaged facilities, and acknowledge that it reflects 100% of the agreed-upon total project costs. The Parties further agree that a separate subaward will be capped at the amount of **$33,626,483.00** to cover DAC/COI associated with this project. The total agreed-

upon fixed amount of **$1,433,046,592.37** includes the 100% federal cost-share and the 0% non-federal cost-share. The Recipient and the Subrecipient acknowledge that, in accordance with section 428 of the Stafford Act, 42 U.S.C. §5189f, the Subrecipient accepts this fixed amount subawards for permanent work with full knowledge and understanding that it will not receive any additional Public Assistance funding if the actual cost to restore the roads and storm water drainage system facilities based on the eligible scope of work exceeds the agreed-upon fixed amount.

b. Changes to the Approved Scope of Work. FEMA acknowledges that the Subrecipient may exercise flexibility in completing work associated with the fixed amount subaward.

   i. The Parties acknowledge that the Subrecipient must notify FEMA and the Recipient prior to initiating a change to the scope of work described in the SRIA PW or for any changes that substantially deviate from the pre-disaster facility design and/or function.

   ii. For scope of work changes that involve historic properties listed on or eligible for listing on the National Register of Historic Places and/or result in changes that do not substantially conform to the pre-disaster design, function, and/or location, FEMA will conduct an EHP compliance review required under 44 C.F.R. Part 10.

   iii. If the Subrecipient wants to complete a scope of work that does not restore the facility or its function, it must submit a request for an alternate project to FEMA prior to the start of construction, in accordance with 44 C.F.R. §206.203(d)(2) and applicable PA policy. The parties acknowledge that FEMA must review and approve alternate projects in accordance with PA program requirements, including without limitation, EHP compliance.

c. Period of Performance for Complex Projects. In accordance with 42 U.S.C. § 5189f (f), FEMA has the authority to carry out alternative procedures as a pilot program. FEMA acknowledges that due to the magnitude and complexity of the work, the Subrecipient will require an extension to the period of performance set forth in 44 C.F.R. § 206.204(c). Accordingly, FEMA will establish a period of performance of 7 years from the date the SRIA PW is issued. If the Subrecipient requires any further extension(s) of the period of performance, then it shall submit its request for an extension to the Assistant Administrator for Recovery at FEMA Headquarters in accordance with 44 C.F.R. § 206.204(d). The Recipient and Subrecipient acknowledge that failure to comply with the terms of period of performance set forth in this letter may cause the approved funding in the fixed amount subaward referenced in this letter of undertaking to be deemed ineligible and may result in de-obligation of those funds.

d. Insurance. Pursuant to Section 312 of the Stafford Act and 44 C.F.R. Part 206, Subpart I, the Subrecipient may not receive disaster assistance for losses covered by insurance.

FEMA, the Recipient, and the Subrecipient acknowledge and agree that Section 312 of the Stafford Act and 44 C.F.R. Part 206, Subpart I, are not applicable to these facilities.

i. Further, the Parties acknowledge and agree that Section 406(d) of the Stafford Act and 44 C.F.R. §§ 206.250(d) and 206.252(a), are not applicable to these facilities.

ii. Finally, the Parties acknowledge and agree that Section 311(b) of the Stafford Act and 44 C.F.R. § 206.252(d), are not applicable to these facilities.

5. For all eligible work:

a. In accordance with 42 U.S.C. § 5189f (f), FEMA will carry out the proposed alternative procedure project for the Subrecipient as part of a pilot program.

b. The Recipient and Subrecipient agree to waive any and all rights to bring appeals pursuant to 44 CFR §206.206 or arbitration pursuant to 44 CFR §206.209 against FEMA for additional costs related to the fixed estimate subaward articulated in section 4(a) above.

c. The Office of Inspector General has the ability to audit any Subrecipient and/or subaward, and FEMA may conduct compliance reviews to ensure that the Subrecipient complied with this document's guidelines and other applicable requirements. Any corrective actions (including de-obligations) that FEMA takes as a result of these audits or compliance reviews may be appealed in accordance with 44 C.F.R. § 206.206 or arbitrated in accordance with 44 C.F.R. § 206.209.

d. Pursuant to the Arbitration Agreement for the United States Civilian Board of Contract Appeals (CBCA) case number CBCA 3344-FEMA dated April 25, 2014 and executed on May 6, 2014, the Subrecipient must use the Settlement Agreement funding transferring to the new SRIA PW (PW Ref. # C2479) associated with this Agreement for the sole purpose of installation of ADA compliant curb ramps identified as meeting the criteria in the ADA Settlement Agreement.

In the event the Subrecipient has funding left over after installation of all eligible curb ramps funded by FEMA through the ADA Settlement Agreement, the Subrecipient may apply the remainder of funding towards installation of ADA compliant curb ramps not identified by FEMA, but meets the criteria per the ADA Settlement Agreement. The associated Settlement Agreement soft costs, based on a flat 23.3 percent of the agreed to construction cost for the installation of ADA

ramps, may be applied towards installation of additional Subrecipient-installed ADA ramps. CNO must submit to FEMA all additional curb ramps where the remaining funding will be used for installation of ADA curb ramps for standard FEMA EHP review prior to the start of construction. CNO must provide documentation at closeout of this SRIA PW, which clearly shows the remaining funding was used for installation of ADA compliant curb ramps not identified as part of FEMA's original eligible scope of work, but meets the criteria per the ADA Settlement Agreement. Failure on the part of the Subrecipient to provide this information at closeout of the SRIA PW will result in the de-obligation of any remaining funding for the installation of ADA ramps associated with the ADA Settlement Agreement.

e. Any soft costs not expended as of this Agreement, but associated with the ADA compliant ramp work approved pursuant to the ADA Settlement Agreement, shall be transferred to the SRIA PW for this Agreement. Soft costs shall include Program/Project Management, Engineering Layout, Engineering Basic Services, Inspection, Material Testing, Geotechnical, Survey, etc.

f. Upon receiving the Recipient's and the Subrecipient's signed confirmation of the essential elements of this understanding, FEMA will generate a DAC/COI PW of **$33,626,483.00,** and a SRIA PW resulting in a fixed Public Assistance subaward for the agreed upon total of **$1,399,420,109.37,** which will include, the flexibility authorized by 42 U.S.C. § 5189f (e)(1) and further outlined in the PA Alternative Procedures Pilot Program Guide, and be based upon the terms and conditions contained of this letter.

Sincerely,

George A. Robinson
Regional Administrator
FEMA, Region VI

By signing below, the parties confirm their understanding of and their agreement to the essential elements of this undertaking as set forth above:

Governor's Office of Homeland Security and Emergency Preparedness:

James B. Waskom, Director
Governor's Office of Homeland Security and Emergency Preparedness

6/14/2016
Date

City of New Orleans:

Mitchell J. Landrieu, Mayor
City of New Orleans

6/13/2016
Date

ATTACHMENT 3

U.S. Department of Homeland Security
FEMA Region VI
FRC 800 North Loop 228
Denton, TX 76209-3698

FEMA

LETTER OF UNDERTAKING
FOR FIXED COST ESTIMATE AGREEMENT

May 27, 2016

James B. Waskom, Director
GOHSEP, State of Louisiana
1500 Main Street
Baton Rouge, LA 70802

Cedric S. Grant, Executive Director
Sewerage and Water Board of New Orleans
625 Saint Joseph Street, Room 237
New Orleans, LA 70165

Re: Sewerage and Water Board of New Orleans - Joint Infrastructure Recovery Request (JIRR) Consolidated Subaward

Dear Director Wascom and Executive Director Grant:

This letter confirms the understanding that was reached on December 18, 2015, between the Federal Emergency Management Agency (FEMA), the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) (the "Recipient[1]"), and the Sewerage and Water Board of New Orleans (the "Subrecipient"), regarding the restoration of the water distribution lines, sanitary sewer collection lines, and Americans with Disabilities Act (ADA) compliant curb ramps. The facilities sustained flooding damages from Hurricane Katrina. This project is to be funded under the Public Assistance Grant Program authorized for the major disaster declaration FEMA-1603-DR-LA declared on August 29, 2005.

Please sign a confirmation of the essential elements of the undertaking below no later than two (2) weeks from the date of this letter. Once I receive your signed confirmation, FEMA will work with the Recipient and the Subrecipient to develop and execute a Public Assistance alternative

[1] The terms "recipient," "subrecipient," "award," and "subaward" are used in place of the terminology of the "grantee," "subgrantee," "grant," and "subgrant," respectively. This language has been changed in order to comport with the definitions provided in 2 CFR Part 200.

procedure pilot project for permanent work and supporting Project Worksheets ("PW") in accordance with 42 U.S.C. § 5189f and the terms of this letter of undertaking.

Essential Elements of Alternative Procedures Pilot Project for Restoration of Water Distribution Lines, Sanitary Sewer Collection Lines, and ADA-Compliant Curb Ramps under FEMA-1603-DR-LA

1. FEMA agrees that due to damage sustained as a result of the declared event, the following elements of the damaged facilities are eligible for restoration pursuant to Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, codified in 42 U.S.C. § 5172. Further, FEMA, the Recipient, and the Subrecipient (collectively, the "Parties") agree upon the detailed description of damage caused as a direct result of the declared event, including associated dimensions, and an eligible scope of work that will be captured in the PW that FEMA will generate for the facilities. A summary of the agreed upon damages for the applicable facilities is below:

Facilities Element by Neighborhood	***Linear Miles of Right-of-Way Damage*** (Including: road pavement, curb and gutter, drive aprons, sidewalk, storm water drainage lines, water distribution lines, sanitary sewer collection lines)
1) Lake Shore – Lake Vista	16
2) St. Claude	57
3) Holy Cross	11
4) French Quarter – Iberville	5
5) Treme-Lafitte	11
6) Central Business District	3
7) Lower Garden District	5
8) Seventh Ward	12
9) Lakewood	5
10) Navarre	6
11) Read East – Venetian Isle	16
12) Touro	7
13) Marlyville – Fountainbleu	16
14) St. Anthony	18
15) West Lake Forest	4
16) City Park	4
17) Littlewoods	25
18) Broadmoor	15
19) St. Bernard	4
20) Lower Ninth Ward	36
21) Lake Terrace – Lake Oaks	6
22) Milan	6
23) Filmore	19
24) West End	11
25) Dillard	9
26) Bayou St. John	12
27) Desire	14
28) Irish Channel	8

29) Gentilly Woods	9
30) Freret	6
31) West Riverside	12
32) St. Roch	15
33) Audubon-University	12
34) Uptown	11
35) Dixon	6
36) Village D'Lest	9
37) Back Pearl	11
38) Central City	25
39) Pines Village	10
40) Lakeview	31
41) East Riverside	4
42) B.W. Cooper	6
43) Tulane-Gravier	10
44) Viavant	6
45) Mid City	29
46) Fairgrounds	13
47) Garden District	4
48) Gentilly Terrace	14
49) Hollygrove	16
50) Gert Town	5
51) Read Blvd West	12
52) East Carrollton	11
53) Leonidas-West Carrollton	16
54) Milneburg	13
55) Plum Orchard	12
56) Pontchartrain Park	9

a. The Parties agree this subaward contains funding for Americans with Disabilities Act (ADA) compliant curb ramps throughout New Orleans. The Parties agree when the Subrecipient's scope of work enters a roadway intersection and triggers the implementation of ADA compliant curb ramps, these ADA compliant curb ramps must be executed in accordance with the "Department of Justice/Department of Transportation Joint Technical Assistance on the Title II of the American with Disabilities Act Requirements to Provide Curb Ramps when Streets, Roads or Highways are Altered through Resurfacing" dated July 8, 2013.

2. The Parties agree that the Subrecipient will accept a fixed amount Public Assistance subaward for the agreed-upon disaster damage and eligible scope of work for the disaster-damaged facilities under the alternative procedures authorized under Section 428 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. § 5189f, and implemented as a pilot program. The Parties further agree that the terms of this project will be subject to Section 428 of the Stafford Act, the *Public Assistance Alternative Procedures Pilot Program Guide for Permanent Work* (Version 3) dated

March 29, 2016, and, except where specifically modified pursuant to Section 428 of the Stafford Act, all other laws, regulations, policies, and guidance applicable to FEMA's Public Assistance Program.

3. In accordance with 42 U.S.C. § 5189f (e), FEMA, working collaboratively with representatives from the Recipient and the Subrecipient, has validated and accepted the total fixed cost estimate for eligible work to restore the damaged facilities in the amount of **$264,579,387.15**. This cost estimate includes architectural and engineering design and supplemental services, project management, and any costs resulting from environmental and historic preservation (EHP) compliance reviews.

    a. Direct administrative cost (DAC)/closeout incentive (COI) is authorized separate and apart from the fixed cost estimate subaward. The authority to provide funding for DAC/COI under FEMA-1603-DR-LA is authorized under Title VI, Chapter 2, Section 638(F) of the Public Law 109-295 (Post-Katrina Emergency Management Reform Act [PKEMRA] of 2006) and under sections 406 and 407 of the Stafford Act.

    b. FEMA will obligate a separate, capped DAC/COI subaward for DAC/COI tasks specifically associated with the additional eligible funding cited in FEMA's December 7, 2015 letter. The Subrecipient may be reimbursed for DAC/COI based on actual incurred costs up to **$3,869,581.00**, which is three (3) percent of the additional funding cited in FEMA's letter dated December 7, 2015. Likewise, any DAC/COI costs already incurred or to be incurred in the future for other scope of work being consolidated into this Sandy Recovery Improvement Act (SRIA) Project Worksheet (PW) will continue to be reimbursable through the Subrecipient's roll-up DAC/COI PW 20808. DAC/COI will be reimbursed for eligible scope of work and costs that are adequately documented, reasonable, and attributed to a specific project worksheet as described in a June 12, 2012 letter to GOHSEP from FEMA's Assistant Administrator Recovery Directorate, Deborah Ingram; and a September 8, 2009 Direct and Indirect Administrative Task List attached to a memorandum to Regional Administrators from Elizabeth Zimmerman, FEMA's Assistant Administrator Disaster Recovery Directorate.

4. In agreeing to the fixed amount Public Assistance (PA) subaward:

    a. Fixed Amount Subaward. The Parties agree that the subaward will be capped at the amount of **$264,579,387.15** for the restoration of the damaged facilities, and acknowledge that it reflects 100% of the agreed-upon total project costs. The Parties further agree that a separate subaward will be capped at the amount of **$3,869,581.00** to cover DAC/COI associated with this project. The total agreed-upon fixed amount of **$268,448,968.15** includes the 100% federal cost-share and the 0% nonfederal cost-share. The Recipient and the Subrecipient acknowledge that, in accordance with section 428 of the Stafford Act, 42 U.S.C. §5189f, the Subrecipient accepts this fixed amount subawards for permanent work with full knowledge and understanding that it will not receive any additional Public Assistance funding if the actual cost to

restore the facility based on the eligible scope of work exceeds the agreed-upon fixed amount.

b. Changes to the Approved Scope of Work. FEMA acknowledges that the Subrecipient may exercise flexibility in completing work associated with the fixed amount subaward.

   i. The Parties acknowledge that the Subrecipient must notify FEMA and the Recipient prior to initiating a change to the scope of work, even changes that substantially conform to pre-disaster design, function.

   ii. For scope of work changes that involve historic properties listed on or eligible for listing on the National Register of Historic Places and/or result in changes that do not substantially conform to the pre-disaster design, function, and/or location, FEMA will conduct an EHP compliance review required under 44 C.F.R. Part 10.

   iii. If the Subrecipient wants to complete a scope of work that does not restore the facility or its function, it must submit a request for an alternate project to FEMA prior to the start of construction, in accordance with 44 C.F.R. §206.203(d)(2) and applicable PA policy. The parties acknowledge that FEMA must review and approve alternate projects in accordance with PA program requirements, including without limitation, EHP compliance.

c. Period of Performance for Complex Projects. In accordance with 42 U.S.C. § 5189f (f), FEMA has the authority to carry out alternative procedures as a pilot program. FEMA acknowledges that due to the magnitude and complexity of the work, the Subrecipient will require an extension to the period of performance set forth in 44 C.F.R. § 206.204(c). Accordingly, FEMA will establish a period of performance of 7 years from the date the PW is issued. If the Subrecipient requires any further extension(s) of the period of performance, then it shall submit its request for an extension to the Assistant Administrator for Recovery at FEMA Headquarters. The Recipient and Subrecipient acknowledge that failure to comply with the terms of period of performance set forth in this letter may cause the approved funding in the fixed amount subaward referenced in this letter of undertaking to be deemed ineligible and may result in de-obligation of those funds.

d. Insurance. Pursuant to Section 312 of the Stafford Act and 44 C.F.R. Part 206, Subpart I, the Subrecipient may not receive disaster assistance for losses covered by insurance.

   FEMA, the Recipient, and the Subrecipient acknowledge and agree that Section 312 of the Stafford Act and 44 C.F.R. Part 206, Subpart I, are not applicable to these facilities.

iv. Further, the Parties acknowledge and agree that Section 406(d) of the Stafford Act and 44 C.F.R. §§ 206.250(d) and 206.252(a), are not applicable to these facilities.

v. Finally, the Parties acknowledge and agree that Section 311(b) of the Stafford Act and 44 C.F.R. § 206.252(d), are not applicable to these facilities.

5. For all eligible work:

a. In accordance with 42 U.S.C. § 5189f (f), FEMA will carry out the proposed alternative procedure project for the Subrecipient as part of a pilot program.

b. The Recipient and Subrecipient agree to waive any and all rights to bring appeals pursuant to 44 CFR §206.206 or arbitration pursuant to 44 CFR §206.209 against FEMA for additional costs related to the fixed estimate subaward articulated in section 4(a) above.

c. The Office of Inspector General has the ability to audit any Subrecipient and/or subaward, and FEMA may conduct compliance reviews to ensure that the Subrecipient complied with this document's guidelines and other applicable requirements. Any corrective actions (including de-obligations) that FEMA takes as a result of these audits or compliance reviews may be appealed in accordance with 44 C.F.R. § 206.206 or arbitrated in accordance with 44 C.F.R. § 206.209.

d. Upon receiving the Recipient's and the Subrecipient's signed confirmation of the essential elements of this understanding, FEMA will generate a DAC/COI PW of **$3,869,581.00**, and a PW resulting in a fixed Public Assistance subaward for the agreed upon total of **$264,579,387.15**, which will include, the flexibility authorized by 42 U.S.C. § 5189f (e)(1) and further outlined in the PA Alternative Procedures Pilot Program Guide, and be based upon the terms and conditions contained of this letter.

Sincerely,

George A. Robinson
Regional Administrator
FEMA, Region VI

By signing below, the parties confirm their understanding of and their agreement to the essential elements of this undertaking as set forth above:

Governor's Office of Homeland Security and Emergency Preparedness:

6/14/2016

James B. Waskom, Director
Governor's Office of Homeland Security and Emergency Preparedness

Date

Sewerage and Water Board of New Orleans:

6/14/2016

Cedric S. Grant, Executive Director
Sewerage and Water Board of New Orleans

Date

ATTACHMENT 4

REQUEST FOR INFORMATION

RE: FEMA-1603-DR-LA, FIPS 071-55000-00 and 071-06A69-00
City of New Orleans, Project Worksheet 21032
Sewerage and Water Board of New Orleans, Project Worksheet 21031
Sixth Street Transmission Main Project TM001–Project ID TM001
Sandy Recovery Improvement Act/Joint Infrastructure Recovery Request Amendment
Alternate and Improved Database (AIDB) #2991

Dear Grantee/Subgrantee:

We received a letter from the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) dated August 31, 2022 (Attachment) on behalf of the City of New Orleans (CNO, Subgrantee) and the Sewerage and Water Board of New Orleans (SWBNO, Subgrantee) for an amendment to the scope of work (SOW) under large Project Worksheets (PWs) 21032 and 21031.

In the letter, the Subgrantees request FEMA review the Sixth Street Transmission Main project which lies within the 1200 block of Sixth Street from Camp Street to Chestnut Street in New Orleans.

To complete the compliance review, FEMA requests the following information no later than 30 days from the date of this e-mail notification:

Sheet No.	Comment
5	The new ADA ramps at the intersection of Chestnut Street and Sixth Street are not labeled with their funding sources. Please providing the funding sources in the drawings.
5	The street name tiles located at Chestnut Street and Sixth Street are not referenced in the drawings. Please reference if they are being salvaged or replaced in the drawings.

If we do not receive a response by the requested date, the request will be returned to GOHSEP and the Subgrantees with no action. If you have any questions regarding this matter, please contact Ronnie Fairley, FEMA Task Lead, at (703) 463-6938.

Approved by: Eddie Williams
Title: Louisiana Public Assistance Lead
Date:

EDDIE L WILLIAMS

Digitally signed by EDDIE L WILLIAMS
Date: 2022.09.23 13:58:18 -05'00'

Attachment: GOHSEP letter dated August 31, 2022 and SWBNO letter dated August 30, 2022

ATTACHMENT 5

Governor's Office of Homeland Security
and Emergency Preparedness
State of Louisiana

JOHN BEL EDWARDS
GOVERNOR

CASEY TINGLE
DIRECTOR

Ocotber 24, 2022

Ms. Traci Brasher
Director, Recovery Division
Federal Emergency Management Agency
FRC 800 North Loop 288
Denton, TX 76209-3698

RE: FEMA-1603-DR-LA, FIPS 071-55000-00 and 071-06A69-00
City of New Orleans, Project Worksheet 21032
Sewerage and Water Board of New Orleans, Project Worksheet 21031
Sixth Street Transmission Main Project TM001–Project ID TM001
Sandy Recovery Improvement Act/Joint Infrastructure Recovery Request Amendment
Alternate and Improved Database (AIDB) #2991 – Task 2179
Response to Request for Information (RFI)

Dear Ms. Brasher,

This office received the attached City of New Orleans correspondence dated October 24, 2022 providing a response to FEMA's RFI for Sixth Street Transmission Main Project TM001–Project ID TM001. The requested information relates to a request for an amendment to the scope of work previously submitted under PWs 21031 and 21032 for Project ID TM001 on August 31, 2022. Please see all documents uploaded to LAPA to the above mentioned task.

If you have any questions, please do not hesitate to contact Lynne Browning via email at Lynne.Browning@la.gov.

Respectfully,

Lynne Browning
Assistant Deputy Director - State Public Assistance

LB: am

Reference Documents: see louisianapa.com under task # 2179

Cc: Albert Walters, FEMA (via email)
Tiffany Spann, FEMA (via email)
LaNitrah Hasan, CNO (via email)
Kelly Cryer, CNO (via email)
Nguyen Phan, CNO DPW (via email)
Donnell Bonnee, CNO DPW (via email)
Khalid Saleh, CNO DPW (via email)
Monique Rainey, SWBNO (via email)
Nathan Gary, GOHSEP (via email)
Anitra Adams, GOHSEP (via email)
Ellen Ibert, GOHSEP (via email)
Daniel Crothers, GOHSEP (via email)

"RE-BUILDING THE CITY'S WATER SYSTEMS FOR THE 21st CENTURY"

Sewerage & Water Board OF NEW ORLEANS

625 ST. JOSEPH STREET
NEW ORLEANS, LA 70165 • 504-529-2837 OR 52-WATER
www.swbno.org

October 24, 2022

Ms. Lynne Browning
Assistant Deputy Director
Governor's Office of Homeland Security
and Emergency Preparedness
7667 Independence Boulevard
Baton Rouge, Louisiana 70806

Subject: TM001 Sixth Street Transmission Main Project
FEMA-1603-DR-LA; Sewerage &Water Board of New Orleans
Joint Infrastructure Recovery Program
Project Design (PW 20769, PW 20131, & PW 21032)
Environmental Planning and Historic Preservation Request
Infrastructure Restoration Scope
Project Construction (PW 21031, PW 21032)
AIDB #2991; Request for Information response

Dear Ms. Browning,

Sewerage & Water Board of New Orleans (SWBNO) requested an expedited Environmental Planning and Historic Preservation review of the Sandy Recovery Improvement Act (SRIA) Public Assistance Alternative Procedures Pilot Program Consolidated Fixed Sub-Grant Phase III Recovery Roads Project - Project Worksheet (PW) 21031 on August 30, 2022. Reference to the City of New Orleans's (City) PW 21032 was included due to street reconstruction, drainage lines, sidewalks, and ADA ramps over the utility lines.

The City received the attached correspondence on September 23, 2022 informing the City and SWBNO of a request for information (RFI) from the Federal Emergency Management Agency (FEMA) (Attachment 1). SWBNO has provided a response to FEMA's RFI (Attachment 1).

Please contact Mark D. Van Hala, P.E. at (504) 930-7223 or via email at mvanhala@swbno.org, if you have any questions. Thank you for your continued support of the full recovery of the City of New Orleans and the Sewerage & Water Board of New Orleans from Hurricane Katrina.

Members of the Board: ANDREW AMACKER • ROBIN BARNES • LATOYA CANTRELL • DR. TAMIKA DUPLESSIS • CILEEN GLEASON RALPH W. JOHNSON • STACY HORN KOCH • JOSEPH PEYCHAUD • LEWIS STIRLING, III • LYNES R "POCO" SLOSS
•An Equal Opportunity Employer"

Sincerely,

Mark D Van Hala, PE
JIRR Program Administrator
Sewerage & Water Board of New Orleans

CC:

Albert Walters, FEMA PA
Tiffany Spann, FEMA EHP
Anitra Adams, GOHSEP
Ronnie Fairley, FEMA PA
M. Ron Spooner, PE, SWBNO GSO
E. Grey Lewis, SWBNO CFO
Monique T. Rainey, SWBNO PDU
Jovan Walker, SWBNO PDU
Sarah M. Porteous, CNO DPW
Khalid Saleh, PhD, CNO DPW
Joseph Threat, CNO PDU

Attachments:

1. FEMA RFI dated September 23, 2022 with SWBNO response

Members of the Board: ANDREW AMACKER • ROBIN BARNES • LATOYA CANTRELL • DR. TAMIKA DUPLESSIS • CILEEN GLEASON RALPH W. JOHNSON • STACY *HORN KOCH • JOSEPH PEYCHAUD • LEWIS STIRLING, III • LYNES R "POCO"* SLOSS
•An Equal Opportunffy Employer"

REQUEST FOR INFORMATION

RE: FEMA-1603-DR-LA, FIPS 071-55000-00 and 071-06A69-00
City of New Orleans, Project Worksheet 21032
Sewerage and Water Board of New Orleans, Project Worksheet 21031
Sixth Street Transmission Main Project TM001–Project ID TM001
Sandy Recovery Improvement Act/Joint Infrastructure Recovery Request Amendment
Alternate and Improved Database (AIDB) #2991

Dear Grantee/Subgrantee:

We received a letter from the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) dated August 31, 2022 (Attachment) on behalf of the City of New Orleans (CNO, Subgrantee) and the Sewerage and Water Board of New Orleans (SWBNO, Subgrantee) for an amendment to the scope of work (SOW) under large Project Worksheets (PWs) 21032 and 21031.

In the letter, the Subgrantees request FEMA review the Sixth Street Transmission Main project which lies within the 1200 block of Sixth Street from Camp Street to Chestnut Street in New Orleans.

To complete the compliance review, FEMA requests the following information no later than 30 days from the date of this e-mail notification:

Sheet No.	Comment
5	The new ADA ramps at the intersection of Chestnut Street and Sixth Street are not labeled with their funding sources. Please providing the funding sources in the drawings.
5	The street name tiles located at Chestnut Street and Sixth Street are not referenced in the drawings. Please reference if they are being salvaged or replaced in the drawings.

If we do not receive a response by the requested date, the request will be returned to GOHSEP and the Subgrantees with no action. If you have any questions regarding this matter, please contact Ronnie Fairley, FEMA Task Lead, at (703) 463-6938.

Approved by: Eddie Williams
Title: Louisiana Public Assistance Lead
Date:

Attachment: GOHSEP letter dated August 31, 2022 and SWBNO letter dated August 30, 2022

ATTACHMENT 6

RECORD OF ENVIRONMENTAL CONSIDERATION

See FEMA Directive 108-1 and FEMA Instruction 108-1-1.

Project Name/Number: Sewerage &Water Board of New Orleans
Roadway and Joint Infrastructure Recovery Program
CNO DPW JIRR/SRIA Phase III Recovery Roads – Sixth St TM
TM001 Sixth Street Transmission Main Project
FEMA- DR 1603-LA; Sewerage &Water Board of New Orleans,
AI 2991
PW 21032 (Donor PW 19901), SWB PW 21031 (Donor PW 20694)

Project Location: Sixth Street, New Orleans, Orleans Parish, LA 70115

Northwest Corner:	29.9264, -90.0844
Northeast Corner:	29.9263, -90.0845
Southeast Corner:	29.9271, -90.0852
Southwest Corner:	29.9272, -90.0850

Project Description:

In order to comply with the provisions of the National Environmental Policy Act of 1969 (NEPA) and the President's Council on Environmental Quality (CEQ) regulations implementing NEPA (Title 40 of the Code of Federal Regulations [C.F.R.] Parts 1500-1508) (Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act 2005), and to streamline funding for road, water, and sewer infrastructure projects in the City of New Orleans, FEMA developed a Programmatic Environmental Assessment (PEA), which would encompass the project now under review. The Programmatic EA was entitled "The City of New Orleans Sewerage and Water Board of New Orleans Joint Infrastructure Recovery Request Project" (JIRR). This PEA concluded with a Finding of No Significant Impact (FONSI), dated 16 June 2016.

On August 29, 2005, high winds and heavy rain from Hurricane Katrina caused extensive damage to the roads and streets in New Orleans, LA. In addition, the storm caused extensive damage to the underground infrastructure, including water mains, sewer systems, and other utility systems. The City of New Orleans has entered into contracts in order to repair, restore, or replace, as needed, these systems in the New Orleans area.

The purpose of the City of New Orleans (CNO) Department of Public Works (DPW) and Sewerage & Water Board of New Orleans (SWB) JIRR is to repair damage sustained due to Hurricane Katrina to roads, minor drainage lines, water lines, and sewer lines, and other incidentals associated with and for the proper implementation of the planned infrastructure repairs in accordance with the Department of Public Works DPW and Sewerage & Water Board standards, within the incorporated limits of the City of New Orleans, and restore this infrastructure to its pre-storm function and condition. Roadway segments and the associated utility systems within the Claiborne neighborhood in the City of New Orleans were impacted and damaged as a direct result of Hurricane Katrina and the post-disaster operations. As such the City plans to repair portions of the Garden District area, local city street network and utility systems under the TM001 –The location of this contract is Garden District Neighborhood in New Orleans, Louisiana. Project blocks include: 1200 block of Sixth St. Transmission Main from Camp St. to Chestnut St. (332 LF of 24" TM) Open cut. (See attached project plans for specific block locations and currently designed work scope.)

The TM001- Sixth Street Transmission Main Project, based on the current anticipated designed scope of work will typically consist of PCCP (concrete) roadway pavement isolated patching (incidental roadway repairs or minor pavement rehabilitation), full panel replacement (minor pavement rehabilitation), and/or full block reconstruction (major pavement rehabilitation); asphaltic concrete roadway pavement isolated full depth patching (incidental roadway repairs or minor pavement rehabilitation), mill (cold planing) & overlay (major pavement rehabilitation), and/or full block reconstruction (major pavement rehabilitation); and composite pavement (asphaltic concrete topped PCCP pavement) isolated full depth patching (incidental roadway repairs or minor pavement rehabilitation), mill (cold planning) & overlay (major pavement rehabilitation), and/or full

block reconstruction (major pavement rehabilitation). In addition to the roadway pavement restoration scope, the project scope will also consist of any necessary associated demolition, removal and reconstruction of the roadway pavement structure, subbase and/or base courses, placement of engineering fabrics (geotextile and/or geogrid), bus pads, curbs, curbs & gutters, driveway aprons, sidewalks, ADA-compliant handicapped ramps, roadway striping and pavement markings, ditches, swales and bio swales, parking and bicycle lanes, relocation of underground streetlight and/or traffic signal conduit, restoration of medians, other incidental paved areas, and/or other street system feature work within the public right-of-way. In some instances, public maintained brick, paver, stone, and/or aggregate pavement sections or services alleyways will be repaired as needed to restore to the pre-disaster function and condition.

For the individual street blocks undergoing roadway restoration work, where necessitated due to disaster related damages or constructability and/or site condition issues, the construction scope may also incorporate a combination of utility infrastructure structures/components, including but not limited to, minor drainage (storm sewer) (< 36" in diameter), water, and/or sewerage (sanitary sewer) mains and service lateral and house connection repairs, relocations/offsets, or replacements; utility manhole, drop manhole, catch basin, drop inlet, conflict box, and other utility structure adjustments, repairs or replacements, including associated trench excavation, bedding, backfill and pavement restoration or pipe boring jacking operations and associated pit restoration; water and sewer meter, valve, hydrant, and other utility system appurtenances and components cleaning, adjustments, relocations, repairs or replacements within the public right-of-way or publicly maintained servitude or easement. Drainage structures may require assessment, clean-out, CCTV inspection and/or other analysis, to identify specific damages and necessary repair scope.

In addition to the general programmatic SOW listed above, this amendment seeks approval for the replacement of assorted transmission mains, water lines, and sewer lines, that lie within Project Worksheet (PW) 21031. The street reconstruction, drainage lines, sidewalks, and ADA ramps over the utility lines lie within PW 21032. The work would occur within the 1200 block of Sixth St. Transmission Main (TM) from Camp St. to Chestnut St. – The removal and replacement of water 332 LF of 24” TM, sewer, and drainage utilities and removal and replacement of base course and asphalt roadway, with associated incidentals, on Sixth Street between Camp Street and Chestnut Street. Ground disturbing activities for the planned utility infrastructure scope will consist of general excavation for the roadway pavement patching or reconstruction and base layer sections (typically 24” in depth (<30”)); curbs & gutters, sidewalk, driveways, footlaps, and ADA ramp repairs or replacements including base material; sewer line repairs or replacements including trench bedding (typically buried 6-15’ in depth); associated utility service line lateral of varying depth from the point of origin at the main to the connection point; utility structure manhole & inlet repairs or replacements (typically 3-15’ in depth); minor tree root pruning; and other incidentals necessary to execute the designed work depicted in the proposed plans and outlined in the scope of work. The typical utility main trench will vary from 4-10’ in width and service lateral trenches from 3-5’ in width.

National Environmental Policy Act (NEPA) Determination

☐ Statutorily excluded from NEPA review. (Review Concluded)
☐ Categorical Exclusion - Category ()
  ☐ No Extraordinary Circumstances exist.
    Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
  ☐ Extraordinary Circumstances exist (See Section IV).
    ☐ Extraordinary Circumstances mitigated. (See Section IV comments)
      Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
☐ Environmental Assessment. See FONSI for determination, conditions and approval.
☒ Programmatic Environmental Assessment See FONSI for determination, conditions and approval.
☐ Supplemental Environmental Assessment (Reference EA or PEA in comments)
☐ Environmental Impact Statement
  ☐ Alternative Arrangements
    ☐ Public Involvement Plan on file (see comments below)
    Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

Comments: In accordance with 44 CFR part 10, a Programmatic Environmental Assessment (PEA) was prepared pursuant to Section 102 of the National Environmental Policy Act (NEPA) of 1969, as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ; 40 CFR Parts 1500-1508). The PEA resulted in a Finding of No Significant Impact (FONSI) dated June 16, 2016. Particular attention should be given to the project conditions before and during project implementation. Failure to comply with these conditions may jeopardize federal assistance including funding. M Myers, Environmental Specialist

Reviewer and Approvals

☐ Project is Non-Compliant (See attached documentation justifying selection).

FEMA Environmental Reviewer.

Name: Megan Myers, Sr. Environmental Protection Specialist, FEMA-LIRO

Signature MEGAN F MYERS Digitally signed by MEGAN F MYERS Date: 2022.09.07 16:02:50 -05'00' Date _____

FEMA Regional Environmental Officer or delegated approving official.

Name: LeSchina Holmes, Sr. Environmental Protection Specialist, FEMA-LIRO

Signature LESCHINA HOLMES Digitally signed by LESCHINA HOLMES Date: 2022.09.08 07:46:53 -05'00' Date _____

I. Compliance Review for Environmental Laws (other than NEPA)

A. National Historic Preservation Act

☐ Not type of activity with potential to affect historic properties. **(Review Concluded)**
☒ Applicable executed Programmatic Agreement December 21, 2016, amended August 13, 2018. Otherwise, conduct standard Section 106 review.

☐ Activity meets Programmatic Allowance
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

HISTORIC BUILDINGS AND STRUCTURES

☐ No historic properties 50 years or older in project area. **(Review Concluded)**
☒ Building or structure 50 years or older in project area and activity not exempt from review.

☐ Determination of No Historic Properties Affected (FEMA finding/SHPO/THPO concurrence on file)
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

☒ Determination of Historic Properties Affected (FEMA finding/SHPO/THPO concurrence on file)

☒ Property a National Historic Landmark and National Park Service was provided early notification during the consultation process. If not, explain in comments

☐ No Adverse Effect Determination (FEMA finding/SHPO/THPO concurrence on file).
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

☒ Adverse Effect Determination (FEMA finding/SHPO/THPO concurrence on file)

☒ Resolution of Adverse Effect completed. (MOA on file)
Are project conditions required ☒ Yes (see section V) ☐ No **(Review Concluded)**

ARCHEOLOGICAL RESOURCES

☐ Project affects only previously disturbed ground. **(Review Concluded)**
☒ Project affects undisturbed ground.

☐ Project area has no potential for presence of archeological resources

☐ Determination of no historic properties affected (FEMA finding/SHPO/THPO concurrence or consultation on file). **(Review Concluded)**

☒ Project area has potential for presence of archeological resources

☐ Determination of no historic properties affected (FEMA finding/SHPO/THPO concurrence on file)
Are project conditions required ☐ Yes (see section V) ☐ No **(Review Concluded)**

☒ Determination of historic properties affected

☐ NR eligible resources not present (FEMA finding/SHPO/THPO concurrence on file).
Are project conditions required ☐Yes (see section V) ☐ No **(Review Concluded)**

☒ NR eligible resources present in project area. (FEMA finding/ SHPO/THPO concurrence on file)

☐ No Adverse Effect Determination. (FEMA finding/ SHPO/THPO concurrence on file)
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

☒ Adverse Effect Determination. (FEMA finding/ SHPO/THPO concurrence on file)

☒ Resolution of Adverse Effect completed. (MOA on file)
Are project conditions required? ☒ Yes (see section V) ☐ No
(Review Concluded)

***Comments*:** A review of this amendment was conducted in accordance with FEMA's Programmatic Agreement dated December 21, 2016 and amended on August 13, 2018 (PA). FEMA determined that approximately 30% of the proposed Undertaking will fall within eligible or listed historic districts, and that 33% of the proposed Undertaking will fall within areas of high archaeological concern. In accordance with Stipulation II.C.5 of the PA and 36 CFR§ 800.5, FEMA has determined the Undertaking will adversely affect historic properties. FEMA consulted with SHPO and Tribes to avoid, minimize, and mitigate the adverse effects of this Undertaking in accordance with Stipulation II.C.6 of the PA. FEMA proposed to resolve the adverse effects through an Abbreviated Consultation Process (ACP) (Stipulation II.C.6.a) in a letter dated November 6, 2018. None of the parties objected within the regulatory timeframe; however minor changes were proposed. A final letter dated December 11, 2018 incorporated these changes and was transmitted to parties on this same date. The ACHP responded on December 17, 2018 that they did not object to FEMA's use of the ACP to resolve potential adverse effects. To remain in compliance with Section 106, minimization and treatment measures detailed within the ACP and set out in the REC must be carried out by the Applicant. Any change to the approved scope of work will require reevaluation under Section 106. Failure to comply with these conditions may jeopardize receipt of FEMA funding.
Correspondence/Consultation/References: Benjamin Maygarden, Historic Preservation Specialist

B. Endangered Species Act

☒ No listed species and/or designated critical habitat present in areas affected directly or indirectly by the Federal action. **(Review Concluded)**

☐ Listed species and/or designated critical habitat present in the areas affected directly or indirectly by the Federal action.

- ☐ No effect to species or designated critical habitat**.**
  Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
- ☐ May affect, but not likely to adversely affect species or designated critical habitat (FEMA determination/USFWS/NMFS concurrence on file)
  Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
- ☐ Likely to adversely affect species or designated critical habitat
  - ☐ Formal consultation concluded. (Biological Assessment and Biological Opinion on file)
    Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: Project is for repairs, upgrades, and replacement of infrastructure within previously disturbed areas, but does not include work that would affect a federally listed threatened or endangered species.
Correspondence/Consultation/References: ESA and MBTA Project Review tool (http://www.fws.gov/lafayette/pdc/Default.aspx), accessed 9/7/2022

C. Coastal Barrier Resources Act

☒ Project is not on or connected to CBRA Unit or Otherwise Protected Area **(Review Concluded)**

☐ Project is on or connected to CBRA Unit or Otherwise Protected Area. (FEMA determination/USFWS consultation on file)

- ☐ Proposed action an exception under Section 3505.a.6 (**Review Concluded)**
- ☐ Proposed action not excepted under Section 3505.a.6.
  Are project conditions required? ☐ YES (see section V) ☐ NO (**Review Concluded)**

Comments: Project is not on or connected to a CBRA Unit or Otherwise Protected Area.
Correspondence/Consultation/References: Louisiana Coastal Barrier Resource System Maps, referenced 9/7/2022

D. Clean Water Act

☒ Project site located outside of and would not affect any waters of the U.S. **(Review Concluded)**
☐ Project site located in or would affect waters, including wetlands, of the U.S.
- ☐ Project exempted as in kind replacement or other exemption. **(Review Concluded)**
- ☐ Project requires Section 404/401/10 or Section 9/10 (Rivers and Harbors Act) permit, including qualification under Nationwide Permits.

  Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: The proposed work will take place in existing rights-of-way and involve existing infrastructure only. No jurisdictional waters of the U.S., including wetlands, occur in the project areas. In a letter from the LDEQ dated 7/5/2017 and 6/8/2020, LDEQ granted the CNO a LPDES Construction General Permit. The project authorization number is LAR10M215. This construction project, if qualified under the conditions of the permit and unless notified otherwise by this office, is authorized to discharge storm water associated with construction activity to Lake Pontchartrain , Bayou Bienvenue, Algiers Canal and Gulf Intracoastal Waterway under the terms and conditions established under Louisiana's LPDES Construction General Permit. This number and the Agency Interest Number (206772) listed above should be referenced in all future correspondence with this office. Coverage under this general permit will be terminated on March 28, 2024, as indicated by the year(s) selected. Please note extensions of coverage beyond March 28, 2024, (the expiration date of the LPDES Large Construction General Permit) may not be granted. Permittees with coverage upon the expiration date of the general permit will be provided with instructions for permit renewal when the general permit is reissued.
In a letter dated October 10, 2017, the USACE stated "the agency has reviewed the City's Joint Infrastructure Recovery project and has determined that a Department of the Army permit under Section 404 of the Clean Water Act is not required (Attachment #1) since the work scope will take place within the existing rights-of-way. The City understands that any modifications to the current project will require a secondary review by the Army Corps of Engineers."
Correspondence/Consultation/References: USFWS National Wetlands Inventory map (http://www.fws.gov/wetlands/Wetlands-Mapper.html), queried on 6/9/2021. Letter dated 7/5/2017 from the LDEQ. Letter dated 10/10/2017 from the USACE.

E. Coastal Zone Management Act

☐ Project is not located in a coastal zone area – (**Review concluded)**
☒ Project is located in a coastal zone area:
- ☐ State administering agency does not require consistency review. **(Review Concluded)**
- ☒ State administering agency requires consistency review.

  Are project conditions required? ☒ YES (see section V) ☐ NO **(Review Concluded)**

Comments: This project is located within the Louisiana Coastal Management Zone. LA DNR has determined that receipt of federal assistance is consistent with the Louisiana Coastal Resource Program. See conditions.
Correspondence/Consultation/References: Louisiana Coastal Zone maps, referenced 9/7/2022

F. Fish and Wildlife Coordination Act

☒ Not applicable for financial assistance**. (Review Concluded)**

***Comments*:** The proposed work will take place in existing rights-of-way and involve existing infrastructure only. Project scope does not include impoundment, diversion, control, or other modification of waters of any stream or body of water.
Correspondence/Consultation/References: M Myers, Environmental Specialist

G. Clean Air Act

☒ Project will not result in permanent air emissions. **(Review Concluded)**
☐ Project is located in an attainment area. **(Review Concluded)**
☐ Project is located in a non-attainment area.
☐ Coordination required with applicable state administering agency.
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: Project is for repair, restoration, and replacement of existing infrastructure, as needed. The proposed project includes activities that would produce minor, temporary, and localized impacts on air quality from vehicle emissions and fugitive dust particles. No long-term air quality impacts are anticipated. See conditions.
Correspondence/Consultation/References: EPA Region 6 Non-Attainment Map (http://www.epa.gov/oaqps001/greenbk/map/mapnpoll.pdf), queried 9/7/2022

H. Farmland Protection Policy Act

☒ Project does not affect designated prime or unique farmland. **(Review Concluded)**
☐ Project causes unnecessary or irreversible conversion of designated prime or unique farmland.
☐ Coordination with Natural Resource Conservation Commission required.
☐ Farmland Conversion Impact Rating, Form AD-1006, completed.
Are project conditions required? ☐ YES (see section V) ☐ NO (**Review Concluded)**

Comments: The project site is in a developed urbanized area and Farmland Protection Policy Act (FPPA) is precluded.
Correspondence/Consultation/References: National Resource Conservation Service, Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app), referenced 9/7/2022

I. Migratory Bird Treaty Act

☐ Project not located within a flyway zone. **(Review Concluded)**
☒ Project located within a flyway zone.
☒ Project does not have potential to take migratory birds.
Are project conditions required? ☐ Yes (see section V) ☒ No **(Review Concluded)**
☐ Project has potential to take migratory birds.
☐ Contact made with USFWS
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: The site is an existing disturbed area with little value to migratory birds and would not be included in the USFWS migratory bird management program.
Correspondence/Consultation/References: ESA and MBTA Project Review tool (http://www.fws.gov/lafayette/pdc/Default.aspx), accessed 9/7/2022

J. Magnuson-Stevens Fishery Conservation and Management Act

☒ Project not located in or near Essential Fish Habitat. **(Review Concluded)**
☐ Project located in or near Essential Fish Habitat.
- ☐ Project does not adversely affect Essential Fish Habitat.
  Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
- ☐ Project adversely affects Essential Fish Habitat (FEMA determination/USFWS/NMFS/NOAA concurrence on file)
  - ☐ NOAA Fisheries provided no recommendation(s)
    Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
  - ☐ NOAA Fisheries provided recommendation(s)
    - ☐ Written reply to NOAA Fisheries recommendations completed.
      Are project conditions required? ☐ YES (see section V) ☐ NO (**Review Concluded)**

Comments: The proposed work will take place in existing rights-of-way and involve existing infrastructure only. Project is not located in or near any surface waters with the potential to affect EFH species.
***Correspondence/Consultation/References*:** M. Myers, Environmental Specialist

K. Wild and Scenic Rivers Act

☒ Project is not along and does not affect Wild or Scenic River (WSR) - **(Review Concluded)**
☐ Project is along or affects WSR
- ☐ Project adversely affects WSR as determined by NPS/USFS. **FEMA cannot fund the action**. (NPS/USFS/USFWS/BLM consultation on file) **(Review Concluded)**
- ☐ Project does not adversely affect WSR. (NPS/USFS/USFWS/BLM consultation on file)
  Are project conditions required? ☐ YES (see section V) ☐ NO (**Review Concluded)**

Comments: Project is not along and does not affect a Wild and Scenic River (WSR).
Correspondence/Consultation/References: National Wild and Scenic Rivers (http://www.rivers.gov/louisiana.php), queried 9/7/2022

L. Other Relevant Laws and Environmental Regulations

Resource Conservation and Recovery Act (RCRA)
Unusable equipment, debris, and material shall be disposed of in an approved manner and location. The Applicant shall handle, manage, and dispose of petroleum products, hazardous materials (such as lead-based paint), and/or toxic waste in accordance with all local, state, and federal agency requirements. All coordination pertaining to these activities should be documented and copies forwarded to the state and FEMA as part of the permanent project files. See conditions.

Toxic Substances Control Act (TSCA)
If any asbestos containing materials, lead based paint and/or other hazardous materials are found during remediation or repair activities, the applicant shall comply with all federal, state and local abatement and disposal requirements under the national emissions standards for hazardous air pollutants (NESHAP) and Louisiana Administrative Code 33:III 5151. Demolition activities related to possible asbestos-containing materials (PACM) must be inspected for ACM/PACM where it is safe to do so. Should asbestos containing materials (ACM) be present, the applicant is responsible for ensuring proper disposal in accordance with the previously referenced administrative orders. Demolition activity notification must be sent to the LDEQ before work begins. All coordination pertaining to these activities should be documented and copies forwarded to the state and FEMA as part of the permanent project files.

This project involves the demolition or renovation, of a facility constructed prior to 1978 that may contain surfaces coated with Lead-Based Paint (LBP). The applicant is responsible for complying with the Toxic Substances Control Act (TSCA) Section 402(c)(3) requirements. All coordination pertaining to these activities should be documented and copies forwarded to the state and FEMA as part of the permanent project files.

Safe Drinking Water Act (SDWA)
According to an article from NOLA.com/Times Picayune dated July 12, 2017, entitled *New Orleans road work could raise lead levels in your water, officials warn,* which can be reviewed at http://www.nola.com/environment/index.ssf/2017/07/lead_water_new_orleans_road_wo.html#incart_river_home, the FEMA-funded road work taking place in the City of New Orleans could "unearth another aspect of the city's aging infrastructure in desperate need of repair – undiscovered lead water service lines." The New Orleans Sewerage and Water Board and Mayor Mitch Landrieu's office are notifying residents citywide of the possibility of temporary elevated lead levels in drinking water as crews begin to dig up roads in coming months. "The City of New Orleans ensures that the water coming out of the plant and into the distribution and main pipe system is lead free," Cedric Grant, Executive Director of the Sewerage & Water Board said. "We treat it extensively in the plant, but we also provide corrosion control." The Environmental Protection Agency also requires the city to complete citywide lead testing once every three years. EPA rules require that no more than 10 percent of 50 homes tested have lead levels at or above 15 parts per billion. The last official EPA sampling was completed in November 2016. Grant said more than 100 tests were completed at sites across the city and all the tests fell below the EPA threshold. (The East Bank of Orleans Parish had an average count of 7ppb and the West Bank an average of 2ppb.)

Despite treatment, lead contamination is still a possibility in New Orleans. By the time drinking water leaves your tap, it has woven through a system of dozens, if not hundreds, of water supply pipes, including service pipes that are on private property. Those private lines are the ones that remain the biggest mystery to the city. Grant noted the Sewerage & Water Board can replace all the lead pipes its finds on public property, but not those underneath private property. He said homeowners and others who want lead water pipes on their property to be replaced will need to hire their own contractor to complete the work. Road work can enhance that risk. City lines are often disconnected and reconnected with a homeowner's pipe system. That can dislodge deposits that have prevented lead from leeching into water in the homeowner's pipe. Lead can be released into the water for months after a reconnection is completed. Sarah McLaughlin Porteous, the director of the city's Special Projects & Strategic Engagement Office, said the S&WB and the city will be notifying affected property owners and renters of the possibility of elevated lead levels before each road project begins, through the city's Roadwork NOLA email newsletter, inserts in water bills, and during community meetings, which will be held at the start of each project. Grant said the S&WB will also be going door-to-door with flyers to notify property owners in areas where lead water supply pipes are found during road work.

II. Compliance Review for Executive Orders

A. E.O. 11988 - Floodplains

☐ No Effect on Floodplains/Flood levels and project outside Floodplain - **(Review Concluded)**
☒ Located in Floodplain or Effects on Floodplains/Flood levels
- ☐ No adverse effect on floodplain and not adversely affected by the floodplain.
  Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
- ☐ Beneficial Effect on Floodplain Occupancy/Values (**Review Concluded).**
- ☒ Possible adverse effects associated with investment in floodplain, occupancy or modification of floodplain environment
  - ☒ 8 Step Process Complete - documentation on file
    Are project conditions required? ☒ YES (see section V) ☐ NO (**Review Concluded)**

Comments: The Parish of Orleans enrolled in the National Flood Insurance Program (NFIP) on 8/3/1970. Orleans Parish adopted the DFIRMs on 9/30/16. All of Orleans Parish is within the Hurricane and Storm Damage Risk Reduction System (HSDRRS). The project area is partly located within Flood Zone "Shaded X," an area levee-protected from the base flood but subject to the 0.2% (or the 500-year) annual chance flood, based upon shallow ponding only, and/or partly in the Flood Zone "AE," areas subject to the 1.0% (or the 100-year) annual chance flood.

According to a letter dated 3 March 2017 from Jerome Landry, CFM, Floodplain Administrator, "The Department of Safety & Permits New Orleans has reviewed the [CNO] [DPW] and [NOSWB] Joint Recovery Program project for compliance with our Floodplain Ordinance, Chapter 78 of The City Code of Ordinances. The proposed work reviewed by this office will be in compliance with our floodplain ordinance. The scope of work for the Joint Recovery Program states that 'All restored pavement and other roadway structures will typically be repaired or replaced to the existing elevation, with minor changes as necessary to maintain positive drainage and minimize pooling water along paths of travel and street surfaces. The planned activities will have no significant impact on the slope of local topography or lands/properties bordering the project limits.'"

FEMA regulations at 44 CFR Part 9, Floodplain Management and Protection of Wetlands, apply to actions within or affecting the floodplain (definition included below). For "critical actions", those for which even a slight chance of flooding is too great, the minimum floodplain of concern is the 0.2% annual chance floodplain, i.e., the 500-year floodplain. Adverse effects to floodplains during construction could result from temporary service disruptions that would render portions of the system inoperable and contribute to an increase in localized flooding. Poorly maintained construction sites can lead to the release of pollutants to stormwater runoff and increased sedimentation, which would reduce water quality.

Adverse effects would be minimized in accordance with FEMA's minimization standards in 44 CFR 9.11. Treatment measures would be required to reduce adverse impacts below the level of significance. New construction must be compliant with current codes and standards. Per 44 C.F.R. § 9.11(d)(6), no project should be built to a floodplain management standard that is less protective than what the community has adopted in local ordinances through their participation in the NFIP. The Subgrantee is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities. Coordination pertaining to these activities and Subgrantee compliance with any conditions should be documented and copies forwarded to the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) and FEMA for inclusion in the permanent project files.

In compliance with Executive Order 11988, an 8-step process was completed in conjunction with the JIRR, is attached and on file. See project conditions.

Correspondence/Consultation/References: M. Myers, Environmental Specialist

B. E.O. 11990 - Wetlands

☒ No Effects on Wetland(s) and project located outside Wetland(s) - **(Review Concluded)**
☐ Located in Wetland or effects Wetland(s)
- ☐ Beneficial Effect on Wetland - **(Review Concluded)**
- ☐ Possible adverse effect associated with constructing in or near wetland
  - ☐ Review completed as part of floodplain review
  - ☐ 8 Step Process Complete - documentation on file
    Are project conditions required? ☐ YES (see section V) ☐ NO (**Review Concluded)**

Comments: The proposed work will take place in existing rights-of-way and involve existing infrastructure only. No wetlands occur within the project areas.
Correspondence/Consultation/References: USFWS National Wetlands Inventory map (http://www.fws.gov/wetlands/Wetlands-Mapper.html), queried on 9/7/2022

C. E.O. 12898 - Environmental Justice for Low Income and Minority Populations

☐ No Low income or minority population in, near or affected by the project - **(Review Concluded)**
☒ Low income or minority population in or near project area
- ☒ No disproportionately high and adverse impact on low income or minority population- **(Review Concluded)**
- ☐ Disproportionately high or adverse effects on low income or minority population
  Are project conditions required? ☐ YES (see section V) ☐ NO (**Review Concluded)**

Comments: The project is located within zip code 70125. The composition of the population for zip code 70125 is 26.3% Black or African American, 68.7% White, 0.1% American Indian & Alaska Native, 1.3% Asian, 0.1% Native Hawaiian and Other Pacific Islander, 0.6% Some other race, and 1.9% two or more races. 5.4 % of the population is Hispanic or Latino (of any race). The median household income was $77,961 and 13.3% of families exist below the poverty level. Project is for repair, restoration, and/or replacement, as needed, to existing infrastructure in the S Claiborne Neighborhood Area of New Orleans. Although low income and minority populations are located in the project area, the proposed work should have a positive effect on all groups by improving the infrastructure and road systems in the area.
Correspondence/Consultation/References: 2014 U.S. Census Bureau data available at (https://data.census.gov/cedsci), referenced 7/21/2022

III. Other Environmental Issues

Identify other potential environmental concerns in the comment box not clearly falling under a law or executive order (see environmental concerns scoping checklist for guidance).

Comments: None known.
Correspondence/Consultation/References:

IV. Extraordinary Circumstances

Based on the review of compliance with other environmental laws and Executive Orders, and in consideration of other environmental factors, review the project for extraordinary circumstances.

***** A "Yes" under any circumstance may require an Environmental Assessment (EA). If the circumstance can be mitigated, please explain in comments. If no, leave blank.

Yes

- ☐ (i) A potentially significant effect on public health or safety.
- ☐ (ii) A potentially significant effect on species or habitats protected by the ESA, Marine Mammal Protection Act, Migratory Bird Treaty Act, Magnuson-Stevens Fishery Conservation and Management Act, or other law protecting a species or habitat.
- ☐ (iii) A potentially significant effect on historic properties (e.g., districts, sites, buildings, structures, or objects) that are listed in or eligible for listing in the National Register of Historic Places, affects traditional cultural properties or sacred sites, or leads to the loss or destruction of a significant scientific, cultural, or historical resource.
- ☐ (iv) A potentially significant effect on an environmentally sensitive area.
- ☐ (v) A potential or threatened violation of a Federal, State, or local law or requirement imposed to protect the environment. Some examples of other requirements to consider are: a local noise control ordinance; the requirement to conform to an applicable State Implementation Plan for air quality standards; Federal, Tribal, State, or local requirements to control hazardous or toxic substances; and environmental permits.
- ☐ (vi) An effect on the quality of the human environment that is likely to be highly controversial in terms of scientific validity, likely to be highly uncertain, or likely to involve unique or unknown environmental risks. This also includes effects that may result from the use of new technology or unproven technology. Controversy over, including public opposition to, a proposed action absent any demonstrable potential for significant environmental impacts does not itself constitute an extraordinary circumstance.
- ☐ (vii) Extent to which a precedent is established for future actions with significant effects.
- ☐ (viii) Significantly greater scope or size than normally experienced for this particular category of action.
- ☐ (ix) Potential for significant degradation of already existing poor environmental conditions. Also, initiation of a potentially significant environmental degrading influence, activity, or effect in areas not already significantly modified from their natural condition.
- ☐ (x) Whether the action is related to other actions with individually insignificant, but cumulatively significant impacts.

Comments: None

V. Environmental Review Project Conditions

General comments: None

Project Conditions:

The following conditions and mitigation measures must be met as part of the implementation of the project. Failure to comply with these conditions and mitigation measures will jeopardize federal funds:

1. Follow applicable state, territory, tribal, and local permitting requirements for construction;
2. Fugitive dust from earth moving activities, storage piles, disturbed surface areas, unpaved areas and other construction related activities will be controlled using one or more of the following measures: watering, coverings, wind fencing, covering of haul beds, wheel washers, vegetation, restricted site access, and/or street sweeping;
3. Enclose or water down exposed dirt storage piles;
4. Minimize the disturbed area and preserve vegetation to the maximum extent possible;
5. Maintain topsoil whenever possible;

6. Phase construction activities to the extent possible;

7. The contractor shall prepare and maintain a Storm Water Pollution Prevention Plan (SWPPP), which describes in specific details the Contractor's program to prevent contamination of the storm water collection system for this project. The Subgrantee's Stormwater Pollution Prevention Plan and its related conditions is located in Appendix D. All project will have a SWPPP that is consistent with the Municipal Separate Storm Sewer System (MS4) Permit for the Orleans Parish area and contractors will be required to take every reasonable precaution to prevent fuels, oils, asphalts, concrete, chemical, and other harmful materials from entering the drainage system and/or ground water table in accordance with the Section C204 of the DPW General Specifications. Storm Water Control Measures (SCMs) may include storm drain system protection, spill prevention and clean-up, employee training, project site housekeeping, and temporary erosion controls. Residue from dust collectors, concrete mixers, vehicles wash racks, an entrance/exits debris will be disposed of in an approved disposal facility;

8. Establish stabilized construction entrances/exits (e.g. large crushed rocks, stone pads, steel wash racks, hose-down systems, and pads);

9. Work will primarily be performed between 7:00am and 5:00pm, Monday through Friday. Subgrantee should limit construction activities, including operation of heavy machinery, to normal business hours (M-F 7am-5pm). Contractors will be required to conform to noise level restrictions as established in Section 66-202 of the City of New Orleans Municipal Code (50-75 dBA, depending on the zoning of the area). All construction machinery and vehicles shall be equipped with practical sound muffling devices and operated in a manner to cause the least noise, consistent with efficient performance of work. Activities near noise and vibration sensitive areas such as churches, hospitals, and schools will be minimized as much as practically possible.

10. Ensure adequate maintenance of equipment, including proper engine maintenance, adequate tire inflation, and proper maintenance of pollution control devices;

11. Existing trees and other vegetation within the construction area that may be impacted within the public right of way will be protected on a location-by-location basis. In general, the Recovery Roads Program will attempt to maintain the existing healthy canopy in place. Protective measures may include fencing and signage. Any trimming, root pruning, or removal of any tree or stump within the public right of way due to construction will be minimized as much as possible and be conducted under the supervision of a licensed arborist. Any trees removed from the construction site within the public right of way will be relocated if possible to an area in close proximity to the project site. Trenching within the critical root zone of a tree of a tree will not be permitted on tree roots or within the canopy limits unless approved by Parks & Parkways. Existing vegetation or cover disturbed by construction activities will be seeded and fertilized;

12. At least 48 hours' notice will be given in advance of any street closures and anticipated areas of low water pressure to residents and emergency response agencies;

13. The Subgrantee is responsible for acquiring any Section 401/404 Clean Water Act (CWA) permits and/or Section 10 permits under the Rivers and Harbors Act. When these permits are required, Subgrantee must maintain documentation of compliance with applicable Nationwide Permit (NWP), exemption from requirements, or obtain individual permits from U.S. Army Corps of Engineers prior to construction, unless exempt by the NWP from pre-construction notification. The Subgrantee shall comply with all conditions of the required permit. All coordination pertaining to these activities should be documented and copies forwarded to the state and FEMA as part of the permanent project files;

14. Care should be taken to ensure that any potentially hazardous or toxic materials used for, generated, or encountered during pressure washing, cleaning, or any other construction activities, do not impact groundwater, waterways, wetlands, or nearby stormwater conveyance systems. Potentially hazardous and toxic wastes generated or encountered during these processes should be isolated, contained, and disposed of in an approved manner. This condition includes petroleum products and by-products use in machinery and equipment. The Subgrantee shall be responsible for complying with all relative rules of the Clean Water Act (CWA). No activity performed should have any impact on waters of the state;

15. Appropriate measures for the proper assessment, remediation, management, and disposal of any contamination discovered in the course of construction activities must be initiated in accordance with applicable federal, state, and local regulations. The contractor is required to take appropriate actions to prevent, minimize, and control the spill of hazardous materials at the proposed site;

16. Contractor and/or sub-contractors must properly handle, package, transport and dispose of hazardous materials and/or waste in accordance with all local, state, and federal regulations, laws, and ordinances, including all Occupational Safety and Health Administration worker exposure regulations covered within 29 C.F.R. Parts 1910 and 1926;

17. All work affecting the Agriculture Street Landfill Superfund Site must be undertaken in accordance with the Consent Decree between the City and USEPA including the *Technical Abstract for Utility Operations within the Agriculture Street Landfill Superfund Site*;

18. A spill prevention and emergency response plan (SPERP) will be required for all construction contractor groups. The SPERP will need to identify at a minimum: emergency contact numbers for local, state and federal environmental and public health agencies, material safety data sheets (MSDS) for all hazardous substances, hazardous material inventory, spill prevention plan, spill response plan/emergency response plan, spill response equipment (e.g. absorbent pads, disposal containers) and reporting requirements;

19. If any asbestos containing materials (ACM) and/or other hazardous materials are found during remediation or repair/replacement activities, the Subgrantee shall comply with all federal, state, and local abatement and disposal requirements under the National Emissions Standards for Hazardous Air Pollutants (NESHAP) and Louisiana Administrative Code 33:III 5151. Demolition activities related to possible asbestos-containing materials (PACM) must be inspected for ACM/PACM where it is safe to do so. Should ACM be present, the Subgrantee is responsible for ensuring proper disposal in accordance with the previously referenced administrative orders. Regardless of the asbestos content, the Subgrantee is responsible for ensuring that all renovation or demolition activities are coordinated with the LDEQ to the extent required prior to initiating work. All documentation pertaining to these activities and Subgrantee compliance with any conditions should be forwarded to the state and FEMA for inclusion in the permanent project files;

20. Unusable equipment, debris, and material shall be disposed of in an approved manner and location. The Subgrantee must handle, manage, and dispose of petroleum products, hazardous materials, and/or toxic waste in accordance with all local, state, and federal agency requirements. All coordination pertaining to these activities should be documented and copies forwarded to the state and FEMA as part of the permanent project files;

21. Contractors will be responsible for maintaining, securing, and protecting any staging area, containers, or bins set up for construction purposes. The storage of any equipment or materials will not be permitted immediately adjacent to canals or other water bodies, trees, transportation or utility servitudes, or private property without prior approval from the respective owner or regulatory agency. The contractors will be responsible to ensure all equipment arriving at or departing from the construction limits remains clean and to take any necessary measures to ensure foreign materials or debris is not tracked or deposited on opened streets or outside the construction site limits. The contractor will also be required to store and handle any fuels or other hazardous material in accordance with OSHA requirements, and ensure any such materials required at a construction site be adequately secured and protected at all times;

22. In order to minimize indirect impacts (erosion, sedimentation, dust, and other construction-related disturbances) to nearby waters of the U.S. and surrounding drainage areas, the contractor must ensure compliance with all local, state, and federal requirements related to sediment control, disposal of solid waste, control and containment of spills, and discharge of surface runoff and stormwater from the site. All documentation pertaining to these activities and Subgrantee compliance with any conditions should be forwarded to LA GOHSEP and FEMA for inclusion in the permanent project files;

23. The Subgrantee shall ensure that best management practices are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to prevent erosion and sedimentation to ensure that wetlands are not adversely impacted per the clean water act and executive order 11990;

24. The Louisiana Department of Natural Resources (LDNR) requires that a complete Coastal Use Permit (CUP) Application package (Joint Application Form, location maps, project illustration plats with plan and cross section views, etc.) along with the appropriate application fee, be submitted to their office prior to construction. The Subgrantee is responsible for coordinating with and obtaining any required CUPs or other authorizations from the LDNR OCM's Permits and Mitigation Division prior to initiating work. The Subgrantee must comply with all conditions of the required permits. All documentation pertaining to these activities and Subgrantee compliance with any conditions should be forwarded to the state and FEMA for inclusion in the permanent project files;

25. Coordination with the appropriate local levee district(s) and USACE would be required for work within 1,500 feet of Mississippi River levees and/or within 300 feet of hurricane protection levees. CNO and SWBNO are responsible for obtaining any required permits from these districts and following any conditions imposed;

26. Avoid engaging in construction activities within 660 feet of a bald or golden eagle nest during nesting and fledging where there is no visual buffer or 330 feet where there is a visual buffer, as nesting eagles are quite sensitive to human activities during these times;

27. No project may be built to a floodplain management standard that is less protective than what the community has adopted in local ordinances through their participation in the NFIP. FEMA PA-funded projects carried out in the floodplain must be coordinated with the local floodplain administrator for a floodplain development permit prior to the undertaking, and the action must be carried out in compliance with relevant, applicable, and required local codes and standards and thereby, will reduce the risk of future flood loss, minimize the impacts of floods on safety, health, and welfare, and preserve and possibly restore beneficial floodplain values as required by E.O. 11988. Coordination pertaining to these activities and Subgrantee compliance with any conditions should be documented and copies forwarded to the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) and FEMA for inclusion in the permanent project files;

28. Adverse effects must be minimized in accordance with FEMA's minimization standards in 44 C.F.R. § 9.11. Treatment measures would be required to reduce adverse impacts below the level of significance;

29. Louisiana law (Part VII of Chapter 8 of Title 40, and the sections as R.S. 40:1749.11 to 40:1749.26) requires excavators and demolishers to call a regional notification center prior to beginning work. Prior to any excavation or demolition, each excavator or demolisher, including cable television owners or operators, shall serve telephonic notice of the intent to excavate or demolish to the regional notification center serving the area in which the proposed excavation or demolition is to take place. Such notice shall be given to the notification center at least 96 hours, but not more than 120 hours (excluding weekends and holidays) prior to the commencement of any excavation or demolition activity. See entire laws at www.laonecall.com or call 1-800-272-3020 for more information;

30. This project involves the modification of a public structure that may contain surfaces coated with lead-based paint. The Subgrantee is responsible complying with all local, state, and federal laws and ensuring that project activities are coordinated with the Louisiana Department of Environmental Quality for abatement activities;

31. The Subgrantee is responsible for obtaining and/or complying with all federal, state and local permits, ordinances and/or requirements for the collection, handling, storage, transportation and disposal of any medical, hazardous, biological, radiological, pharmaceutical or toxic related waste or debris. Equipment such as ice machines, refrigerators, generators, air conditioning units, computers, and televisions may contain chlorofluorocarbons (CFCs), used oil, diesel and other petroleum products, mercury switches, used oil filters, fuel filters, and batteries. The Subgrantee shall handle, manage, and dispose of damaged materials and equipment that may be hazardous waste, universal waste, and hazardous materials in accordance with the requirements of local, state, and federal regulations;

32. If your project results in a discharge to waters of the state, submittal of a Louisiana Pollutant Discharge Elimination System (LPDES) application may be necessary;

33. All waste is to be transported by an entity maintaining a current "waste hauler permit" specifically for the waste being transported, as required by Louisiana Department of Transportation and Development (DOTD), LDEQ, and other regulations;

34. Disposal of demolition debris must be in accordance with all federal, state, and local laws, regulations, and rules. Prior to disposal, the Subgrantee must identify and provide to FEMA and GOHSEP the waste disposal site, including the complete name, location, telephone number, and contact person of the facility. Due to the presence of the Agriculture Street Landfill Superfund site and the potentially hazardous nature of material to be removed from the site, all construction and demolition debris must be disposed in a Type I Industrial Landfill. The disposal facility must be permitted by the State of Louisiana Department of Environmental Quality Permit Support Division to receive Regulated Asbestos Containing Material. Waste must be packaged, labeled, manifested, and transported in accordance with LDEQ regulations and requirements. Further, the Subgrantee must comply with Best Management Practices for Demolition, Construction, and Renovation Sites Under Five Acres (See Appendix D);

35. Contractors will be responsible for maintaining, securing, and protecting any staging area, containers, or bins set up for construction purposes. The storage of any equipment or materials will not be permitted immediately adjacent to canals or other water bodies, trees, transportation or utility servitudes, or private property without prior approval from the respective owner or regulatory agency. The contractors will be responsible to ensure all

equipment arriving at or departing from the construction limits remains clean and to take any necessary measures to ensure foreign materials or debris is not tracked or deposited on opened streets or outside the construction site limits. The contractor will also be required to store and handle any fuels or other hazardous material in accordance with OSHA requirements, and ensure any such materials required at a construction site be adequately secured and protected at all times. Contractor and/or Subcontractors will properly handle, package, transport and dispose of hazardous materials and/or waste in accordance with all local, state and federal regulations, laws and ordinances including all OSHA worker exposure regulations covered within 29 CFR 1910 and 1926;

36. To minimize worker and public health and safety risks from project construction and closure, all construction and closure work must be done using qualified personnel trained in the proper use of construction equipment, including all appropriate safety precautions. Additionally, all activities must be conducted in a safe manner in accordance with the standards specified in OSHA regulations;

37. Appropriate signage and barriers shall be in place prior to construction activities in order to alert pedestrians and motorists of project activities and traffic pattern changes. The contractor will implement traffic control measures, as necessary. This shall include Subgrantee 24-hour emergency contact information;

38. Subgrantee is responsible for maintaining construction site perimeter fencing where possible;

39. The Subgrantee and its contractor(s) must take all reasonable precautions to control construction site access during project implementation, including posting appropriate signage and fencing, where possible, to minimize foreseeable potential public safety concerns. All activities shall be conducted in a safe manner in accordance with OSHA work zone traffic safety requirements. Truck and equipment routes must be kept free of construction debris;

40. The Subgrantee and its contractor(s) are responsible for implementing all traffic control and warning in accordance with the Manual of Uniform Traffic Control Devices, including placing signs and signals in advance of construction activities in order to alert pedestrians and motorists of the upcoming work and traffic pattern changes. Subgrantee is responsible for compliance with Section C129, Temporary Signs, Barricades Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety (See Appendix D);

41. Subgrantee will perform all Treatment Measures identified by FEMA in consultation with SHPO and other consulting parties through the Section 106 review to offset any adverse effects;

42. The applicant is required to adhere to the following minimization and treatment measures and timeframes established within the final ACP consultation letter, dated December 11, 2018, and summarized below:

    a) CNO has hired an archaeologist and historic preservation specialist who meet the SOI Professional Qualification Standards to serve as liaisons to FEMA and SHPO/Tribes for the JIRR Undertaking. CNO must notify FEMA in writing, if in the future, one or both of these positions is not filled and consult with FEMA, SWBNO, GOHSEP, SHPO, and Tribes to determine what steps must be taken during any such vacancy.

    b) CNO/SWBNO will report on the number of projects and treatment measures during semi-annual meetings to be held on or about March 15th and September 15th of each year. The CNO archaeologist and historic preservation specialist will email the consulting parties a copy of the report prior to the semi-annual meetings. CNO/SWBNO will provide the consulting parties with a written summary describing the information discussed at the meeting.

    Archaeology:

    c) The CNO archaeologist is responsible for monitoring work where there is an identified potential for burials, human remains, burial furniture or artifacts, or pre-contact, contact and colonial era archaeological sites. If the discovery appears to be pre-contact, contact or colonial era archaeological deposits, the CNO archaeologist will assess the NRHP eligibility of the discovery in consultation with FEMA, SHPO, Tribes, and GOHSEP; develop a response or mitigation strategy in consultation with FEMA, SHPO, Tribes, and GOHSEP

    d) The CNO archaeologist will ensure that the protocol for the discovery of human remains detailed in Appendix 4 of the ACP is followed, and will ensure that a report on each discovery of human remains is prepared and submitted to parties described in the ACP.

    e) CNO/SWBNO will be responsible for the development of a cultural resource context statement as described in the ACP.

    f) CNO/SWBNO will ensure the development of a public outreach program for archaeology based on the cultural resource context statement as described in the ACP.

Built Environment:

g) The CNO historic preservation specialist is responsible for implementing and fulfilling CNO/SWBNO's responsibilities described in the ACP and will serve as CNO/SWBNO's primary point-of-contact for all issues regarding the built environment.

h) The historic preservation specialist will record the following CDFs scheduled for removal in full reconstruction projects or projects within NHL districts or adjacent to individual NHL properties: brick or stone street pavers (including driveways and driveway aprons); brick or stone parking boundaries; brick or stone crosswalks; brick or stone curbs; brick or stone open gutters; brick or stone gutter bottoms; inlaid decoration in sidewalks, foot laps, driveways, or driveway aprons; streetcar tracks or pavers; mounting blocks or steps (aka carriage steps, footbridges over open gutters); and abandoned fire hydrants.

i) CNO/SWBNO will avoid or minimize effects to CDFs within National Register Historic and National Historic Landmark Districts by adhering to the avoidance/minimization effort listed in Appendix 2 of the ACP.

j) CNO/SWBNO will be responsible for conducting research and a field sampling survey of character defining streetscape features in each affected NRHP listed or eligible district as described in the ACP.

k) CNO/SWBNO will be responsible for drafting a historic context statement focusing on the history of the streetscape throughout all affected NRHP listed or eligible districts as described in the ACP.

43. If the project results in a discharge of wastewater to an existing wastewater treatment system, that wastewater treatment system may need to modify its LPDES permit before accepting the additional wastewater;

44. All precautions should be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one acre. It is recommended that you contact the LDEQ Water Permits Division at (225) 219-9371 to determine if your proposed project requires a permit.

45. If your project will include a sanitary wastewater treatment facility, a Sewage Sludge and Biosolids Use or Disposal Permit is required. An application or Notice of Intent will be required if the sludge management practice includes preparing biosolids for land application or preparing sewage sludge to be hauled to a landfill. Additional information may be obtained on the LDEQ website at http://www.deq.louisiana.gov/portal/tabid/ 2296/Default.aspx or by contacting the LDEQ Water Permits Division at (225) 219- 9371;

46. All precautions should be observed to protect the groundwater of the region;

47. Please be advised that water softeners generate wastewaters that may require special limitations depending on local water quality considerations. Therefore if your water system improvements include water softeners, you are advised to contact the LDEQ Water Permits to determine if special water quality-based limitations will be necessary;

48. If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's Single-Point-of-Contact (SPOC) at (225) 219-3640 is required. Additionally, precautions should be taken to protect workers from these hazardous constituents;

49. Any renovation or remodeling must comply with LAC 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions.

50. Permit LAR10M215 requires certain storm water pollution prevention and control measures, possible monitoring and reporting, and regular inspections. You must prepare and implement a storm water pollution prevention plan (SWPPP) that is tailored to your site. As a construction project authorized to discharge under this general permit, all terms and conditions of the permit must be complied with in order to maintain coverage and to avoid possible penalties. Coverage under this permit does not relieve the permittee from any regulatory responsibility to apply for and receive other permits or authorizations that may be required as a result of activities ongoing or planned at this site. Any activity resulting in a discharge to waters of the state, such as that from a sanitary sewage treatment plant, must have all necessary permits prior to commencement of the planned discharge.

APPENDIX D

TM007 Magnolia, Joseph, and Willow Transmission Main

SEWERAGE & WATER BOARD OF NEW ORLEANS

CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

FOR

JIRR – TM007 MAGNOLIA, JOSEPH, AND WILLOW TRANSMISSION MAIN (FEMA)

PROJECT ID: TM007

S&WB JOB NO.: A1348FEM

JUNE 2026

PREPARED BY:

HARTMAN ENGINEERING, INC.

527 WEST ESPLANADE AVENUE, SUITE 300

KENNER, LA

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STATE OF LOUISIANA
DANIELLE B. CONNELLY
License No. 36284
PROFESSIONAL ENGINEER
06/24/2026

Hartman Engineering, Inc.

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PART I - SPECIAL PROVISIONS

SECTION 1.01 - GENERAL SPECIFICATIONS AND INTENT OF CONTRACT

A. The General Specifications entitled, "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, 2015 Edition (adopted 11/5/2015), are incorporated into the Specifications for this Contract and shall govern except as otherwise revised or supplemented by the provisions contained in the other Specification sections. The SWBNO Standard Drawings shall apply except as revised or supplemented by the project specific Construction Plans. In the event of discrepancy or conflict in provisions of the various contract documents, precedence shall be given to the provisions as contained in the document which appears first in the following list: Contract, Proposal, Addendum, Construction Specifications, Construction Plans, Sewerage and Water Board ~~General Specifications~~ Standard Drawings, General Specifications and Standard Plans for Street Paving ~~2006 Edition LaDOTD Standard Specifications for Roads and Bridges.~~ Provisions of these Construction Specifications then precedence shall be given to the requirements of the Proposal, then to the Special Items.

B. The Sewerage and Water Board of New Orleans General Specifications, General Notes (DWG. NO. 7260-S, 7260-W, and 7260-D) and Standard Drawings, shall govern for the construction of all sewer, water, and drainage systems except as otherwise revised or supplemented by these Construction Specifications and the plan drawings. All sewer, water, and drainage work when complete, must be inspected and accepted by the Sewerage and Water Board of New Orleans before final payment can be approved.

C. The intent of the contract is to provide performance of the work described. The Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, project specifications and terms of the contract.

D. When an item in the proposal and contract contains a choice to be made by the Contractor and of the type material to be furnished, the Contractor, before the work is initiated, shall indicate his choice in accordance with the specifications for that item. Such notification shall be submitted to the Director in writing.

E. Payment for all bid items shall include all incidental materials, labor, supervision, and equipment required for installation in place according to the plans and specifications or as directed by the Director.

F. There shall be no direct pay for any work that is not listed in the bid proposal but is required to complete the construction of this project in accordance with the project plans and specifications. All costs thereof shall be included in the bid price of other items.

G. Prior to bidding, the Contractor is to examine the contract documents and visit the site to determine the extent of the work. Should the Contractor have any doubts or questions regarding Pay Items, he should, before submitting his bid, contact the Department of Finance, Purchasing Bureau.

H. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used and interpretation of these Specifications shall be made upon that basis.

I. The Director reserves the right to accept or reject any and all bids. The Director reserves the right to reduce, delete or increase the quantity of any item in the proposal.

J. Section C121.01 of the General Specifications for Street Paving, 2015 Edition shall be amended to include the following language:
"The contractor shall not sublet any portion of the contract, excluding material, without the prior written consent and approval of the Director, including work sublet to an authorized Disadvantaged Business Enterprise. If such consent is given, the contractor will be permitted to sublet a portion of the work but shall perform with the contractor's own organization work amounting to at least 50 percent of the total contract cost.
A subcontractor shall not further subcontract to a third party any portion of this authorized work, excluding material, without written consent, including work sublet to an authorized Disadvantaged Business Enterprise."

K. Section C135 Changes in the Work of the DPW 2015 General Specifications For Street Paving (2015 edition) is hereby deleted in its entirety and replaced with the following:

The Director shall have the right to make alterations in the line, grade, plan, form, or dimensions of the work herein contemplated, either before or after the commencement of the work and without notice to the sureties. If such alterations diminish the quantity of work to be done, they shall not constitute a claim for damages for anticipated profits for the work deleted.

SECTION 1.02 - SCOPE OF WORK

A. Removal and reconstruction work shall be accomplished in accordance with the construction documents and shall include but is not limited to the following:
   1. Installing drainage, sewer and water main systems as shown on the plans.
   2. Removing existing pavement and excavating to as shown on the plans. Hauling and legally disposing of existing pavement and surplus materials from the project site.
   3. Constructing new concrete curbs or curbs and gutters.
   4. Constructing asphalt pavement or Portland cement concrete pavement.
   5. Replacing concrete sidewalks and driveway aprons.
   6. Constructing concrete handicap ramps at locations shown on the plans.
   7. Other work incidental to the project as shown on the plans.

B. The Director reserves the right to reduce, delete or increase the quantity of any item in the proposal.

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SECTION 1.03 - SPECIAL PROJECT REQUIREMENTS

A. All utility frames, covers, and boxes shall be tilted to generally conform to the slope of the ramp or walk. Where frames, etc. fall at the edge of a ramp or slope, adjust the tilt halfway between ramp slope and original elevation and warp the surface of ramp to blend into the edge of utility frames. Covers and boxes are to be adjusted by the Contractor. Private utility frames, covers and boxes are to be adjusted by the respective private utility company.

B. Temporary Barricades and Sidewalks: The Contractor shall provide and maintain construction

fences, barricades, tree protection fencing, warning lights and temporary sidewalks as required by the Director or other authorities in approved locations affording complete protection to the public and providing security to the premises during the construction period. The Contractor shall provide all necessary items to insure pedestrian access to properties during construction. When required, flashing lights shall be installed at required locations.

C. Compliances: The Contractor shall comply with safety standards and governing regulations for cleaning operations. Waste materials shall not be burned at the site. Debris or excess materials shall not be buried on the Owner's property. Volatile or other harmful or dangerous materials shall not be discharged into drainage systems. The Contractor shall remove waste materials from the site and dispose of such waste in a lawful manner.

D. Salvageable Materials: Before the Contractor shall remove any items from the site, the Owner reserves the right to retain in his possession any demolished items that the Owner deems salvageable. All other items, after review by Owner, may be salvaged by the Contractor. All salvage materials as determined by the Director shall be delivered at the Contractor's expense to the related locations listed below and must provide forty-eight (48) hour notice to these locations before delivering the salvaged material.

1. Materials such as stone curbs, cobble stone, etc. to the Public Works/Maintenance yard at 838 South Genois Street.
2. Materials such as Traffic Control devices (signs and signals) to the DPW sign shop at 2700 Lafitte St.
3. Materials such as CB, MH frames, covers, hydrants, valves, etc. to the S&WB Central Yard at 2900 Peoples Ave.
4. Materials such as tree grates to the Department of Parks &Parkway Nursery at 2829 Gentilly Blvd.
5. Recycled asphalt product

E. The Contractor shall remove existing sidewalks, driveways, and pavement to full depth in areas shown on drawings, or as directed by project engineer, and shall take care not to damage existing pavement and existing curbing that is to remain. The use of "STOMPERS" and similar gravity equipment is prohibited in order to preserve the structural integrity of the adjacent buildings and adjoining property. All excavation is to be done from the street.

F. The Contractor shall be required to protect all adjacent properties, buildings, walls, fences, steps, etc., from damage due to demolition, removal, and construction of items required by the Contract Documents. Removal of material adjacent to adjoining structures should be done in such a manner so as not to cause damage by direct blows, vibrations, or other methods of demolition or construction. The Contractor shall promptly repair damages caused to adjacent facilities by demolition and construction operations at no cost to the property Owner or City.

G. The Contractor shall clean adjacent structures and improvements of dust, dirt and debris caused by demolition and construction operations, as directed by the Director or governing authorities. The Contractor shall return adjacent areas to condition existing prior to the start of the work.

H. The Contractor shall, before removing any signpost, etc., coordinate such removal with all of the appropriate City agencies and companies involved. Existing signposts, light standards, and all other items penetrating the sidewalk shall be straightened and reset in accordance with the Director’s requirements, at no direct payment. All traffic control devices and their associated hardware (sign,

signal, conduit, and marking) removed or damaged during execution of this contract, other than as provided for in this contract, shall be replaced by the Contractor at no cost to the City.

I. No sign, or signal shall be removed without the approval of the Director. The Contractor accepts all liabilities during the time of removal. Contractor will notify the DPW Traffic Engineer in writing when controls are removed and reinstalled. All signs, signals and markings removed during construction, shall be restored and in place prior to the final inspection.

J. It shall be the responsibility of the Contractor to maintain all public roadways, sidewalks, driveways, etc. in a clean condition during the construction project. All mud, trash, debris, etc. deposited on said areas by the Contractor shall be removed daily, before the end of work or more frequently, as necessary to maintain a clean condition. The Contractor shall return adjacent areas to condition existing prior to the start of the work.

K. The Contractor shall ensure that mail and trash pickup services can be provided on a continuous basis during construction of the project. If necessary, the Contractor shall relocate or provide curb side mailboxes for use during the construction period. No direct payment will be made for this work. Any costs incurred by this work will be included in project bid items.

L. For daily work on projects the City and/or RoadworkNOLA shall provide the Contractor with a project specific "We Are Working" notification template that shall include the start and end date, not exceeding a thirty (30) day duration, and detailed scope of work to be performed. New notifications shall be distributed if the end date exceeds thirty (30) days from the time of distribution.

M. The Contractor may be allowed to work on the weekend but shall first request permission from the City no later than seventy-two (72) hours prior to beginning that work. Notification flyers, provided by the City and/or RoadworkNOLA, must be distributed at least forty-eight (48) hours before any weekend work begins in an area.

N. The Contractor shall notify the RoadworkNOLA office at least seventy-two (72) hours for all water valve closures. Water valve closures for businesses, schools/colleges/universities, and medical facilities that require specialized advanced coordination must be provided one week prior. Notification flyers, provided by the City and/or RoadworkNOLA, must be distributed at least forty-eight (48) hours before the valve closures.

O. The Louisiana Department of Health and Hospitals requires at least twenty-four (24) notification of all test valve closures. Notification flyers, provided by the City and/or RoadworkNOLA, must be distributed at least twenty-four (24) hours before the valve closures. Test valve closures for businesses, schools/colleges/universities, and medical facilities that require specialized advanced coordination must be provided 72 hours in advance.

P. The Contractor must obtain approval from the City and/or RoadworkNOLA prior to distribution of notifications and is responsible for distributing all notifications, as required above. Failure to properly notify, based on these requirements, will result in a stop work order issued.

Q. It shall be the responsibility of the Contractor to distribute and obtain all Construction Authorization forms during the construction project. If necessary, a Construction Authorization form will be provided to the Contractor by the City. The Construction Authorization form is to be signed by the homeowner and a witness. All signed Construction Authorization forms are to be furnished to the

Director prior to any work on the property listed on the Construction Authorization form. The Contractor shall return all disturbed areas to the condition existing prior to the start of the work.

R. The Contractor shall contact all utility companies prior to starting work to verify utility locations, depths of lines, etc., prior to starting demolition. Care should be taken in excavation around all utility lines. Utility service shall be maintained at all times for adjacent property owners, etc.

S. UTILITY SERVICES: Maintain existing utilities, keep in service, and protect against damage.

1. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to the governing authorities with no direct payment.

2. Note: Locations of existing utilities shown on the drawings are approximate. The Contractor shall verify their locations in the field with the appropriate agency in order to avoid conflicts and damage to utilities. Should damage occur to any existing utility lines or equipment, the Contractor shall be responsible for all cost repairs or replacements.

SECTION 1.04 - INTERPRETATION OF DOCUMENTS

No oral interpretation will be made to any bidder as to the meaning of any of the Contract Documents which in effect would modify any of the provisions of the same. Every request for an interpretation of the Documents shall be made in writing and delivered to the Director, at least seven (7) days (excluding weekends and holidays) before the time fixed for opening of bids. Any addenda shall be issued by the Director a minimum of 72 hours (excluding weekends and holidays) in advance of the time fixed for opening of bids. All bidders are requested to direct all questions about the contract documents promptly to the Director.

SECTION 1.05 - SPECIAL SAFETY PRECAUTIONS

In addition to the requirements of the General Specifications, it shall be the Contractor's responsibility to verify with the utility owners (electric, gas, telephone, communications, cable, etc., and New Orleans Sewerage and Water Board) having facilities within the project area, that the use of the Contractor's equipment (weights, configurations, characteristics, etc. provided by the Contractor) within the project area will not adversely affect their facilities.

SECTION 1.06 - SAFETY AND HEALTH REGULATIONS

The Code of Federal Regulations, Title 29, Occupational Safety and Health Administration (OSHA) shall apply. Safety and Health Provisions of the State of Louisiana shall apply where more stringent and where not covered by OSHA. The Contractor shall notify the Director within 24 hours of any reportable injury.

SECTION 1.07 - SAFETY PROTECTION & SECURITY

The Contractor shall be responsible for initiating, providing, maintaining, and supervising all safety precautions and programs in connection with the work. He shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

a. All Employees on the work and other persons who may be affected thereby,

b. All the work and all materials or equipment to be incorporated herein, whether in storage on or off the site, and

c. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, drives, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

The Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss. He shall erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for its safety and protection. He shall notify owners of adjacent utilities when prosecution of the work may affect them.

The Contractor shall develop and provide an effective safety and health plan for inspection and training required and communicates the work practices to be applied to the work site(s). The Contractor must develop and implement a comprehensive health and safety plan for his or her employees, which covers all aspects of onsite construction operations and activities associated with the contract. This plan must comply with all applicable health and safety regulations and any project-specific requirements.

The Contractor must provide a copy of this plan to the Department of Public Works prior to issue of the NTP. Acceptance of the Contractor's health and safety plan only signifies that the plan generally conforms to the requirements of the contract; it does not relieve the Contractor of the responsibility for providing employees with a safe and healthful work environment.

The Control measures outlined in the site-specific safety plan, provides each worker assigned to the job the opportunity to complete his/her task safely. Summary of this document should include but not limited to the following:

Description	Summary	Reference
Contractor Name	Self-Explanatory	29 CFR 1910-OSHA General Industry Safety and Health
Contract No.	Self-Explanatory	
Project Name	Self-Explanatory	
Responsibility and lines of Authority	Include the identification and job responsibilities of personnel responsible for safety and the lines of authority for each level of responsibilities.	
Responsible Member (Competent Person)	Designated by employer to identify hazards that are dangerous to employees	29 CFR 1926.32 (f) Section 01 200 Special Provisions, Section 1.07
General safety and health provisions	List the steps to be taken to control the hazards	29 CFR 1926.20
Safety training and education	All employees shall be trained in the recognition and avoidance or unsafe conditions,	29 CFR 1926.21(B)(2)

	standards, to control or eliminate any hazards or other exposure	
Housekeeping	Work areas, walkway clear of debris; garbage and flammable /hazardous waste disposed, frequently and regularly	29 CFR 1926.25
Illumination	Construction areas, roadways, trenches, ditches, and storage areas where work is in progress shall be lighted with either natural or artificial illumination	29 CFR 1926.26
Personal protective equipment	Employers are to ensure all personnel wear of protective equipment in all operations where there is an exposure to hazardous conditions	29 CFR 1926.28
Site Inspection	Designated person to make frequent and regular documented inspections of the job site/sites, materials, and equipment. Provide proof of inspector's qualifications and or training certificates	29 CFR 1926.20(b)(3)
Lockout/tagout	Procedures established for unsafe equipment identified or made inoperable by tagging, locking, or removing	29 CFR 1926.20(b)(1)&(b)(2)

Representatives of the Contractor shall meet with the DPW and Engineers representative prior to the start of construction for the purpose of reviewing safety requirements and discussing implementation of all health and safety provisions pertinent to the work under the assigned contract.

The representative will review the Contractor's site-specific safety and health plan with the Contractor as well as review all required safety data sheets (SDS) submitted for proposed products to be used by the Contractor. Due to the nature of the project/contract, the Contractor may be required to provide additional written comprehensive safety and health plans for the specific contract to include but not limited to the following:

Confined Space	Entry into any Manholes, Sewer, and Storm drains must be cleared for entry.	29 CFR 1910.146
Excavation and Shoring	Safe access and egress to all excavations, including ladders, steps, ramps, or other safe means of exit for employees working in trench excavations 4 feet (1.22 meters) or deeper.	29 CFR 1926 Subpart P
Lift Plan	Jobsite lifting with hydraulic	29 CFR 1926.252

	excavators and backhoes is routine and lift capacity with rigging of each lift must be established.	29 CFR 1926.601 29 CFR 1926.1400

Review and Acceptance of the Contractor's health and safety plan only signifies that the plan generally conforms to the requirements of the contract; it does not relieve the contractor of the responsibility for providing employees with a safe and healthful work environment.

The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Director for approval.

It shall be the Contractor's responsibility to maintain safety in the construction and maintenance zones within the project's vicinity. If the Contractor hires law enforcement during the project's duration, it shall be funded as an element in the Contractors Indirect Cost buildup presented at time of bid.

All damage, injury or loss to any property referred to in paragraphs b and c caused, directly or indirectly, in whole or in part, by the Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by the Contractor at no direct payment. The Contractor's duties and responsibilities for the safety and protection of the work shall continue until such time as all the work is completed and the Director has issued the Notice of Project Acceptance.

In emergencies affecting the safety of persons or the work or property at the site or adjacent thereto, the Contractor without special instructions or authorization from the Director, is obligated to act, at his discretion, to prevent threatened damage, injury, or loss.

The Contractor must protect and support all water, sewer, drain, and gas pipes or other conduits and buildings, walls, fences, or other properties which are liable to be damaged during the execution of his work. He shall take all reasonable and proper precautions to protect persons, animals, and vehicles of the public from injury, and shall erect and maintain a fence or railing around all excavation and place a sufficient number of warning lights about the work and keep them burning from twilight until sunrise and shall employ one or more watchmen as an additional security. He must, as far as practicable and consistent with good construction, permit access to private and public property and leave fire hydrants and catch basins free from encumbrances. He must restore, at his own expense, all injured property caused by any act of omission on his part, or on the part of his agent, including but not limited to sidewalks, curbing, pipes, conduits, sewers and other public or private property, to a condition as good as it was when he entered upon the work.

In case of failure on the part of the Contractor to restore such property or make good such damage, the City may upon forty-eight (48) hours' notice proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary, and the cost thereof, will be deducted from any monies due, or which may become due, under this contract.

Safety is the responsibility of the Contractor. There will be no direct payment for erecting and maintaining a fence or railing around excavations, placing warning lights and providing watchmen and supporting and protecting utilities as prescribed herein and the cost thereof shall be included in the prices bid for pay items in the Contract. There will be no direct payment for providing and supervising

all safety precautions and programs in connection with the work and the cost thereof shall be included in the prices bid for pay items in the contract.

SECTION 1.08 - COORDINATION WITH UTILITY COMPANIES

A. All utility companies, including the Sewerage and Water Board, shall be contacted three working days prior to starting work to verify utility locations, depth of lines, etc., prior to starting demolition.

B. Contractor is responsible for contacting all utility companies so the utility companies can coordinate their efforts to move into the area to make whatever revisions they have to make to their utility installation.

C. Care shall be taken in excavation around all utility lines. Utility service shall be maintained at all times for adjacent property owners.

D. The Contractor shall notify the electric, gas, telephone, communications, and cable utility companies, utility owners, etc., three working days in advance of digging near or across their conduits or buried cables.

E. The Sewerage and Water Board must be notified three working days in advance of laying sewer and water lines called for in this contract.

F. Damage that may occur to any utility shall be repaired and paid for by the Contractor, except as noted to be paid for as a Bid Item.

G. The Contractor shall notify Entergy, S&WB and all other utility companies before any demolition takes place. The utility companies and the Contractor's representative should open all covers in the area and inspect and note any damage to frames, lines, manhole walls, etc. Any additional damage that occurs during demolition shall be repaired at the Contractor's expense. The utility companies have the option of repairing items and back charge the Contractor for such repairs.

H. UTILITY SERVICE: Maintain existing utilities, keep in service, and protect against damage during demolition operations.

Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to the governing authorities.

The Contractor is hereby cautioned that many of the underground utility pipes, lines, conduits, cables, etc., are located immediately below the existing grade. Location and elevation of all utility lines have been established based on information furnished to the Engineers by the respective utility companies. However, location and depth of utility lines may vary from those shown on the Plans and Profiles.

The Contractor shall be required to provide property owners a minimum forty-eight (48) hours advanced notice for any foreseen or planned interruption of utility service(s).

SECTION 1.09 - COOPERATION WITH UTILITIES

A. The Contractor shall cooperate with officials of utility companies to avoid delays in completion of work due to non-removal or non-adjustment of utilities.

B. Some utility facilities will be removed, relocated, or adjusted in accordance with agreements between the City and utility companies. Such work may be underway concurrently with the Contractor's work and within construction limits covered by this contract.

C. Contractor shall consider in his bid all permanent and temporary utilities lines and appurtenances in their present or relocated positions and that no additional compensation will be allowed for delays, inconvenience or damage sustained by him due to interference from the said utility lines and appurtenances or the operation of moving them.

SECTION 1.10 - ABOVE GROUND UTILITIES

A. The Contractor shall exercise due care and caution to prevent damage to Fire Hydrants, Traffic Lights, Street Light Standards, Parking Meters, Utility Poles, Guy Poles, etc., whenever it is necessary to remove any type of pavement around such items. The Contractor shall repair and/or replace any such item damaged by his operations to the satisfaction of the utility's owner.

B. It shall be the responsibility of the Contractor to notify the appropriate owners of such facilities in the way of construction so that they can have representatives present, if they so desire, when the Contractor is performing such work around their facilities.

SECTION 1.11 - EXISTING UNDERGROUND AND OTHER INSTALLATIONS

Existing underground installations are indicated on the drawings only to the extent such information was made available to or discovered by Engineer in preparing the drawings. There is no guarantee as to the accuracy or completeness of such information, and all responsibility for the accuracy and completeness thereof if expressly disclaimed.

The Contractor shall be responsible for the preservation of all public and private property, monuments, highway signs, telephone lines, other utilities, etc., along and adjacent to the Work; shall use every precaution necessary to prevent damage to pipes, conduits, and other underground structures; and shall protect carefully from disturbance or damage all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their locations and shall not remove them until directed by the property owners. The street and highway signs and markers, that are to be affected by the Work, shall be carefully removed when the work begins and stored in a manner to keep them clean and dry. The Contractor must obtain all necessary information in regard to existing utilities, and shall give notice in writing to the owners of the property or the authorities in charge of streets, gas, water, pipes, electric, sewers and other underground structures, including conduits, railways, poles and pole lines, manholes, catch basins, fixtures, appurtenances, and all other property that may be affected by the Contractor's operations, at least three (3) working days before his operations will affect such property or as specified elsewhere. The Contractor shall not hinder or interfere with any person in the protection of such work or with the operation of utilities, at any time. When property or the operation of railways, telephone lines, telegraph lines or other public utilities are endangered, the Contractor shall at his own expense, maintain flagmen or watchmen and any other necessary precautions to avoid interruption of service or damage to life or property, and shall promptly repair, restore, or make good injury or damage caused by his operations in an acceptable manner.

SECTION 1.12 - UTILITIES EXPLORATION

Utilities exploration shall include all labor, materials, and equipment necessary for the Contractor to conduct a field investigation including exploratory excavations in advance of construction for the purpose of determining the existing location, size, and depth of all underground utilities shown or identified on the Drawings, any and all meetings with representatives of each utility, and furnishing the information to the Engineer. In addition to those utilities indicated on the Drawings, the Contractor shall also make exploratory excavations of all utilities which could impact the construction. This work shall include all test pit excavations including backfilling with sand, compaction, dewatering, pavement removal and replacement, and other related items. No direct payment shall be made for utility exploration.

SECTION 1.13 - SECURITY

Contractor shall be responsible for protection of the site, and all work, materials, equipment, and existing facilities thereon, against vandals and other unauthorized persons.

No claim shall be made against the City by reason of any act of an employee or trespasser, and Contractor shall make good all damage to the City's property resulting from his failure to provide security measures as specified.

Security measures shall be at least equal to those usually provided by the City to protect his existing facilities during normal operation, but shall also include such additional, security fencing, barricades, lighting, watchman services, and other measures as required to protect the site.

SECTION 1.14 – TEMPORARY UTILITIES

A. Temporary Lighting: Contractor shall provide, at his expense, temporary lighting facilities for prosecution and inspection of the work. These facilities shall be installed and maintained by the Contractor. Locate in such a manner as to result in the least interference with work upon the Project site and existing facilities. Contractor shall also provide temporary street lighting where the existing street lighting is disrupted due to construction activities.

B. Temporary Power: Contractor shall provide, at his expense, temporary power facilities required for prosecution and inspection of the Work. These facilities shall be installed and maintained by the Contractor. Locate in such a manner as to result in the least interference with work upon the Project site and existing facilities.

C. Temporary Water: The Contractor shall make the necessary arrangements, at his expense, for securing and transporting all water required in the construction, including water required for the mixing of concrete, sprinkling, flushing, flooding, or jetting, and including any temporary pipeline or equipment which may be necessary to make use of such water.

D. Temporary Sanitary Facilities: The Contractor shall provide, at his expense, adequate portable sanitary facilities on the site and shall be obscured from public view to the greatest extent possible. They shall be cleaned, deodorized, and disinfected each day construction is in progress, all at the Contractor's expense. If toilets of the chemically tested type are used, at least one toilet will be furnished for each 20 workers, in addition to the above requirement. Contractor shall enforce the use of such sanitary facilities by all personnel at the site.

SECTION 1.15 – INCLEMENT WEATHER DAYS

For this Contract, an Inclement Weather Day shall be defined as any day on which construction operations were unable to proceed for at least five (5) continuous hours of the day or 65% of the regular working hours, whichever is greater. Should the Contractor prepare to begin work on any given day in which inclement weather, or the conditions resulting from inclement weather, prevent work from beginning at the usual starting time, and the crew is dismissed as a result thereof, the day will be declared an Inclement Weather Day, whether or not conditions change during the day, resulting in the rest of the day becoming suitable for work. The Contractor shall notify DPW within 48 hours of an Inclement Weather Delay listing the critical path tasks affected by the delay.

SECTION 1.16 - AS-BUILT DRAWINGS

Contractor shall provide manually marked-up "red line" drawings to the project engineer for use in creating "as-built" AutoCAD® record drawings of the project. The original contract drawings shall be modified to show all additions, deletions, and other changes made during construction. Drawing modifications shall include both a markup of the graphics and a brief written explanation describing any changes. Wherever applicable, revisions shall include updates to details, sections, index, notes, drawing callouts, plan, and plan & profile views.

Each Sheet of the red line drawings shall include a stamp showing: RED-LINE DRAWINGS, name of Contractor, Superintendent's signature, and Date. Drawings shall also include: All field changes, any change in line or grade from the original drawings, location of mains and house service connections, and the limits of pavement removal and replacement.

To promote accuracy; red line drawings shall be updated on a bi-weekly basis with copies provided to the Director as work is completed for each block. Redlines shall be jointly reviewed/developed by the Contractor and Resident Inspector and discussed at each construction progress meeting. The Contractor shall furnish a final set of redline drawings prior to final inspection. The Contractor shall furnish redline drawings at no direct payment.

SECTION 1.17 - PROGRESS MEETINGS & SCHEDULE REQUIREMENTS

A. Progress meetings shall be scheduled biweekly or as requested by the Director.

B. Location of Meetings: The project field office of the Contractor or as approved by the Director.

C. Attendance: Director's Representative, Contractor, subcontractors, and suppliers as appropriate to the agenda, others as required.

D. Requirement: In addition to an updated approved schedule, the Contractor shall also provide a detailed two week look ahead schedule demonstrating the block locations along with the scope to be performed and present it to the Project Team as shown on the agenda. The Project Team shall review the requested schedule at the progress meeting and agree on an approved list of locations and scope of work. Contractor to provide CPM schedule, two-week look ahead schedule, RFI log, Plan Change Log, Submittal Log, and invoice status at each progress meeting.

E. Format: The Department will provide a two week look ahead schedule template at the Pre-Construction meeting, which shall be completed prior to all progress meetings. The Contractor's CPM schedule shall include the following criteria:

1. Schedule shall have a title that includes the DPW Project ID and name.
2. The project schedule shall depict all field activities necessary to complete the work.
3. Activities shall be sufficiently detailed to include the block number, and a start/end date.
4. All schedule activities should be fully integrated, having predecessors and or successors.
5. Gantt chart shall show the predecessors and successors of each activity.
6. Critical Path Activities should be uniquely identified in the Gantt chart legend.
7. Schedules shall have a progress line in the Gantt chart that represents contractors progress to the date of the request.

F. Obligation: The Contractor shall abide by the schedule shown on the approved two week look ahead schedule. The Contractor shall not deviate from the approved schedule at any time, without obtaining prior approval. Shall deviations of the approved schedule be required, the Contractor shall submit deviations, in writing, requesting approval of the new locations and scope of work.

G. Repercussion: Failure to adhere to the approved two week look ahead will put the contractor in default and may result in a stop work order or termination of the contract for cause. This includes all work deviated from the approved schedule, including subcontractor work.

SECTION 1.18 – PRE-CONSTRUCTION VIDEO SURVEYS

Mandatory Pre-Construction Video Surveys are to be performed by the Contractor. Video Surveys are to be turned into the Owner before the Contractor's first invoice is to be processed. There shall be no direct payment for the pre-construction video surveys.

SECTION 1.19 – CONTRACTOR PROGRESS PAYMENT INVOICING AND DOCUMENTATION

Contractor shall be required to provide a detailed breakdown of each payment request that includes a summary of the work completed for each bid item by each municipal block. Additionally, a summary of the work completed for each bid item for each intersection, identified as "Intersection of (insert street name) Street and (insert cross street name) Street" shall be provided For quantification purposed blocks begin/end at the apparent right-of-way line of intersecting streets as shown on the plans. Contractor shall be required to provide separate invoices for the following categories:

- A.1.1 City of New Orleans Department of Public Works FEMA Eligible work items,
- A.1.3 City of New Orleans Department of Public Works FEMA ADA Eligible work items,
- A.2 City of New Orleans Department of Public Works non-FEMA Eligible work items,
- B.1.1 Sewerage and Water Board of New Orleans FEMA Eligible work items,
- B.1.2 Sewerage and Water Board of New Orleans FEMA ESSA Eligible work items,
- B.1.3 Sewerage and Water Board of New Orleans ADA Eligible work items,
- B.1.4 Sewerage and Water Board of New Orleans additional FEMA Eligible waterline work items,
- B.2.1 Sewerage and Water Board of New Orleans Water non-FEMA Eligible waterline work items,

- B.2.2 Sewerage and Water Board of New Orleans Water non-FEMA Eligible SSERP work items,
- B.2.3 Sewerage and Water Board of New Orleans non-FEMA Eligible sewer work items,
- B.2.4 Sewerage and Water Board of New Orleans non-FEMA Eligible drainage work items

The Director will provide invoice and form templates, and direction to the Contractor on which work is non-FEMA Eligible.

Each contractor payment request shall include:

1. Two (2) original invoices certified by the Engineer and SWB (if applicable) signed in blue ink. All invoices shall include the FEMA PW number and the DPW reference number. Invoices shall be submitted monthly and shall include the billing period.
2. Two (2) original DPW STS-651 and PWC-15 forms certified by the Engineer and SWB (if applicable) signed in blue ink.
3. Two (2) Compact discs with all invoice forms and backup including but not limited to:
    a. Cover letter containing: Date, project ID, project name, invoice No., pay Period, Invoice amount, company logo, Purchase Order No., Service Contract No., FEMA PW No. 21032 and SWB PW No. 21031 (if appliable).
    b. Pre and post construction photographs for all completed work
    c. ADA ramp breakdown by location per funding source
    d. DPW cost estimate STS-651 and PWC-15 Excel workbook.
    e. Certified payroll (if required)
    f. Updated approved CPM Schedule
    g. Approved Weather and Working Days report
    h. BMP/SCM Inspection Report with weather conditions noted and if rain occurred, appropriate photographs documenting Stormwater Pollution Prevention Plan Stormwater Control Measures in place.

SECTION 1.20 - SEQUENCE OF CONSTRUCTION

A. Section 1.05 of these Construction Specifications and Section C126 of the General Specifications are hereby supplemented as follows:

B. The Contractor shall submit construction sequence and schedule to the Director for approval prior to the start of construction in accordance with Section C126. Contractor shall be required to follow the approved sequence and schedule unless he has first obtained written approval from the Department for a deviation.

C. Contractor shall, within three (3) days of initiating any work on a street, prepare and submit to the Department for review, a practical critical path schedule and phasing plan showing the order in which the Contractor proposes to carry on the work, the dates on which he will start the phases of the work, and the anticipated dates for completion of the same. The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion at any time. The Contractor shall enter on the chart the actual progress and present the updated information at each bi-weekly contractor/owner construction meeting or at such intervals as validated by the Director and shall provide electronically to the Director.

D. To facilitate Director testing and inspection requirements once Contractor starts utility work the utility installations shall be executed on a continuous basis until substantial completion of all of the utility work. Contractor shall substantially complete all work, including pavement restoration, for any continuous roadway segment with water and/or sewer work prior to initiating operations on roadway segments consisting of only roadway pavement restoration work, unless approved in writing by the Director. Once Contractor mobilizes to start work on a roadway segment Contractor must complete all approved work, including any necessary utility repairs or relocations in a continuous fashion within the approved scheduled time and shall maintain adequate personnel and equipment on site until such time all work is substantially complete. Work to be substantially completed includes, but is not limited to, utility replacement or rehabilitation, including all services, connections, and tie-ins; roadway repairs; curbs and gutters; drive aprons; sidewalks; ramps; proper backfilling of all cavities; and other incidental work in accordance with the project plans and specifications. Any work restricting access to any street, drive, or sidewalk shall be completed prior to substantial completion being granted. If to meet the approved schedule the contractor elects to work on multiple sites simultaneously the contractor must ensure the proper resources are available in order to adequately handle all the work in progress as specified. Contractor is responsible for performing all tasks to substantially complete all work in a concentrated area prior to moving onto another work area.

E. When scheduling work Contractor shall phase limits of construction to allow completion of all pavement work within ten (10) working days unless otherwise approved by the Director. The Contractor shall use traffic aggregate or steel plates for pavement activities exceeding ten (10) working days to minimize impacts to traffic flow in accordance with Section C402 in the General Specifications. Pavement repair shall commence immediately following the acceptance of the waterline installation on each block. In addition, Contractor shall only perform utility trenching operations ahead a distance sufficient for the length of pipe installation planned for the current workday, plus a reasonable additional distance ahead to reveal any obstructions that may necessitate changing the line or grade of the pipe. All other associated work within the scheduled work limits shall be completed in accordance with the approved critical path schedule and phasing plan.

F. Contractor shall phase all roadway construction including intersections to allow for the maintenance of traffic and emergency vehicle access.

G. Contractor shall notify the Sewerage & Water Board and the Director in writing at least two (2) working days prior to mobilizing and starting any utility work, including trenching, and at least two (2) working days prior to the day utility tie-ins to the existing system will be made and service will be transferred to the new main. These notifications shall be in addition to any other notification in accordance with Sewerage & Water Board requirements and per the project plans and specifications. Contractor shall notify the Director in writing at least two (2) working days prior performing any roadway restoration work detailed on the plans or include in approved plan changes, including removal operations.

H. Contractor shall receive no additional compensation for any work related to the means, methods, techniques, scheduling, sequences, or procedures that are required to complete the project in accordance with the project plans and specifications.

I. [RESERVED]

J. [RESERVED]

K. [RESERVED

SECTION 1.21 – SEWER SYSTEM EVALUATION AND REHABILITATION PROGRAM REQUIREMENTS

[RESERVED]

A. This contract does not include work commissioned by the Sewerage & Water Board of New Orleans under their Sewer System Evaluation and Rehabilitation Program in response to an EPA Consent Decree. However, any sewer rehabilitation work fulfilled under this contract shall meet the sewer rehabilitation requirements included herein this section. Contractor shall refer to sections 2.07 through 2.12 and Section ~~3.21~~ 3.22 for additional sewer rehabilitation requirements for consent decree and non-consent decree sewer rehabilitation work.

A. This contract includes work commissioned by the Sewerage & Water Board of New Orleans under their Sewer System Evaluation and Rehabilitation Program in response to an EPA Consent Decree. Bidders and the contractor are required to become familiar with the consent decree requirements and the documents can be viewed on the S&WB internet website (https://www.swbno.org/docs_consentdecree.asp). Contractor shall direct the full force of his efforts toward completion of the work within the time stipulated. The S&WB must adhere to strict milestone requirements and the fines for the failure to meet these milestone requirements are significant. Contractors may be held liable if they are found to be part cause for the S&WB to not meet the obligatory milestone requirements.

1. The parties agree that the work and duties required to be performed in accord with the Contract Documents shall meet and comply with all environmental requirements to include the laws and regulations of the United States and the State of Louisiana, and shall satisfy and be in accord with the provisions of the Consent Decree with attachments entered into by and between the BOARD and CITY with the EPA and the UNITED STATES in the matter entitled "UNITED STATES OF AMERICA V. SEWERAGE AND WATER BOARD OF NEW ORLEANS, ET AL," No. 93-3212, United States District Court, Eastern District of Louisiana and all modifications thereof, which provisions the CONTRACTOR must acquaint itself and become familiar with prior to bidding on said Contract.

2. The Contractor specifically acknowledges the Board has made said Decree with attachments available for review and CONTRACTOR has read said decree with attachments or the pertinent parts thereof and is familiar with the terms and conditions thereof, and will pay any fines or penalties that will be assessed against the BOARD or CITY (or reimburse them therefore) which are imposed by the terms of said decree with attachments resulting from the actions of CONTRACTOR in performance of or its failure to perform its duties under this Contract.

3. Should the Board be penalized under the Consent Decree for not meeting these milestones, the Contractor shall be responsible for reimbursement to the Board of those penalties as identified in Paragraph 79 of the Consent Decree.

B. This contract also includes work commissioned by the Sewerage & Water Board of New Orleans that is authorized and deemed reimbursable by FEMA and this work is also subject to the same milestone deadlines as the work described in Paragraph 1.21A.

C. Contractors shall prepare a separate itemized invoice for work performed under paragraph 1.21A and a separate itemized invoice for work performed under paragraph 1.21B; these invoices shall be submitted as attachments to the regular partial payment applications.

D. Upon receipt of the "Notice to Proceed" and prior to commencement of any sewer rehabilitation work on this contract, the Contractor shall be required to furnish a combined cost breakdown and progress schedule. The progress schedule shall list all sewer line segments and sewer manholes by the S&WB asset ID shown on the plans with anticipated start dates, completion dates, responsible contractor (or sub-contractor) and value of work. This document shall be updated monthly and will be used to document the Contractor's compliance with the consent decree milestone dates.

1. Contractor shall sequence all sewer rehabilitation work to precede other utility work and shall progress in an uninterrupted manner.

2. Contractor shall prioritize any and all "Find and Fix" work at the beginning of the contract and submit the coded CCTV DVDs to the S&WB Networks Engineering for review and concurrence on any rehabilitation recommendations.

3. All sewer line segments requiring any excavated repairs and CIPP lining shall have all pipe and service repairs completed prior to the installation of the CIPP liner.

4. All sewer manholes requiring rehabilitation to the frame and cover shall have this work completed prior to the installation of the manhole liner (if required).

E. Contractor is responsible to obtain all S&WB "Wye Cards" and other available records in order to locate sewer service connections prior to any pavement removal or selective site demolition corresponding the sewer rehabilitation program. Contractors may obtain Wye Cards from the S&WB House Connections Department located at 625 St. Joseph Street in New Orleans.

F. Contractors shall layout all pavement and site restoration work prior to saw cutting, pavement demolition or saw cutting. Where pavement and/or site restoration for the DPW program and the SSERP program overlap and the pavement or other site restoration is FEMA eligible under DPW, the restoration shall be invoiced to DPW as per this contract's requirements for FEMA eligible work. Pavement and site restoration eligible under the DPW FEMA program will not be paid for under the S&WB SSERP or S&WB FEMA program.

G. The Contractor shall develop a plan to report, contain/by-pass and clean up all sewage spills or unanticipated hazards that would adversely affect the health of the community.

1. A report shall be given immediately to the S&WB Emergency Desk (942-2920). The information communicated in the report must include location, nature of problem, name of project, name of company performing work, name of the individual making the call, time of incident and other pertinent data as necessary. It should be communicated as a Priority I incident.

2. The plan must consider all available options for immediately eliminating the discharge or diverting to a containment area, as well as options for containing the contents of, for example, a damaged main which will be evacuated during repair work.

3. The Contractor will by-pass, direct, and temporarily store sewage as the situation dictates to avoid contamination of soil, street, etc. that would place the citizens in contact with waste products. If these sewer wastes reach a canal it will be the Contractor's first effort to remove the contamination. Drainage pumping from the contaminated canal will be stopped.

4. In those circumstances when sewage cannot be removed from the canal system because of location or weather, where possible the procedures will be dilute and flush the canals.

5. For public areas that have come in contact with overflowed sewage, the Contractor will take action that is acceptable to the Engineer to implement disinfection procedures. Generally, these procedures will involve an application of an oxidizing agent such as a dilute chlorine solution on constructed surfaces (streets, driveways, walls, etc.) and a lime application on organic surfaces (lawns, soil areas, etc.). The level and extent of disinfection will be determined in the field. It is not the intent of this disinfection procedure to infer that total pathogen destruction has been achieved, nor that any other level of disinfection has been achieved.

6. The Contractor is responsible for all costs, fines or penalties associated sewerage spills or other unacceptable community health hazards or for the Contractor's failure to meet the provisions of this section, paragraph 1.21F, including but not limited to fines levied by the Louisiana Department of Environmental Quality or the EPA.

H. Contractors shall refer to sections 2.01 through 2.12 and section ~~3.22~~ 3.23 for technical specifications and special pay items specific to the work in this section.

I. Submittal Requirements & Procedures for consent decree work:

1. Transmittal Document (letter or form) must include the following information in each submittal.

a. Project name.
b. Date.
c. Name of Engineer.
d. Name of Construction Manager.
e. Name of Contractor.
f. Name of firm or entity that prepared submittal.
g. Names of subcontractor, manufacturer, and supplier.
h. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier, and alphanumeric suffix for resubmittals.
i. Category and type of submittal.
j. Submittal purpose and description.
k. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
l. Drawing number and detail references, as appropriate.
m. Indication of full or partial submittal.
n. Location(s) where product is to be installed, as appropriate.
o. Other necessary identification.
p. Remarks.

q. Signature of transmitter

3. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Engineer or Construction Manager on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
4. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

5. Engineer and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

6. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineer's and Owners.

7. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

8. Certificates:

    a. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.

    b. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

    c. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

    e. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

    f. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

9. Typical Submittals List for Sewer Construction:

Submittal #	Submittal Description
1	Contractor's Emergency Contact Numbers
2	List of Subcontractors
3	Notice of Construction to Parks & Pkwys Dept.
4	Construction Notice (Notification to Residents)
5	Site Permits for Staging/Storage Areas
6	Approved Traffic Plan with Site Reference List
7	Water Meter Serial Numbers w/ current readings
8	40-hour Work Week Schedule
9	Construction Debris Disposal Location
10	Sewage Debris Disposal Plan
11	Sewer Flow Control Plan
12	Photo of Typical Pipe Plug with ID Tag
13	Safety Plan & MSDS
14	Pre-Construction Videos with Video Logs
15	Post-Construction Videos with Video Logs
16	Site Specific Flow Diversion (Bypass Pumping) Plan
17	MH - Liner Material
18	MH Frame & Cover Castings
19	MH - Casting Sealant
20	MH Grout
21	MH SS Inflow Dish w/ "Load Test Verification"
22	PVC Pipe & PVC Fittings, (6" through 15")
23	PVC Pipe & PVC Fittings, (18" through 36")
24	Repair Couplings
25	Saddle Fittings
26	Hydrostatic Testing Plan
27	Start-Work Notice - 48-hours prior to mobilization
28	Pipe Bursting-Method
29	HDPE Pipe
30	HDPE Fittings
31	Pipe Bedding Gradation Report
32	Geotextile Fabric - Non-Woven
33	Sand Backfill Gradation & Proctor
34	CIPP - Wet-Out Facility
35	CIPP - Felt Liner Material
36	CIPP - Resin
37	CIPP - Hydrophilic Rubber Seal
38	CIPP - Chemical Grout
39	CIPP - Installation Method
40	Post-Construction CCTV: VHS Video Tapes & CDs with Access Database & Hardcopy Reports

NOTES:

- This list of submittals is typical for SSERP gravity sewer projects. However, the contract may require submittals that are not on this list, and not every item listed may be in this contract.
- Each submittal must comply with Section 1.21.

Each *Request for Clarification* must be submitted separately and in writing to the Engineer and include all relevant details.

SECTION 1.22 – WATER POINT REPAIRS

A. ~~**The Contractor shall furnish all labor, supervision, materials, and equipment required for the repairs to the water distribution system.**~~

~~**B. All workmanship and materials shall conform to Section F of the S&WB General Specifications, S&WB Dwg. No. 7260-W, S&WB Standard Drawings and Section C741 of the Department of Public Works General Specifications for Street Paving, except as noted herein.**~~

~~**C. The existing utilities shown are approximate. The Contractor shall verify the location of utilities in the field and shall protect them from damage.**~~

~~**D. The Contractor shall examine the locations of every plan sheet, well in advance of any planned construction within that block, and report all leaks to the S&WB by calling in 529-2837**~~

~~**E. Damages to the water distribution system caused by the Contractor, shall be repaired by the Contractor at no direct pay, or repaired by the S&WB at the Contractor's expense. If in the opinion of the Engineer that damages to the water distribution system were not a result of the Contractors normal construction activities, the contractor will be paid at the unit prices in the bid form. The Contractor will be furnished a list of the locations of water and sewer house connections. This listing is from S&WB records and the listed locations could vary from the actual locations. It is the Contractor's responsibility to verify the location of these services and to protect them from damage. Furnishing this information should not be construed as a waiver of the Contractor's liability, but rather an attempt on the part of the S&WB to minimize the Contractor's hazards.**~~

~~**F. Point repairs of an existing water main shall consist of recaulking an existing lead bell joint and installing a bell joint clamp, repair a leak on the water main by installing a full circular stainless steel repair clamp or replacing a section of existing water main.**~~

~~**G. Point repairs of existing water house connections 5/8" to 2" shall consist of replacing the entire service connection from the water main to the meter. Existing 5/8" and ¾" services shall be replaced with 1" Polyethylene (PE) tubing. All other existing water house connections shall be replaced with the same size as the existing connection, unless otherwise noted. There shall be no splices allowed in the new or existing water service connections unless there is a new main being installed at this location, or if directed by the Engineer.**~~

~~**H. All lead service lines (LSL) exposed within the project limits, regardless of status of utility replacement at the location of the LSL, shall be reported to the S&WB project representative immediately if directed to replace the LSL must be replaced from the water main to the meter box with no splices. Temporary splices or repairs of leaking or damaged LSLs are not allowed. If directed by S&WB project representative to relocate water meter location, special care shall be taken to ensure the water service between the water meter and the property line is not of lead material. If the service line between the meter and the property line is of lead material, coordination with the property owner shall be required to ensure the entire LSL is replaced in tandem with no splicing between the water main and the structure. The LSL**~~

~~**shall be replaced once written approval is provided by S&WB representative. Resident must receive S&WB-approved written notification at the time any LSL is located and/or replaced."**~~

~~**J. Contractor shall refer to section 2.12 and section 3.22 for technical specifications and special pay items specific to the work in this section.**~~

A. The Contractor shall furnish all labor, supervision, materials, and equipment required to complete items in this section.

B. All workmanship and materials shall conform to Section C741 of the Department of Public Works General Specifications for Street Paving, S&WB Dwg. No. 7260-W, and S&WB Standard Drawings, except as noted herein.

C. The Contractor shall examine the locations of every plan sheet, well in advance of any planned construction within that block, and report all leaks to the S&WB by calling in 52-WATER (529-2837).

D. Damages to the water distribution system caused by the Contractor, shall be repaired by the Contractor at no direct pay, or repaired by the S&WB at the Contractor's expense. If in the opinion of the Engineer that damages to the water distribution system were not a result of the Contractors normal construction activities, the contractor will be paid at the unit prices of the appropriate bid item.

E. All lead service lines (LSL) exposed within the project limits, regardless of status of utility replacement at the location of the LSL, shall be reported to the S&WB project representative immediately. Resident must receive S&WB-approved written notification at the time any LSL is located and/or replaced." The LSL shall be replaced once written approval is provided by S&WB representative.

F. If directed to replace the LSL, the service connection must be replaced from the water main to the meter box. Temporary splices or repairs of leaking or damaged LSLs are not allowed. If directed by S&WB project representative to relocate water meter location, the pipe material must be identified between the meter box and property line. If the service line between the meter and the property line is of lead material, the Contractor and S&WB shall coordinate with the property owner to ensure the entire LSL is replaced between the water main and the property.

J. Contractor shall refer to section 2.12 and section ~~3.22~~ 3.23 for technical specifications and special pay items specific to the work in this section.

SECTION 1.23 – CONTRACT TASK ORDERS

THIS SECTION NOT APPLICABLE FOR THIS PROJECT. THIS PROJECT WILL NOT BE SUBJECT TO TASK ORDER REQUIREMENTS.

The successful bidder shall be awarded the work for a period of | Contract Duration | working days starting from the day after the Overall Notice to Proceed, which shall constitute the overall duration or contract period. The contract prices are firm during the entirety of the project.

The quantities given in the proposal form are approximate for the comparison of bids only. The

City of New Orleans Department of Public Works (DPW) reserves the right to purchase only such items and in such quantities as needed for the duration of this contract after acceptance of the lowest responsible bid. Additional unit price quantities will be in accordance with Section C136. The City also reserves the right to perform part of the work with its in-house forces or hire other contractors for similar work in the project area during the contract period.

The overall project scope shall be broken down and delineated as individual Task Orders in contract documents. Each Task Order may consist of one or multiple plan sheets, which will serve as the scope for that specific Task Order to include all utilities, roadway, and associated infrastructure work per the associated plan sheets.

Contract Task Orders shall be issued to the Contractor individually or grouped with multiple Task Orders at once, at the discretion of the Engineer and DPW. Prior to issuance of a Task Order, Contractor, Engineer and DPW will hold a Pre-Task Order Meeting to discuss scope, schedule, and delivery strategy. Task Order durations shall be determined by the Contractor during the Pre-Construction Meeting. Exhibit 1, attached at the end of this section, is a sample Task Order to be utilized for this process.

All work within the limits of each Task Order shall be shown to the Contractor by a representative of the Department of Public Works and/or Engineer prior to commencing work. Appropriate drawings and details will be furnished to the Contractor with each Task Order. Work sites may be non-continuous blocks for an individual task order; however, every effort will be made to consolidate the work to minimize scattered work sites.

Each Task Order will be issued with appropriate drawings or other attachments and will designate a specific Task Order number. All correspondence, billing, etc., pertaining to the work should reference the Task Order number and the current job number designation.

The Contractor shall begin the work within Ten (10) days after issuance of an executed task order and a corresponding Task Order Notice to Proceed. If the Contractor fails to start a task order within Ten (10) days of the Notice to Proceed date or leaves the work incomplete for over a 30-day period, the City shall proceed in accordance with Sections C123 and C126 or shall approach the next lowest bidder to start and/or complete the Task Order(s) or utilize other contractors to perform the work. However, if the Contractor has a valid reason for the lack of progress or delayed start of an issued Task Order that is beyond the Contractor's control, he must obtain written permission from the Engineer or DPW for the stipulated delay.

DPW reserves the right to put a Task Order on hold at any time as needed, without reason. If the scope of work is discontinued, the Contractor will be compensated only for the completed and accepted items of work. DPW reserves the right to modify, add, or remove scope within an issued Task Order as needed to best serve the Project. There shall be no compensation for work performed outside the limits of the issued Task Order(s). Temporary waterline tie-ins shall be abandoned, removed, and tied into the adjacent mainline in accordance with Section C741 in the General Specifications at no direct pay.

Beyond the initial Task Order issued for said Project, additional Task Orders shall be issued only when the previously issued Task Order is deemed Substantially Complete by the Engineer and DPW. The Contractor can request additional task orders to be issued and approved by DPW Director. Substantial Completion, as defined for this purpose, shall be determined by one or more of the

following criteria:

- Issued work within a given Task Order is 95% complete by the planned scope and cost or agreed upon scope and cost;

- All Utilities, Roadways & Driveways within the Task Order are complete and open to traffic;

- Any minor incomplete work or Punch List items which typically consist of addressing areas in need of minor backfilling, completion of pavement striping, necessary yard restorations, patching, site cleanup, etc.

Additional Task Orders on the project shall only be issued when the preceding task orders are either complete or substantially complete, as defined above. The Contractor can request additional task orders to be issued and approved by DPW Director. If the Contractor fails to complete a task order within the agreed time frame or leaves the work incomplete or inactive for a period of Thirty (30) days, absent any previously agreed upon stipulated delay claim, DPW shall proceed in accordance with Sections C123 and C126 and reserves the right to complete the remainder of that task order, as well as all additional remaining work included in the overall project scope by either the use of City work forces or other contractors. The Contractor shall notify DPW within 48 hours of a critical path task delay listing the critical path tasks affected by the delay.

It is understood by the Contractor that the quantities provided in the schedule of bid prices are a fair approximation of the amount of work to be done, and that the sum of the products of the approximate quantities multiplied by the unit price bid constitutes the base bid price, which sum shall be used in the comparison of bids and the awarding of the respective contracts. The unit cost quantities represent a complete cost total, representing all work required to provide a completed project scope. The actual constructed quantities may vary from the quantities listed in the proposal form.

EXHIBIT 1
JIRR FEMA
Department of Public Works Project No. RRXXX
New Orleans, LOUISIANA
TASK ORDER 01

City of New Orleans
Department of Public Works

1300 Perdido St. – Suite 6W03
New Orleans, LA 70112

Estimated Cost: $ 3,874,648.57

Date Issued: February 25, 2021

Plan Sheets: 1-10, W01-W10, S-1 – S-10

Contractor: XX Construction, L.L.C.

Project No. FEMA RRXXX

You are hereby directed to commence work within 10 days of the date of this work order and complete all work, including restoration, within XX days, in accordance with project specifications. If this task order is not substantially completed within XX days, no further task orders will be issued.

See attached Plan Sheets for details of **Task Order 01**.

Description:

Task Order 01 contains XX sheets located within XX Neighborhood in Orleans Parish. **Special attention shall be given to the roadway elevations to ensure positive drainage to the adjacent catch basins.** All work described in the attached plan sheets is subject to field verification. Variations shall be approved by the Engineer. The following is a list of the plan sheets associated with Task Order 01.

Site Location	DPW Sheet(S)	SWB Sheet(s)
XXX	XX	XX
XXX	XX	XX
XXX	XX	XX

SIGNED:

Contractor.:_____DATE: _____

Engineer.:_____DATE:_____

CNO DPW.: _____DATE:_____

Attachments

SECTION 1.24 – PROCORE COLLABORATION SOFTWARE

COLLABORATION SOFTWARE

1. SUMMARY
    a. Utilize City-provided Procore construction management software (www.procore.com) to submit, track, distribute and collaborate on project documentation and action items.
    b. The intent of utilizing Procore construction management application is to reduce cost and schedule risk, improve quality and safety, and maintain a healthy team dynamic by improving information flow, reducing non-productive activities, reducing rework and decreasing turnaround times.
2. SOFTWARE USES
    a. Daily Log
        i. Daily log entry from web and mobile with automatic capture of daily weather conditions.
        ii. Attach photographs to entries directly from mobile.
        iii. Reporting capabilities to easily report on man-hours and activities for a certain time frame and contractor.
    b. Dashboards
        i. Dashboards that show the status of all currently assigned items with drill down capability to see the subject, assignee and due date of each item.
    c. Deficiency Tracking
        i. A means for recording, assigning and confirming completion of any deficiency or observation noted during the course of construction. Is accessible from web and mobile.
    d. Directory
        i. All team member's contact information that is accessible from web and mobile.
    e. Documents
        i. Storage location for miscellaneous project documents with the ability to have a folder hierarchy and privacy settings on folders.
        ii. No storage limit.
        iii. Download tracking.
        iv. Ability to revise and check out files, with access to all previous revisions.
    f. Drawings
        i. A system maintained current set of drawings on web and mobile, with access to all previous revisions as well.
        ii. Automatic hyperlinking capability for detail callouts.
        iii. Drawing markup capabilities on web and mobile.

iv. Ability to link RFIs, Submittals, Punchlist Items, Photos and Project Documents to the drawings.

v. Drawing Markups should be carried forward when new revisions are uploaded.

vi. Markups and linked documentation should be able to be public or private.

g. Financial Management

i. Manage contracts, payment applications and change orders through the software.

ii. View contracts and change orders from web and mobile.

h. Inspections

i. Create inspections from web and mobile.

ii. Create a deficiency item from an inspection that can be assigned and tracked to completion.

i. Meetings

i. Create, edit and view meeting minutes from web and mobile.

ii. Create action items with assignees and due dates from a meeting item.

j. Mobile Accessibility

i. Native mobile applications for iOS and Android phones at a minimum that provide access to relevant project documentation, including as-built versions of Drawings and Specifications, even when there is no internet access.

k. Photos

i. Upload and view photos from web and mobile.

ii. Markup photos from mobile to clarify anything important in the photo.

iii. Link photos to specific locations on drawings.

l. Punchlist

i. Create punch list items from web and mobile and link them to specific locations on the drawings.

ii. Distribute punch list items to all contractors, for contractors to mark them as resolved with photographic proof of resolution via mobile, and for the items to be marked as complete via mobile or web. .

m. Requests for Information (RFIs)

i. Create RFIs with assignees, due dates and attachments.

ii. Assignees can respond to RFIs both via the software and by responding to the system generated email.

iii. Auto-generated log of all RFIs.

n. Schedule

i. Display schedules from typical scheduling software such as Microsoft Project, Primavera P3, Primavera P6 or Asta Powerproject.

o. Specifications

i. Upload project specifications and manage them at the individual specification level.

ii. View and search specifications on web and mobile.

iii. Upload revisions to individual specifications and maintain all revision history.

iv. Auto-generated current specification log that provides access to the current version of each specification.

v. Link specifications to submittals and view the specification from the submittal.

p. Submittals

i. Upload a submittal register of all expected submittals.

ii. Create multi-step approval workflows for submittals, with reminder notifications for the current assignee.

iii. Upload any file type without size restrictions.

iv. Auto-generated submittal log.

3. TECHNOLOGY

a. Fully web based with mobile apps for Windows, iOS and Android phones.

b. Accessible without logging in through a virtual private network (VPN).

c. Works on the current version of Internet Explorer, Google Chrome, Mozilla firefox and Apple Safari browsers.

d. Can generate emails automatically, and all attachments are included in the emails via download links to avoid emails not being delivered due to size.

e. PDF output of forms such as RFIs, Submittals, Meetings, Change Orders, etc. should be available and customizable.

4. TRAINING AND SUPPORT

a. Support to all parties via email, phone and live chat at no additional charge.

b. Training in the form of self-paced learning videos as well as interactive webinars.

c. The contractor shall hold a kickoff meeting with the Owner and applicable consultants at the beginning of the project to discuss how the software will be used, routing & naming protocols, etc.

5. PROCEDURES

a. RFIs and Submittals

i. The Contractor will be responsible for submitting all RFIs and Submittals through the software and assigning them to the appropriate parties.

ii. Architects / Engineers / Consultants etc. are responsible for posting all responses to these items via the software, including all relevant attachments.

iii. The Contractor will distribute responses to all affected subcontractors and confirm agreement with the response by closing the item.

b. Construction Documentation

i. The Contractor will manage Drawings, Specifications and Documents in the software to ensure that the current version of all applicable construction documentation is available to the entire team via web and mobile.

ii. The Contractor will ensure that all RFIs which modify the current drawings are posted to the drawings and available via web and mobile within 24 hours of the RFI being responded to.

c. Contractor will record and distribute meeting minutes and action items via the software.

d. Contractor will take daily site photos and make them publicly available.

e. Punchlist

i. All punch list items will be managed through the software.

ii. Punchlist items will be created by the Contractor while walking with the Owner and applicable consultants.

iii. It will be at the Owner's discretion whether or not Punchlist Items can be closed while a representative from the Owner or applicable consultant is not present.

f. General

i. It is intended that the contractor will utilize the software for at least all functions identified in "Section 2 – Software Uses."

6. PRICING

a. The cost of Procore Technologies services has been paid in full by the Owner

b. The software allows for unlimited users to ensure that all parties have access to the system.

7. HARDWARE

a. The Contractor will ensure all necessary users have devices compatible with Procore

b. The Contractor will maintain at least one Procore compatible device on site with a screen of 7" or larger for ease of viewing, sharing, and discussing plans in the field.

~~8. SUMMARY~~

~~a. Utilize a web based construction project management collaboration software such as Procore (www.procore.com) to submit, track, distribute and collaborate on project documentation and action items.~~

~~b. The intent of utilizing a web based construction management application is to reduce cost and schedule risk, improve quality and safety, and maintain a healthy team dynamic by improving information flow, reducing non-productive activities, reducing rework and decreasing turnaround times.~~

~~9. SOFTWARE CAPABILITIES (including but not limited to)~~

~~a. Daily Log~~

i. Provide daily log entry from web and mobile with automatic capture of daily weather conditions.

ii. Provide ability to attach photographs to entries directly from mobile.

iii. Provide reporting capabilities to easily report on man-hours and activities for a certain time frame and contractor.

b. Dashboards

i. Provide a dashboard that shows the status of all currently assigned items with drill down capability to see the subject, assignee and due date of each item.

c. Deficiency Tracking

i. Provide a means for recording, assigning and confirming completion of any deficiency or observation noted during the course of construction. Must be accessible from web and mobile.

d. Directory

i. Provide a directory of all team member's contact information that is accessible from web and mobile.

e. Documents

i. Provide a storage location for miscellaneous project documents with the ability to have a folder hierarchy and privacy settings on folders.

ii. There should not be a storage limit.

iii. Provide download tracking.

iv. Provide the ability to revision and check out files, with access to all previous revisions.

f. Drawings

i. Provide access to a system maintained current set of drawings on web and mobile, with access to all previous revisions as well.

ii. Provide automatic hyperlinking capability for detail callouts.

iii. Provide drawing markup capabilities on web and mobile.

iv. Provide ability to link RFIs, Submittals, Punchlist Items, Photos and Project Documents to the drawings.

v. Drawing Markups should be carried forward when new revisions are uploaded.

vi. Markups and linked documentation should be able to be public or private.

g. Financial Management

i. Provide ability to manage contracts, payment applications and change orders through the software.

ii. Provide ability to view contracts and change orders from web and mobile.

h. Inspections

i. Provide ability to create inspections from web and mobile.

ii. Provide ability to create a deficiency item from an inspection that can be assigned and tracked to completion.

i. Meetings

i. Provide ability to create, edit and view meeting minutes from web and mobile.

ii. Provide ability to create action items with assignees and due dates from a meeting item.

j. Mobile Accessibility

i. Provide native mobile applications for iOS and Android phones at a minimum that provide access to relevant project documentation, including as-built versions of Drawings and Specifications, even when there is no internet access.

k. Photos

i. Provide ability to upload and view photos from web and mobile.

ii. Provide ability to markup photos from mobile to clarify anything important in the photo.

iii. Provide ability to link photos to specific locations on drawings.

l. Punchlist

i. Provide ability to create punchlist items from web and mobile and link them to specific locations on the drawings.

ii. Provide ability to distribute punchlist items to all contractors, for contractors to mark them as resolved with photographic proof of resolution via mobile, and for the items to be marked as complete via mobile or web. .

m. Requests for Information (RFIs)

i. Provide ability to create RFIs with assignees, due dates and attachments.

ii. Provide ability for assignees to respond to RFIs both via the software and by responding to the system generated email.

iii. Provide an auto-generated log of all RFIs.

n. Schedule

i. Provide ability to display schedules from typical scheduling software such as Microsoft Project, Primavera P3, Primavera P6 or Asta Powerproject.

o. Specifications

i. Provide ability to upload project specifications and manage them at the individual specification level.

ii. Provide ability to view and search specifications on web and mobile.

iii. Provide ability to upload revisions to individual specifications and maintain all revision history.

iv. Provide an auto-generated current specification log that provides access to the current version of each specification.

v. Provide ability to link specifications to submittals and view the specification from the submittal.

p. Submittals

i. Provide ability to upload a submittal register of all expected submittals.

ii. Provide ability to create multi-step approval workflows for submittals, with reminder notifications for the current assignee.

iii. Provide the ability to upload any file type without size restrictions.

iv. Provide an auto-generated submittal log.

10. TECHNOLOGY

a. Fully web based with mobile apps for Windows, iOS and Android phones.

b. Accessible without logging in through a virtual private network (VPN).

c. Works on the current version of Internet Explorer, Google Chrome, Mozilla firefox and Apple Safari browsers.

d. Can generate emails automatically, and all attachments are included in the emails via download links to avoid emails not being delivered due to size.

e. PDF output of forms such as RFIs, Submittals, Meetings, Change Orders, etc. should be available and customizable.

11. TRAINING AND SUPPORT

a. The software selected must provide support to all parties via email, phone and live chat at no additional charge.

b. The software selected must provide training in the form of self-paced learning videos as well as interactive webinars.

c. The contractor shall hold a kickoff meeting with the Owner and applicable consultants at the beginning of the project to discuss how the software will be used, routing & naming protocols, etc.

12. PROCEDURES

a. RFIs and Submittals

i. The Contractor will be responsible for submitting all RFIs and Submittals through the software and assigning them to the appropriate parties.

ii. Architects / Engineers / Consultants etc. are responsible for posting all responses to these items via the software, including all relevant attachments.

iii. The Contractor will distribute responses to all affected subcontractors and confirm agreement with the response by closing the item.

b. Construction Documentation

i. The Contractor will manage Drawings, Specifications and Documents in the software to ensure that the current version of all applicable construction documentation is available to the entire team via web and mobile.

ii. The Contractor will ensure that all RFIs which modify the current drawings are posted to the drawings and available via web and mobile within 24 hours of the RFI being responded to.

c. Contractor will record and distribute meeting minutes and action items via the software.

d. Contractor will take daily site photos and make them publicly available.

e. Punchlist

i. All punchlist items will be managed through the software.

ii. Punchlist items will be created by the Contractor while walking with the Owner and applicable consultants.

iii. It will be at the Owner's discretion whether or not Punchlist Items can be closed while a representative from the Owner or applicable consultant is not present.

f. General

i. It is intended that the contractor will utilize the software for at least all functions identified in "Section B – Software Capabilities."

13. PRICING

a. The Contractor's proposal shall be inclusive of all software costs. The cost of Procore Technologies services has been paid in full by the Owner.

b. The software must allow for unlimited users to ensure that all parties have access to the system.

SECTION 1.25 – ENVIRONMENTAL PROTECTION AND STORM WATER POLLUTION PREVENTION

Environmental Protection and Storm Water Pollution Prevention Plan shall be in accordance with Section C204 Environmental Protection and Stormwater Pollution Prevention Plan from the General Specifications except as modified here-in.

The Contractor certifies under penalty of law that he understands and will abide by the terms and conditions of the following:

1. Permit LAR10M21: Orleans Parish-wide coverage for Storm Water Discharges Associated with Construction Activities five (5) acres or more for the JIRR Program

2. Sewerage & Water Board of New Orleans Plumbing Code

3. The Joint Infrastructure Recovery Request (JIRR) Program is authorized under LPDES Permit LAR10M215 that encompasses all of Orleans Parish for Storm Water Discharges Associated with Construction Activities five (5) acres or more. The permit had an effective date of June 8, 2020 and expiration date is March 28, 2024. This permit coverage alone automatically mandates that all JIRR projects regardless of the project size will be part of a "larger common plan of development" Since the entire program is covered, the contractor does not have to obtain a state-issued permit from LDEQ; regardless, an adequate Stormwater Pollution Prevention Plan shall be developed and maintained regardless of the size of the project.

4. Compliance with JIRR Permit LAR10M21.

PART II – SUPPLEMENT TECHNICAL SPECIFICATIONS

SECTION 2.01 - REMOVAL OF EXISTING PAVEMENT

A. All existing pavement designated to be removed shall be removed and disposed of beyond the limits of project by the Contractor.

B. Payment for concrete and asphaltic concrete pavement removal shall include removal, hauling and disposing of pavement off of the project site.

C. Pavement consisting of asphaltic concrete over Portland cement concrete shall be considered Composite Pavement. Composite Pavement shall be removed, without regard to thickness, at the price bid per square yard for REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT. There will be no additional payment if the Contractor elects to cold mill or remove the existing asphalt surface prior to removal of the concrete pavement.

D. Payment for the pay item C202(52)(C) REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT shall be made at the contract unit price, including removal and disposal of existing curb at no direct pay.

SECTION 2.02 - CURBS OR CURB AND GUTTER BOTTOMS

The Contractor shall remove and dispose of all existing curb or curb and gutter bottoms in accordance with the plans. Existing stone curb to be removed shall be delivered to the Department of Public Works Maintenance Yard located at 838 South Genois Street unless directed by the Owner (No additional pay for disposal).

Price for new dowel curbs in new concrete pavement shall include horizontal dowels and longitudinal reinforcement as detailed on the standard plan by the City of New Orleans Department of Public Works (DPW).

Price for new curb shall include transitions, depression or hand forming curbs at obstructions as may be directed by the Director or required by the Department of Parks and Parkways.

The Contractor shall backfill and compact behind curb with select material obtained from roadway excavation or other approved sources and install the top 4 inches with batture sand behind the curb for dressing and beneath sidewalks and driveways at no direct pay. Payment shall be included in the unit price bid for curbs, sidewalks, or driveways as applicable.

Price for new curb and gutters associated with new asphalt pavement shall include all transverse and longitudinal reinforcement in conformance with the details on standard plan by DPW included with these specifications.

Price for new curb or curb and gutters associated with Handicapped Ramp construction shall be measured and paid for as subsidiary to unit price bid for ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS.

SECTION 2.03 - REMOVAL OF EXISTING SIDEWALKS, DRIVEWAYS, AND FOOTLAPS

Existing concrete sidewalk, driveway, and footlaps shown to be removed shall be removed and properly

disposed of by the Contractor. At locations where sidewalk, driveway, or footlaps are to be removed but are not to be replaced, the contractor shall backfill the area with selected excavated or other suitable approved material at no direct payment.

SECTION 2.04 - EXCAVATION

A. Limits of roadway excavation are shown on the plans and are measured from the bottom of the existing pavement to the bottom of the base course, and/or sub-base (where applicable). All excavated material shall be hauled and disposed of off the project site.

B. The quantity shown in the proposal form is approximate and is included for information purposes only. Partial payments for excavation will be made on a percentage basis computed from the ratio of linear foot of roadway excavation completed to the total length of roadway in the project.

SECTION 2.05 - CONSTRUCTION ROUTING AND MAINTENANCE

The Contractor must minimize damage to streets used for access to the project for the delivery of materials and equipment by observing weight and speed limits as defined in the City Code in Section 38-169 and 38-73 (h) respectively. Access routes to the work site from designated "truck routes" will be established at the preconstruction meeting. The Contractor and his subcontractor(s) will be required to adhere to these routes to and from the project site. The routes may be revised by the Director to accommodate the work as it progresses. The Contractor is required to keep the work site clean, particularly the roadways adjacent to the work site. The Contractor shall clear such roadways of dirt, silt sand or other such material as often as necessary, or as specified by condition at the close of each workday.

SECTION 2.06 - SHEETING AND BRACING

A. Sheeting and bracing shall meet the design, material, installation, and maintenance requirements of all SAFETY AND HEALTH REGULATIONS.

B. The cost of sheeting and bracing shall be included in the unit price bid per linear foot for drain, sewer, or water lines.

C. The Contractor shall provide design services, materials, and labor necessary for sheeting, shoring, and bracing of excavations as required for trenches in a safe working condition. The Contractor shall provide for protections and supports of utilities, roadways, buildings, and structures, etc. when performing project work. The Contractor shall provide an adequate system to withstand lateral pressure in trenches, in accordance with local, state, and federal regulations. Where required to be designed by a licensed engineer, the sheeting and shoring plan must be submitted to the Engineer for his records.

SECTION 2.07 - SANITARY SEWER SYSTEM REHABILITATION

A. The supplemental specifications within this section are applicable to all sewer rehabilitation work within the scope of the SSERP or FEMA sewer rehabilitation program as per paragraphs 1.21A and 1.21B. Any general conditions, materials or methods not discussed within this section shall be governed by the SPW standard specifications section 742 and the S&WB standard details and

specifications.

B. Sewer Flow Control

1. Contractor is responsible for all sewer flow control. There will be no direct pay for flow isolation, flow diversion (bypass) pumping or any other outreach and coordination required as part of flow isolation.

2. Contractor is responsible to determine the method of sewer flow control for any pipe size and flow quantity. S&WB cannot provide any guarantees to draw the system down to reduce surcharging.

3. Contractor shall ensure that sewer does not back-up into private property and shall have a plan to prevent sewer back-ups prior to start of work in case of unforeseen delays. A sewer flow control plan is required to be submitted prior to start.

4. Where it becomes necessary to shut down a private sewer service line while work in progress, and before the service lines are reconnected, the residents are to be notified by the Contractor at least one week prior to work and again 24 hours prior to shut down. Sewer service shutdowns shall be limited to 8 hours in duration and between the hours of 8:00 am and 6:00 pm, otherwise an alternate means of sewer flow shall be provided, including but not limited to by-pass pumping.

5. Under no circumstances shall sewer be removed from the system or discharged onto the ground or into the drainage system or other waterway. Refer to section 1.21G in cases of accidental spills or discharges.

6. Only pneumatic (inflatable) pipe plugs, specifically designed for municipal sewer applications, shall be installed in the gravity sewer system for flow control or diversion. Each plug shall bear a permanent identification tag with the installer's emergency contact information. A photo of a typical plug, showing the attached identification tag, must be submitted to the Engineer for approval. Plugs without ID tags will not be permitted on the jobsite or inside vehicles on the jobsite. The Engineer may direct the immediate suspension of work and removal from the worksite of unapproved flow control devices.

a. Under no circumstances shall any plug be left inside a pipe or manhole overnight. Pipe plugs are to be removed from the jobsite at the end of each workday.

7. Flow diversion pumping shall be performed to the satisfaction of the S&WB networks engineering representative, shall be complete with all pumps, piping and other appurtenances required to pump the required sewer flow around the work site continuously with capacity for unforeseen wet weather flows and shall not adversely impact upstream or downstream sewer flow conditions or levels. Flow diversion pumping setups shall be always manned by an experienced operator the pump is required to operate or sit in standby. Flow diversion pumping equipment and piping shall be drained back into the sanitary sewer system prior to disassembly. Contractors are required to submit a flow diversion plan to the engineer 5 business days prior to setting up a flow diversion pumping setup.

8. Any sewerage removed from the gravity system, such as dewatering of surcharged manholes or line segments shall be disposed into the sanitary sewer system.

9. When sewer flow control is used to perform CCTV inspection, the following depths of flow shall be maintained at a maximum:

a. For 10" and smaller diameter pipe, flow depth shall be maintained at or less than 10% of the pipe diameter.

b. For 12" through 24" diameter pipe, flow depth shall be maintained at or less than 15% of the pipe diameter.

c. For pipes larger than 24" diameter pipe, flow depth shall be maintained at or less than 20% of the pipe diameter.

10. For every location where flow diversion is required, the Contractor shall submit a site-specific flow diversion plan to the Engineer at least five (5) business days prior to mobilizing flow diversion equipment. The plan shall include pipe sizes and lengths, pump make/manufacturer, pump capacities, pump curves, a scaled drawing or diagram showing limits of the work, location of suction and discharge hoses, adjoining sewer segments and manholes, flow direction and plug locations, and any additional information requested by the Engineer.

11. The Contractor must conduct sewer flow control, isolation, and diversion in accordance with the approved plan and must have a Competent Person at the site throughout the flow control operation. Flow diversion pumps shall be always manned by and experienced operator.

C. Gravity Sewer and Service Lateral Rehabilitation

1. Contractor is responsible to obtain sewer service location records from the S&WB and to verify the location sewer service connections prior to excavation.

2. Contractor shall perform gravity sewer and service lateral rehabilitation in accordance with the sewer rehabilitation sheets.

3. Any service connections located within the limits of an excavated point repairs, or mainline replacement (excavated or otherwise) shall be fully replaced, including the wye and the 6" service lateral from the main line sewer to the property line. Abandoned service connections shall not be replaced unless directed by the S&WB.

4. All service line replacements shall include replacement of the tee or wye fitting at the main line sewer at no additional cost. The contractor shall perform a standard mainline point repair to replace the service tie-in, which will be paid for separately under the respective bid item price.

5. Sewer service laterals and main line sewers shall be installed at the same grades and elevations of the pipe being replaced. However, in cases where the sewer service lateral provides less than 2% slope, the contractor shall re-grade the service lateral from the property line to the main line sewer to provide a 2% slope where possible.

6. Contractor shall provide rigid non-shear couplings or flexible elastomer couplings with stainless steel shear bands where a mainline point repair or a service later replacement results in the connection between dissimilar pipe materials. These couplers shall conform to ASTM

C425 for connections to vitrified clay pipe and otherwise ASTM C1173. The bands shall be stainless steel 316 and on conformance to ASTM A240. The shear rings shall be in conformance to ASTM A240. There will be no direct pay for these provisions; contractor shall include this cost in their respective bid items of work.

7. All tees, wyes, cleanouts, plugs and other fittings shall be of the same material as the mainline pipe and/or service repair piping used in the rehabilitation.

8. Trenching for gravity sewer and service lateral rehabilitation shall be in accordance with the S&WB standard drawings, unless additional requirements are necessary for compliance with local, state, or federal regulations pertaining to health and safety. Any existing foundation or trenching lumber shall remain in place.

9. Contractor shall completely close the sewer system prior to the end of his workday. The Contractor may not leave any open main line repairs or service laterals with the site unattended. The Contractor is responsible to complete all opened work or to provide temporary piping prior to leaving the site at no additional cost.

10. The Contractor shall not begin backfilling operations over excavated sewer rehabilitation until the work has been inspected by a representative of the S&WB.

11. The S&WB reserves the right to request a mandrel test of any mainline sewer replacements at no additional cost in accordance with DPW standard specifications section C742.03(b).

12. All mainline sewer point repairs and replacements shall be recorded via CCTV immediately after completion of the rehabilitation, backfilling, compaction but prior to final pavement restoration of the site. The site is defined as the full work zone contained to a mainline sewer line segment bound by two manholes inclusive of the full length of main line sewer and all connecting service laterals.

D. Backfill Requirements for Work Near Mississippi River Levee. All sewer rehabilitation excavations within 1,500-ft Mississippi River Levee (MRL) centerline shall be limited within the following US Army Corps of Engineers (USACE) restrictions itemized below:

1. All excavation work within 400-feet of the Mississippi River levee is performed, completed, and backfilled while the stage of the Mississippi River is below +11.0 feet on the Carrollton Gage, at New Orleans, Louisiana.

2. All excavation work more than 400-feet but less than 1,500-feet from the Mississippi River levee is performed, completed, and backfilled while the stage of the Mississippi River is below +15.0 feet on the Carrollton Gage, at New Orleans, Louisiana.

3. Information concerning current river stages may be obtained on our website at www.mvn.usace.army.mil.

4. Sewer pipe bedding must be grouted after compaction. The grout shall meet the following criteria: The slurry shall consist of one part cement, two parts bentonite, and six parts sand mixed with enough water to produce a slurry viscous enough to thoroughly fill the voids. The resulting slurry shall have no less than 12 pounds of solids per gallon.

5. All non-bedding backfill must be impermeable clay – no sand at no direct pay.

6. All work must be coordinated with the Orleans Levee District (OLD) in advance and will be subject to OLD inspection and approval prior to S&WB acceptance.

7. Any damage to the levee or floodwalls resulting from the applicant's activities is repaired at the applicant's expense.

8. The contractor shall provide a detailed schedule for all sewer rehabilitation excavations for coordination with the OLD and USACE. This schedule shall be updated and resubmitted at any time the work dates for these sites has changed.

SECTION 2.08 – GRAVITY SEWER PIPEBURSTING

A. General requirements

1. This Specification covers the work necessary to furnish and install, complete and in-place, high–density polyethylene pipe (HDPE) by the pipe bursting method specified herein. The CONTRACTOR shall provide all materials, labor, equipment, and services necessary for bypass pumping diversion of sewage flows, installation of HDPE pipe, reconnection of all service connections, and closed-circuit television (CCTV) pre- and post-inspection and air testing of the completed pipe system.

2. The CONTRACTOR shall locate receiving/insertion pits to suit the pipe bursting operation. Pits located in areas where new manholes are not being installed shall be excavated, backfilled, and compacted at no additional cost to the owner. This includes providing a new manhole at no additional cost to the owner if an existing manhole is removed or damaged.

B. Qualifications

1. The pipe bursting contractor shall be certified and satisfactorily trained by the pipe bursting system manufacturer that such company is fully trained and is a licensed installer of their pipe bursting system.

2. Polyethylene pipe joining shall be performed by personnel trained in the use of butt-fusion equipment by the specific manufacturer of said equipment and recommended methods for new pipe connections. Personnel directly involved with installing the new pipe shall receive training in the proper methods for handling and installing the polyethylene pipe. Training shall be performed by a qualified and certified representative of the equipment and pipe manufacturer.

3. The CONTRACTOR shall hold the BOARD and ENGINEER whole harmless in any legal action resulting from patent infringements.

C. Reference specifications, codes, and standards

1. The following references are part of this Specification. In case of conflict between the requirements of this Specification and those of the listed documents, the requirements of this Specification shall prevail.

2. The latest edition of the following references shall be used:

a. ASTM D1248 - Polyethylene Plastics Molding and Extrusion Materials

b. ASTM D2657 - Heat Joining of Thermoplastic Pipe and Fittings
ASTM D3035 - Polyethylene Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter

c. ASTM D3261 - Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

d. ASTM D3350 - Polyethylene Plastic Pipe and Fittings Materials
e. ASTM F714 - Standard Specification for Polyethylene Plastic Pipe Based on Outside Diameter

D. Contractor submittals

1. Shop Drawings:

a. The CONTRACTOR shall submit catalog cuts, specifications, dimensioned drawings, installation details and sketches, and other pertinent information for the HDPE pipe installation work. All materials provided shall be fully in accordance with the requirements of the reference specifications specified above.

b. The CONTRACTOR shall verify with the pipe manufacturer all connection details.

c. The CONTRACTOR shall submit detail drawings and a written description of the construction procedure and sequence including its locations to bypass insertion and receiving bypass sewage flow of the host sewer and service laterals, install new hose sewer and service laterals, and disconnection and reconnection of the sewer service lateral connections.

2. Certification: The CONTRACTOR shall furnish a certified affidavit of compliance for all HDPE pipe and fittings furnished confirming that the materials supplied fully conform to the requirements specified herein.

3. Warranty as specified in Paragraph 1.06 Warranty of this Specification

4. The CONTRACTOR shall submit a complete plan for a sewage bypass pumping system in accordance with Section 2.07.

5. The CONTRACTOR shall perform trial fusion welds in the field for both main line and lateral connections and submit samples to the ENGINEER for review prior to installation of the pipe. Full penetration welds shall provide a homogeneous material across the cross section of

the weld. The fusion machine employed for the trial welds shall be the same machine to be utilized for the complete project installation work.

6. Fusion equipment shall be operated only by technicians who have been certified by the pipe manufacturer or supplier and who have a minimum of 2 years' experience of fusion welding 8 inches or larger diameter pipelines. The technician's experience and verifiable references shall be documented in the HDPE pipe submittal.

E. Quality assurance

1. Quality assurance procedures shall be performed by the pipe manufacturer fully in accordance with the requirements of this Specification. The certification shall include certified laboratory data confirming that said tests have been performed on a sample of the pipe to be provided under this contract, or pipe from that production run, and that satisfactory results were obtained prior to any installation of said pipe.

2. Fusion joining and other procedures necessary for correct assembly of the polyethylene pipe shall be done only by personnel trained in those skills to the satisfaction of the ENGINEER and the pipe supplier.

3. Only those tools designed for the aforementioned procedures and approved by the pipe manufacturer or supplier and the ENGINEER, shall be used for assembly of pipe fittings to ensure proper installation. The heater plate shall be equipped with suitable means to measure the temperature of plate surfaces and to assure uniform heating such as thermometers or pyrometers.

4. Pipe (bursting) insertion equipment shall be operated only by technicians who have a minimum of 2 years' experience in the installation of the polyethylene pipe, using pipe bursting lining technology as specified herein. The technician's experience and references shall be documented in the HDPE pipe submittal.

5. The CONTRACTOR shall televise the installed pipe after existing services have been reconnected and manhole reconnection and sealing procedure work has been completed. The original post-television inspection video tape shall be provided to the ENGINEER for final approval.

F. The CONTRACTOR shall provide to the OWNER a warranty to be in force and effect for a period of 1 year from the date of final acceptance by the OWNER. The warranty shall require the CONTRACTOR to repair or replace the pipe should leakage, separation, collapse, or other failure result from faulty materials or installation as determined by the ENGINEER.

G. Materials

1. The CONTRACTOR shall provide polyethylene pipe as specified. The pipe shall be made to diameter and tolerances in accordance with ASTM D3035. The minimum ratio of orthogonal diameters prior to installation shall be 0.95. All pipes shall be made from virgin grade material. The pipe shall be of the diameter and class shown or specified and shall be furnished complete with all fabricated fittings, and other appurtenances as necessary for a complete and functional system.

2. Markings: Pipe materials shall be legibly marked by the pipe manufacturer. The following shall be printed on the pipe:

a. Name and trademark of manufacturer.

b. Nominal pipe size.

c. Dimension ratio.

d. The letters PE followed by the polyethylene grade per ASTM D1248, followed by the Hydrostatic Design Basis in hundreds of psi.

e. Manufacturing Standard Reference.

f. A production code from which the date and place of manufacture can be determined.

H. Pipe Material

1. Pipe: Pipe shall be high molecular weight, high-density polyethylene pipe. The material shall be listed by the Plastic Pipe Institute (PPI) with a designation of PE 3408 and have a minimum cell classification of 345434C, D, or E (inner wall shall be light in color) as described in ASTM D3350. The pipe material shall meet the requirements for Type III, Class B or C, Category 5, Grade P34 material as described in ASTM D1248. The pipe shall contain no recycled compound except that generated in the manufacturer's own plant from resin of the same specification from the same raw material pipe. Pipe (excluding black colored pipe) stored outside shall not be recycled. Pipe and fittings shall be made in conformance with ASTM F714 and ASTM D3261 as modified for the specified material. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, or other injurious defects. It shall be uniform in density and other physical properties. Any pipe not meeting these criteria shall be rejected.

2. Pipe Color, Pipe shall conform to the following color scheme:

a. Inside: The inner wall shall be soft white only (Opticore or equal),

b. Outside: The outer wall shall be black only.

3. Standard Dimension Ratio (SDR): Pipe shall conform to the following:

a. Nominal Size: 8 to 12 inches.

b. Outside Diameter: 8 to 12 inches.

c. SDR: Minimum 17.

I. Polyethylene pipe shall be joined by butt fusion welding, as specified in Paragraph O, Pipe Joing, herein.

J. Connection of new service lateral to the sewer main shall be accomplished by use of electrofusion saddle type fittings. The service connection shall be specifically designed for connection to the HDPE sewer main being installed, and shall be Central Electrofusion System, as manufactured by Central Plastics Company, Shawnee, Oklahoma.

K. The CONTRACTOR shall protect existing and new facilities including utilities, road pavement, and private property from damage by forces generated by the pipe bursting equipment. Any damage to any existing facilities as a result of the pipe bursting operation shall be the responsibility of the CONTRACTOR. If it is found that the damage is a result of the pipe bursting operation, the cost to repair or replace the damage facility shall be the responsibility of the CONTRACTOR.

L. Preparation

1. All work shall be performed as specified herein and supervised by personnel experienced in the installation of the pipe.

2. All sewer service connections shall be identified and located by CCTV prior to the start of any pipe bursting operation and pipe insertion. Upon commencement, pipe insertion shall be continuous and without interruption from one manhole to another, except as approved by the ENGINEER. Upon completion of the insertion and installation of the new pipe, the CONTRACTOR shall expedite the reconnection of lateral service connections so as to minimize any inconvenience to the customers.

3. The project foreman assigned to the project by the CONTRACTOR shall be onsite at all times from the time of inception to the time of completion.

M. Handling and storage

1. The CONTRACTOR shall exercise special care during the unloading, handling, and storage of all polyethylene pipe to ensure that the pipe is not cut, gouged, scored, or otherwise damaged. Any pipe segment, which has cuts in the pipe wall exceeding 10 percent of the wall thickness, shall be cut out and removed from the site at the CONTRACTOR's cost. The pipe shall be stored so that it is not deformed axially or circumferentially, which may hinder pipe installation. After the unloading of any pipe material ordered to the project site and before installation of the pipe, the CONTRACTOR shall inspect all pipe to verify its condition prior to installation with the ENGINEER and/or the project inspector. A pipe condition inspection report provided by the CONTRACTOR shall be filed with and approved by the ENGINEER prior to installation.

2. All polyethylene pipe, without an ultraviolet inhibitor, shall not be stored unprotected against the outside elements.

N. Repairs to the existing line

1. If the pre-installation video inspection reveals a sag in the existing sewer greater than one-half the diameter of the existing pipe, the CONTRACTOR shall take necessary measures to eliminate these sags by the system of pipe replacement, digging a sag elimination pit and bringing the bottom of the pipe trench to a uniform grade in line with the existing pipe invert or by other measures that shall be approved by the ENGINEER. There is no additional pay for this work.

2. The CONTRACTOR shall repair the pipe where point repairs are identified on the Drawings. If not shown, it will constitute extra work when approved by the ENGINEER. Any required point repairs shall be performed as per these specifications and will be paid for separately under the respective bid items for the work.

O. Pipe joining

1. Sections of polyethylene pipe shall be joined into continuous lengths on the jobsite above ground. The joining method shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. Fusion equipment used in the joining procedure shall be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, fusion temperature, alignment, and fusion pressure. Electrofusion may be used for field closures as necessary when appropriate fusion equipment can be utilized in a trench type environment. For end sections or "tail" pipe, the use of electrofusion couplings as manufactured by Central Plastics Company can be utilized.

2. A fire-retardant bag or suitable enclosure shall be used with the heater plate to facilitate control of heating process and to protect the heater plate surfaces from dirt and other debris when not in use. The heater plate surfaces shall be cleaned regularly as needed to prevent accumulation of fusion welding residues or other substances that may result in faulty pipe joining.

3. Butt fusion shall conform to ASTM D2657 and pipe manufacturer's criteria for the type of joining. Joint strength shall be equal to that of the adjacent pipe.

4. The inside and outside of pipe ends shall be cleaned with a cotton or non-synthetic cloth to remove dirt, water, grease, and other foreign materials. The pipe ends shall be cut square and carefully aligned just prior to heating.

5. After achieving the proper melt pattern, the pipe ends shall be brought together in a firm, rapid motion applying sufficient pressure to form a pipe bead (1/8 inch to 3/16 inch in height) around and inside the entire circumference of the pipe.

P. Pipe installation

1. The CONTRACTOR shall excavate, expose, and isolate all sewer service connections prior to replacing the existing sewer. The existing service connections may be encased in mortar, concrete, or reinforced concrete. There will be no additional compensation for demolition of this concrete.

2. The CONTRACTOR shall install the pipe by utilizing a constant tension system with a hydraulic or pneumatic bursting device that breaks away the existing pipe. A static "cone cracking" method may be used, but only by advancing the mole bursting head with a "solid steel tow rod" pulled by a constant tension hydraulic pulling wrenching system. The advancement of the bursting mole head with a "chain" shall be prohibited. The void created by the bursting device shall be sufficient in size to accommodate the HDPE pipe, which shall be installed immediately after the void has been formed. The CONTRACTOR shall be responsible to provide adequately designed pipe bursting equipment to accomplish the replacement of the existing pipe under all adverse conditions.

3. The CONTRACTOR may utilize existing manholes where practical. Location of pits outside of existing manholes should be considered as replacement of existing manholes that are not designated to be replaced shall be at the sole cost of the CONTRACTOR. Manhole inverts and benches and channels shall be removed to permit access for installation equipment as appropriate. When installing through an existing manhole, the input and output pipe openings shall be enlarged as appropriate to accommodate to the maximum OD size of the bursting device. At no time shall the bursting device and/or the installation process put any undue stress on the existing surface. Benches and channels shall be reconstructed to proper elevations after the new pipe is in–place.

4. The CONTRACTOR shall secure the pipe to concrete structures or manholes after the pipe has been installed along the length of sewer replaced. The CONTRACTOR shall use a water stop or flange adapter, as supplied by the pipe manufacturer, that is fused and seated perpendicular to the pipe axis, around the pipe exterior, and grouted into the structure wall to create a watertight seal. The new pipe shall be installed 12 inches inside of the manhole opening. The structure or manhole connections shall be made a minimum of 12 hours after pipe insertion.

Q. Low pressure air testing

1. After a manhole-to-manhole section of sanitary sewer has been pipe bursted and prior to any service lines being connected to the replacement pipe, the pipe shall be plugged at each manhole with pneumatic plugs. The design of the plugs shall be such that they will hold against the test pressure without requiring external blocking or bracing. One of the plugs shall have three air hose connections; one for inflating of the plug; one for reading the air pressure in the sealed line; and one for introducing air into the sealed line.

2. Low pressure air shall then be introduced into the sealed line until the interlay air pressure reaches 4.0 psig greater than the average back pressure resulting from any groundwater that may be over the pipe. At least 2 minutes shall elapse to allow the pressure to stabilize.

3. The time required for the internal pressure to decrease from 3.5 to 2.5 psig greater than the average backpressure resulting from any groundwater that may be over the pipe, shall not be less than the time shown for a given diameter in the following table:

Carrier Pipe Diameter (inches)	Minimum Elapsed time (minutes)
8	4
10	5
12	6
15	7

R. Reconnection of sewer service connections

1. The CONTRACTOR shall successfully test the installed pipe prior to reconnecting sewer services.

2. All sewer service laterals shall be replaced from the new main line to the respective property line and will be paid for separately under the respective unit bid items.

3. Service connections shall be connected to the new pipe and installed in a hole that shall be drilled the full inside diameter of the outlet or as recommended by the connection manufacturer. Service connections shall only be connected to the mainline with the use of fused service fittings as per the requirements in this section.

S. Final cleaning and television inspection

1. Prior to final acceptance and final inspection of the pipe by the ENGINEER, the CONTRACTOR shall flush and clean all parts of the system by removing all accumulated construction debris, rocks, gravel, sand, silt, and other foreign material from the pipe.

2. After completion of the pipe installation, service reconnections, finish work at the manholes and final cleaning, the sewer shall be televised with a color CCTV tilt-head camera recorded in VHS format. The original tape shall be provided to the ENGINEER.

SECTION 2.09- PRE- AND POST-REHABILITATION CCTV INSPECTION AND CLEANING

A. Scope of work

1. Cleaning: The Contractor shall furnish all labor, materials, equipment, and incidentals required to clean sanitary sewer line segments and manholes to remove all debris, solids, sand, grease, grit, etc. as specified herein.

2. Sewer Flow Control: The Contractor shall provide all the labor, materials, equipment, and incidentals necessary to divert wastewater flow in accordance with Subsection 2.07.B of this specification.

3. Contractors shall perform line cleaning and CCTV inspection of sewer lines for the following conditions. There is no direct pay for CCTV inspections unless noted otherwise.

a. Pre-rehabilitation of Find and Fix lines, at direct pay.

b. Pre-rehabilitation of sewer line segments requiring full length CIPP lining.

c. Pre-rehabilitation of sewer line segments requiring full length replacement via pipe bursting or other trenchless methods.

d. Post-rehabilitation of any sewer line segments inclusive of all rehabilitation methods (replacement, point repair, lining, etc.).

e. Upon written request by the engineer to perform additional CCTV inspections, at direct pay.

f. In the case of a CCTV performed as a Pre-rehabilitation inspection for a full length CIPP and then the CIPP is canceled as a result of the CCTV findings, the Contractor will be reimbursed for the line cleaning and CCTV at direct pay.

g. For pre-rehabilitation of sewer service laterals requiring CIPP lining see Paragraph G.

h. For post-rehabilitation of sewer service laterals requiring CIPP lining see Paragraph G.

B. Submittals

1. The Contractor shall maintain a master copy of all DVD's and CCTV inspection reports submitted, until final acceptance of contract. All DVDs, and CCTV inspection reports submitted by the Contractor will become the property of the Board.

2. The Contractor shall submit two (2) DVD's, one (1) hard copy, and one (1) electronic copy of corresponding CCTV inspection reports on a weekly basis for all work accomplished the previous week.

3. For pre-rehabilitation and post-rehabilitation CCTV inspection, the Contractor shall submit to the Engineer for review two (2) DVD's, one (1) hard copy, and one (1) electronic copy of the CCTV inspection reports on-line segments identified herein as requiring pre-rehabilitation CCTV inspection.

4. Where defect coding is required, the Contractor shall provide the defect coding in the Microsoft Access database provided by the Board. Defect coding shall be performed in accordance with the Sewerage & Water Board of New Orleans' Sewer Condition Classification Manual.

5. The Contractor shall submit documentation that the CCTV inspection equipment to be utilized meets the requirements in these specifications.

6. Forms and reports the Contractor proposes using to document cleaning work.

C. Camera distortions, inadequate lighting, dirty lens, blurred/hazy or unsteady video will be grounds to reject pre- and post-rehabilitation CCTV inspections. If quality of the pre- and post-rehabilitation CCTV inspections and inspection reports is not adequate as determined by the Engineer, the Contractor shall provide a new pre- or post-rehabilitation CCTV inspection or inspection report. No additional payment shall be made for pre- and post-rehabilitation re-inspections.

D. When water from the public water supply is needed to meet the cleaning requirements of the equipment and the sewer, the Contractor shall obtain transient water meters from the Board with payment of a deposit. The Contractor shall be billed monthly by the Board for water usage. As a general rule, prior written approval from the Board is not needed to use fire hydrants located within this project area under this contract. However, fire hydrant keys are required and are available from the Sewerage and Water Board's Networks Department with payment of a deposit. The Contractor will be responsible for payment of deposit and payment of a monetary fine should the hydrant key(s) not be returned.

E. All high velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a variety of high velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 degrees to 45 degrees in all size lines to be cleaned. In addition to

conventional nozzles, use a nozzle or series of nozzles which direct the cleaning force to the bottom of the pipe for sewers 18 inches and larger. The equipment shall include a water tank, auxiliary engines, pumps, and hydraulically driven hose reel all contained within one single unit. All controls shall be located so the equipment can be operated above ground. A gauge shall be installed to indicate working pressure on the discharge of high-pressure water pumps.

F. CCTV inspection

1. The Contractor shall supply camera skids and floating skids or rafts as required to complete pre- and post- rehabilitation CCTV inspection as required in the Contract. The Contractor shall inspect sewer lines with pan and tilt conventional television equipment. The operation of the television equipment shall be controlled by a skilled technician or supervisor who shall be located at the control panel in the mobile television studio. The CCTV equipment including reels and the television studio are to be contained within a single vehicle.

2. The camera system shall be able to navigate around minor objects, roots, and debris. The camera cable shall be retracted to remove slack and to ensure an accurate footage reading.

3. The distance between manholes shall be verified by measuring tape. If the counter distance and the taping distance differ by more than 2 feet per 100 feet, the run shall be re-televised by CCTV Contractor.

G. Pre-rehabilitation CCTV

The Contractor shall perform pre-rehabilitation CCTV inspection as required herein.

1. The Contractor shall perform cleaning activities prior to pre-rehabilitation CCTV inspection.

2. The purpose of the pre-rehabilitation CCTV inspection is to provide defect coding data to the Engineer to determine the extent of rehabilitation for line segments identified as find and fix line segments. In addition, pre-rehabilitation CCTV inspection is intended to verify the location of service connections and to verify that additional repairs are not required for line segments and service laterals identified to receive full length CIPP liners.

3. Defect coding for line segments identified as find and fix line segments is required. The Contractor shall submit defect coding of find and fix line segments in the Microsoft Access database provided by the Board

4. The Engineer will make the final determination of rehabilitation for line segments identified as find and fix line segments.

5. The Contractor shall determine if a change or addition in the rehabilitation method(s) is necessary for line segments identified to receive a full length CIPP liner. If the Contractor determines that a change or addition in the rehabilitation method(s) is necessary, the Contractor shall provide the pre-rehabilitation CCTV inspection, DVD, and inspection report to the Engineer for review and approval.

H. Post-rehabilitation CCTV

1. The Contractor shall perform post-rehabilitation CCTV inspection as required herein.

2. Sewer line segments repaired by full-length replacement or by full-length lining will require cleaning prior to CCTV inspection and will require defect coding in accordance with the Board's Sewer Condition Classification Manual, latest edition.

3. Sewer line segments repaired by excavated point repair will require cleaning prior to CCTV inspection. The Contractor shall inspect the main from manhole to manhole, but defect coding of the line segments is not required.

4. Service laterals repaired by CIPP lining shall receive post-rehabilitation CCTV inspection. Defect coding of the service lateral is not required.

I. Cleaning

1. All interior surfaces of sewer lines shall be cleaned adequately to provide for a camera used in internal inspection to discern structural defects, misalignment, and infiltration and inflow sources. Cleaning shall be performed prior to internal inspection to preclude the buildup of debris from infiltration and inflow sources and discharges from upstream sewer line segments sections.

2. Cleaning: Cleaning shall be defined as the use of high velocity jet nozzle cleaning equipment to clean the line to the satisfaction of the Engineer.

3. Specialty cleaning: Specialty cleaning is defined as removal of obstructions such as roots and intruding connections. Obstruction removals may require the use of special equipment such as rodding or bucket machines, and/or expanding cutters. The Contractor will obtain authorization from the Engineer prior to conducting any specialty cleaning. Authorization shall be required for each individual sewer reach. No payment shall be made for specialty cleaning without prior approval by the Engineer.

4. No fire hydrant shall be obstructed so as to prevent its use in case of a fire in the area served by the hydrant.

5. The Contractor shall provide the Board with monthly readings of water consumption for billing purposes. All cleaning equipment must be equipped with a backflow preventer to prevent any contamination to the public water supply. When utilizing water from the public water supply, the Contractor shall remove water meters, fitting, and piping from fire hydrants at the end of each working day. The Contractor shall not waste water from public water supplies due to poor connections to hydrants.

6. If cleaning of an entire line segment cannot be successfully performed from one manhole, the equipment shall be re-setup at the manhole on the opposite end of the pipe segment being cleaned and cleaning shall be re-attempted.

7. The Contractor shall use a nozzle that directs the cleaning force to the full circumference of the pipe.

8. When using hydraulically propelled devices, the Contractor shall take necessary precautions to ensure that the water pressure created does not cause damage or flooding to public or private property.

9. The Contractor is responsible for the disposal of waste from cleaning operations at a permitted disposal site. The Board's East Bank Sewage Treatment Plant is available for disposal of waste from cleaning operation under this Contract. The Contractor shall abide by the operational policies and normal administrative working hours for the East Bank Sewage Treatment Plant when used for disposal.

10. Acceptance of sewer cleaning work is contingent upon the successful completion of the television inspection. If television inspection shows debris, solids, sand, grease, or grit remaining in the line, the cleaning is considered unsatisfactory. The Contractor, at no additional cost to the Board, shall repeat the cleaning, inspection, and televising of the sewer line until cleaning is acceptable by the Engineer.

J. Television equipment

1. Closed Circuit TV Equipment: The Contractor shall select and use closed-circuit television equipment that will produce color video recordings. The Contractor shall supply camera skids and floating skids or rafts as required to complete the CCTV portion of the Contract.

2. Pipe Inspection Camera

a. The television camera used for the sewer line inspection shall be one specifically designed and constructed for sewer pipeline inspection. The camera shall be waterproof and shall be operative in any conditions that may be encountered in the inspection environment. The camera shall be operative in 100% humidity conditions. The Contractor shall produce video recordings using a pan-and-tilt, radial viewing pipe inspection camera that pans ±275 degrees and rotates 360 degrees.

b. Television inspection of an entire line segment cannot be successfully completed from one manhole; a reverse set-up must be performed to obtain a complete television inspection. If successful televising of the entire line segment cannot then be accomplished, the inspection effort shall be abandoned. The Contractor will be paid for the inspection of the actual length of line segment televised. There will be no additional payment for reverse set-ups.

c. The camera shall be moved through the line segment in either direction at a rate not to exceed 30 feet per minute. Any means of propelling the camera through the sewer line which would produce non-uniform or jerky movement of the camera, will not be acceptable, Stop the camera at all defects so that a clear picture of the defect remains on the video screen for the operator to verbally describe the defect on the tape. Record a full 360^{O} pan view at all service lateral lines.

3. Wherever prevailing conditions allow, the CCTV camera head shall be positioned to reduce the risk of picture distortion. In circular sewers, position the television camera lens centrally (in prime position) within the sewer. In non-circular sewers, camera location shall be

at mid-height of the sewer, unless otherwise agreed, and centered horizontally. In all instances, orient the camera along the longitudinal axis of the sewer when in prime position. A positioning tolerance of plus or minus 10% of the vertical sewer dimension shall be allowed when the camera is in prime position.

4. The adjustment of focus and iris shall provide a minimum focal range from 2 inches in front of the camera's lens to infinity. The distance along the sewer in focus from the initial point of observation shall be a minimum of twice the vertical height of the sewer. The illumination must be such as to allow an even distribution of the light around the sewer perimeter without the loss of contrast, flare out of picture, or shadowing.

5. The Contractor shall use a camera with camera height adjustment so that the camera lens is always centered at one-half the inside diameter or higher in the pipe being televised. The Contractor shall provide remote and/or automatic focus and aperture control.

6. The television inspection equipment shall be of such high quality as to enable the following to be achieved:

a. Color: With the monitor adjusted for correct saturation, the six colors plus black and white shall be clearly resolved with the primary and complementary colors in order of decreasing luminance.

b. Resolution: The live picture must be displayed on a monitor capable of providing a clear, stable image free of electrical interference with a minimum horizontal resolution not less than 450 lines.

7. The Closed-Circuit Television monitor display shall incorporate an automatically updated record in feet and tenths of a foot of the distance along the line from the cable calibration point to the center point of the camera. The Contractor shall use a suitable metering device that enables the cable length to be accurately measured; this shall be accurate to ±2%. The Contractor shall demonstrate that the tolerance is being complied with, by tape measurement between manholes on the surface. This taped measurement must be included on each television inspection log both written and electronic. If the Contractor fails to meet the required standard of accuracy, the Engineer shall instruct the Contractor to re-survey those lengths of sewer at no additional cost to the Board.

8. Video recordings shall be high quality. The video recording shall reproduce clearly discernable sound and video information on the television monitor. The recording shall be free of interference and shall produce a clear, stable image.

9. The audio portion of the recording shall be clear and complete, and easily discernible. The audio portion shall record the location or identification of the line segment, the manhole-to-manhole direction of travel, and the distance traveled on the specific inspection. The audio portion shall record and identify all visible defects and include the information required by the Sewerage and Water Board of New Orleans' Sewer Condition Classification Manual, latest edition.

10. The video recording equipment shall be continuously connected to the television inspection and monitoring equipment. The video recording and monitoring equipment shall have the built-in capability to allow the Engineer and the Contractor to instantly evaluate both

the audio and video quality of the video recording at all times during the television survey. Video recordings shall be enclosed in plastic containers which shall clearly indicate the date the tape was recorded, the designated section(s) of sewer lines contained on the tape, and the referenced sewer inspection report covering the sections of the sewer lines so included.

11. Lateral Inspection Camera

a. The television camera used for the lateral inspection shall be one specifically designed and constructed for lateral inspection. The Contractor shall provide a portable "mini-cam" CCTV inspection system. This system shall provide a color video satisfactory to the Engineer and contain footage readings displayed on the monitor and videotape at all times. The accuracy of the distance meter shall be checked by the use of tape measurement and the accuracy shall be within 2%.

b. When the cleanout for a service line is inaccessible, the Contractor shall perform CCTV inspection of the service lateral from the mainline utilizing a lateral camera launcher system. A sewer main line television camera shall be used to position the lateral camera launcher.

12. DVD

a. The Contractor shall provide video recordings with audio comments in the DVD format, recorded at Standard Play (SP).

b. Complete sewer line segments shall be included on the same video recordings (i.e., CCTV inspections for sewer line segments shall not be divided among videotapes).

c. The video format shall be an MPEG-1 compressed video, and resolution video format shall be QSIF (Quarter-size Standard Image Format) of 176 x 112 pixels for NTSC video format.

d. Two labels are required on each DVD. One label shall be placed on the DVD Case and the other on the face of the DVD. The Contractor shall permanently label each as follows:

DVD Case

PRECONSTRUCTION AUDIO-VIDEO SURVEY
Contract No. _____ Tape No. _____

Face of DVD

Project Title: _____ Contractor: _____

Date Televised (MM/YY): _____ Date Submitted _____

Manhole No. From	Manhole No. To	Pipe Diameter	Pipe Length	Street	Starting

					Counter No.

K. Television Inspection Report

1. The Contractor shall complete a Television Inspection Report covering the television inspection work and the information acquired, as described in the Sewerage and Water Board of New Orleans' Sewer Condition Classification Manual, latest edition.

2. The same television inspection code sheet shall be used throughout the Contract. The code sheet shall include abbreviations for specific defects as detailed in the Sewer Condition Classification Manual. Submit all electronic data files for the previous week's work to the Engineer weekly CD-ROM. Include hard copy printouts of the correlating inspection reports with each submittal. Submit electronic files on CD-ROM and DVDs for corresponding lines concurrently. Submit all electronic data files in a Microsoft Access database format provided by the Board. The manual and data entry database are available for review at the office of the SSERP Program Manager.

3. At the start of each line segment video recording, record and report the measured length of the sewer line being inspected. Begin with zero at the inside face of the start manhole, and end at the inside face of the end manhole.

4. At the start of each line segment video recording, electronically generate and clearly display, on the viewing monitor and video recording, a record of data in alphanumeric form containing the following information:

a. Size and Length of Line;

b. Automatic update of the camera's position, in feet and tenths, in the sewer line from adjusted zero;

c. Type of pipe material;

d. Upstream manhole name and downstream manhole name;

e. Date of inspection;

f. Road name or line segment location description;

g. Direction of inspection (upstream or downstream);

h. Starting time of the inspection.

5. Once the survey of the sewer line is under way, continuously display specific data on the viewing monitor and video recording. The size and position of the data display shall not

interfere with the main subject of the picture yet shall be easily readable when the recording is replayed. At a minimum, the following data should be displayed:

a. Automatic update of the camera's position, in feet and tenths, in the sewer line from adjusted zero.

b. Upstream manhole name and downstream manhole name.

6. Each sewer length, i.e., the length of sewer between two consecutive manholes, shall be entered on a separate coding sheet. Thus, where a Contractor elects to "pull through" a manhole during a CCTV Survey, he shall start a new coding sheet at the manhole "pulled through" and shall re-set the distance to zero on the coding sheet.

7. The Contractor shall make submittals as required herein, on a weekly basis for all work accomplished the previous week.

L. Camera operation

1. All efforts should be made to prevent damage to the sewer conduit during the television inspection. In the case where damage is caused by the Contractor, for any reason, such as would be caused by incorrect deployment of bonds or retrieval of lodged equipment, the cost of repair or remedy shall be absorbed by the Contractor and shall be considered an incidental part of the Work. No separate measurement or payment will be made.

2. The CCTV operator shall accomplish simultaneous video and audio recording of defects, services, on site.

3. The camera shall be moved through the line in either direction at a uniform rate, stopping when necessary to insure proper documentation of the sewer's condition. Manual winches, power winches, TV cable, powered rewinds, and crawler devices or other devices that do not obstruct the camera view and do not interfere with proper documentation of the sewer conditions shall be used to move the camera through the entire sewer line section. The Contractor shall reposition his equipment as necessary so that the inspection can be performed from manhole on the opposite end of the pipe segment being viewed.

4. The lateral inspection camera video shall contain the forward and backward movement of the camera up to the mainline and back to the cleanout. If an attempt to video the service lateral line cannot be completed to the sewer main line, the blockage will be reported to the Engineer in writing and the service lateral line CCTV inspection will be abandoned.

5. When utilizing a lateral camera launcher system from the mainline, a maximum of 100 linear feet of the lateral or to the property cleanout, whichever is closer to the sewer main line, shall be inspected. Actual footage inspected may vary depending on lateral condition, bends, roots, launcher limitations, etc.

SECTION 2.10 - SANITARY SEWER MANHOLE REHABILITATION

A. Scope of work

1. The Contractor shall furnish all labor, materials, equipment, and incidentals required for the purpose of restoring structural integrity, eliminating water infiltration, repair of voids, and providing corrosion protection of the sanitary sewer manholes as shown on the Drawings and specified herein and assumed to be approximately 48" in diameter.

2. Sanitary sewer manhole rehabilitation shall include the following:

a. Leak-proofing of deteriorated, leaking, or structurally unsound manholes by lining with lightweight structurally reinforced concrete systems.

b. Repair and sealing of the manhole base, benches, channel, walls, corbel/cone, and chimney of brick, block, or precast manholes, including the removal of any unsound material.

c. Injection of chemical grout.

d. Cleaning and preparatory patching of manholes receiving liners.

e. Removal of flush valves and water service lines.

3. Sanitary sewer manhole rehabilitation for frames and covers replacement or adjustments shall be performed in accordance with section ~~3.15~~ 3.16 of these special provisions (Items CF-371 through CF-378).

B. Submittals

1. The Contractor must submit for approval the manufacturers' specifications for all products that will be used for manhole rehabilitation. Only materials approved by the Engineer shall be on the job site.

2. The Contractor must, upon request by the Engineer, submit all other product information deemed necessary by the Board.

3. The Contractor must submit a written Vacuum Test Report for each test location of the concrete lining system indicating pressures, duration, actual leakage amounts, and other data to the Engineer for approval as a condition of acceptance. Testing is to be performed only when the Board inspector is present.

4. For the installation of the lightweight spray applied structural concrete lining system the Contractor shall submit a Warranty Certificate showing that the Contractor, the Applicator, and the Manufacturer will warrant the installed cementitious lining system against infiltration and corrosion for a minimum of 1 year from Final Acceptance of the Contract by the Board.

5. The Contractor shall provide certification from each product manufacturer utilized that the applicator is certified to apply the product and the manufacturer has witnessed and approved the application in the first manhole to be rehabilitated with the product.

C. Manhole rehabilitation materials

1. General

a. All materials shall be designed, manufactured, and intended for sewer manhole rehabilitation and the specific application in which they are used.

b. Each material shall be designed for application over damp surfaces (not wet surfaces or surfaces with actively running water) without degradation of the final product or the bond between the product and the manhole surface.

2. Infiltration Control: Stopping active leaks in concrete and masonry manholes shall be achieved by using the following:

a. Hydraulic Cement:

i. The hydraulic cement shall be a fast-setting, volume-stable, waterproofing, cementitious plugging material. The material shall consist of hydraulic cement, graded silica aggregates, and special plasticizing/accelerating agents. It shall not contain chlorides, gypsum, plasters, iron particles, aluminum powder or gas-forming agents, nor shall it promote the corrosion of steel.

ii. The material shall meet the following physical property requirements:

Set time (max)	ASTM C403	60 to 90 sec
Compressive strength (1hr)	ASTM C109	1000 psi
Bond strength (1hr)	ASTM C321	50 psi.

iii. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

b. Chemical Grout:

i. The chemical grout shall be a hydrophilic liquid that is water reactive and will change from a free-flowing liquid to a water impermeable elastomeric gel upon injection to stop excessive infiltration to a manhole. The reaction (curing) shall produce a chemically stable and non-biodegradable, tough, flexible gel. The chemical grout shall be a urethane liquid in uncured form with a moderate viscosity suitable for pumping and variable curing times. ii. The polyurethane chemical grout shall be Scotch-Seal 5610 by 3M, Avanti AV-254, or approved equal.
The material shall meet or exceed the following requirements:

- The liquid shall have a solids content of 80% and a specific gravity of 1.04 to .11.

- The liquid shall have a viscosity of 300 to 1000 centipoise at 70-degree Fahrenheit.
- Gel times shall be in accordance with the manufacturer's recommendations.
- The grout shall have the ability to increase viscosity, density, gel strength and resistance to shrinkage by the use of additives in the reaction water.

iii. A reinforcing agent shall be added to the reaction water at the manufacturer's suggested rate. This agent is intended to increase the polyurethane gel's resistance to wet/dry cycles, freeze/thaw cycles, and solid movement stresses. The reinforcing agent shall be appropriate for the specific grout product that is to be used.

iv. Additional chemical grout additives, such as catalysts or accelerators, needed to make the grout function properly shall be as manufactured by 3M, Avanti, or approved equal and shall be used in a manner approved by the manufacturer.

3. Patching

a. Material - Patching, repointing, filling, and repairing nonleaking holes, cracks, and spalls in concrete and masonry manholes, including trough repair shall be achieved by using the following material:

b. A premixed non-shrink, cement-based, patching material. The material shall consist of hydraulic cement, graded silica aggregates, special plasticizing/accelerating agents, which has been formulated for vertical or overhead use. It shall not contain chlorides, gypsums, plasters, iron particles, aluminum powder, or gas-forming agents, nor shall it promote the corrosion of steel.

i. The material shall meet the following physical property requirements:

Set time (max)	ASTM C403	30 min
Compressive strength (1 hr.)	ASTM C109	800 psi
Compressive strength (28 day)	ASTM C109	3000 psi.

ii. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

D. Spray applied and centrifugally cast lining materials

1. The material applied to the surface of the manhole shall be a lightweight structurally reinforced cementitious blend of siliceous aggregates, non-metallic fibers, and other additives. The material shall produce a monolithic liner that is impervious to the flow of water, resistant to sulfide attack, and restores structural integrity to the existing manhole walls. The material

shall be Permacast MS-10,000, Quadex QM-1s, SCM Reliner MSP, Strong Seal MS-2A, or approved equal.

2. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

3. The cementitious lining system shall result in a monolithic structure conforming to the interior shape and contour of the existing manhole and covering all interior surfaces. The lining system shall be completely watertight and free of any joints or openings other than pipe inlets, pipe outlets, and the rim opening. The junction of the lining material with the pipe material at the inlets and outlets shall be watertight.

4. The cementitious lining system shall allow rehabilitation of a concentric, eccentric, or flat top manhole without removing the manhole frame casting and top section or corbel.

5. For manholes greater than 12 feet in depth, the lining shall withstand the pressures associated with a groundwater depth equal to the manhole depth. Linings for all other manholes shall withstand the pressures associated with a minimum depth of 12 feet. The manufacturer's recommended lining thickness dimensions to withstand groundwater pressure shall be submitted to the engineer for review.

6. The material shall have the following minimum requirements:

Compressive Strength (28 days), psi	ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars	3,000
Tensile Strength, psi	ASTM C496 - Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens	300
Flexural Strength, psi	ASTM C293 - Standard Test Method for Flexural Strength of Concrete	600
Bond Strength, psi	ASTM C321 - Standard Test Method for Bond Strength of Chemical-Resistant Mortars	130
Shrinkage, %	ASTM C596 - Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement	0
Density, lb/cf	(when applied)	105

7. The material shall be designed for the selected method of application.

E. Wall cleaning material

1. Pressure Washing Equipment shall have the following minimum requirements:

a. Operating Pressure – 3,000 psi with the capability to produce a continuous flow of water at a minimum temperature of 210-degree Fahrenheit at a minimum force of 3,000 psi.

2. Cleaners: Detergent or muriatic acid capable of removing dirt, grease, oil, and other matter which would prevent bonding of the sealing material to the manhole wall. The Contractor shall refer to the lining material manufacturer's recommendations for preparatory surface cleaning.

F. New manhole frames and covers shall be East Jordan Iron Works (Vulcan) V-1501, or approved equal, as detailed on S&WB STD Drawings 3143-E-1. Work shall be performed and will be paid for as per section ~~3.15~~ 3.16.

G. Manhole casting embedment sealant

1. The sealant shall be a premium, extruded, bituminous, tacky rubber sealant in rope form for use on manholes as an embedment material for the frame to adjusting brick/mortar corbel. Work shall be performed and will be paid for as per section ~~3.15~~ 3.16.

2. Sealant shall conform to the latest version of ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants and Federal Specification SS-S-210A – Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints, Type I.

3. The sealant shall have the following properties:

Physical Properties	REQUIRED
Initial Elongation, %, min.	300
Elongation, %, min., at two weeks in total water immersion	300
Storage Life	Indefinite
Service Temperature Range, ^{0}F	-20 to 200

H. The Contractor shall perform all work needed to structurally repair manholes, improve sewer flow, prevent entrance of inflow or groundwater, and prevent entrance of soil or debris.

I. Delivery, storage, and handling

1. The materials shall be delivered to the job site in original unopened packaging and clearly labeled with the manufacturer's identification and printed instructions. The Contractor shall handle and store all material in accordance with manufacturer instructions and shall dispose of all wastes in accordance with applicable regulations.

2. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods.

J. Project conditions

1. Manholes Containing Flow Monitoring Equipment:

a. Drawings may not show locations of flow monitoring equipment. If a manhole contains any mechanical hardware or electrical flow monitoring equipment, the Contractor shall immediately notify the Engineer.

b. Work in such manholes shall be rescheduled at no additional cost to the Board until the Board has removed the equipment and the Contractor has been given further instructions.

c. Manholes with mechanical hardware or electrical equipment shall not be subjected to diversion pumping.

d. Any damage to installed equipment, resulting from the Contractor's failure to adhere to the above, shall be repaired by the Board at the Contractor's expense.

2. Field Location of Manholes:

a. The Contractor shall be responsible for locating and uncovering all manholes. If the Contractor is unable to locate a manhole after due diligence with measuring tapes, metal detectors, and probing, the Contractor shall notify the Engineer in writing for Board assistance.

b. The Contractor is cautioned that manholes that are not part of the subsystem being rehabilitated may be located within the project limits. No payment will be made to the Contractor for work in manholes not indicated on the Drawings or as directed in writing by the Engineer.

K. Manhole covers, frames, and adjusting rings from abandoned, broken, or adjusted castings shall remain the property of the Board. The Contractor shall deliver salvaged items at a time and to a property location designated by the Board.

L. Rehabilitation of manhole structure

1. Disposal Sites: The Contractor may dispose of sludge, sand, debris, grit, and liquid wastes resulting from performance of operations in this contract at the East Bank Sewage Treatment Plant (6501 Florida Avenue). There will be no charge for disposal at this location. The Contractor may utilize and coordinate other licensed disposal sites at no additional cost to the Board, upon approval by the Engineer.

2. Cleaning: All concrete and masonry surfaces to be rehabilitated shall be cleaned prior to the application of rehabilitation products. All grease, oil, laitance, coatings, loose bricks, mortar, unsound brick, or concrete and other foreign materials shall be completely removed. Water blasting utilizing 210-degree Fahrenheit steam unit and proper nozzles shall be the primary method of cleaning; however, other methods such as wet or dry sandblasting, acid wash, concrete cleaners, degreasers and/or mechanical means may be required to properly clean the surface. All surfaces on which these methods are used shall be thoroughly rinsed, scrubbed,

and neutralized to remove cleaning agents and their reactant products. Debris resulting from cleaning shall not be washed downstream but shall be removed from the manhole.

3. Infiltration Control: After surface reparation and prior to the application of mortars and coatings, infiltration shall be stopped by use of an approved water stop compound or chemical grout. All large holes or voids around steps, joints or pipes, all spalled areas and all holes caused by missing or cracked brick shall be patched and all missing mortar shall be removed from the area to be patched or repointed, exposing a sound subbase. All cracks not subject to movement and greater than 1/16 inch in width shall be grouted with approved non-shrink-patching mortar.

4. Channel Repair: The Contractor shall remove all loose grout and rubble from existing channel. The Contractor shall rebuild channel if required by reshaping, repairing slope of shelves or benches. Work shall include aligning inflow and outflow ports in such a manner as to prevent the deposition of solids at the transition point. All inverts shall follow the grades of the pipe entering the manhole. Changes in direction of the sewer and entering branch or branches shall have a true curve of as large a radius as the size of the manhole will permit, but will be shaped to allow easy entrance of maintenance equipment including buckets, CCTV, etc.

5. Manhole Steps: All existing non-stainless-steel manhole steps shall be cut smooth with the wall or be removed completely prior to lining.

6. Full Depth Wall Liner: The lining system shall be installed in accordance with the manufacturer's recommendation to withstand groundwater pressures. Cementitious lining shall be applied to manhole wall, bench, and channel surfaces. All cementitious linings shall have a minimum thickness of 5/8 inch. All multi-component polymeric lining shall have a minimum thickness of 1/2 inch.

a. Application of all products shall be by manufacturer certified applicators.

b. Manholes requiring lining shall be cleaned no more than 2 hours before lining. The surface prior to lining shall be damp without noticeable free water droplets or running water. Materials shall be applied to a minimum uniform thickness ensuring that all cracks, crevices, and voids are filled, and a smooth surface remains after light troweling.

c. For spray applied lining, the first application shall take an initial set (disappearance of surface sheen which could be 15 minutes to 1 hour depending on ambient conditions) before the second application, if necessary, to assure a minimum total finished thickness of 5/8 inch. For centrifugally cast lining, the rotating casting applicator shall be positioned to evenly apply the material and shall be withdrawn at a rate to ensure a final minimum thickness of 5/8 inch. A depth gauge shall be used during application, at various locations, to verify the required thickness.

d. The Contractor shall apply light troweling to compact the material into voids and set the bond. The surface shall be troweled to a smooth finish with care taken not to over trowel and bring additional water to the surface.

e. The bench covers used to catch debris shall be removed and the bench and channel lined to produce a gradual slope from the walls to the channel with the thickness at the edge of the channel being no less than 5/8 inch. The wall and channel intersection

shall be rounded to a uniform radius along the circumference of the intersection.

f. No application shall be made to a frozen surface or if freezing is expected to occur within the manhole for 24 hours after application. If ambient temperatures are in excess of 90-degree Fahrenheit, precautions shall be taken to keep the mix temperature at the time of application below 90-degree Fahrenheit.

g. The application shall have a minimum cure time as recommended by the manufacturer before being subjected to active sewer flow.

h. Liner samples shall be taken by the Board assigned testing laboratory on a weekly basis or as directed by the Engineer.

M. Testing and acceptance of full depth liners

1. Cementitious Liners

a. All rehabilitated manholes utilizing a full depth comprehensive lining system shall be tested by using a vacuum method. This testing shall follow the manufacturer's recommendations for proper and safe procedures. Vacuum testing of manholes and structures shall be performed following proper curing of the lining. Any visible leakage in the manhole or structure, before, during, or after the test shall be repaired regardless of the test result at no additional cost to the Board.

b. All pipes for vacuum testing shall be installed at the top access point of the manhole. A vacuum of 10 inches of mercury (5.0 psi) shall be drawn on the manhole and the time for the pressure vacuum to drop 9 inches of mercury (4.5 psi) shall be measured. Manholes will be considered to have failed the air test if the time to drop 1 inch of mercury is less than the value shown in the following table.

Vacuum Test Timetable

Depth - feet	48" Diameter	60" Diameter	72" Diameter	96" Diameter
4	10 sec.	13 sec.	16 sec.	19 sec.
8	20 sec.	26 sec.	32 sec.	38 sec.
12	30 sec.	39 sec.	48 sec.	57 sec.
16	40 sec.	52 sec.	64 sec.	76 sec.
20	50 sec.	65 sec.	80 sec.	95 sec.
24	60 sec.	78 sec.	96 sec.	114 sec.
+ Each 2'	+ 5 sec.	+ 6.5 sec.	+ 8.0 sec.	+ 9.5 sec.

c. When testing, manhole depths shall be rounded to the nearest foot. Testing times for intermediate values of manhole depth shall be interpolated. For manhole depths greater than 24 feet, the values shown in the last line of the table shall be added to the 24-foot value for each additional 2 feet of depth.

d. If the manhole or structure fails the vacuum test the Contractor shall perform additional repairs and repeat the test procedures until satisfactory results are obtained at no additional cost to the Board.

e. After the manhole rehabilitation work has been completed, the Contractor shall allow the manhole to be visually inspected by the Engineer. The finished surface shall be free of blisters, “runs”, “sags”, or other indications of uneven lining thickness. There shall be no evidence of visible leaks.

N. Manhole benches and channels

1. The Contractor shall remove obstructions and all loose materials from benches, troughs, and pipe inverts prior to shaping the channel. The Contractor shall form a smooth, U-shaped channel having a minimum depth of one-half exiting pipe diameter and connecting the inlet and exiting pipes of the manhole using an approved manhole rehabilitation material. The Contractor shall control flow to allow sufficient setting time for material used.

2. The Contractor shall form a smooth transition between the reshaped channel and a raised manhole bench to eliminate sharp edges of pipe, concrete bench, and channel. The Contractor shall make finished benches and channels smooth and without defects which would allow for accumulation of debris.

O. Removal of Flush Valve Apparatus and Water Service Lines

1. For each sewer manhole with a flush valve present, the Contractor is required to remove the flush valve apparatus from the manhole (ITEM NO. CSS742(X10) below). Prior to starting this work, Contractor must send written notification, including manhole ID numbers, to the Engineer. The Engineer’s inspector must witness all work performed.

2. Remove the service line from the manhole to a distance of two (2) feet beyond the exterior face of the manhole wall as directed by the Engineer’s inspector. [See SSERP Detail for Flush Valve Removal]. The water line penetration hole shall be filled from both inside and outside of the manhole with non-shrink grout, (ITEM NO. CSS742(X11) below). The Engineer’s inspector must witness all work performed.

3. For each sewer manhole with a water service line present, locate and disconnect the service line at the water main (ITEM NO. CSS742(X12) below). [See SSERP Detail for Flush Valve Removal]. Prior to starting this work, Contractor must send written notification, including manhole ID numbers, to the Engineer. The Engineer’s inspector must witness all work performed.

4. The Contractor shall refer to the S&WB unit sheets to find the closest water main. To locate the point of connection at the water main, identify the shortest distance between the water main and the point where the service line penetrates the manhole. [See SSERP Detail for Flush Valve Removal]. Typically, the actual connection is within six feet in either direction of the theoretical connection point. On the manhole side of the water main, and at approximately twelve (12) inches clear from the outside of the water main, carefully sawcut any pavement and excavate parallel to the main until the water service line is located. Once located, trace the

service line to the main. Limits of pavement saw cutting and removal shall be limited to within panels and not extend beyond panel joints without engineer's approval.

5. At the water main, the service line may or may not be connected to the water main with a corporation cock. If a corporation cock is present, the corporation cock should be turned off and the service line disconnected. The cock should be inspected to determine if it is leaking. If there is no corporation cock, or if the corporation cock is leaking, it will be necessary for the S&WB to shut down the water main. The Contractor shall then remove the direct connection or leaking corporation cock and seal the tap hole using a full circle stainless steel repair clamp approved by the Engineer (ITEM NOS. CSW741-01 or CSW741-02).

6. The remainder of the water service line shall be abandoned in place.

7. Restore the site to pre-construction condition in accordance with the restoration specifications and pay items in this contract.

P. Final Acceptance of the Contract will be granted via Sewerage and Water Board Resolution. All Contract work is not considered final accepted until the Resolution has been passed by the Board of Directors.

SECTION 2.11 – CURED-IN-PLACE PIPE LINING

A. The Contractor shall provide all labor, materials, equipment, and incidentals to accomplish the Cured-In-Place Pipe (CIPP) Lining of all existing sewer pipe and service laterals as shown on the Drawings and specified herein.

B. The Contractor shall furnish an extended warranty for liner materials from the liner manufacturer for a total of 5 years from the date of Final Acceptance.

C. The Contractor shall have a minimum of two (2) years' experience in sewer line repairs by CIPP liner installation. The CIPP liner product manufacturer shall have a minimum installation history of two (2) years and 100,000 linear feet of furnished product including the sizes applicable for this project. Verifiable experience shall be submitted to the Board upon request.

D. Liner

1. All CIPP lining products shall comply with the latest versions of ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube, or ASTM F1743 - Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP). The Contractor shall furnish a general purpose unsaturated, polyester, or thermosetting vinyl ester resin and catalyst system that provides cured physical strengths specified herein.

2. The flexible tube shall consist of one or more layers of needled felt or equivalent woven or non-woven material manufactured under quality-controlled conditions set by the manufacturer and be capable of carry resin and withstanding installation pressures and curing temperatures. The tube shall be compatible with the resin system used and shall contain no intermediate layers that delaminate after resin curing. It shall not be possible to separate any layers with a probe or knife blade such that the layers separate cleanly or the probe or knife blade moves freely between the layers.

3. The flexible tube material shall be able to stretch to fit irregular pipe sections and negotiate bends. The tube shall be fabricated to a size that when installed will neatly fit the internal circumference and length of the existing sanitary sewer main lines and service lateral lines when installed. Allowance shall be made for circumferential stretching during insertion so that the final cured product is snug against the wall of the host pipe and free of fins and buckles.

4. The resin used shall be a thermoset resin system that is compatible with the CIPP installation. The resin shall be able to cure in the presence of water and the initiation temperature for cure shall not be more than 180o F.

5. The liner thickness shall be sized for a minimum hydrostatic and earth load of 8 feet. The earth load and hydrostatic load shall be increased to the manhole depth for bury depths in excess of 8 feet unless otherwise noted.

6. The wall color of the interior pipe surface of the CIPP after installation shall not be of a dark or nonreflective nature that could inhibit proper CCTV inspection.

7. The liner shall be structurally designed for a fully deteriorated host pipe/direct bury condition, prism loading, and AASHTO Standard Specification for Highway Bridges HS-20-44 live loading due to traffic. The liner shall be designed for the following conditions:

DESIGN PARAMETER	VALUE
Minimum Service Life	50 years
Soil Density	120 pounds per cubic foot (lb/cf)
Soil Modulus	1000 pounds per square inch (psi)
Minimum Safety Factor	2.0
Ovality Factor	2%
Maximum Deflection	5% in vertical axis
Long Term Modulus Reduction Factor	50%

8. The final CIPP liners shall conform to the minimum structural standards as listed below in accordance with the latest versions of ASTM D790 - Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials and ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube:

FINAL CIPP	MINIMUM REQUIRED
Flexural Stress	4,500 psi
Short Term Flexural Modules	250,000 psi
Long Term Flexural Modules	125,000 psi

9. The liner shall be fabricated from materials which when complete are chemically resistant to and will withstand internal exposure to domestic sewage having a pH range of 5 to 11 and temperatures up to 125o F. CIPP liners shall meet the minimum chemical resistance

requirements in accordance with the latest version of ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.

10. The liner shall be furnished to the following minimum thickness, or the thickness based upon design criteria as specified herein, whichever is greater:

Pipe Diameter (inch)	Depth of Sewer Invert (feet)	CIP Nominal Thickness (millimeter)_	(inches)
6	to 20	4.5	0.177
8	to 20	6.0	0.236
10	0 to 15	6.0	0.236
10	15.1 to 20	7.5	0.295
12	0 to 10	6.0	0.236
12	10.1 to 20	7.5	0.295
15	0 to 10	7.5	0.295
15	10.1 to 15	9.0	0.354
15	15.1 to 20	10.5	0.413
18	0 to 10	9.0	0.354
18	10.1 to 15	10.5	0.413
18	15.1 to 20	12.0	0.472
Pipe Diameter (inch)	Depth of Sewer Invert (feet)	CIP Nominal Thickness (millimeter)_	(inches)
21	0 to 10	10.0	0.374
21	10.1 to 20	15.0	0.555
24	0 to 10	12.0	0.472
24	10 to 22	15.0	0.590
27	0 to 10	12.0	0.465
27	10.1 to 20	18.0	0.705
30	0 to 10	15.0	0.590
30	10 to 22	21.0	0.817
36	0 to 20	24.0	0.921

E. Expanding hydrophilic rubber joint seal

1. The rubber joint seal shall be an extended hydrophilic rubber compounded from chloroprene (Neoprene) rubber and hydrophilic resin, which expands on contact with water.

2. The rubber joint seal shall be bonded with adhesive on one face to hold it in place during assembly.

3. On contact with water, the rubber shall swell a minimum of 8 times its original volume, if necessary, and mold itself to completely fill any gaps and exert pressure evenly to ensure the seal. High compression or bolt up forces shall not be necessary to affect a complete and watertight seal.

F. Chemical grout - Chemical Grout in accordance with SECTION 2.10 - SANITARY SEWER MANHOLE REHABILITATION, Subsection C, Paragraph 2, Subparagraph b.

G. Delivery, storage, and handling

1. The Contractor shall comply with the pipe manufacturer's printed recommendations for delivery, storage, and handling of all products.

2. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods at no additional cost to the Board.

H. All required flow isolation of private services shall be in accordance with section 2.07.B of these special provisions.

I. Preparation

1. The Contractor shall carry out his operations in accordance with all OSHA and manufacturer’s safety requirements. Particular attention is drawn to those safety requirements involving the entering of confined spaces.

2. The Contractor shall take field measurements to verify the existing pipe diameter, ovality and length prior to manufacturing liners. The manufacturer shall incorporate these measurements into the manufacturing process of the liner. The outside of the flexible tube shall be marked along its full length at regular intervals not to exceed five (5) feet. It shall be the responsibility of the Contractor to remove all internal debris such as solids and roots and clean the existing sewer line prior to installation of the liner in accordance with Section 2.09 Pre-and Post-Rehabilitation CCTV Inspection and Cleaning.

3. Inspection of existing sewer lines shall be performed by experienced personnel trained in locating breaks, obstacles, and service connections by CCTV. The interior of the line shall be carefully inspected to determine the location of any conditions which may prevent proper installation of the CIPP liner into the main lines or service lateral lines, and such conditions shall be noted so they can be corrected. A videotape and log shall be kept as specified in Section 2.09 Pre-and Post-Rehabilitation CCTV Inspection and Cleaning.

4. The Contractor shall provide for the flow of sewage around the section or sections of pipe designated for lining as specified in Section 2.07B, Sewer Flow Control. The Contractor shall be completely responsible for preventing service line back-ups during the CIPP liner installation and curing periods.

5. The Contractor shall clear the line of obstructions such as solids, protruding gaskets, dropped joints, protruding service connections, or collapsed pipe that will prevent the insertion of the liner, as noted during pre-rehabilitation CCTV inspection. If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment, the Contractor, upon approval from the Engineer, shall make a point repair to uncover and remove or repair the obstruction prior to lining.

6. Location and distance from the upstream and downstream manholes of all internal and external point repairs shall be determined before rehabilitation commences.

7. Only those sewer services that are live and active shall be repaired or reinstated after the sewer main has been lined or replaced. The Contractor shall note that not all sewer lines segments have been televised in their entirety due to obstructions blocking further entry, etc. These obstructions shall be cleared to allow CCTV viewing of the entire segment length before lining is commenced. The number of service connections on some sewer segments may exceed the number of buildings actually served. It is the Contractor's responsibility to determine through dye testing, CCTV inspection or other acceptable methods, the services that are live and require reinstatement prior to commencing lining of the sewer main. Services that are confirmed to be inactive shall not be reinstated. Services that are inactive, but reinstated, shall be plugged at no additional expense to the Board.

J. Installation

1. Installation shall be accomplished by inversion or winched-in-place methods and cured in place by ambient temperature or circulating hot water or steam to produce a hard, jointless, impermeable pipe repair. Installation procedures shall be in accordance with the latest versions of ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube or ASTM F1743 - Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP), and the manufacturer's recommendations.

2. The Contractor shall designate a location where the reconstruction tube will be vacuum impregnated prior to installation. The Contractor shall allow the Engineer to inspect the materials and "wet out" procedure. Sufficient excess resin shall be used in accordance with the latest version ASTM F1216. A roller system shall be used to uniformly distribute the resin throughout the tube.

3. Before installation begins, the tube manufacturer shall provide the minimum pressure required to hold the tube tight against the existing conduit, and the maximum allowable pressure so as not to damage the tube. Once the installation has started the pressure shall be maintained between the minimum and maximum pressures until the installation has been completed.

4. The curing of the CIPP must take into account the existing pipe material, the resin system, and ground conditions (temperature, moisture level, and thermal conductivity of soil). The post-cure temperature should be held for a period as recommended by the resin

manufacturer, during which time the recirculation of the water and cycling of the head source to maintain the temperature continues.

5. The bond between all CIPP layers shall be strong and uniform. All layers, after cure, shall be completely saturated with resin.

6. The CIPP shall be cooled to a temperature below 100oF before relieving the hydrostatic head. Care should be taken in release of the static head so that a vacuum will not be developed that could damage the newly installed liner.

7. Where practicable, liners can be installed in continuous runs through manholes where there are two of more continuous sewer segments requiring lining, especially to connect several short segments with continuous lining.

8. The temperature of water discharged to the sewer system from processing liners shall not exceed 125o F maximum, or the level allowed by State or local standards if less than 125o F.

9. The Contractor shall furnish on-site on a continuous basis one (1) additional operational robotic cutter assembly train and key spare components as a "stand-by" unit in the event of primary equipment breakdowns.

K. Post installation

1. After installation of the liner in a full segment pipe, a minimum of one (1) inch of the liner material shall be left to protrude from the wall of the entrance and the exit manhole.

2. The Contractor shall install a joint seal at all manhole inlet and outlet connections to seal the area where the line enters or leaves each manhole. The Contractor shall use grout to dress up around the end of the liner. This space may be sealed with a mechanical seal, chemical seal, or combination of both. The method used shall be as approved by the Engineer.

3. The upstream and downstream manholes shall be inspected and any holes or voids in the manhole wall immediately surrounding the new liner shall be sealed with a hydrophilic rubber joint seal and chemical grout as specified herein. The Engineer shall approve the seal.

4. Where liners of any type are installed in two or more continuous manhole segments, the liner invert through the trough of intermediate manholes shall be left intact. Final finishing of the installation in those intermediate manholes shall require removal of the top of the exposed liner with a horizontal cut and neat trimming of the liner edge along the top edge of the bench and any cut portions removed from the system.

5. Portions of any piece of liner material removed during installation shall be available for inspection and retention by the Engineer. Any unrestrained samples shall not be used for testing purposes.

6. The Contractor shall reinstate openings for all drop assemblies after relining the mainline sewer.

7. Service connections shall be reinstated without excavation, utilizing a remotely controlled cutting device monitored by a CCTV camera. The coupons from this action shall be collected downstream and submitted to the Engineer. The Contractor shall provide certification that he has the required equipment to reinstate the service connections as specified herein.

8. After the liner has been installed, in the event that the Contractor chooses to temporarily reinstate service lines, all active existing services may be temporarily reinstated by punching through the liner from the interior of the pipeline. Temporary reinstatements shall allow normal flow from the service line into the mainline. Final reinstatement of all active services within a rehabilitated line segment shall be performed internally using a robotic cutter within 48 hours of curing and buffed to a minimum of 95% of the original service opening size. The finished opening shall contain no jagged edges.

L. Testing

1. During the cool down process, after installation and curing of the liner, the Contractor shall perform tests on the sewer line to determine if it is watertight. No separate payment will be made for testing.

2. The Contractor shall furnish all necessary equipment to conduct the test.

3. The sewer shall be tested using either exfiltration test methods in accordance with the latest version of ASTM F1216 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated tube or air test methods as specified herein.

4. After completing lining and service reinstatement, every liner shall be CCTV inspected in accordance with Section 2.09 of the Special Provisions. Segments not fully conforming to these Specifications must be immediately brought to the Engineer's attention. The Contractor shall furnish a written proposed method of correction within 24 hours for approval by the Engineer.

5. The Board will have a certified independent testing lab analyze finished liner samples taken from the restrained sample located at the manhole invert. The Contractor shall furnish samples directly to the Engineer within 2 days after installation.

a. A minimum of one (1) sample shall be taken from every four (4) segments installed. The restrained samples shall be a minimum of one (1) foot in length. The Contractor shall place a sample mold aligned with and the same size as the existing sewer in such a manner as to allow the installation of the liner material through the restraining sample mold. This sample mold shall be made of SDR 35 PVC, or an Engineer approved equal.

b. The resin-impregnated tube shall be installed and cured through this restraining mold in order to obtain a liner sample representative of the actual liner physical characteristics. The sample shall be removed from the mold and shall be labeled with the project number, date of installation, pertinent manhole numbers, nominal thickness, flow direction, and location of installation. The Contractor and Engineer shall acknowledge receipt and transfer of all samples.

c. Tests in accordance with the latest versions of the ASTM standards for flexural strength, flexural modulus and wall thickness will be conducted by the independent testing lab.

d. A sample will be provided by the Contractor to the Engineer for all CIPP installation over 18" inches in diameter to be tested in accordance with ASTM standards.

M. Acceptance

1. The finished CIPP liner shall be fully rounded and free from visible defects, including but not limited to damage, deflection, holes, delamination, ridges, cracks, uncured resin, foreign inclusions, or other objectionable defects as determined by the Engineer.

2. There shall be no visible infiltration through the liner, or around the liner at manhole or service line connections. The Contractor shall be required to repair any visible leaks in a manner approved by the Engineer.

N. Non-conforming work

1. If either the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP liner are less than 80% of the approved design values, the product is considered unacceptable. A method of repair or replacement shall be submitted for review and approval by the Engineer. All work required to remedy non-conforming work shall be at no additional expense to the Board.

2. For all instances, as described in this Subsection, other than thickness, flexural strength, and flexural modulus of elasticity, where the CIPP liner is deemed unacceptable, the Contractor shall submit a method of repair or replacement for review and approval by the Engineer. All work required to remedy non-conforming work shall be at no additional expense to the Board.

3. Where post-installation thickness measurements and/or physical property testing is performed, payment for installed cured-in-place pipe shall be made in accordance with the following:

a. If the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP are 90% or greater than the approved design values, full payment shall be made accordingly.

b. If the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP are between 90% and 80% of the approved design values, with all at least 80% of the approved design values, payment shall be based on:

Adjusted Unit Price = Unit Price Bid X Value Factor, where:

Value Factor = [__*__ thickness + __*__ flexural strength + __*__ flexural modulus of elasticity] / 3.

* Insert actual measured or tested result expressed as a percentage of specified value. Maximum allowable percentage is 100%.

4. If a defect repair is required after the liner has cured, a short segment tube shall be used to splice across the defect repair. The overlap on each defect shall be twice the diameter, or 12 inches, whichever is greater.

O. Measurement and payment for Cured In Place Liners shall be in accordance with the DPW Standard Specifications Section C742.05(k).

SECTION 2.12 – WATER POINT REPAIRS

A. ~~**Installation of water point repairs shall be in accordance with DPW General Specifications Section C741.02.2.**~~

~~**B. Lubricant for gasketed pipe and fittings shall be in accordance with DPW General Specifications Section C741.02.3.**~~

~~**C. All inspection of the water main and related appurtenances will be performed under the inspection of, and to the satisfaction of, the S&WB. Final acceptance of water point repairs is subject to a one-year maintenance period following the substantial completion date of the contract accepted by the S&WB.**~~

~~**D. It is the intent of these specifications and of the contract based thereon, that all pipe joints be watertight under all service conditions. Any and all leaks from improperly laid or defective joints which are discovered at any time prior to the elapse of one year following the final acceptance by the S&WB of the entire work, will be repaired by and at the expense of the Contractor.**~~

~~**E. It is the intent of these specifications and of the contract based thereon, that all pipe joints be watertight under all service conditions. Any and all leaks from improperly laid or defective joints which are discovered at any time prior to the elapse of one year following the final acceptance by the S&WB of the entire work, will be repaired by and at the expense of the Contractor.**~~

~~**F. The Contractor shall follow ANSI/AWWA C651-14 standard for disinfection water mains for new & repaired mains in the presence of the S & WB field representative prior to proceeding.**~~

~~**G. The Contractor shall use either sodium hypochlorite or calcium hypochlorite to provide the disinfectant for the chlorination process. If calcium hypochlorite is used, the Contractor shall pre-mix the calcium hypochlorite into solution before application. All hypochlorite raw materials must be certified as suitable for the treatment of drinking water by an accredited certification organization in accordance with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals – Health Effects.**~~

~~**H. The Contractor shall follow AWWA Standard C651-14, latest revision, these Special Specifications and shall meet the requirements of the Louisiana Department of Health and Hospitals (LA-DHH) for installation and disinfection of potable water mains. Transporting, storage, and handling of all disinfection products, utilized for chlorination, shall be performed in accordance with all applicable Federal, State, Local Laws and Regulations.**~~

~~**I. The Contractor shall chlorinate the new water main system, including fire hydrants, fire hydrant leads, valves, and service connections, under the direct supervision of the S&WB, such**~~

~~that the minimum chlorine concentration throughout the system is 50 mg/l. The chlorinated water shall be retained in the pipe for 24 hours for water mains less than 30 inches in diameter, and for 48 hours for water mains greater than or equal to 30 inches in diameter. After the required retention time, the chlorinated residual shall be at least 5 mg/l free chlorine, as measured by the S&WB. If the residual is less than 5 mg/l at any point in the system, the initial flushing and disinfection procedure shall be repeated by the Contractor until a 5 mg/l free chlorine residual is obtained. The Contractor shall contact the S&WB Water Purification Department (504) 865-0572, a minimum of 72 hours prior to chlorinating the new main to schedule the sample collection.~~

~~J. The Contractor shall flush the chlorinated water from the new main using potable water. Disposal of chlorinated water shall be in accordance with AWWA Standard C651-14 and all federal, state, and local requirements. The Contractor's chlorination and flushing setup shall include provisions for the S&WB to collect a sample, via a ¾" faucet without hose bib threads, on the inlet and each discharge standpipe.~~

~~K. The S&WB shall collect and analyze samples for coliform bacteria, chlorine residual, and turbidity from all pipe extremities and from representative points. All samples must be free from contamination by coliform bacteria and have acceptable turbidity levels as determined by the S&WB. The Contractor shall be responsible for final flushing and coordinating sample collection by the S&WB.~~

~~L. In the event that a new water main tests positive for coliform bacteria following chlorination, the Contractor will be responsible for reflushing the main and coordinating resampling for coliform analysis. If the second set of coliform samples test positive, the Contractor shall be required to repeat the chlorination procedure. A fee may be imposed on the Contractor for the additional supervision, sampling, and analysis required of S&WB employees as the result of the necessity of resampling and/or re-chlorination.~~

~~M. Before the water service is interrupted, the Contractor shall:~~

~~1. Expose the existing water main at the repair point location and verify the type, size, and elevation of the existing service.~~

~~2. Have sufficient materials, equipment, and manpower available at the job site.~~

~~3. Verify materials on hand will meet the job needs after uncovering the existing mains.~~

~~4. Request a water test closure through the S&WB Networks Department (942-3891) a minimum of thirty (30) working days in advance of the scheduled repair.~~

~~5. Have notified all residents and the New Orleans Fire Department a minimum of seventy-two (72) hours in advance of interruption of service.~~

~~N. Any damage caused by the Contractor, will be at the Contractor's own expense.~~

A. The supplemental specifications within this section are applicable to water related work not listed as a standard bid item in Section C741. Any general conditions, materials or methods not discussed

within this section shall be governed by the DPW Standard Specifications Section C742 and the S&WB standard details and specifications.

B. Water point repairs shall be completed in accordance with this section as well as DPW General Specifications Section C741.02.2 and Special Provisions Section 1.22.

C. Point repairs of an existing water main shall consist of recaulking an existing lead bell joint and installing a bell joint clamp, repairing a leak on the water main by installing a full circular stainless steel repair clamp, or replacing a section of existing water main.

D. Point repairs of an existing water house connections 5/8" to 2" shall consist of replacing the entire service connection from the water main to the meter. Existing 5/8" and ¾" services shall be replaced with 1" Polyethylene (PE) tubing. There shall be no splices allowed in repair of the existing water house connection, unless directed by the Engineer.

E. Point repairs of an existing water house connection greater than 2" shall consist of replacement of existing pipe with polyvinyl chloride (PVC) of equal diameter from the main to the shut-off valve where practical. Couplings used to make connections between existing and new pipe shall be AWWA approved and pressure rated as required by S&WB.

F. New water mains sized 2-inch shall be Polyethylene plastic tubing (PE4710, DR 9) conforming to ASTM D2737 and AWWA C901-17, latest edition, and shall be compliant with NSF/ANSI 61. All bronze and brass fittings, connectors, corporation stops, and any other appurtenance used to complete the installation of the water main shall be of domestic manufacture and be lead free. Polyethylene pipe shall be jointed by thermal butt-fusion , flange assemblies, or polyethylene mechanical joint adapters. Installation shall be in accordance with manufacturer's recommendation.

G. All new water mains shall be polyethylene plastic tubing (PE4710, DR 9) conforming to ASTM D2737 and AWWA C901-17, latest edition, and shall be compliant with NSF/ANSI 61. All bronze and brass fittings, connectors, corporation stops, and any other appurtenance used to complete the installation of the water main shall be of domestic manufacture and be lead free. Polyethylene pipe shall be jointed by thermal butt-fusion, flange assemblies, or polyethylene mechanical joint adapters. Installation shall be in accordance with manufacturer's recommendation.

H. All pipe joints shall be installed watertight under all service conditions. Any leaks from improperly installed or defective joints discovered at any time prior to the one-year maintenance period following substantial completion will be repaired by and at the expense of the Contractor.

I. Before the water service is interrupted, the Contractor shall:

a) Expose the existing water main at the repair point location and verify the type, size, and elevation of the existing service.
b) Have sufficient materials, equipment, and manpower available at the job site.
c) Verify materials on hand will meet the job needs after uncovering the existing mains.
d) Request a water test closure through the S&WB Networks Department (942-3891) a minimum of thirty (30) working days in advance of the scheduled repair.

e) Have notified all residents and the New Orleans Fire Department a minimum of seventy-two (72) hours in advance of interruption of service.
f) Any damage caused by the Contractor, will be at the Contractor's own expense.

SECTION 2.13 – GEOTEXTILE FOR STABILIZATION

A. General: This work consists of furnishing and placing geotextile fabric in accordance with these specifications and in conformance with the details shown on the plans.

B. Materials: The geotextile fabric shall conform to Section 1019, Class D.

C. Construction Requirements: Rolls of geotextile fabric shall be kept covered at all times until used. Geotextile fabric that has been installed shall be covered with embankment within 7 calendar days. When ultraviolet damage occurs, the geotextile fabric shall be removed and replaced. The geotextile fabric shall be placed at the locations shown on the plans or as directed. Adjacent rolls of geotextile fabric will be overlapped or sewn. When rolls are overlapped, the overlap shall be a minimum of three (3') feet, including the ends of the rolls. The top layer of the geotextile fabric shall be parallel with adjacent rolls and in the direction of construction.

1. Geotextile fabric shall be placed as smooth as possible with no wrinkles or folds, except curved road sections. For curved road sections, the geotextile fabric shall be folded to accommodate the curve. The fold shall be in the direction of construction and pinned or stapled. Ruts that occur during construction shall be filled and compacted prior to placement of geotextile fabric.

2. Damaged geotextile fabric shall be either removed and replaced with new geotextile fabric or covered with a second layer of geotextile fabric extending three (3') feet in each direction from the damaged area.

SECTION 2.14 – GEOGRID

These items shall be governed by the requirements of the "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, latest edition, Section C203 Geogrid, shall be the General Conditions for this Contract and shall govern except as modified here-in. Acceptable geogrid, when approved by the Engineer, shall meet the required material properties, geometry, and characteristics listed below.

PROPERTY	TEST METHOD	UNITS	GEOGRID OPTION VALUES	
Geometry				
Aperture Shape			Square	Equilateral Triangular
Aperture size	I.D. Calipered or Observed	in (mm)		1.6 (40) (nom)
MD		in (mm)	1.3 (33) (nom)	
CMD		in (mm)	1.3 (33) (nom)	
Thickness				
Ribs	Calipered	in (mm)		0.05 (1.2) (nom)
MD	Calipered	in (mm)	0.09 (2.4) (nom)	
CMD	Calipered	in (mm)	0.06 (1.5) (nom)	
Junctions	Calipered	in (mm)	0.125 (3.2) (nom)	0.13 (3.3) (nom)
Physical Characteristics				
Tensile Strength @ 2% Strain				
MD	ASTM D6637	lb/ft (kn/m)	650 (9.5)	
CMD	ASTM D6637	lb/ft (kn/m)	685 (10)	
Tensile Strength @ 5% Strain				
MD	ASTM D6637	lb/ft (kn/m)	1164 (17)	
CMD	ASTM D6637	lb/ft (kn/m)	1300 (19)	
Ultimate Tensile Strength				
MD	ASTM D6637	lb/ft (kn/m)	1713 (25)	
CMD	ASTM D6637	lb/ft (kn/m)	1775 (26)	
Overall Flexural Stiffness	ASTM D7748	mg-cm	2,150,000 (min)	
Radial Stiffness at 0.5% strain	ASTM D6637	lb/ft	38,500 (min)	18,495 (min)
Aperture Stability	ASTM D7864	m-N/deg	0.80 (min)	
Junction Efficiency	ASTM D6637 & D7737	%	93 (min)	93 (min)
Material				
Polypropylene	ASTM D-4101 Group 1/Class 1/Grade 2	%	98 (min)	98 (min)
Carbon Black	ASTM 4218	%	0.5 (min)	0.5 (min)

SECTION 2.15 – VIBRATIONS DUE TO CONSTRUCTION ACTIVITIES

The Owner ~~will~~ may retain the services of an independent testing laboratory to perform vibration monitoring for the duration of the construction. Payment for these services will be the responsibility of the Owner.

The Project Engineer shall determine the need for vibration monitoring. The Project Engineer shall direct the number and placement of monitors to be used for each activity or condition. Monitoring equipment shall directly measure particle velocity (rate of ground movement) in three mutually perpendicular directions (longitudinal, transverse and vertical) and be capable of recording the vector sum of these three measurements to an accuracy of 0.01 in/sec. In addition, the monitoring equipment shall be capable of producing a continuous written record of all measurements taken. A daily report will be furnished to the Engineer including, at a minimum, a monitoring location plan, all recorded data and a narrative of construction activities which is referenced to the recorded data.

The Contractor shall report to the Engineer's field representative at least twenty-four (24) hours in advance of starting any new construction related activity (or if site conditions change) and request that proper vibration monitoring be provided for this activity and/or condition.

If, at any time, any monitor records a reading of 0.20 inches per second in any direction, the laboratory technician shall notify the Contractor and the Owner's field representative immediately. The Contractor shall record the activity and location causing the reading. If, at any time, any monitor records a reading of 0.25 inches per second or greater in any direction, the laboratory technician shall notify the Contractor and the Owner's field representative immediately and the affecting construction activity shall be suspended. The Contractor shall propose to the Engineer corrective measures for the affecting construction activity to ensure that vibration-monitoring limits will not be exceeded. Upon approval by the Engineer, the modified construction activity may resume. Repair of any damage caused by the vibrations above safe limits as specified herein shall be the full responsibility of the Contractor.

SECTION 2.16 – SUPERPAVE ASPHALTIC CONCRETE REQUIREMENTS

All Superpave asphaltic concrete placement shall conform to Section C502 except where modified here within.

Roadway quality control, roadway acceptance, and surface tolerance shall apply to this project and shall conform to Section C501.

Superpave asphaltic concrete binder course placement shall consist of ¾ inch (0.75") maximum nominal aggregate size. Superpave asphaltic concrete wearing course mixture shall consist of ½ inch (.5") maximum nominal aggregate size. Grade of Asphalt Cement shall be at minimum a PG 67-22. The Engineer shall verify the correct material is used and ensure that roadway density requirements are met in accordance with the contract documents.

The thickness of Superpave binder course shall be placed with a 5" section. Two (2) lifts shall be used: one at 3" and then one at 2". The thickness of Superpave wearing course shall be placed with a 2" section using one single lift.

NTSS-1HM (trackless tack) shall be considered as an acceptable prime coat when requested by the Contractor, approved by the Engineer, and follows the requirements of Section 505 from the latest version of LaDOTD Louisiana Standard Specifications for Roads and Bridges.

When the Owner determines that a core sample shall be obtained, the samples will be drilled by the Contractor at the locations determined by the Director at no direct pay and those samples shall be provided to the Department.

SECTION 2.17 – INTERIM ASPHALT PAVEMENT

Temporary asphalt pavement shall be same mix as asphaltic concrete wearing course; shall be a minimum of two (2) inches thick; shall be placed over a minimum of six (6) inches of compacted crushed stone or crushed concrete and encapsulated in a layer of geotextile fabric.

Measurement and payment for interim asphalt pavement shall be made at the unit price bid per

square yard for Special Bid Item No. CF-501 INSTAL TEMPORARY PAVEMENT, 2” THICK when listed on the Unit Price Form.

SECTION 2.18 – BASE COURSE

All Base Course materials shall conform to section C302 except where modified here within.

Gray Limestone stone conforming to section C302.03 part C is the acceptable material for base course.

Recycled Portland Cement Concrete is not acceptable as a base course material. This is acceptable as a Traffic Maintenance Aggregate.

PART III – SPECIAL ITEMS

SECTION 3.01 – TEMPORARY SIGNS, BARRICADES, PAVEMENT MARKINGS, CONSTRUCTION SIGNING, TRAFFIC MAINTENANCE AND PUBLIC SAFETY

This item shall be governed by the provisions of General Specifications Section C129 Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety except as follows:

There shall be no direct payment for Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety. All costs associated with Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety shall be included in other major items of the proposal.

SECTION 3.02 – MOBILIZATION

For this project mobilization will be considered as a subsidiary obligation of the contractor under other bid proposal items. There shall be no direct payment for mobilization, or for any items that may be referenced as subsidiary to or included in mobilization. All costs associated with mobilization shall be included in other major items of the proposal.

SECTION 3.03 – CLEARING AND GRUBBING AND DISPOSAL OF MATERIALS

There shall be no direct payment for any required Clearing and Grubbing and removal and disposal of material not listed for removal in the proposal. There shall be no direct payment for removal and disposal of culverts, metal curb protection at intersections, metal plates at driveways, existing drain lines or drainage structures and other materials other than Portland Cement Concrete Pavement and Asphaltic Cement Concrete Pavement. All costs associated with Clearing and Grubbing, and removal and disposal of other material shall be considered subsidiary to and included in Roadway Excavation or other major bid items of the proposal.

SECTION 3.04 – CONSTRUCTION LAYOUT

A. This item shall be governed by the requirements of Standard Specification Item C740(51) except as modified here-in. The Contractor will be responsible for laying out the work prior to beginning of construction and establishing grades for all roads to maintain positive drainage when the profile of the road is altered. The Contractor shall initiate a Request for Information to the Engineer for review if any changes to the existing road profile are to be made. The Contractor shall provide elevations to the Engineer in order to evaluate the effect of grade changes to the adjacent driveways, sidewalks, and residential lots. The Contractor shall submit a detailed sketch to the Engineer that shows existing roadway elevations and the proposed gutter line. This effort shall consist of adjusting catch basins or drop inlets as the low points of this profile. Any change to the existing road profile shall be approved by the engineer and DPW prior to making any changes. The Engineer shall review and approve the proposed gutter line

to assert that the road is laid out adhering to City Standards. Any changes made to the existing road profile without the City's approval may be rejected and replaced at the Contractor's expense.

B. Prior to starting construction in each block, the Contractor shall be required to mark using survey marking paint the limits of the pavement, driveway, sidewalk, and handicapped ramp removal as shown on the plans, and mark using a contrasting color any areas the contractor recommends as additional removal/replacement due to constructability concerns.

C. There shall be no direct payment for Construction Layout. All costs associated with the requirements included in Section C740 of the General Specifications shall be included in other major items of the proposal.

SECTION 3.05 – TRAFFIC CONTROL PLAN

The requirements of General Specifications Section C128 PERMITS AND REGULATIONS shall apply except a detailed traffic control plan shall be required for this project.

A. The Contractor shall maintain fifty (50%) percent of the roadway accessible to vehicular traffic at all times, and for major streets shall maintain 100% of roadway accessible to vehicular traffic between the hours of 7-9 A.M. and 4-6 P.M. A traffic control plan indicating, in detail, the location of all signs, lights, and barricades must be prepared by the Contractor for the written approval of the Director, no less than two, nor more than ten working days in advance of implementation. It shall be the Contractor's responsibility to obtain these approvals in writing. There is no direct pay for this requirement.

B. The Police Department, Fire Department, all affected utilities as well as any and all residents and/or businesses affected must be informed a minimum of twenty-four (24) hours in advance of anticipated closures and the duration thereof.

C. Construction traffic control signs, barricades, warning lights, devices, and methods, shall comply with Part VI of Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) unless otherwise directed by the Director. There is no direct pay for this.

D. All traffic control devices (roadway markings, signs, signals, signal controls, etc.) destroyed as a result of construction shall be replaced at the Contractor's expense.

E. The Contractor shall notify the Director immediately if the project requires changes or modifications to existing traffic control signs, parking meters, etc.

The Contractor performing work under this contract shall be required to coordinate and cooperate in scheduling his operations with the Director and S&WB prior to finalizing pavement repairs to accommodate other contractor's activities. There shall be at no direct payment for traffic control plans.

SECTION 3.06 – SAW CUTTING (SIDEWALK, DRIVEWAY AND CURBS)

A. This item shall be governed by the requirements of General Specification Item C202 (55) except as modified here-in. To ensure against ragged connections between old and new work, saw cutting will

be required at sidewalks, driveways, curbs, and/or at other paved construction areas as may be designated by the Engineer.

B. The saw cuts in sidewalks shall be full depth with an appropriate saw to ensure the straight vertical edge for the upper portion on the patch. After the edges have been cut, the areas to be removed are broken in small pieces with pneumatic chisels or drills and the pieces removed. The resulting broken edge of the concrete below the saw cut is left fairly rough and irregular but in approximately vertical plane so that it will provide aggregate interlocks between the patch and existing concrete. Joints and typical joint spacing within the repair area shall be established or reestablished in accordance with the details shown on City of New Orleans Department of Public Works Standard Drawings.

The saw cuts in driveways and curbs shall be full depth with an appropriate saw to ensure the straight vertical edge for the upper portion on the patch. After the edges have been cut, the areas to be removed are broken in small pieces with pneumatic chisels or drills and the pieces removed. The resulting broken edge of the concrete below the saw cut is left fairly rough and irregular but in approximately vertical plane so that it will provide aggregate interlocks between the patch and existing concrete. When breaking the concrete driveway pavement an attempt shall be made to save a minimum twelve (12) inches of the existing welded wire fabric on each side.

Joints and typical joint spacing within the repair area shall be established or reestablished in accordance with the details shown on City of New Orleans Department of Public Works Standard Drawings.

C. Measurement and payment for saw cutting required to establish joints interior to the work area as required by the DPW Standard Details and General Specifications shall not be allowed.

D. Measurement and payment for saw cutting of sidewalks, driveways, or curbs along the ends or perimeter of removal areas as required to protect existing concrete that is to remain in-place shall be made at the unit price bid per linear foot for Special Bid Item No. CF-3 SIDEWALK, DRIVEWAY AND CURB SAW CUTTING when listed on the Unit Price Form.

E. There shall be no Measurement and payment for the depth of saw cutting of sidewalks, driveways, or curbs along the ends or perimeter of removal areas. The depth of saw cutting shall follow the plan drawings regarding the pavement section thickness.

SECTION 3.07 – PAVEMENT SAW CUTTING ADJACENT TO EXISTING PAVEMENT AND AT PATCHES AND UTILITY TRENCHES

A. This item shall be governed by the requirements of Standard Specification Item C202 (56) except as modified here-in. The cut in roadway pavement adjacent to existing pavement that is to remain in place, and for patching, and for utility trenches shall be made prior to demolition of the paved area to be removed and shall be sawcut full pavement depth to ensure the adjacent paved areas that are to remain in place are protected from damage during the demolition process. If the contractor damages the edge of sawcut pavement the contractor shall be required to re-sawcut the entire concrete panel, or as approved by the engineer, to remove the damaged area. Any saw cutting, pavement, and related items that are required due to Contractor damage of existing pavement shall be at no direct cost.

B. This item shall include saw cutting for both Portland cement concrete and asphaltic concrete pavement along the ends or perimeter of removal areas as required to protect existing pavement that is to remain in-place. The pavement saw cut, assuming a full pavement-depth saw cut up to a 10”

maximum depth, shall be made with an appropriate saw to ensure the straight vertical edge for the upper portion on the patch. After the edges have been cut, the areas to be removed shall be broken in small pieces with pneumatic chisels or drills and the pieces removed.

C. Measurement and payment for saw cutting required to establish or reestablish contraction and expansion joints interior to the work area as required by the DPW Standard Details and General Specifications shall not be allowed.

D. Measurement and payment for saw cutting existing pavement along the ends or perimeter of removal areas adjacent to patches and utility trenches shall be made at the unit price bid per linear foot for Special Bid Item No. CF-4 PAVEMENT SAW CUTTING ADJACENT TO EXISTING PAVEMENT AND AT PATCHES AND UTILITY TRENCHES when listed on the Unit Price Form.

SECTION 3.08 - REMOVAL OF ADA-ACCESSIBLE RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS INCLUDING SAW CUTTING

A. This item shall be governed by the requirements of Standard Specification Item C202 except as modified here-in. The unit price bid per Square Yard for this item shall include all saw cutting of curb, curb and gutter bottom, sidewalk, and pavement, removal and proper disposal of existing pavement, curb, curb and gutter bottom, sidewalk, ramps, and curb transitions, including all excavation, associated with handicapped ramp removal and at the locations shown on the plans.

B. Measurement and payment for Handicap Ramps and Concrete sidewalks at intersection shall be made at the unit price bid per square yard for Special Bid Item No. CF-5 REMOVAL OF HANDICAPPED RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS INCLUDING SAW CUTTING when listed on the Unit Price Form.

SECTION 3.09 - ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS

A. This item shall be governed by the requirements of General Specification Item C706 (54) except as modified here-in. Concrete sidewalks at intersection shall include the handicap ramp Type B as detailed on the Construction Documents, and the latest ADA standards, unless otherwise approved by the Director in writing on a case-by-case basis. Concrete shall be 3000 psi compressive strength at 28 days reinforced with 6x6 - W2.9xW2.9 reinforcing mesh weighing forty-two (42) lbs. per 100 sq. ft. placed at 2” from the top of slab.

B. Breaking out and removing existing pavement, curb, and sidewalk will be paid for under another item. Transitional sidewalk, where required, will be paid for under for under other items of the proposal.

C. Measurement and payment for Handicap Ramps and Concrete sidewalks at intersection shall be made at the unit price bid per square yard for Special Bid Item No. CF-6 ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS, when listed on the Unit Price Form, and shall include: detectable warning surfaces, all necessary sand, backfill, concrete, transitional flares, transitional curbs, the curb with thickened section and gutter bottom, and all additional curb transitions required for ramp construction in accordance construction requirements of the Standard New Orleans DPW details.

All non-compliant ADA Handicap Ramps within the limits of construction shall be replaced with ADA

compliant ramps unless otherwise approved by the Director.

Price shall include all backfill and compaction behind curb and along the edges of walk with select material obtained from roadway excavation or other approved sources and installation of the top 4 inches with batture sand for dressing and beneath sidewalks and curbs as required.

Price shall include removal and replacement of adjacent roadway pavement as required to form curb, gutter, and ramp transition areas, where adjacent pavement is not included on the drawings and quantified in other items of the proposal.

Price shall include all dowelling and transverse and longitudinal reinforcement in conformance with the Standard New Orleans DPW details.

Price for new curb or curb and gutters associated with Handicapped Ramp construction shall be measured and paid for as subsidiary to Square Yard unit price bid for ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS.

SECTION 3.10 - DRIVEWAYS AND SIDEWALKS (SPECIAL FINISH)

Special finish sidewalks and driveways in this section shall be in conformance with the requirements of C706 of the DPW General Specifications.

A. SUBMITTALS

1. Product Data: Submit manufacturer's complete technical data sheet for the following:

   a. Colored admixture.
   b. Powder antiquing release agent.
   c. Imprinting/Texturing tools.

2. Samples for initial selection: Manufacturer's color charts showing full range of colors available.

3. Pea Gravel concrete mix shall be submitted in addition to standard concrete mixes for sidewalks and driveways. Pea Gravel Mix shall be in conformance with the requirements of Section C706 of the DPW General Specifications.

B. QUALITY ASSURANCE

1. Manufacturer Qualifications: Manufacturer with 5-years experience in production of specified products.

2. Installer Qualifications: An installer with 5-years experience with work of similar scope and quality.

3. Comply with the requirements of ACI 301.

4. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout the Project.

5. Notification of manufacturer's authorized representative shall be given at least 1-week before start of Work.

6. Integrally Colored Concrete Mockups:

7. Provide under provisions of Section "Submittals".

8. At location on Project selected by Owner and Engineer, place and finish 10 feet by 10 feet area.

9. For accurate color, the quantity of concrete mixed to produce the sample should not be less than 3 cubic yards or not less than 1/3 the capacity of the mixing drum on the ready-mix truck and should always be in full cubic yard increments. Excess material shall be discarded according to local regulations.

10. Construct mockup using processes and techniques intended for use on permanent work, including curing procedures. Include samples of control, construction and expansion joints in sample panels. Mockup shall be produced by the individual workers who will perform the work for the Project.

11. Retain samples of cements, sands, aggregates and color additives used in mockup for comparison with materials used in remaining work.

12. Accepted mockup provides visual standards for work of Section.

13. Mockup shall remain through completion of the work for use as a quality standard for furnished work. Remove mockup when directed.

C. DELIVERY, STORAGE, AND HANDLING

Colored Admixture: Comply with manufacturer's instructions. Deliver colored admixtures in original, unopened packaging. Store in dry conditions.

D. PROJECT CONDITIONS

Integrally Colored Concrete Environmental Requirements:

1. Schedule placement to minimize exposure to wind and hot sun before curing materials are applied.

2. Avoid placing concrete if rain, snow, or frost is forecast within 24-hours. Protect fresh concrete from moisture and freezing.

3. Comply with professional practices described in ACI 305R and ACI306R.

E. PRODUCTS

1. MATERIALS

a. Colored Admixture for Integrally Colored Concrete:

Admixture shall be a colored, water-reducing, admixture containing no calcium chloride with coloring agents that are lime proof and UV resistant.

b. Stamping/Imprinting Tools and Materials:

Stamping/Imprinting Tools and Materials shall be furnished by the Color Admixture manufacturer.

c. Powder antiquing release agent shall be recommended by pattern tool manufacturer and compatible with integral color additives.

2. COLORS AND PATTERNS

a. Concrete Color:

Provide cement, sand, aggregate and colored admixture as required to match existing stamped/colored concrete.

b. Curing Compound: Color to match colored concrete.

c. Surface Texture: Stamped concrete finish.

d. Stamp/Imprinting Pattern:

As required to match existing stamped driveway. The Contractor shall submit imprinting pattern to Engineer for review and approval before construction.

F. MEASUREMENT

The area of driveways will be determined by surface measurements and no extra allowance will be made for shoulders. Sidewalk pavements will be paid for by surface measurements and no deduction will be made for subsurface structures occupying less than five (5) square feet of area. Areas under structures encroaching on Public Property not paved will not be included in the surface measurement.

G. PAYMENT

Payment for special finish concrete driveways and sidewalks shall be made at the contract price per square yard, which includes excavation, installation of expansion joint and welded wire fabric. Granular material for adjustment and removal of existing driveways, sidewalk or banquette pavement shall be paid for in other items.

ITEM NO.	PAY ITEM	PAY UNIT
CF-7	4” Concrete Sidewalk (Special Finish)	Square Yard
CF-8	6” Concrete Driveway (Special Finish)	Square Yard

SECTION 3.11 - SIDEWALK TRANSITION ADJACENT TO ADA-ACCESSIBLE CURB RAMP AREAS

A. This item shall be governed by the requirements of Standard Specification Item C706 (51) Concrete Sidewalk, C706 (57) Brick Sidewalk, and C706 (59) Stone Sidewalk except as modified here-in. This item shall include all necessary work associated with transitioning line and grade of existing sidewalk and non-roadway paved transition areas adjacent to proposed handicapped ramp locations.

B. The unit price bid per Square Yard for SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS shall include all saw cutting, removal and proper disposal of existing sidewalk and non-roadway paved transition areas, all excavation, subgrade preparation, setting bed, concrete foundation, grading, compaction, tamping, and furnishing and placing all necessary fill material, backfill, dressing, sand for adjustment, joints, reinforcement, grout, finishing, curing, and sidewalk or non-roadway paved transition area constructed of a material to match the existing type and surface course unless otherwise directed by the Director. Where existing sidewalk or non-roadway paved transition areas to be removed is Portland Cement Concrete the new surface course shall be 4 inches thick 3,000 psi concrete at 28 days reinforced with 6x6 - W2.9xW2.9 reinforcing mesh. Where existing sidewalk or non-roadway paved transition areas to be removed is Brick or Stone the new surface course shall be replaced in-kind and compliant with the construction requirements of the General Specifications for the type material removed. Where feasible and accepted by the Director existing salvaged material, if reusable, can be removed, properly cleaned, and re-installed. Price shall include all backfill and compaction behind curb and along the edges of walk with select material obtained from roadway excavation or other approved sources and the installation of the top four inches with Batture sand for dressing as required. The Contractor is solely responsible for coordinating with the respective utility for any required adjustments or relocations as required. If approved by the respective utility any necessary utility box adjustments shall be performed by the contractor in accordance with the appropriate standards and requirements at no direct payment.

C. When SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS has been shown on the unit price proposal the extent of transition area allowable for measurement and payment shall be a maximum of 8’-0” in length in each direction from proposed handicapped ramps where existing sidewalk requires replacement to meet line and grade dictated by compliance with the latest ADA standards. The width of the sidewalk transition shall match the width of the material to be removed to meet line and grade dictated by compliance with the latest ADA standards. Locations eligible for use of this pay item shall be recommended by the contractor to the project engineer’s Resident Inspector (RI) for submission to the Director of an approved amount per each location proposed. The Contractor shall consult directly with the RI and provide field measurements, recommendations, and existing and proposed grades as needed to install ADA compliant sidewalk transitions to proposed handicapped ramp locations. Only locations and extents specifically pre-approved by the Director during construction will be eligible for payment. SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS shall not be considered a material part of the work contemplated, and only amounts specifically approved in writing from the Director shall be measured and paid for at the contract unit price bid with no adjustment to the unit price for an increase or decrease in the final quantity approved.

D. Measurement and payment:

1. SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS, not shown on the Construction Drawings but included in the unit price proposal, shall only be measured and paid for each location and specific quantity approved in writing by the Director for Special Bid Item No. CF-13 SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS.
2. All sidewalk areas that are shown on the Construction Drawings are measured and paid for in other applicable pay items of the proposal.

SECTION 3.12 - ADA-ACCESSIBLE CURB RAMP RETROFIT

A. DESCRIPTION

1. This item shall include all necessary work associated with adding ADA compliant tactile / detectable warning surface tiles to existing curb ramps. This Section includes Specifications for furnishing and installing Surface Applied Tactile / Detectable Warning Surface Tiles (SA) in an inline truncated dome pattern on all curb ramps and walking surfaces at the locations and to the dimensions shown on the Drawings, in accordance with the Contract Documents and as directed by the Director. (Surface Applied Tactile is also known as Surface Mount Tactile Warning Tiles or Retrofit Tactile Warning Tiles).

B. RELATED DOCUMENTS

1. Drawings and general provisions of the Contract Documents.

2. Americans with Disabilities Act (ADA) Title 49 CFR Transportation, Part 37.9 Standards for Accessible Transportation Facilities, Appendix A, Section 4.29.2 Detectable Warnings on Walking Surfaces. FHA Memo (5-06-02) titled Truncated Domes. Federal Register Volume 71, No. 209, 49 CFR Part 37 (10-30-06), ADA Standards for Transportation Facilities (11-29-06, DOT): Sections 406, 705, and 810. ADA Standards for Accessible Design – 2010 (9/05/11, DOJ), ADAAG: Sections 705 and 810. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board), PROWAG: Sections R208, R304, R305, R308, and R309.

3. American Society for Testing and Materials (ASTM) Test Methods B117, C501, C1028, D543, D570, D638, D695, D790, G151, G155, and E84.

4. American Association of State Highway and Transportation Officials (AASHTO): Test Method AASHTO-H20

C. SUBMITTALS

1. Product Data: Submit manufacturer's literature describing products, installation procedures and maintenance instructions.

2. Samples for Verification Purposes: Submit two (2) Tactile Warning Surface samples minimum 8" x 8" of the kind proposed for use. Samples shall be properly labeled and shall contain the following information: Name of Project, Submitted by, Date of Submittal, Manufacturer's Name, and Catalog Number.

3. Shop Drawings: Submit Standard Manufacturer Shop Drawings showing all pertinent characteristics of the Surface Applied Tactile Warning Tile (SA) including profile, sound on cane contact amplification feature, fastener locations and installation methods.

4. Material Test Reports: Submit current test reports from qualified, accredited independent testing laboratory in accordance with ASTM guidelines and indicating that materials proposed for use are in compliance with specification requirements and meet the properties indicated. All test reports submitted shall be representative of the Surface Applied Tactile Warning Tile (SA) delivered to the Project.

5. Maintenance Instructions: Submit copies of manufacturer's specified maintenance practices for each type of Tactile Warning Surface Tile and accessory.

D. GUARANTEE

1. SA Tiles shall be guaranteed in writing for a period of five (5) years from date of Contract's final completion. The guarantee includes manufacturing defects, breakage, and deformation.

E. MATERIALS

1. Composition: SA Tiles shall be manufactured using a matte finish exterior grade homogeneous (uniform color throughout thickness of product) glass and carbon reinforced polyester based Sheet Molding Compound (SMC) composite material. Truncated domes must contain fiberglass reinforcement within the truncated dome for superior structural integrity and impact resistance. A matte finish will be required on the Tactile Warning Surface for superior slip resistance performance superior to that offered by a gloss finish. Use of Tactile Warning Surface Products employing coatings or featuring layers of material with differing composition, performance, or color properties is expressly prohibited under this Section.

2. Color: Color shall be homogeneous throughout SA Tile, Dark Gray (G) per Federal Standard 595B Table IV, Color No. 36118.

3. Domes: Square grid pattern of raised truncated domes of 0.2" nominal height, base diameter of 0.9" and top diameter of 0.45". The Federal Code of Regulations permits a truncated dome spacing range of 1.6"-2.4." For superior wheelchair, walker and shopping cart mobility, the preferred truncated dome spacing shall have a center-to-center (horizontally and vertically) spacing of 2.35", measured between the most adjacent domes on square grid.

4. Configuration: SA Tile sizes shall be as indicated on the Contract Drawings. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry. At a minimum, the thickness of the body of SA Tile shall measure 3/16" (nominal). The SA Tile thickness shall not exceed ½" maximum when measured from the curb ramp surface to the top of the truncated dome. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry.

5. In compliance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board, "PROWAG") Section R302.7.2 and California Code of Regulations (CCR 2007) Section 1127B.5.5 and Section 1133B.8.5, the Composite Tactile Warning Surface Tiles shall have a perimeter beveled edge with a maximum slope of 1:2 in order to minimize the potential for a pedestrian tripping.

6. Radius SA Tile:

   a. Radius SA Tile measures 24"x 33.25" and features reverse score lines on each 24" dimension for a 10', 15', and 20' radius condition. The Radius SA Tile out of the box measures 11' - 6" radius.

   b. Truncated domes feature proper dome alignment for a radius application. Radius SA Tile shall be cut to the appropriate configuration using the reverse score lines as a guide.

7. Follow Tactile Warning Surface Manufacturer's installation procedures.

8. Dimensions: SA Tiles shall be held within the following dimensions and tolerances:

   a. Length and Width:

      i. Rectangular SA Tile: 2.35" Dome Spacing

      ii. Radius SA Tile: 1.6" - 2.4" Dome Spacing

9. Fasteners: The Tactile Warning Surface Tile shall have minimum twelve (2'x3' Tactile Warning Surface Tile) to twenty-four (3'x5' Tactile Warning Surface Tile) countersunk fastening holes. Color matched, stainless steel 304, flat head drive anchor: ¼" diameter x 1 1/2" long.

10. Adhesive:

    a. Polyether Structural Adhesive/Sealant by Chem Link (M-1)

    b. Urethane Elastomeric Adhesive by Bostik (Hydroment Ultra-Set Advanced or Durabond D-818)

    c. Approved equal.

11. Sealants:

    a. Single Component Urethane Sealant:

       i. Sources: BASF NP1 by BASF Building Systems or Sikaflex 1A by Sika Corp.

       ii. Colors: Black, Limestone, Redwood Tan

b. Polyether Structural Adhesive/Sealant by Chem Link (M-1)

i. Colors: Black, Gray, Limestone, White

c. Approved Equal

12. Available manufacturers, subject to compliance with these Specifications include, but are not limited to, the following:

a. ADA Solutions Inc. of Chelmsford, MA (Phone: 800-372-0519, Fax: 978-262-9125, Web Site: www.adatile.com, Email: info@adatile.com, or owner approved equal.

F. EXECUTION

1. Preparation

a. Transmit submittals and deliverables required by this Section.

b. Furnish products as indicated.

c. Substrate Condition: Ensure substrate is in suitable condition, and in compliance with the Tactile Warning Surface manufacturer recommendations, to receive work of this Section. Prior to construction, refer any and all discrepancies to the Engineer for further action.

2. Installation

a. Contractor will not be allowed to install Tactile Warning Surface Tiles until all submittals have been reviewed and approved by the Engineer.

b. SA Tile shall be installed per manufacturer's instructions.

c. To the maximum extent possible, the SA Tiles shall be oriented such that the rows of in-line truncated domes are parallel with the direction of the ramp. When multiple SA Tiles regardless of size are used, the truncated domes shall be aligned between the tactile warning surface tiles and throughout the entire tactile warning surface installation.

d. In accordance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board): Sections 304 + 305), Tactile Warning Surface Tile shall be located relative to the curb line as shown within Sections 304+305 of the Guidelines.

e. Cutting of SA Tiles may be required to accommodate specific site conditions. All possible attempts shall be made to minimize cutting of the SA Tiles. Minimum acceptable width of the cut SA Tile shall be 9".

f. Environmental Conditions: Air and substrate temperatures must exceed 40 degrees for at least 8 daytime hours for a sound and proper installation. A

"weed torch" may be used to boost the substrate temperature to expedite cure of adhesives and sealants.

g. Immediately prior to installing the SA Tiles, the concrete surfaces must be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound with a minimum four (4) day concrete cure period (unless otherwise directed by the SA Tile manufacturer) and that the surface is flat. As necessary, substrate may be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material although a broom or leaf blower is usually adequate for cleaning of the substrate.

h. Apply adhesive on the backside of the SA Tiles following the perimeter border and internal cross pattern established by the SA Tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the 2-inch width of the adhesive locator.

i. Set the SA Tile(s) true and square to the curb ramp areas as detailed in the Drawings. Allow 1/8" separation between successive SA Tiles for expansion/contraction.

j. Drill holes true and straight to a depth of 2" by 1/4" using the recommended bit. As necessary, additional countersunk holes may be added to the SA Tile by using a 5-point ½" (82 degree) countersink to create the necessary holes.

k. Mechanically fasten SA Tile to the concrete substrate using a 32oz. to 48oz. hammer to set the composite sleeve anchors. Ensure that the fastener has been set to full depth, straight and true. Care should be taken when setting the fastener to avoid any advertent blows with the hammer to the SA Tile.

l. Following the installation of the SA Tile, the sealant system should be applied to the perimeter edge. Follow the Tactile Warning Surface manufacturer's recommendations when applying the sealant in a cove type profile to blend and seal the SA Tile edge to the adjoining surfaces.

m. Do not allow foot traffic on installed SA Tile until the perimeter edge sealant has cured sufficiently to avoid tracking. If the SA Tile must be placed into immediate pedestrian service, apply baby powder to the sealant to minimize the possibility of tracking while the sealant cures. Foot imprints may appear in the fully cured sealant application

n. A Urethane Sealant such as Sikaflex 1a or BASF NP1 shall be applied to the edge treatment for a watertight Tactile Warning Surface Tile installation.

3. Cleaning and Protecting

a. Protect SA Tiles against damage during construction period to comply with SA Tiles manufacturer's Specifications.

b. As necessary, while the Project remains under construction, protect SA Tiles

against damage from rolling loads following installation by covering with plywood or hardwood.

c. If requested by the Director, clean SA Tiles not more than four (4) days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean SA Tile by method specified by Tactile Warning Surface Products manufacturer.

G. MEASURMENT AND PAYMENT

1. When the Surface Applied Tactile / Detectable Warning Surface Tiles pay item has been shown on the unit price proposal the final approved quantity for installation, measurement, and payment shall be determined by and subject to written approval of the Director and shall not be considered a material part of the work contemplated. Only locations specifically approved in writing by the Director during construction shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the final amount approved.

2. The unit price bid per square foot for Surface Applied Tactile / Detectable Warning Surface Tiles shall include all cost to prepare, furnish, install, clean, protect and warrant the tiles in accordance with the specifications and the manufacturer's recommendations.

3. Surface Applied Tactile / Detectable Warning Surface Tiles shall be measured based on approved actual square footage of installed final product in-place.

4. Surface Applied Tactile / Detectable Warning Surface Tiles, not shown on the Construction Drawings but included in the unit price proposal, shall only be measured and paid for at location approved in writing by the Director for Special Bid Item No. CF-14 SURFACE APPLIED TACTILE / DETECTABLE WARNING SURFACE TILES.

SECTION 3.13 - CONCRETE PAVEMENT (8" THICK)

A. This item shall be governed by the requirements General Specification Item C601 except as modified here-in.

B. The final finish and texture shall be obtained using a broom, or other acceptable methods approved by the Director, in accordance with the latest edition of LaDOTD Louisiana Standard Specifications for Roads and Bridges Section 601.

C. At all locations proposed concrete pavement abuts existing concrete pavement that is to remain in place:

All concrete pavement within the designated area is to be removed and the subgrade area prepared to receive an eight (8") inch compacted crushed stone base course as shown on the typical roadway cross sections contained in the Construction Drawings. Compacted pumped sand covered by a geotextile fabric as required shall be used to bring subgrade to the required elevation. It shall also be used to replace unsuitable subgrade or to fill voids as directed.

No. 5 (#5) dowels 24" long at 12" on center shall be drilled and epoxy grouted into the existing concrete to allow for a proper tie-in.

Just prior to placing the new concrete, the vertical faces of the old concrete pavement are to be coated with an approved concrete epoxy per ASTM C 881 Type II. The new roadway pavement shall consist of four thousand (4,000) psi P.C.C.P. reinforced with 6 X 12 - W 7.5 X W 6.5 welded wire fabric, seventy-seven (77) pounds per one hundred (100) square feet. The new mesh shall be tied to the existing mesh where possible. Full width sheets are to be used and overlapped a minimum of 12", no partial or scrap pieces are to be used.

Wherever a joint (any type) or a part thereof falls within the affected area, the same shall be reestablished in kind and shall be incidental to the work included as concrete pavement.

After all roadway pavement repairs have been completed at a location, Bituminous Wearing Course material, if required, shall be placed in a continuous operation.

D. Unit Price bid shall include all preparation work and drilling and dowelling between existing and proposed pavement in accordance with the CONCRETE PAVEMENT REPAIR detail shown on City of New Orleans Department of Public Works Standard Drawing STD5, except epoxy grout shall also be required.

E. Measurement and payment for concrete pavement shall be made at the unit price bid per square yard for Bid Item No. C601 (54) REINFORCED CONCRETE PAVEMENT (8" THICK) when listed on the Unit Price Form.

SECTION 3.14 - ROOT PRUNING, TREE PROTECTION, LANDSCAPING, AND SIDEWALK GRAVEL BED

Landscaping shall be in accordance with Section C719 of the General Specifications for Street Paving Department of Public Works 2015 Edition (Revised 11/05/2015), Department of Parks and Parkways Specifications Section 02480 *Landscape Protection During Construction,* 02481 *Installation of Plant Materials* and Section 02485 *Seeding and Sodding,* and amended as follows:

A. Root Pruning – All tree roots, of City owned trees, damaged during removal of curbs, sidewalks and driveways shall be root pruned. All tree roots damaged during any excavation operations; yard drains, collector lines, etc. shall be root pruned. Tunneling and boring shall be required when working within the critical root zone. Trenching is prohibited from this area. Air spading may be required in order to reveal the roots under circumstances where construction occurs within the critical root zone as directed by the Parks & Parkways Department (PPD) arborist.

1. Air spading requirement - When working within the critical root zone, air spading is required to expose the top seven to ten inches of the critical root zone to reveal root conflicts.
2. Aerial pruning requirement – When root pruning occurs, aerial pruning is required as per the direction of the Chief Urban Forester to mitigate damage by reducing the canopy in proportion to the root reduction.
3. Lac Balsam is prohibited from use to dress severed roots as a tree wound treatment.
4. A living root that will be buried below grade following pruning shall be treated with a rooting hormone approved by the Chief Urban Forester.
5. A root flare that must be cut and remain exposed shall be treated with a copper paste approved by the Chief Urban Forester.
6. All root pruning shall occur prior to excavation.

7. When circumstance require that roots be exposed for more than 48 hours, the roots shall be re-cut to living tissue, re-treated, buried and irrigated promptly.
8. Approved root cutting tools – Sharp instruments that make clean cuts, including hand saw, loppers, snips or hand pruners, chain saw or reciprocating saw with unpainted blades. Dull blades are prohibited. Trenchers and excavators are prohibited.

B. Fertilization – All trees' roots pruned due to construction shall be fertilized using a water-soluble fertilizer injected into the soil. The fertilization plan shall be based upon soil lab test reports furnished by the Contractor. The minimum acceptable N-P-K ratio shall be 30-5-5. The nutrient complex and ratio (gal. /sq. ft.) must be approved by the Urban Forester overseeing the project.

C. Mycorrhizal Fungal Inoculate – Treatment equal to or better than Mycor Tree Saver, Cambistat, and mulching shall be applied to all construction damaged tree root zones per manufacturer's directions. Cost shall be included in the bid price for root pruning.

D. Termite Treatment – All tree roots pruned due to construction shall be treated for termites. A termiticide equal to or better than Premise manufactured by Bayer Corporation shall be used per manufacturer's directions. Cost shall be included in the bid price for root pruning.

E. Tree Permit Requirements – When necessary, the Contractor will be required to obtain a Tree Permit from the Department of Parks and Parkways.

1. Pre-Permit: In order to obtain a tree permit, the Contractor must satisfy the following conditions:

- The Contractor will ensure that the tree permit application will be made by a Louisiana Licensed Arborist certified by the International Society of Arboriculture
- A signed contract and a written detailed plan are required for issuance of the permit. The plan shall include the location of the proposed excavation, measurements of depth, length, and proximity to the main trunk of the tree, tools and methodology and exact time when work will be performed.

2. Post-Permit: Once PPD approves the tree permit, the Contractor must ensure the following on-going requirements are met:

- The Contractor will ensure that the Arborist is present on the construction site for all excavation and/or root pruning within protected areas of the tree.
- The Contractor will ensure that the Arborist visits the construction site for a minimum of one hour per day during active construction that is near to or involves trees.
- The Contractor will ensure that the Arborist will submit a weekly log of hours to the Chief Urban Forester with each invoice.

F. Canopy Pruning – When aerial pruning occurs, the resulting canopy shall be symmetrical and balanced as per the direction of the Chief Urban Forester.

G. Tree Replacement – Trees determined by the Chief Urban Forester to no longer be viable due to damage inflicted by the Contractor shall be replaced as directed by the Department of Parks and Parkways. At a minimum, trees shall be replaced on the basis of inch caliper per inch diameter lost. In the event that there is not sufficient space for planting, an alternative location may be designated off site, or the Contractor my donate a sum equal to the cost of replacement to the Department of Parks and Parkways Plant-A-Tree Trust Fund.

H. Tunneling and Boring Requirement – When work cannot be redirected away from the Critical Root Zone, tunneling and boring is required for the installation of lines. Trenching is prohibited within the critical root zone. Air spading may be required in order to reveal the roots under circumstances where construction occurs within the critical root zone as directed by the Chief Urban Forester.

I. Root Barrier – When work includes installation of root barrier, the barrier may not be constructed from wood.

J. Restricted Use Instruments – Permission must be obtained from the Chief Urban Forester in advance for use of any machines intended for trenching or mechanical digging. When stump grinders are employed, it must be followed by the use of an approved cutting instrument that will remove any torn or shredded tissue back to a clean, living cut.

F. These items shall be governed by the requirements of General Specification Item C719 except as modified here-in.

G. When Root Pruning has been shown on the unit price proposal the extent of root pruning allowable shall be determined by the Parks & Parkways Department (PPD) and require written approval by the Director. The Contractor shall consult directly with the PPD and provide a licensed arborist as needed to perform root pruning. Only root pruning locations specifically approved by the Director during construction will be eligible for payment. Root Pruning shall not be considered a material part of the work contemplated, and only Root Pruning locations specifically approved in writing from the Director shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the number of items approved. Measurement and payment for Root Pruning shall be made for each approved location at the unit price bid per each tree for Special Bid Item No. CF-10 ROOT PRUNING. When Root Pruning has not been shown on the unit price proposal then any required Root Pruning shall be at no direct payment.

H. There shall be no direct payment for Root Trenching. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the engineer. All costs associated with Root Trenching shall be included in other major items of the proposal.

I. There shall be no direct payment for tree protection. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the Director. All costs associated with tree protection shall be included in other major items of the proposal. Tree protection shall be in place and approved by the PPD arborist prior to commencement of any work on site, including clearing and grubbing.

J. There shall be no direct payment for Sidewalk Gravel Bed as required for ramping over tree roots that interfere with placement of sidewalk. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the engineer. All costs associated with Gravel Bed and Filter Cloth over Tree Roots shall be included in other major items of the proposal.

K. There shall be no direct payment for Tree Trimming required to obtain needed clearance to perform the work. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the engineer. All costs associated with Tree Trimming shall be included in other major items of the

proposal. There shall be no direct payment for air spading and tunnel and boring required to work within the critical root zone as directed by the PPD arborist.

SECTION 3.15 - GRANULAR MATERIAL AND FILL MATERIAL

A. Granular material shall be governed by the requirements of Standard Specification Item C723 except as modified here-in. The Contractor shall be responsible for importation and placement of granular fill material as required for placement of timber or concrete curb and structures. There shall be no direct payment for Granular Material or Batture Sand. Payment for Item C723 Granular Material item no. C723 (52) Batture Sand for Dressing, Granular Material for other Adjustments shall not be allowed. All costs for Batture Sand for Dressing, Granular Material for other Adjustments shall be included in the unit price bid for curbs, sidewalks, or driveways, roadways, or other major items of the proposal as applicable.

B. Fill material shall be required as fill, backfill or dressing material to ensure positive drainage within the limits of the area disturbed by construction, areas adjacent to sidewalk or driveway repairs, and between sidewalk repairs and the roadway to comply with the typical roadway cross sections shown on the plans or as directed. The fill material shall be suitable on-site excavated earth material, subject to approval of the Director, or borrow material compliant with the requirements Standard Specification Item C723 Granular Material with subsection 1003.07 referencing 2006 Edition LaDOTD Standard Specifications for Roads and Bridges. Fill and borrow materials shall be free from waste, rubbish, large rocks, or other unsuitable or foreign material.

Suitable excavated material is to be used if available as fill or dressing to comply with the typical roadway cross sections shown on the plans. In the absence of a sufficient amount of suitable on-site material the Contractor shall provide and import borrow material. There shall be no direct payment for Fill Material. All costs associated with furnishing, hauling, storing, placement and compaction of material used as fill, backfill, or dressing in accordance with the typical sections or as required to ensure positive drainage shall be included in the unit price bid for curbs, sidewalks, or driveways, roadways, or other major items of the proposal as applicable.

SECTION 3.16 - CATCH BASIN AND MANHOLE REPAIRS AND VERTICAL ADJUSTMENTS

A. This work consists of the replacement of components and repair or vertical adjustment of vertical catch basins, mountable catch basins, drop inlet catch basins, and drain manholes as described and in accordance with the details, dimensions, and grades shown on plans or as directed by the Director. These items shall be governed by the requirements of the latest addition of standard Sewerage and Water Board New Orleans (SWBNO) drawings for the type of structure described and Standard Specification Item C702 except as modified herein. When Catch Basin and Manhole Repairs and Adjustments pay items have been shown on the unit price proposal the final approved quantity for installation, measurement, and payment shall be determined by and subject to written approval of the Director and shall not be considered a material part of the work contemplated. Only locations specifically approved in writing by the Director during construction shall be measured and paid for at

the unit price bid with no adjustment to the unit price for an increase or decrease in the number of items approved.

B. Measurement and payment for Catch Basin and Manhole Repairs and Vertical Adjustments items shall be made at the unit prices bid under Special Bid Item Numbers CF-301 through CF-378 for Vertical Catch Basin, Drop Inlet Catch Basin, Mountable Catch Basin, and Drain Manhole in conjunction with Cover or Grate; Frame; Front Grate; and Repair or Vertical Adjustment of Single or Double Basins or Manhole Reusing Existing Metal Castings or Repair or Vertical Adjustment of Single or Double Basins or Manhole Brick Work Only, for each type of Special Bid Item. Measurement shall be per each or per foot height, as specified for each type of repair or vertical adjustment item.

C. Unit prices bid for Catch Basin and Manhole Repairs and Vertical Adjustments items shall include any related preparation and finishing work, all excavation, soil and debris removal and proper disposal, sheeting, shoring, bracing, bedding material, granular backfill, backfill and compaction, cement, mortar, sealants, fabric, shagging, materials, castings, transitions to match adjacent improvements, protection and restoration of adjacent areas, labor and workmanship required to provide each individual repair or adjustment as described. All required removal and replacement of adjacent improvements and any damage caused by the contractor to the bordering roadway, adjacent non-paved area, sidewalk, driveway, ramp, curb, existing structure or components, or other existing assets shall be considered incidental to the unit price paid for the Catch Basin and Manhole Repairs and Adjustments items and the contractor shall be required to replace improvements or repair the damages to comply with SWBNO and DPW approved standards at no direct pay. Each Catch Basin and Manhole Repairs and Adjustments pay item may be required individually, or in combination with other Catch Basin and Manhole Repairs and Adjustments pay items, but the unit price bid shall prevail for each item individually.

D. Vertical Catch Basin items - At no time is a vertical catch basin is to be installed in a driveway, in the event that an existing vertical catch basin is located in the face of a drive apron within project limits and the scope of adjacent work includes full depth restoration, the catch basin will need to be converted to a mountable catch basin conforming SWBNO Std. Drawing No. D-3431-A. Curb inlet type vertical catch basins shall conform to the requirements shown on SWBNO Standard Drawings D-873 and D-873A for single or double vertical catch basins, except:

CF-301 Vertical Catch Basin Cover

Work to provide and install Catch Basin Cover shall include furnishing and installing a cover on the catch basin existing frame. Catch Basins shall receive new covers made of fiberglass material sized to properly to fit flush in the existing metal frame. Fiberglass covers for Catch Basins shall be Grate Glass "M" Solid Composite Plate by Road Masters International or approved equal and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing cover as identified by the Director, cleaning the existing frame, and to fit/retrofit a new cover in the existing frame, measured per each Vertical Catch Basin Cover.

CF-302 Vertical Catch Basin Frame

Catch Basin frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of catch basin repaired. This work will include removing the damaged/missing cover and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged cover or in conjunction with a new cover pay item(s) as directed by the Director. Work and materials for Catch Basin Frame includes the removal of the existing cover and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the basin for the new frame installation, measured per each Vertical Catch Basin Frame.

If no structural repair or vertical adjustment work is required, then Vertical Catch Basin Frame placement shall include any incidental brick and mortar work required for the installation of the frame. If structural repairs or vertical adjustment are required, then the Vertical Catch Basin Frame pay item may be used in conjunction with other pay item(s) for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-303 Lockable Vertical Catch Basin Frame and Cover

Work to provide and install Lockable Catch Basin Frame and Cover shall include furnishing and installing the frame and cover on an existing Catch Basin. Lockable Catch Basin Frame and Cover shall conform to East Jordan Iron Works, INC. V-4300-7 or approved equal. Item installation requirements shall follow CF-302 description. CF-303 Lockable Vertical Catch Basin Frame and Cover will be measured per each.

CF-311 Vertical Catch Basin Front Grate No. 1,
CF-312 Vertical Catch Basin Front Grate No. 2, and
CF-313 Vertical Catch Basin Front Grate No. 3

No. 1, 2, or 3 Catch Basin Front Grate shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing grate and to fit/retrofit a new grate to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged frame and cover, or in conjunction with a new frame and/or cover pay item(s) as directed by the Director. Work and materials for Catch Basin Front Grate includes the removal and reinstallation of the existing cover and frame if necessary, and removal of the existing front grate and furnishing and installing a new front grate including and all components and any related preparation or finishing work to the basin for the new grate installation, measured per each Vertical Catch Basin Front Grate No. 1, 2, or 3. If no structural repair or vertical adjustment work is required then Catch Basin Front Grate placement shall include any incidental brick and mortar work required for the installation of the grate. If structural repairs or vertical adjustments are required, then the Catch Basin Front Grate pay item may be used in conjunction with other pay item for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-315 Single Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, and
CF-316D Double Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of catch basin reusing existing metal castings shall consist of: remove and salvage the existing frame and cover, or frame, cover and grate, remove all of the existing brick and mortar structure to the lowest elevation of brick area requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, and clean and reinstall the salvaged frame and cover, or frame, cover and grate, measured per each.

CF-317 Single Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only, and
CF-318D Double Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only

Work to repair or provide brick work only for vertical adjustment of Vertical Catch Basins shall consist of removing all or a portion of the existing brick and mortar structure down to the lowest brick course elevation requiring repair and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure, measured per each. Vertical Catch Basin Repair or vertical Adjustment Brick Work only shall be used in conjunction with a pay item for installing a new frame and/or a pay item for installing a new front grate.

E. Drop Inlet Catch Basin items - Drop inlet type Catch basins shall conform to the requirements shown on SWBNO Standard Drawings D-3264 for Standard 24”x30” Clear Opening Drop Inlet Catch Basins, except:

CF-331 Drop Inlet Catch Basin Grate

Work to provide and install Drop Inlet Catch Basin Grate shall include furnishing and installing a grate on the drop inlet catch basin existing frame. Drop Inlet Catch Basins shall receive new grates made of fiberglass material sized to properly to fit flush in the existing metal frame. Fiberglass grate for Catch Basins shall be Grate Glass "M" Mesh Composite Drain by Road Masters International or approved equal and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing grate as identified by the Director, cleaning the existing frame, and to fit/retrofit a new grate in the existing frame, measured per each Drop Inlet Catch Basin Grate.

CF-332 Drop Inlet Catch Basin Frame

Drop Inlet Catch Basin frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of catch basin repaired. This work will include removing the damaged/missing grate and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged grate, or in conjunction with a grate pay item(s) as directed by the Director. Work and materials for Drop Inlet Catch Basin Frame includes the removal of the existing grate and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the basin for the new frame installation, measured per each Drop Inlet Catch Basin Frame. If no structural repair or vertical adjustment work is required, then Drop Inlet Catch Basin Frame placement shall include any incidental brick and mortar work required for the installation of the frame. If structural repairs or vertical adjustments are required, then the Drop Inlet Catch Basin Frame pay item may be used in conjunction with other pay item(s) for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-335 Drop Inlet Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of drop inlet catch basin reusing existing metal castings shall consist of: remove and salvage the existing frame or frame and grate, remove all of the existing brick and mortar structure to the lowest elevation of brick area requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, and clean and reinstall the salvaged frame or frame and grate, measured per each.

CF-336 Drop Inlet Catch Basin Repair or Vertical Adjustment Brick Work Only

Work to repair or provide brick work only for vertical adjustment of Drop Inlet Catch Basins shall consist of removing all or a portion of the existing brick and mortar structure down to the lowest brick course elevation requiring repair and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure. Drop Inlet Catch Basin Repair or vertical Adjustment Brick Work Only, measured per each, shall be used in conjunction with a pay item for installing a new drop inlet frame.

F. Mountable Catch Basin items - Mountable catch basin shall conform to the requirements shown on SWBNO Standard Drawings D-3431-A Standard Single Mountable Catch Basin and D-3431-B Standard Double Mountable Catch Basin, except:

CF-351 Mountable Catch Basin Grate

Work to provide and install Mountable Catch Basin Grate shall include furnishing and installing a grate in the mountable catch basin existing frame. Mountable Catch Basins shall receive new grates made of fiberglass material sized to properly to fit flush in the existing metal frame. Fiberglass grates for Catch Basins shall be Grate Glass "M" Mesh Composite Plate by Road Masters International or approved equal and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing grate as identified by the Director, cleaning the existing frame, and to fit/retrofit a new grate in the existing frame, measured per each Mountable Catch Basin Grate.

CF-352 Single or Double Mountable Catch Basin Frame

Mountable Catch Basin frames shall meet AASHTO M 306 loading requirements and shall be of the

proper size and installed to meet the requirements of the SWBNO drawings for the type of catch basin repaired. This work will include removing the damaged/missing grate and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and curb, transition to match the adjacent roadway and curb, and cleaning and reinstallation of the existing salvaged grate, or in conjunction with a grate pay item(s) as directed by the Director. On rigid pavement streets, after installation of mountable catch basin frame an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item. Work and materials for Single or Double Mountable Catch Basin Frame includes the removal of the existing grate and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the basin for the new frame installation, measured per each Single or Double Mountable Catch Basin Frame. If no structural repair or vertical adjustment work is required, then Mountable Catch Basin Frame placement shall include any incidental brick and mortar work required for the installation of the frame. If structural repairs or vertical adjustments are required, then the Single Mountable Catch Basin Frame or Double Mountable Catch Basin Frame pay item may be used in conjunction with other pay item(s) for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-353 Lockable Mountable Catch Basin Grate

Work to provide and install Lockable Mountable Catch Basin Grate shall include furnishing and installing a grate in the mountable catch basin existing frame. Mountable Catch Basins shall receive new grates which shall conform to the requirements of East Jordan Iron Works, INC. V4510-1L or approved equal and shall be installed to properly fit flush in the existing metal frame. This work will include removing the damaged/missing grate as identified by the Director, cleaning the existing frame, and to fit/retrofit a new grate in the existing frame, measured per each Lockable Mountable Catch Basin Grate.

CF-355 Single Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, and

CF-356D Double Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of single or double mountable catch basin reusing existing metal castings shall consist of: remove and salvage the existing frame(s) or frame(s) and grate(s), remove all of the existing brick and mortar structure to the lowest elevation of brick area requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, and clean and reinstall the salvaged frame or frame and grate, measured per each. On rigid pavement streets, after adjustment of the mountable catch basin an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings STD9 and included in the unit price bid for this item.

CF-357 Single Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only, and

CF-358 Double Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only

Work to repair or provide brick work only for vertical adjustment of Single or Double Mountable Catch Basins shall consist of removing all or a portion of the existing brick and mortar structure down to the lowest brick course elevation requiring repair and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure. Single or Double Mountable Catch Basin Repair or vertical Adjustment Brick Work Only, measured per each, shall be used in conjunction with a pay item for installing a new mountable catch basin frame.

G. Manhole items - Manhole items shall conform to the requirements shown on SWBNO Standard Drawings D-870 Standard Drain Brick Manhole and D-871 Drain Manhole Frame & Cover or 3143-E-1 Sewer and Water Manhole Castings to match the type utility repaired. Manholes that are approved

as described here-in, shall be adjusted to match with the level of the new surface using brick and mortar. Only City of New Orleans Department of Public Works and Sewerage and Water Board manholes and structures shall be adjusted to grade under this contract. Other manholes and structures shall be adjusted to grade by the respective utility company.

CF-371 Manhole Cover

Work to provide and install Manhole Covers shall include furnishing and installing a cover on the manhole existing frame. The new manhole cover shall be sized and installed properly to fit flush in the existing metal frame and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing cover as identified by the Director, cleaning the existing frame, and to fit/retrofit a new cover to the existing frame, measured per each Manhole Cover.

CF-372 Manhole Frame

Manhole frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of manhole repaired. This work will include removing the damaged/missing cover and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged grate, or in conjunction with a grate pay item(s) as directed by the Director. Work and materials for Manhole Frame includes the removal of the existing cover and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the manhole for the new frame installation, measured per each Manhole Frame. On rigid pavement streets, after installation of the frame an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

Manhole Frame placement shall include any brick-and-mortar work required for the adjustment of the frame to the existing or new road pavement grade, inclusive of the requirements of item CF-377 at no additional compensation. The Director and the S&WB will have authority in determining whether structural repairs or vertical adjustments are required.

CF-375, Manhole Repair or Vertical Adjustment up to 6” Reusing Existing Metal Castings

Work to repair or provide a vertical adjustment of manholes up to 6” reusing existing metal castings shall consist of: remove and salvage the existing frame or frame and cover, excavation, remove all of the existing brick and mortar structure requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, backfill, and clean and reinstall the salvaged frame or frame and cover, to repair or provide a vertical increase or decrease elevation adjustment to grade up to six inches (6”), measured per each (location). On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

CF-376, Manhole Repair or Vertical Adjustment over 6” Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of manholes over 6” reusing existing metal castings shall consist of: remove and salvage the existing frame or frame and cover, excavation, remove all of the existing brick and mortar structure requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, backfill, and clean and reinstall the salvaged frame or frame and cover, to repair or provide a vertical increase or decrease elevation adjustment to grade over six inches (6”),measured per foot height, or any fraction of a foot to the nearest 0.1’. On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

CF-377, Manhole Repair or Vertical Adjustment up to 6" Brick Work Only

Work to repair or provide brick work only for vertical adjustment up to 6" for manholes shall consist of excavation, removing all or a portion of the existing brick and mortar structure requiring repair or adjustment, and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, and backfill to repair or provide a vertical increase or decrease elevation adjustment to grade up to six inches (6"). Manhole Repair or Vertical Adjustment up to 6" Brick Work Only, measured per each (location). This item shall be used in conjunction with the appropriate pay items for installing a new manhole frame and cover. On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

CF-378, Manhole Repair or Vertical Adjustment over 6" Brick Work Only

Work to repair or provide brick work only for vertical adjustment over 6" for manholes shall consist of excavation, removing all or a portion of the existing brick and mortar structure requiring repair, and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, and backfill. Manhole Repair or Vertical Adjustment over 6" Brick Work Only, to repair or provide a vertical increase or decrease elevation adjustment to grade over six inches (6"), shall be measured per foot height or any fraction of a foot to the nearest 0.1'. This item shall be used in conjunction with the appropriate pay items for installing a new manhole frame and cover. On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

H. Measurement and payment of Special Bid Items for Catch Basin and Manhole Repairs and Vertical Adjustment:

ITEM NO. PAY ITEM PAY UNIT

CF-301, Vertical Catch Basin Cover, per each*
CF-302, Vertical Catch Basin Frame, per each*
CF-303, Lockable Vertical Catch Basin Frame and Cover, per each*
CF-311, Vertical Catch Basin Front Grate No. 1, per each*
CF-312, Vertical Catch Basin Front Grate No. 2, per each*
CF-313, Vertical Catch Basin Front Grate No. 3, per each*
CF-315, Single Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-316D, Double Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-317, Single Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-318D, Double Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-331, Drop Inlet Catch Basin Grate, per each
CF-332, Drop Inlet Catch Basin Frame, per each
CF-335, Drop Inlet Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-336, Drop Inlet Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-351, Mountable Catch Basin Grate, per each*
CF-352, Single or Double Mountable Catch Basin Frame, per each
CF-353, Lockable Mountable Catch Basin Grate, per each*
CF-355, Single Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal

Castings, per each
CF-356D, Double Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-357, Single Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-358D, Double Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-371, Manhole Cover, per each
CF-372, Manhole Frame, per each
CF-375, Manhole Repair or Vertical Adjustment up to 6" Reusing Existing Metal Castings, per each
CF-376, Manhole Repair or Vertical Adjustment over 6" Reusing Existing Metal Castings, per foot height
CF-377, Manhole Repair or Vertical Adjustment up to 6" Brick Work Only, per each
CF-378, Manhole Repair or Vertical Adjustment over 6" Brick Work Only, per foot height

*Note, double catch basins requiring two covers, frames, or grates each shall be paid for separately.

SECTION 3.17 - DRAIN LINE REPAIRS / REPLACEMENT

3.17.01 GENERAL

A. These items shall be governed by the requirements of the "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, latest edition, Section C701 Storm Drains shall be the General Conditions for this Contract and shall govern except as modified here-in. All workmanship, material and tests shall conform to Section E of the General Specifications of the S&WB and the S&WB Standard Drawing No. 7260-S or 7260-D for the type of pipe material installed. When Culverts and Storm Drains replacement or repair items have been shown on the unit price proposal the final approved quantity for installation, measurement, and payment shall be determined by and subject to written approval of the Director and shall not be considered a material part of the work contemplated. Only locations specifically approved in writing by the Director before or during construction shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the bid quantity for approved work.

B. The Contractor shall conduct his operations in such manner as to cause the least possible interruption to service. The Contractor shall maintain drainage and driveway access at the end of the day's pipe laying. Open trenches shall only be as long as the length of pipe to be laid that day. At the end of the day's work, the end of the last length of pipe laid shall be blanked with a cover to prevent intrusion of trash. The Contractor shall provide bracing at power poles as per instructions from the utility owner where the trench excavation is adjacent to the poles (no direct pay). The Contractor shall exercise caution when placing and compacting backfill and bedding material as not to damage the pipe or cause joints to move out of place. The Contractor shall replace, at his own expense, any pipe, fittings, and other materials in existing installation which are damaged due to his operations. All pipe installations shall be inspected by the engineer's field representative before backfilling operations commence.

C. New pipe between two existing structures and pipe used for point repairs shall match the alignment and elevations of the existing pipe to be replaced unless otherwise shown in the plans or directed by the Director or the S&WB.

3.17.02 REPLACEMENT

A Pipe used for the replacement of the entire length of existing drain lines between manholes or structures may be either new reinforced concrete pipe, high-performance polypropylene pipe, or solid wall polyvinyl chloride pipe.

B. New Class IV Reinforced Concrete Pipe shall be required when the cover over the pipe within the roadway between 2.0-2.5 ft. The installation of reinforced concrete pipe shall be installed as shown on SWBNO Standard Drawing No. D-3809, D-3810, D-3933 or D-3934.

C. High-Performance Polypropylene Pipe (HPPP) shall only be installed when the cover over the pipe within the roadway is equal to or greater than 2.5 ft. Installation of HPPP pipe shall be formally recommended by the Engineer of Record and reviewed by SWBNO and DPW on a case-by-case basis before the use is approved. HPPP Pipe shall meet or exceed the material requirements of ASTM F 2881 (12"-30" diameters), shall include bell and spigot joint with single factory installed gasket that meets ASTM F 477, and shall a Manning's Roughness Coefficient "n" of 0.012. Bell and spigot joints shall be required on all storm sewer pipes inside/outside ROW with bell that covers at least two full corrugations on each section of pipe. HPPP pipe bedding and backfill to the top of the flexible pipe shall be in accordance with ASTM D2321 Class I angular crushed stone or rock with little or no fines for pipe sizes 30" or less. Geotextile fabric shall enclose the entire bedding and backfill material (min. transverse and longitudinal overlap of 36"). Foundation shall consist of a continuous transverse layer of 2" boards (min. 8" wide) on 2" X 10" sills driven into soil or approved geogrid (min. transverse and longitudinal overlap of 36"). HPPP Pipe connecting to brick manholes shall include water-stop gasket grouted in accordance with SWBNO Standard Drawing No. 6178-B6.

D. The installation of solid wall polyvinyl chloride (PVC) pipe shall only be installed when the cover over the pipe within the roadway is greater than 3 ft. PVC pipe used for replacement up to 30" diameter shall be installed as shown on SWBNO Standard Drawing No. 4697-E5-A. PVC pipe connecting to brick manholes shall be installed as shown on SWBNO Standard Drawing No. 6178-B-6. PVC pipe bedding shall be in accordance with ASTM D2321 Class I angular crushed stone or rock for pipe sizes 30" or less. Geotextile fabric shall enclose the entire bedding and backfill material (min. transverse and longitudinal overlap of 36"). Foundation shall consist of a continuous transverse layer of 2" boards (min. 8" wide) on 2" X 10" sills driven into soil or approved geogrid (min. transverse and longitudinal overlap of 36"). Solid wall PVC pipe less than 18-inches in diameter, unless otherwise noted, shall be SDR 26 (PS115) Polyvinyl Chloride (PVC) pipe manufactured in accordance with ASTM D3034, latest edition, and shall be U.L. listed. Solid wall PVC pipe sizes 18-inches through 30-inches in diameter, unless otherwise noted, shall be SDR 26 (PS115) Polyvinyl Chloride (PVC) pipe manufactured in accordance with ASTM F679, latest edition, and shall be U.L. listed. The elastomeric gaskets and retainer rings shall be installed in accordance with ASTM D3212 and F477, or per latest Sewerage & Water Board requirements. The fittings for solid wall PVC pipe shall be SDR 35 and shall have the same inside diameter as the solid wall PVC.

3.17.03 DRAIN LINE REPAIRS

A. Pipe used for Point Repairs of Existing Drain Lines may be new reinforced concrete pipe conforming to Section E of the S&WB General Specifications, high-performance polypropylene pipe, or solid wall polyvinyl chloride (PVC) pipe, if approved by the Department of Public Works Director

B. New Class IV Reinforced Concrete Pipe or high-performance polypropylene pipe shall be required when the cover over the pipe within the roadway is between 2.0-2.5 ft.

C. The installation of solid wall polyvinyl chloride (PVC) pipe shall only be installed when the cover over the pipe within the roadway is greater than 3 ft. PVC pipe used for drain point repairs up to 30" diameter shall be installed as shown on SWBNO Standard Drawing No. 4697-E5-A. PVC pipe connecting to brick manholes shall be installed as shown on SWBNO Standard Drawing No. 6178-B-6. Solid wall PVC pipe less than 18-inches in diameter, unless otherwise noted, shall be SDR 26 (PS115) Polyvinyl Chloride (PVC) pipe manufactured in accordance with ASTM D3034, latest edition, and shall be U.L. listed. Solid wall PVC pipe sizes 18-inches through 30-inches in diameter, unless otherwise noted, shall be PS115 Polyvinyl Chloride (PVC) pipe manufactured in accordance with ASTM F679, latest edition, and shall be U.L. listed. The elastomeric gaskets and retainer rings shall be installed in accordance with ASTM D3212 and F477, or per latest Sewerage & Water Board requirements. The fittings for solid wall PVC pipe shall be SDR 35 and shall have the same inside diameter as the solid wall PVC.

D. PVC corrugated pipe with smooth interior shall conform to the requirements of ASTM Designation F949. Pipe and fittings shall be homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. Pipe shall be manufactured to 46 psi stiffness when tested in accordance with ASTM Test Method D2412. There shall be no evidence of splitting, cracking, or breaking when the pipe is tested per ASTM Test Method D2412 in accordance with ASTM F949 Section 7.5 and ASTM F794 Section 8.5. The pipe shall be made of PVC compound having a minimum cell classification of 12454 as defined in ASTM Specification D1784. All fittings for PVC corrugated pipe with smooth interior shall conform to ASTM F949 Section 5.2.3 or F794 Section 7.2.4.

3.17.04 PAYMENT

A. Payment for drain line replacement or repairs shall conform to the "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, latest edition, Section C701 Culverts and Storm Drains, C701.08 PAYMENT when listed on the Unit Price Form proposal.

B. Payment for furnishing and installing high-performance polypropylene pipe (HPPP) for replacement shall be made at the unit price bid per linear foot, including all main line fittings (bends, wyes, tees, etc.), of the types and sizes specified for Bid Item No. CF-701(53) HPPP (size) when listed on the Unit Price Form and previously approved by SWBNO.

C. Payment for furnishing and installing SDR 26 (PS115) Polyvinyl Chloride (PVC) pipe for replacement shall be made at the unit price bid per linear foot, including all main line fittings (bends, wyes, tees, etc.), of the types and sizes specified for Special Bid Item No. CF-C701(53) PVC (SIZE) when listed on the Unit Price Form.

SECTION 3.18 - TIMBER CURB

A. This item shall be governed by the requirements of Standard Specification Item C707 (64) Timber Curb except as modified here-in. The unit price bid per horizontal Linear Foot of finished timber curb for this item shall include removal and proper disposal of existing timber curb and posts, grading, furnishing, and installing all required timber posts and timber curb, and final grading.

B. Measurement and payment for Timber Curb, including posts, shall be made at the contract

unit price per Linear Foot (LF) of timber curb under Special Bid Item No. CF - 15 TIMBER CURB when listed on the Unit Price Form.

SECTION 3.19 - TYPE-A DEAD END INSTALLATION

A. The Dead-End Installation shall be governed by the requirements of 2006 Edition LADOTD Standard Specifications for Roads and Bridges section 729.06 except as modified here-in. The Contractor shall be responsible for providing all materials including guard rail, u-channel signposts and required signs and construction of guard rail and installation of signs as required by standard plan HS-03. Payment for Item CF-16, when listed on the Unit Price Form, shall include all material, equipment, and labor necessary to complete installation including guard rail as noted.

B. Dead end road installations shall be as specified and located as shown on the project plans. Posts shall be vertical. Guard rail shall be constructed in accordance with 2006 Edition LaDOTD Standard Specifications for Roads and Bridges section 704. Contractor shall re-grade and ensure positive drainage within the limits of the area disturbed by construction. Any fill material shall be placed at no direct pay and shall meet all requirements for fill material of this project. Fill material shall be suitable on-site excavated earth material, subject to approval of the Director, or borrow material compliant with the requirements Standard Specification Item C723 Granular Material with subsection 1003.07 referencing 2006 Edition LaDOTD Standard Specifications for Roads and Bridges. Fill and borrow materials shall be free from waste, rubbish, large rocks, or other unsuitable or foreign material.

SECTION 3.20 - CONCRETE BARRIER OR MOUNTABLE CURB WITH LAYING STRIP

A. This item shall be governed by the requirements of Standard Specification Section C707 except as modified here-in.

B. See details for Concrete Barrier Curb and Laying Strip and for Concrete Mountable Curb and Laying Strip on the Construction Drawings Typical Roadway and Section Details sheets for additional concrete strip required to be placed between the concrete pavement and concrete curb for construction of composite roadways.

C. There shall be no direct measurement and payment for the laying strip portion of the concrete barrier curb or concrete mountable curb. All associated costs shall be included in other major items of the proposal.

SECTION 3.21 – PROJECT SIGN

A. This item shall be governed by the requirements of Standard Specification Section C729 except as modified here-in.

B. The CONTRACTOR shall provide one project identification sign in accordance with the Contract Documents at no direct pay.

PROJECT SIGN CONSTRUCTION

B. The sign shall be constructed of 1/2-inch exterior plywood with 4-inch by 4-inch supports and 2-inch by 4-inch cross bracing.

C. The sign face shall be 4-feet vertical by 8-feet horizontal.

C. The sign will be printed in color on 10-mil Coroplast®.

SIGN CONTENT

A. The sign shall include the following information and graphic elements:

1) The City of New Orleans Fleur De Lis Logo at Left as shown on the Sign Example.
2) New Day New Orleans at top center as shown on the Sign Example.
3) The project name or title underneath New Day New Orleans as shown on the Sign Example.
4) Underneath project name: City Agency: Department of Public Works as shown on the Sign Example.
5) Underneath City Agency: Project Engineer: (company name) as shown on the Sign Template.
6) Underneath Project Engineer: Contractor (company name) as shown on the Sign Template.
7) Underneath Contractor: Track our progress at nola.gov, as shown on the Sign Example.
8) The Mayor's name underneath City of New Orleans at right as shown on the Sign Example.
9) Underneath the Mayors name, the Councilmembers at Large as shown on the Sign Example.
10) Underneath the Councilmembers at Large, Council District members as shown on the Sign Example.

B. The DPW PM shall provide the editable sign file (in full-size PDF format) to the Contractor at the Pre-Construction meeting. Sign template provided may require editing to reflect the Project Name and General Contractor. Contractor shall verify content of template and submit PROOF to the Director for approval of Copy & Placement.

SIGN LOCATION, MAINTENANCE, AND REMOVAL

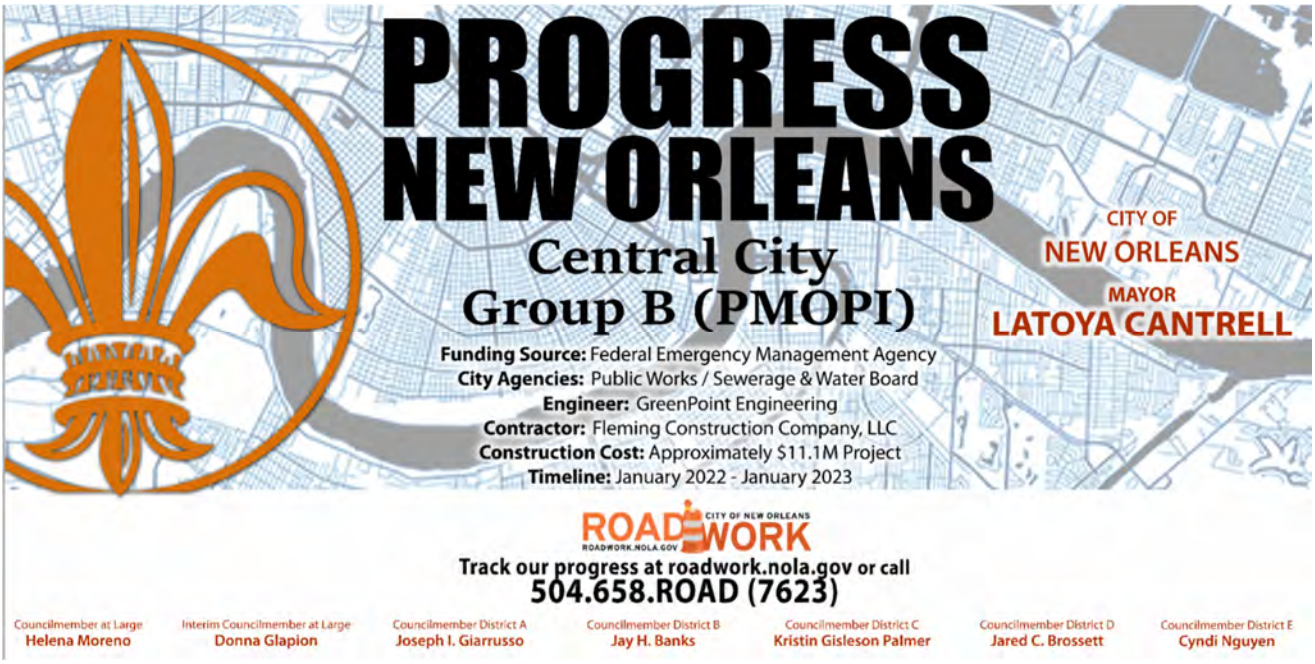
A. The project sign shall be located on the site as directed by the Director.

B. The sign shall be set 4 feet above the ground, measured from grade to the lower edge of the plywood sheet.

C. The CONTRACTOR shall maintain the sign in excellent condition throughout the duration of the project.

D. The CONTRACTOR shall remove the project sign and restore the area when directed by the owner upon preparation of the Notice of Completion.

SIGN EXAMPLE



SECTION 3.22 – NON-STANDARD SEWER REHABILITATION ITEMS

A. This section identifies special pay items applicable to the sewer rehabilitation work outlined in section 1.21 and 2.07 through 2.10 above.

B. Sanitary sewer rehabilitation including adjustment to sewer manhole covers shall be performed, measured, and paid for in accordance with the standard DPW specifications section C702 or the Special Provisions (this section) paragraph 3.15 above, where the Special Provisions supersede the standard specifications.

C. Sanitary sewer rehabilitation including replacement of sanitary sewer manhole covers shall be performed, measured, and paid for in accordance with the standard DPW specifications section C742 or the Special Provisions (this section) paragraph 3.15 above, where the Special Provisions supersede the standard specifications.

D. Sanitary sewer rehabilitation including the replacement of main line sanitary sewers, replacement of sanitary sewer lateral service connections and the lining of main line sanitary sewers, including the reinstatement of lateral service connections, shall be performed, measured, and paid for in accordance with the standard DPW specifications section C742.

E. Sewer Line Replacement by Pipe Bursting. In cases where main line sanitary sewer lines cannot be fully replaced by conventional excavation (due to trees or obstructions), the S&WB may direct the contractor to perform sanitary sewer line replacement by means of pipe bursting. Replacement of the existing sewer house connections shall be performed in accordance with DPW standard specifications section C742.03.

1. CSS742(X1), Install Sewer Mains by Pipe Bursting (Size). Payment shall be made at

the contract unit price per linear foot of the size specified for work including replacement of existing sewer main lines by pipe bursting as approved by the S&WB. Contractor shall include all labor materials and equipment to replace the main line sewer for the entire length from manhole to manhole. This work will be measured and paid for by the linear foot in the same manner as pay item C742(51) but without any provisions for depth.

2. CSS742(X2), Cut Pipe to Replace Existing Sewer House Connection from New Main to Back of Curb. Payment shall be made at the contract unit price per each for work including excavation and reinstatement of service connections disturbed from Install Sewer Mains by Pipe Bursting and the replacement of the service connection from the new main line to the back of the curb. Contractor shall include all labor materials and equipment to excavate, locate and expose each fitting, install a new fusible saddle, or tap for the appropriately sized main line sewer pipe, replace the sewer service lateral to the back of curb, including all required fittings and adjustments, and backfill and compact the excavation. With exception to the fusible saddle fitting, the work shall be performed as per DPW standard specification C742.03 and 742.05. This work will be measured and paid for by each in the same manner as pay item C742(60).

F. Sewer Line Point Repairs, Up to Twelve Feet. For the sewer rehabilitation work in this contract, sewer line point repairs shall be performed as specified in the DPW standard specification section C742.03 except that the length of the point repairs shall be twelve feet (12-ft).

1. CSS742(X3), Sewer Point Repair up to Twelve Feet (Size & Depth). Payment shall be made at the contract unit price per each of the size and depth specified for work including excavation, foundation lumber, bedding, drainage fabric, backfill, complete shoring, pumping as necessary and tie-ins. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

2. CSS742(X4), Sewer Point Repair beyond Twelve Feet (Size & Depth). Payment shall be made at the contract unit price per linear foot of the size and depth specified for work to including excavation, foundation lumber, bedding, drainage fabric, backfill, complete shoring, pumping as necessary and tie-ins. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

G. Find and Fix Lines. In some contracts the sewer rehabilitation work may include “Find and Fix” lines. These are line segments that were not locatable during inspection. The Contractor is responsible to locate the manholes for these line segments, perform sewer line cleaning and CCTV inspection. The manholes should then be secured to protect the safety of the public until the scope of rehabilitation has been determined. Manholes requiring vertical adjustment will be directed in the field and paid for under the respective bid unit item (Section ~~3.16~~ 3.17.G above or Section C702). There is no direct payment for the coordination, locating or exposing of the manholes for lines identified as “Find and Fix” 2.09.E.

1. CSS742(X5), Sewer Main Line Cleaning (Size). Payment shall be made at the contract unit price per linear foot of the size specified for work including the cleaning of main line sewers in accordance with paragraph 2.09.E above in preparation for CCTV Inspection. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

2. CSS742(X6), Sewer Main Line CCTV Inspection (Size). Payment shall be made at the contract unit price per linear foot of the size specified for work including the CCTV inspection of main line sewers in accordance with paragraph 2.09.E above. Contractor shall include all

labor materials, equipment and appurtenances required to complete this work.

H. Sewer Service Lateral CIPP Lining. In some cases, sanitary sewer lateral house connections will require replacement but not be accessible due to oak trees, construction, or other obstructions. In these cases, with authorization from the S&WB, the Contractor will perform rehabilitation on these house connections by means of lateral CIPP lining from the sanitary sewer main line. Work shall be performed in accordance with paragraph 2.09.D above.

1. CSS742(X7), Sewer Service Lateral CIPP Lining. Payment shall be made at the contract unit price ~~**linear foot**~~ per each lateral service house connection including cleaning, CCTV inspection prior to the lining, the CIPP lining and the CCTV inspection upon completion of the lining in accordance with paragraph 2.09.D above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

I. Sewer Manhole Lining Rehabilitation. The sewer rehabilitation included in this contract will include the rehabilitation of manholes via a cementitious grout liner for either a partial depth or full depth. This work shall be performed in accordance with paragraph 2.09.F above.

1. CSS742(X8), Manhole Rehabilitation, Cementitious Liner, Partial Depth (2-feet). Payment shall be made at the contract unit price per each manhole and include the cleaning and cementitious liner application in the top 2 feet of the manhole in accordance with paragraph 2.09.F above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

2. CSS742(X9), Manhole Rehabilitation, Cementitious Liner, Full Depth. Payment shall be made at the contract unit price per vertical foot height of interior manhole walls from the top of bench to the underside of the frame and include the cleaning and cementitious liner application for the full height of the manhole in accordance with paragraph 2.09.F above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

3. CSS742(X13), Sewer Service Lateral CCTV Inspection. Payment shall be made at the contract unit price per each lateral service house connection including CCTV inspection prior to the lining and CCTV inspection upon completion of the lining in accordance with paragraph 2.10 above. Contractor shall include all labor materials equipment and appurtenances required to complete this work.

J. Measurement and payment of Special Bid Items for Sewer Rehabilitation include:

ITEM NO.	PAY ITEM	PAY UNIT
CSS742(X1)	Install Sewer Mains by Pipe Bursting (Size)	Linear Foot
CSS742(X2)	Fuse Service Tee and Drill Pipe to Replace Existing Sewer House Connection from New Main to Back of Curb	Each

CSS742(X3)	Sewer Point Repair up to Twelve Feet (Size & Depth)	Each
CSS742(X4)	Sewer Point Repair beyond Twelve Feet (Size & Depth)	Linear Foot
CSS742(X5)	Sewer Main Line Cleaning (Size)	Linear Foot
CSS742(X6)	Sewer Main Line CCTV Inspection (Size)	Linear Foot
CSS742(X7)	Sewer Service Lateral Lining (6" CIPP)	Each
CSS742(X8)	Manhole Rehabilitation, Cementitious Liner, Partial Depth (2-feet)	~~LF~~Each
CSS742(X9)	Manhole Rehabilitation, Cementitious Liner, Full Depth	Foot Height
CSS742(X10)	Removal of Cast Iron Flush Valve Apparatus from Sewer Manhole	Each
CSS742(X11)	Removal of water service line from sewer manhole	Each
CSS742(X12)	Locate and disconnect flush valve water service line from water main	Each
CSS742(X13)	Sewer Service Lateral CCTV Inspection	Each
CSS742(~~X13~~) (X14)	– WELL POINT SYSTEM	BLFT

K. Measurement and payment of for flush valve removal items CSS742(X10), CSS742(X11) and CSS742(X12) are specified in Section 2.10 above each item will be measured as a quantity of no more than one each per manhole containing a flush valve apparatus and/or water service connection.

SECTION 3.23 – ~~WATER POINT REPAIRS~~ NON-STANDARD WATER POINT REPAIR ITEMS

~~**3. This section identifies special pay items applicable to the water point repairs work outlined in sections 1.22 and 2.12 above.**~~

~~**B. Payment for the accepted quantities will be made at the contract unit price.**~~

~~**3. Payment for furnishing and installing water point repairs shall be made at the contract unit price including main line point repair installed as a complete system, including tie-ins, excavation, removal of existing pipe, pumping as necessary to prevent contaminating the existing system, bedding, complete shoring, backfilling material, hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.**~~

~~**D. Payment for furnishing and installing 1-inch through 2-inch Polyethylene Pipe for water house connections (LSL replacement) shall be made at the contract unit price per each, including excavation, backfilling, service saddles, corporation cock and removal of existing pipe and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for tie-ins to the main or meter. LSLs replaced in sequence and conjunction with new water main installation after tie-in will be paid at the contract unit price per each for C741(55)(A), (B), or (C).**~~

~~**3. All other items of work necessary to the performance of the project, for which no specific unit price and/or lump sum pay item is established, shall be considered and designated part of the construction, and the existing pay items shall be full compensation. Items including but not limited to, trench safety, traffic**~~

~~control, contract closeout, shop drawings, submittals, and office support shall be merged into the prices bid.~~

~~F. There will be no direct payment for temporary water mains, temporary water service connections, and any related work including temporary tie-ins, removal of temporary work after installation of permanent work, and other incidentals. The cost of all work shall be included in the water point repair unit bid prices.~~

~~3. Measurement and payment of Special Bid Items for Water Point Repairs include:~~

~~ITEM NO. PAY ITEM PAY UNIT~~
~~CSW741-01 Repair Water Main with Full Circle Clamp (Pipe Size 4" – 8") Each~~
~~CSW741-02 Repair Water Main with Full Circle Clamp (Pipe Size 12" – 16") Each~~
~~CSW741-03 Repair Water Main with Bell Joint Clamp (Pipe Size 4" – 12") Each~~
~~CSW741-04 Repair Water Main with Bell Joint Clamp (Pipe Size 16" – 24") Each~~
~~CSW741-05 Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 4" – 12") Each~~
~~CSW741-06 Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 16" – 24") Each~~
~~CSW741-07 Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 4" – 12") LF~~
~~CSW741-08 Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 16" – 24") LF~~
~~CSW741-09 Replace 5/8" to 1" Lead Service Line Water House Connection with 1" Polyethylene Water House Connection (From Main to Meter)~~
~~CSW741-10 Replace 1.5" Lead Service Line Water House Connection (From Main to Meter)~~
~~CSW741-11 Replace 2" Lead Service Line Water House Connection (From Main to Meter)~~

A. This section identifies special pay items applicable to the water point repairs work outlined in sections 1.22 and 2.12 above.

B. Payment for furnishing and installing water point repairs shall be made at the contract unit price including main line point repair installed as a complete system, including tie-ins, excavation, removal of existing pipe, pumping as necessary to prevent contaminating the existing system, bedding, complete shoring, backfilling material, hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.

C. Payment for furnishing and installing 1-inch through 2-inch Polyethylene Pipe for water house connections (LSL replacement) shall be made at the contract unit price per each, including excavation, backfilling, service saddles, corporation cock and removal of existing pipe and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for tie-ins to the main or meter.

D. Payment for furnishing and installing 2-inch Polyethylene Pipe watermain shall be made at the contract unit price per linear foot, including main line fittings (bends, tees, etc.), tie-ins, excavation, removal of existing pipe (if any), pumping as necessary to prevent contaminating the existing system, bedding, complete shoring, backfilling material, hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for 2" valves as required per the plans.

E. The contractor may request reimbursement of monthly water hydrant meter fees paid to the Board that were used for SWBNO Testing and Flushing of new water mains. The Contractor shall record usage type and read meter on a daily basis. Contractor, Resident Inspector and Board Construction Manager will sign and certify each month's usage.

F. All other items of work necessary to the performance of the project, for which no specific unit price and/or lump sum pay item is established, shall be considered and designated part of the construction, and the existing pay items shall be full compensation. Items including but not limited to, trench safety, traffic control, contract closeout, shop drawings, submittals, and office support shall be merged into the prices bid.

G. There will be no direct payment for temporary water mains, temporary water service connections, and any related work including temporary tie-ins, removal of temporary work after installation of permanent work, and other incidentals. The cost of all work shall be included in the water point repair unit bid prices.

H. Measurement and payment of Special Bid Items for Water Point Repairs include:

ITEM NO.	PAY ITEM	PAY UNIT
CSW741-01	Repair Water Main with Full Circle Clamp (Pipe Size 4" – 8")	Each
CSW741-02	Repair Water Main with Full Circle Clamp (Pipe Size 12" – 16")	Each
CSW741-03	Repair Water Main with Bell Joint Clamp (Pipe Size 4" – 12")	Each
CSW741-04	Repair Water Main with Bell Joint Clamp (Pipe Size 16" – 24")	Each
CSW741-05	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 4" – 12")	Each
CSW741-06	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 16" – 24")	Each
CSW741-07	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 4" – 12")	LF
CSW741-08	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 16" – 24")	LF
CSW741-09	Replace 5/8" to 1" Lead Service Line Water House Connection with 1" Polyethylene Water House Connection (From Main to Meter)	LF
CSW741-10	Replace 1.5" Lead Service Line Water House Connection (From Main to Meter)	LF
CSW741-11	Replace 2" Lead Service Line Water House Connection (From Main to Meter)	
CSW741-12	2" New Water Main with Main Line Fittings	LF
CSW741-13	Reimbursement of water used for SWBNO testing and flushing	1000 Gal

SECTION 3.24 – <u>WELL POINT SYSTEM</u>

PART 1 – GENERAL

1. Scope of Work
    1. Furnish, install, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

    2. The Contractor shall be responsible for the satisfactory performance of the system and for correcting any disturbance of natural bearing of soils or damage to structures caused by the dewatering system or by interruption of the continuous operation of the system as specified.

    3. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures. Prevent surface water from entering excavations by grading, dikes, or other means.

    4. Remove dewatering system once construction is complete and no damage will be caused to the installed pipe or structure from the well point system.

    5. Reference Section 01 100 Boring Logs and Coring Data for site specific geotechnical information.

2. Submittals
    1. Prior to excavation, the Contractor shall submit detailed drawings and design calculations descriptive of the proposed well point system used in maintaining dry conditions to the Engineer. This submittal shall be prepared and sealed by a professional engineer licensed in the State of LA.
    2. Submit plan showing arrangement, locations, and details of wells and well points; locations of risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.
    3. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
    4. Include written plan for dewatering operations including sequence of well and well-point placement coordinated with excavation shoring and bracings and control procedures to be adopted if dewatering problems arise
    5. Existing Conditions: Using photographs or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.
    6. Record Drawings: Identify locations and depths of capped wells and well points and other abandoned-in-place dewatering equipment.

3. Installation

1. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
2. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways, if required, using approved traffic control plans by authorities having jurisdiction.
3. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.
    1. Space well points or wells at intervals required to provide sufficient dewatering.
    2. Use slotted screen to prevent pumping of fine sands or silts from the subsurface.
    3. Provide two groundwater observation wells for each setup.
4. Place dewatering system into operation to lower groundwater level to allow for dry working conditions within the excavation. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.
5. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of the system becomes inadequate or fails.
6. Dewatering shall be required until the pipes and structures to be built have been completed to the extent that they will not be floated or otherwise damaged by allowing water levels to rise or return to natural elevations.

4. Operation
    1. Operate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Drain water-bearing strata above and below bottom of foundation of utilities and other structures where required.
        1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
        2. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
        3. Maintain piezometric water level a minimum of 24 inches below bottom of excavation.
        4. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.

2. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.

3. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

4. The dewatering system shall be operated so that the groundwater level outside the excavation is not altered to an extent that would damage or endanger adjacent structures or property.

5. Plug or fill well holes with sand or cut off and cap wells with a flowable fill of a

grout or sane mixture a minimum of 36 inches below the existing ground surface. Where well points are installed within the section of roadway to be replaced, the wells must be capped a minimum of 36 inches below the base course of the pavement section.

5. FIELD QUALITY CONTROL

1. Observation Wells: Provide a minimum of two observation wells or piezometers

2. Observe and record daily elevation of ground water and piezometric water levels in observation wells.

3. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made.

4. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.

5. While dewatering for new construction in the vicinity of existing structures, depletion of the groundwater level underneath these existing structures may cause settlement of within the site footprint and at some distance beyond the footprint. To avoid this settlement, the groundwater level under these structures shall be maintained by appropriate methods.

6. Survey-Work Benchmarks: Resurvey benchmarks regularly during dewatering and maintain an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Engineer if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent structures.

7. The contractor shall ensure appropriate the before and after condition of nearby structures and ground surfaces is recorded using photo and video documentation prior to the installation of any well points. The time and date of the recordings shall be labeled within the file.

6. Measurement and Payment

1. Well-pointing measured in areas of drainage and/or sanitary sewer installation with excavations deeper than 5 feet. Well-pointing measured for payment only with engineer's or owner's field approval.

2. Measurement. Well point systems or dewatering systems shall be measured by the "block linear foot" (blft) of street block requiring the well point system. The measurement shall be taken along the centerline of the block for the length of the open trench.

3. Payment. Shall be made at the contract unit price, per Each ~~BLFT,~~ for bid item CSS742(~~X13~~) (X14) – WELL POINT SYSTEM measured as outlined. Such payment

shall be full compensation for all materials, equipment and labor necessary to furnish, install, operate and maintain the well point system, including any necessary traffic warning systems or any work necessary to restore the site to its original condition.

SECTION 3.25 – PRE AND POST REHABILITATION CCTV INSPECTION AND CLEANING DRAIN STRUCTURE(S)

SECTION 3.25.A – VIDEO RECORDING

A. The Contractor shall furnish all labor, equipment, supplies, and supervision and shall perform all work required in accordance with these specifications. CCTV inspection shall be performed in the areas selected and approved by the Owner.

B. It shall be the responsibility of the Contractor to schedule and perform investigations to prevent system overflows. If flows are such that they interfere with the Contractor's ability to collect accurate data, then the Contractor shall be responsible to schedule his work during low flow periods or to request written permission to perform by-pass pumping around the site. The Contractor may provide by-pass pumping only with specific approval from the City.

C. Inspection of storm drain infrastructure by means of CCTV equipment shall be performed to determine the location and extent of any obstructions and defects such as offset joints, protruding tees, broken pipe, and other pipe defects. Logs shall note the existence of any significant defects. Cleaning by the Contractor shall be performed prior to each CCTV inspection on each pipeline to be inspected.

D. CCTV inspections shall be performed on one drainage structure-to-drainage structure pipe segment at a time. The inspection shall be performed by moving the CCTV camera through the line along the axis of the pipe at a rate not to exceed 30 feet per minute. Any means of propelling the camera through the pipe that would exceed this rate of speed or produce non-uniform or jerky movements shall not be acceptable. The camera shall be stopped for a minimum of 5 seconds at each identifiable defect to ensure proper documentation of the line's condition. In addition, the camera shall be stopped at each service connection, and the camera shall pan the service connection to video inside the service line. CCTV inspection is performed from the upstream manhole/catch basin to the downstream manhole/catch basin when the conditions allow. If conditions do not allow an upstream to downstream inspection, the inspection will be performed in reverse (from the downstream to the upstream drainage structure).

E. A header screen showing tape number, segment number, and manhole number shall be taped for 10 seconds at the beginning of each televised line segment. All header information shall be recorded on the log forms.

F. At the Contractor's discretion the camera shall be stopped or backed up to view and analyze conditions that appear to be unusual or uncommon for a sound storm drain line. At all times, the operating technician shall be able to move the camera through the line in either direction

without loss of quality in the video presentation on the monitor. The picture shall be free of electrical interference and provide a clear, stable image of the specified resolutions at all times. The camera lens shall be cleaned, as required, to provide a clear image within the storm drain lines.

G. In the event that equipment becomes lodged in the line segment, the Contractor shall notify the City immediately. The City will remove the camera at no cost to the Contractor. Timely excavation is necessary to maintain project schedules and to eliminate the possibility of overflows resulting from the lodged equipment creating a blockage.

H. Continuous video recordings of the inspection view as it appears on the television monitor shall be taken. It is intended that a video recording will be made of the complete television inspection of all storm sewer lines as part of this project. The video recording shall be one on which both sound and video information can be reproduced with a video image equal to or better than the quality of the original picture on the television monitor.

A pan tilt zoom (PTZ) camera shall be used to conduct the in122ection. The camera shall be waterproof and corrosion resistant and able to operate in temperatures between 0-50 degrees C (32-122F). The sensor shall be ¼" color CCD with minimum 1.5 lux sensitivity for resolution of minimum 460 NTSC TV lines. A full 360-degree axial pan is required with a variable pan speed not to exceed 25 degrees/second. The camera shall have a minimum 40:1 zoom lens capable of 10X optical and 4X digital, with auto or remote manual focuses. The adjustment of focus and iris shall allow optimum picture quality to be achieved and shall be remotely operated. The illumination shall be such as to allow an even distribution of light around the pipeline perimeter without the loss of contrast or flare out of picture shadowing.

The replay of the recorded video information, when reviewed on a monitor-receiver, shall be free of electrical interference and shall produce a clear, stable image with a horizontal resolution equal to that of the television monitor in the television inspection studio. The audio portion of the completed signal shall be sufficiently free of electrical interference and background noise to produce an oral report that is clear and complete, and easily discernible. The audio portion of the tape report shall include the location or identification of the section, the manhole-to-manhole direction of travel, and the distance traveled on the specific run encountered. The audio portion of the tape shall also identify all defects. The video equipment shall be continuously connected to the television inspection or monitoring equipment. The video and monitoring equipment shall have the built-in capability to allow the technician to instantly review both the audio and video quality of the video productions at all times during the television survey. Playback speed shall be continuously adjustable from one-third normal speed for slow motion viewing to normal playback speed.

A suitable distance-reading device which uses cable length to accurately measure the location of the camera in the pipe shall be provided. This device shall be accurate to +/- 1% of the length of the inspection.

I. Laser Equipment Inspection: If determined necessary by DPW, 2-D Laser scanning shall be conducted continuously and simultaneously with other inspection technology for the entire length of the selected pipe segment. Laser equipment shall be moved through the pipe on a

transport vehicle capable of supporting the laser inspection equipment above the water level. Tracked platforms must be capable of forward/stop/reverse mobility for detailed high-resolution scans to be collected at a specified interval.

The laser equipment shall be designed and manufactured to produce a high resolution of measurement resulting in 0.25% of internal diameter, with a laser sensor accuracy of 0.5% or greater (i.e., an accuracy of 0.5 inches at 100 inches in pipelines up to 30 inches in diameter and a repeatability of 0.10% or greater for pipelines from 15 inches to 30 inches in diameter). The laser equipment shall be properly calibrated per the manufacturer's documentation and the calibration shall be recorded for verification.

The laser equipment shall be capable of measuring the distances to objects and surfaces in drain lines and shall be capable of imaging drain lines less than 36" in diameter. The laser shall support 75 Hz scan rates or higher and be Class 1: eye-safe for operator safety. The laser sensor resolution shall be at least 1mm.

The laser equipment shall be operated in a manner to minimize measurement error sources attributable to the effects of the following:

1. Horizontal displacement from off-axis meander or pipeline alignment curvature that distorts cross-section measurement;
2. Vertical displacement due to sediment, debris, offset joints or other physical environment conditions that distorts cross-section measurement; and
3. Vertical displacement due to flow condition or other hydraulic environment factors that distorts cross-section measurement.

An overview of data collected by laser equipment is to be presented in a color-coded format as 2-D cross sections conveying pipe condition above the laser's centerline over the length of the inspection segment. The report shall provide a 2-D representation of an integrated overview of pipe wall thickness loss or increase data revealed from laser scanning and shall be presented in a color-coded format as an unrolled illustration of the pipe condition above the waterline over the length of the inspection segment. The pipe interior is to be flattened into a graphic whose y-axis represents pipe diameter, whose x-axis represents pipe length and whose color represents deviation from expected values indicating a gradation and severity of corrosion or buildup. Measured pipe internal diameter (ID) that coincides with expected values must be coded in a color that positively identifies and differentiates the measurement of the expected values from pipe wall loss or increase. Measured pipe ID that coincides with expected values must be coded green. Outward deformations, as measured by increasing pipe ID, must be colored on a yellow/red color scale, advanced deformation. Material gain (buildup) or inward deformation, as measured by decreasing pipe ID, must be on a blue color scale.

If DPW determines that Laser Inspection is necessary, it will negotiate a unit price for that inspection upon the first use of this type of inspection. The unit price developed will be entered into the contract and used for the duration of the contract at the fixed established unit price.

J. Video recordings shall be enclosed in plastic containers which shall clearly indicate the date the tape was recorded, the designated section(s) of storm sewer lines contained on the tape, and the referenced storm sewer inspection report covering the sections of the storm sewer lines so included. Two permanent labels are required. One label shall be placed on the spine and the

other on the face of the video. Recording of a single segment shall not span more than one video. The recording of a segment between manholes shall be continuous and complete. The videos become the property of the City, once submitted. The Contractor shall maintain a master copy of all videos and associated Inspection Reports for one year after Contract completion. Additional copies of the videos, if requested, shall be made by the Contractor on professional duplication equipment. Two permanent labels are required. One label shall be placed on the spine and the other on the face of the video. Permanently label each tape with the following information:

Spine of DVD Case

Contract No. _____ Disc No. _____

Face of DVD Case

Start Manhole	Finish Manhole

K. CCTV inspection footage of service laterals shall be included on separate videos. The Contractor may include as many service lateral inspections as possible on each video provided that all service lines from the same mainline are on the same video. The DVD spine label shall be identical to those for mainline inspection. The face label of the video shall include the following information: mainline information (upstream manhole to downstream manhole), service line location, survey start point, and survey finishing point.

SECTION 3.25.B – DRAIN LINE CLEANING

A. Standard line cleaning shall be performed to remove foreign material and restore pipe capacity to 95%. Standard cleaning shall be defined as three (3) complete passes of the storm drain line with the cleaning equipment. The term "complete passes" shall mean cleaning from the upstream manhole all the way to the downstream manhole. Cleaning shall be performed with combination cleaning / vacuum trucks.

B. Heavy line cleaning shall be performed, only if required and approved by the City, to remove foreign material and restore pipe capacity to 95%. Heavy line cleaning shall be defined as four (4) or more complete passes of the storm drain line with the cleaning equipment. The term "complete passes" shall mean cleaning from the upstream manhole all the way to the downstream manhole. Cleaning shall be performed with combination cleaning / vacuum trucks.

C. Conditions such as broken pipe and major blockages may prevent cleaning from being accomplished, especially where additional damage would result if cleaning were attempted or

continued. Should such conditions be encountered and the contractor is unable to clean the entire line from all reasonable points of access and directions, the Contractor shall not be required to clean those specific pipe sections unless the Owner removes the apparent obstruction.

D. During cleaning operations, satisfactory precautions shall be taken by the Contractor in the use of cleaning equipment. Precautions shall be taken to ensure that damage to or flooding of public or private property does not occur during the cleaning procedure.

E. Selection of the equipment shall be the sole discretion of the Contractor and based on the conditions of lines at the time the work commences. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the storm drain lines and manholes. There shall be no change in cost for use of additional or different equipment utilized at the discretion of the contractor to perform work. Contractor shall notify project engineer and Owner of equipment to be used prior to use or initiation of any work.

F. All sludge, dirt, sand, rocks, grease, and other solid or semi-solid materials resulting from the cleaning operation shall be removed at the downstream manhole/catch basin of the section being cleaned. Passing materials from pipe segment to pipe segment, which could cause line stoppages, accumulations of debris in wet wells, interference with in-line permanent flow monitoring equipment or damage to pumping equipment will not be permitted.

G. If the CCTV inspection shows the cleaning to be unsatisfactory, the Contractor shall re-clean and re-inspect the pipe segment at his sole expense until the cleaning is shown to be satisfactory.

H. All sludge, dirt, sand, rocks, grease, and other solid or semisolid materials removed from the storm drain lines during the cleaning operation shall be drained of water and transported to an approved licensed landfill facility. All costs associated with debris disposal will be the responsibility of the Contractor or as otherwise specified herein.

SECTION 3.25.C – LATERAL DRAIN LINE CLEANING

A. Contractor will use a lateral launch inspection system, consisting of a robotic tractor and a lateral launch CCTV camera, to remotely deploy a pan & rotate camera into lateral pipes connected to a mainline storm drainpipe. Should Contractor encounter multiple laterals converging in a single tap, Contractor shall utilize a steerable lateral camera with guide pin to inspect the adjoining laterals separately. Each pipe shall be identified as an independent inspection for data submittal and invoicing purposes.

B. A mainline television camera is used to position the lateral camera launcher. The lateral camera is used to inspect each lateral from the mainline.

C. The television inspection of the lateral will be attempted from inside the mainline up into the lateral or attempted from the service manhole towards the mainline. Lateral lines inspected from

the service manhole towards the mainline will be attempted by using a mini push camera if necessary.

D. In the event a lateral pipe segment cannot be fully inspected after reasonable attempts to remove obstructions or traverse because of poor structural condition is not successful, Contractor shall provide all the information to the City and the City will determine alternate possible solutions or whether enough information has been obtained to safely assess the proximity of uninspected portions of pipe.

E. Under no circumstances shall a lateral line be cleaned or inspected on private property or beyond public right-of-way of non-local City street (i.e., federal, federal-aid or state routes) limits. Any cleaning or inspection services performed outside the City approved scope of work, private property, or otherwise specified herein will not reimbursable and all associated costs contractor responsibility. The connections points for all laterals at the mainline or connecting structure shall be inspected at no direct cost. The limits of lateral lines cleaning and inspection operations for lateral lines connecting a drainage structure to the mainline may end at the drainage structure; however, where feasible the contactor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. For lateral lines not connected to a drainage structure the lateral line shall be cleaned and inspected from the connection point to the mainline to the extent feasible on the private property side (side opposite the mainline). If the contractor is unable to reasonably clean or inspection a lateral line beyond the connection to the mainline the contractor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. Field reports and video logs shall clearly document distinguish whether the line cleaned or inspected is a mainline or lateral.

SECTION 3.25.D – DRAINAGE STRUCTURE CLEANING

A. The Contractor shall furnish all labor, equipment, supplies, and supervision and shall perform all work required in accordance with these specifications. Drainage structure cleaning, including catch basins, drop inlets, conflict boxes, manholes, etc. shall be performed in the areas selected and approved by the City. Only manholes / catch basins with large debris such as rocks, bricks, trash, tree limbs, etc. will require cleaning. Also, cleaning will be required if small deposits or water has accumulated at greater than or equal to 1/3 of the depth of the manhole / catch basin (measured from rim to invert of the lowest pipe).

B. Selection of the equipment shall be the sole discretion of the Contractor and based on the conditions of drainage structures at the time the work commences. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the drainage structures.

C. All sludge, dirt, sand, rocks, grease, and other solid or semisolid materials removed from the storm drainage structures during the cleaning operation shall be drained of water and transported to an approved licensed landfill facility. All costs associated with debris disposal will be the responsibility of the Contractor or as otherwise specified herein.

SECTION 3.25.E – TELEVISION INSPECTION REPORTS

A. Television Inspection Report: The Contractor shall complete a television inspection report covering the television inspection work and the information acquired. The television inspection report shall be completed by the Contractor.

B. A television inspection code sheet shall be used consistently throughout the contract. All electronic data files shall be submitted on CD-ROM, or flash drive, as directed and approved by the City.

C. Video Data Display: At the start of each storm sewer length being surveyed, the length of pipeline from zero up to the cable calibration point shall be recorded and reported in order to obtain a full record of the storm sewer length. The length reading entered on to the data display at the cable calibration point must allow for the distance from the start of the survey is zero. In the case of surveying through a manhole where a new header sheet is required, the distance shall be set at zero with the camera focused on the outgoing pipe entrance.

D. Television Inspection Record: AT the start of each manhole length a data generator shall electronically generate and clearly display on the viewing monitor and video recording a record of data in alphanumeric form containing the following minimum information:

a. Automatic update of the camera's position, in feet and tenths, in the storm sewer line from adjusted zero;
b. Size and Length of Line, Type of material line composed of, etc.;
c. Upstream manhole and downstream drainage structure reference numbers;
d. Date of inspection;
e. Road name/location;
f. Direction of inspection (upstream or downstream);
g. Starting time of the inspection;
h. Pipe ID references;

Once the survey of the pipeline is under way, specific data should be continuously displayed on the viewing monitor and video recording. The size and position of the data display shall be such as not to interfere with the main subject of the picture yet shall be easily readable when the recording is replayed. At minimum, the following data should be displayed:

Automatic update of the camera's position, in feet and tenths, in the storm sewer line from adjusted zero; \

Upstream manhole and downstream manhole reference numbers

Each storm sewer length, i.e., the length of the storm sewer between two consecutive drainage structures, shall be entered on a separate coding sheet. Thus, where a Contractor elects to "pull through" a manhole during a CCTV Survey, he shall start a new coding sheet at the manhole "pulled through" and shall re-set the distance to zero on the coding sheet.

All blind drainage structures and buried drainage structures shall be noted in the inspection report and logged on a separate log with the GPS location and type of structure. The log shall be provided to the City with each pay request.

The videos and corresponding reports shall be submitted to the City on a weekly basis for all work accomplished the previous week.

E. Laser Inspection Reporting: Laser scan final reporting shall include the pipe's true diameter, ovality (per ASTM FI216), x/y diameter, and maximum diameter. Segments or areas revealing deflection in horizontal alignment greater than 2% must be identified in the report. Where the presence of flow in the pipeline requires interpolation and estimation calculations to fill data gaps and complete the full circumference view, the method and calculations used to support these assumptions must be presented. Other data sources such as as-built data, if used for these calculations, must be identified in the report. To support identified radial localization of defects, individual ID measurements as computed from the axis of the inspected pipe must be presented in an illustrated ovality and deflection graphs covering the length of the inspection segment. Laser scan results identifying ovality and deflection must be presented in 2-D cross-sections. The color coding is to be identical to the aforementioned requirements. Where the presence of fluids in the pipe necessitates interpolation and estimation, calculations to fill gaps and complete the full circumference view will be performed. The method and calculations used to support these assumptions must be presented. Any high-resolution scan obtained during the inspection are to be provided along with the report in a 3-D point cloud (VRML) format including software for viewing on a PC.

Precision Ovality Scans including but not limited to Sensor Error, Axis Alignment Error, and Processing Errors must be accurate to +/- 1%.

The report shall provide a 2-D representation of an integrated overview identifying concentricity, and deviation from concentricity resulting in ovality and eccentricity, presented in a color-coded format as an unrolled illustration of the pipe condition to include the entire pipe circumference (above the flow line) as well as a cross-section view. The pipe interior is to be flattened into a graphic whose y-axis represents pipe diameter, whose x-axis represents pipe length and whose color represents deviation from expected values indicating a gradation and severity of the deviation from concentricity. Measured pipe internal diameter (ID) that coincides with expected values must be coded in a color that positively identifies and differentiates the measurement of the expected values from actual concentricity measurements

The report shall provide a 3-D representation with variations in pipe wall shown in sharp relief for easy visual analysis for each of the aforementioned 2-D representations.

SECTION 3.25.F – SUBMITTALS

A. DATA: Data in CD-ROM, or flash drive, format shall be submitted to the City within ten (10) business days from time of inspection. Three (3) hard copies of the inspection report listed above shall be submitted.

B. CCTV Inspections: The Contractor shall provide videos with audio comments in DVD, or flash drive, format recorded at Standard Play (SP).

a. Complete storm sewer line segments can be included on the same video (i.e., CCTV inspections for storm sewer line segments shall not be divided among videos).
b. The video format shall be an MPEG-1 compressed video, and resolution video format shall be QSIF (Quarter-size Standard Image Format) of 176 x 112 pixels for NTSC video format.
c. Two labels are required on each DVD. One label shall be placed on the spine of the DVD Cover and the other on the face of the DVD.

C. Other Required Submittals: The Contractor shall provide the following backup information to support and document each location that has been cleaned/inspected:
   a. Brief narrative describing scope of work for location and any findings after inspection.
   b. Maps/GIS Data of each location showing work completed
   c. Field logs and misc. information generated during field investigation. A log shall be made by the Contractor when each drainage structure-to- drainage structure pipe segment is televised. The log shall include at a minimum:
      a. Street name with municipal address hundred block number, and any intersecting street
      b. Location of each point of leakage
      c. Location of each service connection or other pipe entering the televised line
      d. Location and degree of offsets
      e. Location of any damaged sections, and nature of damage
      f. Location of buried structures or blind junctions
      g. Location and amount of any deflection in alignment or grade of pipe; also, the total length of pipe sag
      h. Pipe ID reference number, materials, diameter, and distance between pipe joints
      i. Date, city, drainage structure-to- drainage structure segment, reference drainage structure ID number
      j. Name of operator, and inspector
      k. Direction of flow
      l. If a reverse-set up
      m. Video Filename
   d. Confined space entry form (when required) per industry standards and any applicable federal or state requirements.
   e. The Contractor shall prepare and submit a list of any encountered defects, obstructions, and blockage locations on a weekly basis. Any locations with defects which appear to require immediate corrective action based on their size and/or type on a daily and weekly basis.

D. Progress Reports: The Contractor will be required to provide a weekly progress report to the City showing, at a minimum, the status of all locations previously worked on in the prior week. The report shall include the location/address, size of drain line being inspected, date the notice to proceed was issued for the location, the status (complete, ongoing, etc.), and the anticipated completion date. A final overall project report shall also be provided upon completion of all work. A hard copy and CD with PDF copy of all reports within the billing period shall be provided with each invoice submitted and the final report submitted with or prior to the final retainage invoice.

SECTION 3.25.G – MEASUREMENT AND PAYMENT

A. CCTV Inspection of Main Lines (and/or Laterals). Drain line laterals shall be considered any drain line or pipe connecting stubbed or otherwise tied into the main drain line. Laterals may originate from drainage structures or other connecting features to facilitate the flow of stormwater into the primary drainage system. Under no circumstances shall a lateral line be cleaned or inspected on private property or beyond public right-of-way of non-local City street (i.e., federal, federal-aid or state routes) limits. Any cleaning or inspection services performed outside the City approved scope of work, private property, or otherwise specified herein will not reimbursable and all associated costs contractor responsibility. The connections points for all laterals at the mainline or connecting structure shall be inspected at no direct cost. The limits of lateral lines cleaning and inspection operations for lateral lines connecting a drainage structure to the mainline may end at the drainage structure; however, where feasible the contactor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. For lateral lines not connected to a drainage structure the lateral line shall be cleaned and inspected from the connection point to the mainline to the extent feasible on the private property side (side opposite the mainline). If the contractor is unable to reasonably clean or inspection a lateral line beyond the connection to the mainline the contractor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. Field reports and video logs shall clearly document distinguish whether the line cleaned or inspected is a mainline or lateral.

   a. *Measurement:* CCTV Inspection of existing storm sewer pipe including drainage structures will be measured in place on a linear foot basis to the nearest foot. Measurement will be along the horizontal centerline of the pipe with no deductions for drainage structures and will be from center of drainage structures to center of drainage structures for the actual storm sewer line televised. CCTV of mainlines will include a view of the upstream and downstream drainage structures where possible to indicate the relative condition of said drainage structures. Measurement will be made for a various range of pipeline diameters listed under this item on the Proposal Form.
      i. The pipe segment length, with respect to the referenced drainage structure, shall be determined with a meter device, accurate to within ±2%. Markings on the cable, instruments requiring observation inside a drainage structure, or correction of each reading for the depth of the referenced drainage structure shall not be allowed. Accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape, or other suitable device.

   b. *Payment:* Payment for CCTV inspection of the existing storm sewer pipe and drainage structures will be made for the respective quantities as determined above at the unit price bid in the Proposal Form. This price and payment shall be full compensation for all material, labor, and equipment, required for television set-up, including, storm sewer flow, camera retrieval, hard copy report, electronic report, video recording, measurement, etc.

B. Cleaning of Main Lines (and/or Catch Basin Laterals)

   a. *Measurement:* Cleaning of existing storm sewer pipe including drainage structures will be measured in place on a linear foot basis to the nearest foot. Measurement will be

along the horizontal centerline of the pipe with no deductions for drainage structures and will be from center of drainage structures to center of drainage structures for the actual storm sewer line televised. Cleaning of mainlines will include a view of the upstream and downstream drainage structures where possible to indicate the relative condition of said drainage structures. Measurement will be made for a various range of pipeline diameters listed under this item on the Proposal Form.

i. If cleaning of an entire section cannot be successfully performed from one manhole/catch basin, the equipment shall be set up at the other manhole/catch basin and cleaning again attempted. If successful cleaning still cannot be performed or the equipment fails to traverse the entire manhole-to-manhole or catch basin to catch basin pipe segment, it will be assumed that a major blockage exists, and the cleaning operation will be abandoned. The cleaning operator will note these occurrences in his daily cleaning log. The Contractor will be compensated for cleaning for only the length associated with the portions thereof pipe successfully cleaned should this occur.

b. *Payment:* Payment for cleaning of the existing storm sewer pipe and drainage structures will be made for the respective quantities as determined above at the unit price bid in the Proposal Form. This price and payment shall be full compensation for all material, labor, and equipment, required for television set-up, including, storm sewer flow, camera retrieval, hard copy report, electronic report, video recording, measurement, etc.

C. Heavy Cleaning of Main Lines (and/or Catch Basin Laterals)

a. *Measurement:* Heavy cleaning of existing storm sewer pipe including drainage structures will be measured in place on a linear foot basis to the nearest foot. Heavy cleaning is defined as making four or more complete passes in the specific line segment being cleaned. Measurement will be along the horizontal centerline of the pipe with no deductions for drainage structures and will be from center of manhole to center of drainage structures for the actual storm sewer line televised. Heavy cleaning of mainlines will include a view of the upstream and downstream drainage structures where possible to indicate the relative condition of said drainage structures. Measurement will be made for a various range of pipeline diameters listed under this item on the Proposal Form.

b. *Payment:* Payment for heavy cleaning of the existing storm sewer pipe and drainage structures will be made for the respective quantities as determined above at the unit price bid in the Proposal Form. This price and payment shall be full compensation for all material, labor, and equipment, required for television set-up, including, storm sewer flow, camera retrieval, hard copy report, electronic report, video recording, measurement, etc.

SECTION 3.25.H – OBSTRUCTIONS AND BLOCKAGES

A. The Contractor will notify the City of any obstructions and blockages preventing the Contractor from completing his/her work. The City shall be notified after an attempt for standard cleaning has taken place. The Contractor shall submit a partial inspection report as outlined above in Sections ~~3.24~~ 3.25.E & ~~3.24~~ 3.25.F. The City will review the submittal and provide further guidance to the Contractor on a case-by-case basis. City may authorize "Heavy Cleaning" as outlined herein or

approve additional means, as requested by the contractor. Any additional costs associated with additional services to address obstructions and blockages shall be approved by the City prior to starting work, or incurring any mobilization or material, equipment, and labor costs. Contractor shall submit a request in writing for City approval complete with all necessary supporting backup and detailed estimate inclusive of all material, equipment, labor, and other incidental costs, in addition to any applicable taxes, fees, markup, profit, overhead, insurance, and bond, etc. costs in accordance with City requirements.

B. If a blockage or obstruction is encountered and conditions allow, the Contractor shall attempt to conduct the inspection and cleaning from the opposite end of the pipe and continue back towards the blockage or obstruction in order to ensure maximum data collection of the pipe segment. Any reverse set-up mobilization costs shall be at no direct pay.

a. If a reverse set-up is required because the cleaning or CCTV in the downstream direction could not be completed, a new coding sheet shall be prepared for the start of the reverse set-up cleaning or CCTV. In no instance shall the pipe ID be altered so that the downstream drainage structure reference number is listed first and upstream drainage structure reference number listed. All reverse set-ups shall be logged on a separate log.

C. It shall be the responsibility of the Contractor to schedule and perform investigations to prevent system overflows. If flows are such that they interfere with the Contractor's ability to collect accurate data, then the Contractor shall be responsible to schedule his work during low flow periods or to request written permission to perform by-pass pumping around the site. The Contractor may provide by-pass pumping only with specific approval from the City.

D. Inspection of storm drain infrastructure by means of CCTV equipment shall be performed to determine the location and extent of any obstructions and defects such as offset joints, protruding tees, broken pipe, and other pipe defects. Field logs / reports shall note the existence of any significant defects. Cleaning by the Contractor shall be performed prior to each CCTV inspection on each pipeline to be inspected.

3. Measurement and Payment Bid Items:

ITEM NO.	PAY ITEM	PAY UNIT
CSD701-01	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15" diameter	Linear Feet
CSD701-02	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15" to 24" diameter	Linear Feet
CSD701-03	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27" to 30" diameter	Linear Feet
CSD701-04	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36" diameter and above	Linear Feet
CSD701-05	Cleaning of Main Storm Sewer Lines and Laterals, including	Linear Feet

	Drainage Structures, under 15” diameter	
CSD701-06	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	Linear Feet
CSD701-07	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	Linear Feet
CSD701-08	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	Linear Feet
CSD701-09	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	Linear Feet
CSD701-10	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	Linear Feet
CSD701-11	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	Linear Feet
CSD701-12	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	Linear Feet

SECTION 3.25.I – <u>POST REHABILITATION CCTV AND INSPECTION</u>

In accordance with Section C204 Environmental Protection and Stormwater Pollution Prevention Plan from the General Specifications, the Contractor is responsible for the long-term operation and maintenance of the related best management practices. Post rehabilitation CCTV and inspection is required, at no direct pay, to evaluate the storm sewer’s capacity and ensure that the restored pipe is free from debris, obstructions, or foreign material which would have been caused by construction activities of the Contractor. Post rehabilitation CCTV and inspection shall follow the requirements of Sections 3.24.A through Section 3.24.F.

SECTION 3.26 – NON-STANDARD BID ITEMS

ITEM NO	PAY ITEM	PAY UNIT
CF-3	SIDEWALK, DRIVEWAY AND CURB SAW CUTTING	LF
CF-4	PAVEMENT SAW CUTTING ADJACENT TO EXISTING PAVEMENT AND AT PATCHES TO UTILITY TRENCHES	LF
CF-5	REMOVAL OF HANDICAPPED RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS INCLUDING SAW CUTTING	SY
CF-6	ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER,, AND CONCRETE SIDEWALKS AT INTERSECTIONS	SY
CF-7	4” Concrete Sidewalk (Special Finish)	SY
CF-8	6” Concrete Driveway (Special Finish)	SY
CF-9	6” Concrete Driveway (Special Finish) (Pea Gravel)	SY
CF-10	ROOT PRUNING	EACH
CF-13	SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS.	EACH
CF-14	SURFACE APPLIED TACTILE / DETECTABLE WARNING SURFACE TILES	EACH
CF-15	TIMBER CURB	LF
CF-16	TYPE-A Dead-End Installation	EACH
CF-301	Vertical Catch Basin Cover	EACH
CF-302	Vertical Catch Basin Frame	EACH
CF-303	Lockable Vertical Catch Basin Frame and Cover	EACH
CF-311	Vertical Catch Basin Front Grate No. 1	EACH
CF-312	Vertical Catch Basin Front Grate No. 2	EACH
CF-313	Vertical Catch Basin Front Grate No. 3	EACH
CF-315	Single Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-316D	Double Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-317	Single Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH

CF-318D	Double Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH
CF-331	Drop Inlet Catch Basin Grate	EACH
CF-332	Drop Inlet Catch Basin Frame	EACH
CF-335	Drop Inlet Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-336	Drop Inlet Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH
CF-501	INSTAL TEMPORARY PAVEMENT, 2" THICK	Square Yard
CF-351	Mountable Catch Basin Grate	EACH
CF-352	Single or Double Mountable Catch Basin Frame	EACH
CF-353	Lockable Mountable Catch Basin Grate,	EACH
CF-355	Single Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-356D	Double Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-357	Single Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH
CF-358D	Double Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH
CF-371	Manhole Cover	EACH
CF-372	Manhole Frame	EACH
CF-375	Manhole Repair or Vertical Adjustment up to 6" Reusing Existing Metal Castings	EACH
CF-376	Manhole Repair or Vertical Adjustment over 6" Reusing Existing Metal Castings	Foot Height
CF-377	Manhole Repair or Vertical Adjustment up to 6" Brick Work Only	EACH
CF-378	Manhole Repair or Vertical Adjustment over 6" Brick Work Only	Foot Height
CF-701(53)	HPPP (size) high-performance polypropylene pipe furnishing and installing	LF
CF-C701(53)	PVC (SIZE) Polyvinyl Chloride furnishing and installing	LF
CSD701-01	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15" diameter	LF
CSD701-02	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15" to 24" diameter	LF
CSD701-03	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27" to 30" diameter	LF
CSD701-04	CCTV Inspection of Main Storm Sewer	LF

	Lines and Laterals, including Drainage Structures, 36” diameter and above	
CSD701-05	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	LF
CSD701-06	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	LF
CSD701-07	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	LF
CSD701-08	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	LF
CSD701-09	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	LF
CSD701-10	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	LF
CSD701-11	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	LF
CSD701-12	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	LF
CSS742(X1)	Install Sewer Mains by Pipe Bursting (Size)	LF
CSS742(X2)	Fuse Service Tee and Drill Pipe to Replace Existing Sewer House Connection from New Main to Back of Curb	EACH
CSS742(X3)	Sewer Point Repair up to Twelve Feet (Size & Depth)	EACH
CSS742(X4)	Sewer Point Repair beyond Twelve Feet (Size & Depth)	LF
CSS742(X5)	Sewer Main Line Cleaning (Size)	LF
CSS742(X6)	Sewer Main Line CCTV Inspection (Size)	LF
CSS742(X7)	Sewer Service Lateral Lining (6” CIPP)	EACH
CSS742(X8)	Manhole Rehabilitation, Cementitious Liner, Partial Depth (2-feet)	~~LF~~ EACH
CSS742(X9)	Manhole Rehabilitation, Cementitious Liner, Full Depth	Foot Height
CSS742(X10)	Removal of Cast Iron Flush Valve Apparatus from Sewer Manhole	EACH
CSS742(X11)	Removal of water service line from sewer manhole	EACH
CSS742(X12)	Locate and disconnect flush valve water service line from water main	EACH
CSS742(X13)	Sewer Service Lateral CCTV Inspection	EACH

CSS742(X14)	Well Point System	BLFT
CSW741-01	Repair Water Main with Full Circle Clamp (Pipe Size 4” – 8”)	EACH
CSW741-02	Repair Water Main with Full Circle Clamp (Pipe Size 12” – 16”)	EACH
CSW741-03	Repair Water Main with Bell Joint Clamp (Pipe Size 4” – 12”)	EACH
CSW741-04	Repair Water Main with Bell Joint Clamp (Pipe Size 16” – 24”)	EACH
CSW741-05	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 4” – 12”)	EACH
CSW741-06	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 16” – 24”)	EACH
CSW741-07	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 4” – 12”)	LF
CSW741-08	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 16” – 24”)	LF
CSW741-09	Replace 5/8” to 1” Lead Service Line Water House Connection with 1” Polyethylene Water House Connection (From Main to Meter)	EACH
CSW741-10	Replace 1.5” Lead Service Line Water House Connection (From Main to Meter)	EACH
CSW741-11	Replace 2” Lead Service Line Water House Connection (From Main to Meter)	EACH
CSW741-12	2” New Water Main with Main Line Fittings	LF

- END OF SECTION -

SECTION 01 10 00

SUMMARY OF WORK

PART 1 – GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS/REQUIREMENTS INCLUDED

A. The work of this contract includes compression fit HDPE lining an existing 30" cast iron water transmission main, installing a new 30" ductile iron pipe and ductile iron fittings, connecting to existing 30" cast iron pipe, installing valves, and installing a new 8" PVC water main. The existing 6" cast iron water main on the 5700 block of Willow Street is to be plugged and abandoned in-place with flowable fill. Other minor project improvements include replacement of sanitary sewer gravity lines, drainage pipes, drainage wyes and laterals, and vertical adjustments of utility and drainage tops. The contract shall be constructed complete in place with all valves, hydrants, fittings, and services. Project shall include restoration of roadway, sidewalks, driveways, established lawns, and roadway drainage pipes and structures to original conditions unless otherwise noted in the plans.

B. The Contractor shall furnish all labor, materials, equipment, tools, services, and incidentals to complete all work required by these specifications and as shown on the drawings.

C. The Contractor shall perform the work complete, in place and ready for continuous service, and shall include repairs, replacements, and restoration required as a result of damages caused during this construction.

D. The Contractor shall furnish and install all materials, equipment, and labor which is reasonably and properly inferable and necessary for the proper completion of the work, whether specifically indicated in the Contract Documents or not.

1.02 CONTRACTS

The Contract consists of a unit bid price. The Bidder shall complete the schedule of all unit prices included in the Bid Form and shall accept all fixed unit prices listed therein. The total Bid will be determined as the sum of the products of the estimated quantity of each item and the unit price bid. The final Contract Price will be subject to adjustment according to final measured, used, or delivered quantities, and the unit prices in the bid will apply to such final quantities except that unit prices will be subject to change by Change Order if quantities vary more than twenty-five percent (25%).

1.03 GOVERNING SPECIFICATIONS

The governing specifications shall be the City of New Orleans Department of Public Works General Specifications for Street Paving, included in these contract documents as Attachment 1, unless explicitly specified otherwise.

1.04 WORK SEQUENCE

A. All work to be done under this contract shall be done with no disruption of water service, except during water line tie-ins, and with minimum inconvenience to traffic. The Contractor shall coordinate his work with the Department of Public Works and the Sewerage and Water Board to ensure all construction in the roadway is marked properly and vehicles are able to travel safely around the construction zone.

1.05 CONSTRUCTION AREAS

A. Contractor shall limit his use of the construction areas for work and storage to allow for:

1) Commercial Use.
2) Owner use.
3) Public use.

B. Coordinate use of work site under direction of Engineer.

C. Assume full responsibility for the protection and safekeeping of products under this contract, stored on the site.

D. Move any stored products, under Contractor's control, which interfere with operations of the Owner or separate contractor.

E. Obtain and pay for the use of additional storage or work areas needed for operations.

1.06 OWNER OCCUPANCY

A. Contractor shall at all times conduct his operations as to insure the least inconvenience to the general public.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 10 25

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

A. Refer to Proposal Form

B. Payment shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labors, operations, and incidentals appurtenant to complete the work being described, as necessary to complete the various items of the work all in accordance with the requirement of the Contract Documents, including all costs of compliance with the regulations of public agencies having jurisdiction. The Contractor is hereby on notice that no separate payment will be made for any item not specifically called out, but that is required to properly complete the project.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

PART 4 – MEASUREMENT AND PAYMENT

4.01 SCOPE

The Total Bid Price shall cover all work required by the Contract Documents. All costs in connection with the proper and successful completion of the work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in the unit and lump sum prices bid. All work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid.

4.02 ESTIMATED QUANTITIES

All estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used only (a) as a basis for estimating the probable cost of the work, and (b) for the purpose of comparing the bids submitted for the work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished. No compensation will be given for any quantities not used

4.03 DPW GENERAL SPECIFICATION PAY ITEMS

Measurement and Payment: All items assigned a DPW General Specification pay item number shall be measured and paid as per the DPW Special Provisions and/or the DPW General Specifications for Street Paving, included as Attachments 1 and 2 of these Specifications.

See below for a list of such items (exclusive of the "Extra Items" measured and paid for separately per their specific Measurement & Payment Paragraphs following the table).

BID ITEM	DESCRIPTION
C202(52)(D)	Removal and Disposal of Existing Sidewalk, Driveway, Foot Lap (Concrete, Brick, Asphalt, ETC.)
C202(52)(I)	Removal and Disposal of Existing Asphaltic Concrete Pavement
C203(51)	Roadway Excavation
C203(58)	Unsuitable Subgrade Excavation and Sand Filling
C203(59)	Geotextile For Stabilization
C203(60)	Geogrid
C302(51)	Base Course (8" thick)
C502(53)-1	2” Thick Superpave Asphaltic Concrete Wearing Course
C502(53)(B)	5” Thick Superpave Asphaltic Concrete Binder Course
C509(51)	Cold Planning Asphaltic Pavement (2.0" Average Thick)
C701(53)(F)	Reinforced Concrete Pipe (15")
C701(53)(G)	Reinforced Concrete Pipe (18")
C701(53)(I)	Reinforced Concrete Pipe (24")
C701(59)(A)	Reinforced Concrete WYE or Arch Equivalent - New (15" x 18")
C702(54)(A)(1)	Adjust Manhole or Drop Inlet (up to 6")
C706(51)	Concrete Sidewalk (4" thick)
C706(52)	Concrete Driveway (6" thick)
C707(59)	Concrete Mountable Curb and Gutter Bottom
CF-3	Sidewalk, Driveway and Curb Saw Cutting
CF-4	Pavement Saw Cutting Adjacent to Existing Pavement and at Patches and Utility Trenches
CF-5	Removal of Handicap Ramps, Curb and Gutter, and Concrete Sidewalks at Intersections Including Saw Cutting
CF-6	ADA-Accessible Curb Ramps, Curb and Gutter, and Concrete Sidewalks at Intersections
CF-10	Root Pruning
CF-501	Install Temporary Pavement, 2" thick
C741(51)(C)(1)	8" PVC New Water Main with Main Line Fittings
C741(51)(J)(2)	30” Ductile Iron New Water Main w/Main Line Fittings

C741(52)(B)	New 6" Valve
C741(54)	New Fire Hydrant
C741(55)(A)	Replace 5/8” to 1’‘Water House Connection with 1" Water House Connection (from main to meter)
C741(55)(G)	Replace Water House Connection from Meter to Property Line 5/8” to 1"
C741(71)(C-01)	8" Water Line Offset Up to 24"
C741(71)(C-02)	8" Water Line Offset Over 24"
C741(75)	Remove Mud and Debris from Inside of Water Meter Box
C741(76)	Adjust Complete Water Meter Box to Grade
C741(77)	Replace Broken Water Meter Box (5/8") to (1")
C741(78)(A)	Plug existing water main 4" through 12" and fill with flowable material (sand/cement mixture)
742(51)(C)(A)	Install Sewer Main (8" at 0' - 6')
C742(60)	Replace Existing Sewer House Connection from Existing Main to Back of Curb
C742(63)	Replace Existing Sewer House Connection Beyond Back of Curb
CSD701-02	CCTV Inspection of Main Storm Sewer Lines and Laterals, Including Drainage Structures (15"-24")
CSD701-06	Cleaning of Main Storm Sewer Lines and Laterals, Including Drainage Structures (15"-24")
Extra Item 1	Exploratory Excavation (0.0' - 6.0') (1/2)
Extra Item 2	Exploratory Excavation (6.1' - 10.0') (1/2)
Extra Item 3	30" Compression Fit HDPE For The 30" Cast Iron Water Transmission Main
Extra Item 4	30" Butterfly Valve
Extra Item 5	Butterfly Valve Vault
Extra Item 6	30" Line Stop
CSW741-12	Well Point System

4.04 TEMPORARY EROSION CONTROL (ITEM NO. SP-1)

A. Measurement: Measurement for payment for temporary erosion control will be made on a lump sum basis.

B. Payment: Payment for temporary erosion control will be made at the lump sum price bid and will constitute full compensation for providing all labor, materials, equipment, and incidentals required for layout of all types of temporary erosion control (including obtaining and maintaining necessary permits, silt fencing, hay bales, and inlet protection). Payment will be at the contract lump sum price in accordance with the following schedule:

% of Total **Contract Amount Earned**	**Allowable % Lump Sum Price for Temporary Erosion Control**

Initial Erection	20
25	40
50	60
75	80
100	100

Item No.	Pay Item	Pay Unit
Extra Item 1	Temporary Erosion Control	LS

4.05 EXPLORATORY EXCAVATION (0.0'-6.0')

A. Measurement: Measurement for payment for exploratory excavation will be made per each exploratory excavation performed. Payment will be made at the contract unit price for each excavated area up to ten (10) feet long, no more than the width of the water line trench wide, and up to six (6) feet deep.

B. Payment: Payment for this item will be made per each exploratory excavation approved by the Engineer and will be paid at the unit price bid. The work will include excavation, backfill, labor, equipment, tools, materials, disposal of debris, and submitted documentation in accordance with the plans and specifications.

Item No.	Pay Item	Pay Unit
Extra Item 1	Exploratory Excavation (0.0' – 6.0')	EA

4.06 EXPLORATORY EXCAVATION (6.1'-10.0')

A. Measurement: Measurement for payment for exploratory excavation will be made per each exploratory excavation performed. Payment will be made at the contract unit price for each excavated area up to ten (10) feet long, no more than the width of the water line trench wide, and up to ten (10) feet deep.

B. Payment: Payment for this item will be made per each exploratory excavation approved by the Engineer and will be paid at the unit price bid. The work will include excavation, backfill, labor, equipment, tools, materials, disposal of debris, and submitted documentation in accordance with the plans and specifications.

Item No.	Pay Item	Pay Unit
Extra Item 2	Exploratory Excavation (6.1 – 10.0')	EA

4.07 30” COMPRESSION FIT HDPE FOR THE 30” CAST IRON WATER TRANSMISSION MAIN

A. Measurement: Compression fit HDPE Line 30” cast iron water transmission main shall be measured for payment by field measurement of the linear feet installed, measured along the centerline of the pipe for the size and type of water main indicated. Ductile iron pipe and fittings used to connect HDPE pipe segments in intermediary pits shall be measured as part of this item. Any ductile iron pipe or fittings needed to meet the limits of compression fit HDPE lining as shown on the plans shall be measured as part of this item.

B. Payment: The actual total linear feet of water main compression fit HDPE lined and accepted, measured as stated above, will be paid at the unit price bid and shall include all labor, materials, tools and equipment necessary to compression fit HDPE line the water main of the size and type indicated. All material and construction methods required for compression fit HDPE lining the water main shall be considered incidental to the unit price, including transitional couplings, ductile iron fittings, ductile iron spool pieces, joint restraints, flanges, tie-ins to valves and existing water mains, and excavation, shoring and backfilling of entry, intermediate, and exit pits.

Item No.	Pay Item	Pay Unit
Extra Item 3	Compression Fit HDPE Line 30” Cast Iron Water Transmission Main	LF

4.08 30” BUTTERFLY VALVE

A. Measurement: Measurement for payment for 30” Butterfly Valve will be made per each item installed.

B. Payment: Payment for each 30” butterfly valve will constitute full compensation for installation of 30” butterfly valve. All equipment, materials, tools and labor shall be considered incidental to the unit price.

Item No.	Pay Item	Pay Unit
Extra Item 4	30” Butterfly Valve	EA

4.09 BUTTERFLY VALVE VAULT

A. Measurement: Measurement for valve vault will be made on a per each item basis.

B. Payment: Payment per each valve vault will constitute full installation of valve vault including furnishing all materials, equipment, tools, labor, and incidentals required to install the valve vault. Excavation, backfill, geotextile fabric, bedding, shoring,

and any other materials required for installation of the valve vault shall be considered incidental to the unit price.

Item No.	Pay Item	Pay Unit
Extra Item 5	Butterfly Valve Vault	EA

4.10 30” LINE STOP

A. Measurement: Measurement for payment of 30” line stop will be made on a per each basis.

B. Payment: Payment for this item will constitute full compensation for installing the line stop, including furnishing all equipment, tools, labor, incidentals, and thrust blocks. Payment will also include full compensation for successful capping of the existing 30” water main including all materials, equipment, labor, and incidentals required to cap the water main. Excavation to expose the existing 30” steel water main, procurement and installation of transitional fittings such as steel transitional pieces, ductile iron fittings, shoring, and bracing shall be considered incidental to the unit price.

Item No.	Pay Item	Pay Unit
Extra Item 6	30” Line Stop	EA

4.12 30” DUCTILE IRON PIPE WITH MAIN LINE FITTINGS

A. Measurement: 30” Ductile Iron Pipe with Main Line Fittings shall be measured for payment by field measurement of the linear feet installed, measured along the centerline of the pipe for the size and type of water main indicated.

B. Payment: The actual total linear feet of 30” ductile iron pipe installed and accepted, measured as stated above, will be paid at the unit price bid and shall include all labor, materials, tools and equipment necessary to install the water main of the size and type indicated. All material and construction methods required for installation of the water main shall be considered incidental to the unit price, including ductile iron fittings, ductile iron spool pieces, joint restraints, flanges, tie-ins to valves and existing water mains, and excavation, shoring and backfilling.

Item No.	Pay Item	Pay Unit
C741(51)(J)(2)	30” Ductile Iron Pipe with Main Line Fittings	EA

END OF SECTION

SECTION 01 10 50

FIELD ENGINEERING AND SURVEYING

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

Contractor shall provide and pay for field engineering and field surveying services required for the project.

1) Survey work required in execution of the project.

2) Civil, structural or other professional engineering services specified, or required to execute the Contractor's construction methods.

1.02 RELATED REQUIREMENTS

A. Conditions of the Contract.

B. Section 01 10 00: Summary of Work.

1.03 QUALIFICATIONS OF SURVEYOR OR ENGINEER

Registered professional engineer of the discipline or registered land surveyor required for the specific service on the project, licensed in the State of Louisiana, acceptable to the Owner.

1.04 SURVEY REFERENCE POINTS

A. Existing basic horizontal and vertical control points for the project are those designated on the drawings.

B. Locate and protect control points prior to starting work, and preserve all permanent reference points during construction.

1) Make no changes or relocations without prior written notice to the Engineer.

2) Report to the Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

3) Require surveyor to replace project control points which may be lost or destroyed.

a) Establish replacements based on original survey control.

1.05 PROJECT SURVEY REQUIREMENTS

A. Establish temporary bench marks as needed, referenced to data established by survey control points. Record locations with horizontal and vertical data on Project Record Documents.

B. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means.

C. From time to time, verify layouts by same methods, as directed by the Engineer.

1.06 RECORDS

Maintain a complete, accurate log of all control and survey work as it progresses.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 11 52

REQUESTS FOR PAYMENT

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

Submit applications for payment to the Engineer in accord with the schedule established by Conditions of the Contract.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Agreement between Owner and Contractor: Unit Price.

B. Conditions of the Contract: Progress Payments, Retainages and Final Payment.

C. Section 01 13 80: Construction Photographs and Video Taping.

D. Section 01 17 00: Contract Closeout.

1.03 FORMAT AND DATA REQUIRED

A. Submit payment requests in the form required by Owner with itemized data typed on 8 ½ x 11 (minimum size) white paper continuation sheets.

B. Provide itemized data on continuation sheet: format, schedules, line items and values.

1.04 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. All payment requests must include a signed affidavit regarding previous payments received, a short progress narrative describing work performed since previous payment submittal, progress photos as per Section 01 13 80, current project schedule, and invoices for any stored materials billed.

B. When the Owner or the Engineer requires additional substantiating data, the Contractor shall submit suitable information, with a cover letter.

C. Submit one copy of all data required with a cover letter for each monthly pay request. Any additional substantiating data requested shall also be submitted as required in Part B above.

1.05 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting as specified in section 01 17 00 – Contract Closeout.

1.06 SUBMITTAL PROCEDURE

A. Submit applications for payment to the Engineer at the times stipulated in the Agreement.

B. Number: Three copies of each application.

C. When the Engineer finds application properly completed and correct, he will transmit certificate for payment to the Owner, with copy to Contractor.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 11 53

CHANGE ORDER PROCEDURES

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. Promptly implement change order procedures.

1. Provide full written data required to evaluate changes.
2. Maintain detailed records of work done on a time-and-material/force account basis.
3. Provide full documentation to Engineer on request.

B. Designate in writing the member of Contractor's organization.

1. Who is authorized to accept changes in the Work.
2. Who is responsible for informing others in the Contractor’s employ of the authorization of changes in the Work.

C. Owner will designate in writing the person who is authorized to execute Change Orders.

1.02 DEFINITIONS

A. Change order: See General Conditions.

1.03 PRELIMINARY PROCEDURES

1. Owner or Engineer may initiate changes by submitting a Proposal Request to Contractor. Request will include:

1. Detailed description of the Change, Products, and location of the change in the Project.
2. Supplementary or revised Drawings and Specifications.
3. The projected time span for making the change and a specific statement as to whether overtime work is, or is not, authorized.
4. A specific period of time during which the requested price will be considered valid.
5. Such request is for information only, and is not an instruction to execute the changes, or to stop work in progress.

2. Contractor may initiate changes by submitting a written notice to Engineer, containing:

    1. Description of the proposed changes.
    2. Statement of the reason for making the changes.
    3. Statement of the effect on the Contract Sum and the Contract Time.
    4. Statement of the effect on the work of separate contractors.
    5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

1.04 DOCUMENTATION OF PROPOSALS AND CLAIMS

1. Support each quotation for a lump-sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow Engineer to evaluate the quotation.

2. On request, provide additional data to support time and cost computations:

    a. Labor required.
    b. Equipment required.
    c. Products required.
    d. Recommended source of purchase and unit cost.
    e. Quantities required.
    f. Taxes, insurance and bonds.
    g. Credit for work deleted from Contract, similarly documented.
    h. Overhead and profit.
    i. Justification for any change in Contract Time.

3. Support each claim for additional costs, and for work done on a time-and-material/force account basis, with documentation as required for a lump-sum proposal, plus additional information.
4. Name of the Owner's authorized agent who ordered the work, and date of the order.
5. Dates and times work was performed, and by whom.
6. Time record, summary of hours worked, and hourly rates paid.
7. Receipts and invoices for:
    a. Equipment used, listing dates and times of use.
    b. Products used, listing of quantities.
    c. Subcontracts.

1.05 PREPARATION OF CHANGE ORDERS

A. Engineer will prepare each Change Order.

B. Form: Owner's Form, to be provided to the Contractor.

C. Change Order will describe changes in the Work, both additions and deletions, with

attachments of revised Contract Documents to define details of the change.

D. Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.

1.06 LUMP SUM/FIXED PRICE CHANGE ORDER

A. Content of Change Orders will be based on, either:

1. Engineer's Proposal Request and Contractor's responsive Proposal as mutually agreed between Owner and Contractor.
2. Contractor's Proposal for a change, as recommended by Engineer.

B. Owner and Engineer will sign and date the Change Order as authorization for the Contractor to proceed with the changes.

C. Contractor may sign and date the Change Order to indicate agreement with the terms therein.

1.07 UNIT PRICE CHANGE ORDER

A. Content of Change Orders will be based on, either:

1. Engineer's definition of the scope of the required changes.
2. Contractor's Proposal for a change, as recommended by Engineers.
3. Survey of completed work.

B. The amounts of the unit prices to be:

1. Those stated in the Agreement.
2. Those mutually agreed upon between Owner and Contractor.

C. When quantities of each of the items affected by the Change Order can be determined prior to start of the work:

1. Owner and Engineer will sign and date the Change Order as authorization for Contractor to proceed with the changes.
2. Contractor may sign and date the Change Order to indicate agreement with the terms therein.

D. When quantities of the items cannot be determined prior to start of the work:

1. Engineer or Owner will issue a construction change authorization directing Contractor to proceed with the change on the basis of unit prices, and will cite the applicable unit prices.
2. At completion of the change, Engineer will determine the cost of such work based

on the unit prices and quantities used.

a. Contractor shall submit documentation to establish the number of units of each item and any claims for a change in Contract Time.

3. Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time.
4. Owner and Contractor will sign and date the change Order to indicate their agreement with the terms therein.

1.08 CORRELATION WITH CONTRACTOR'S SUBMITTALS

A. Periodically revise Schedule of Values and Application for Payment forms to record each change as a separate item of work, and to record the adjusted Contract Sum.

1. Periodically revise the Construction Schedule to reflect each change in Contract Time.

B. Revise sub-schedules to show changes for other items of work affected by the changes.

C. Upon completion of work under a Change Order, enter pertinent changes in Record Documents.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 12 00

PROJECT MEETINGS

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. Engineer shall schedule and administer pre-construction meeting, periodic progress meetings, and specially called meetings throughout progress of the work. At a minimum, he shall perform the following duties:

1) Prepare agenda for meetings.

2) Distribute written notice of each meeting four days in advance of meeting date.

3) Make physical arrangements for meetings.

4) Preside at meetings.

5) Record the minutes; include significant proceedings and decisions.

6) Reproduce and distribute copies of minutes within three days after each meeting.

(a) To participants in the meeting
(b) To parties affected by decisions made at the meeting

B. Representative of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.02 RELATED REQUIREMENTS

A. Instructions to Bidders: Pre-bid Conferences.

B. Section 01 13 40: Shop Drawings, Product Data and Samples.

1.03 PRE-CONSTRUCTION MEETING

A. Schedule prior to issuance of Notice to Proceed.

B. Location: A central site, convenient for all parties, designated by the Engineer.

C. Attendance:
1) Owner's Representative.

2) Engineer and his professional consultants.

3) Resident Project Representative.

4) Contractor's Superintendent.

5) Major Subcontractors.

6) Major suppliers.

7) Others as appropriate.

D. Suggested Agenda:

1) Distribution and discussion of:

(a) List of major subcontractors and suppliers.
(b) Projected Construction Schedules.
(c) Values for progress payment purposes.

2) Critical work sequencing.

3) Major equipment deliveries and priorities.

4) Project Coordination:

(a) Designation of responsible personnel.

5) Procedures and processing of:

(a) Field decisions.
(b) Proposal requests.
(c) Submittals.
(d) Change Orders.
(e) Applications for Payment.

6) Adequacy of distribution of Contract Documents.

7) Procedures for maintaining Record Documents.

8) Use of premises:

(a) Work and storage areas.
(b) Owner’s requirements.

9) Construction facilities, controls and construction aids.

10) Temporary utilities.

11) Safety and first-aid procedures.

12) Security procedures.

13) Housekeeping procedures.

1.04 PROGRESS MEETINGS

A. Schedule regular monthly meetings.

B. Hold called meetings to review progress of the work.

C. Location of the meetings: As designated by the Engineer.

D. Attendance:

1) Engineer, and his professional consultants, as needed.

2) Contractor.

3) Subcontractors, as appropriate to the agenda.

4) Suppliers, as appropriate to the agenda.

5) Others.

E. Suggested Agenda:

1) Review, approval of minutes of previous meeting.

2) Review of work progress since previous meeting.

3) Field observations, problems, and conflicts.

4) Problems which impede Construction Schedule.

5) Review of off-site fabrication, delivery schedules.

6) Corrective measures and procedures to regain projected schedule.

7) Revisions to Construction Schedule.

8) Progress, schedule, during succeeding work period.

9) Coordination of schedules.

10) Review submittal schedules; expedite as required.

11) Maintenance of quality standards.

12) Pending changes and substitutions.

13) Review proposed changes for:

(a) Effect on Construction Schedule and on completion date.
(b) Effect on other contracts of the project.

14) Other business.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 01 13 40

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

Submit shop drawings, product data and samples required by Contract Documents.

1.02 RELATED REQUIREMENTS

A. Conditions of the Contract: Definitions and Additional responsibilities of parties.

B. Designate in a separate schedule, the dates for submission and the dates that reviewed shop drawings, product data and samples will be needed.

1.03 SHOP DRAWINGS

A. Drawings shall be presented in a clear and thorough manner.

1) Details shall be identified by reference to sheet and detail as shown on contract drawings.

B. Minimum sheet size: 8 1/2 inches by 11 inches.

1.04 PRODUCT DATA

A. Preparation

1) Clearly mark each copy to identify pertinent products or models.
2) Show performance characteristics and capacities.
3) Show dimensions.

B. Manufacturer's standard schematic drawings and diagrams.

1) Modify drawings and diagrams to delete information which is not applicable to the work.
2) Supplement standard information to provide information specifically applicable to the work.

1.05 SAMPLES

A. Office samples shall be of sufficient size and quantity to illustrate clearly:

1) Functional characteristics of the product, with integrally related parts and attachment devices.
2) Full range of color, texture and pattern.

1.06 CONTRACTOR RESPONSIBILITIES

A. Review shop drawings, product data and samples prior to submission.

B. Determine and verify:

1) Field measurements
2) Field construction criteria
3) Catalog numbers and similar data
4) Conformance with specifications
5) Confirm compatibility of equipment to be supplied within location to be erected.

C. Coordinate each submittal with requirements of the work and of the contract documents.

D. Notify the Engineer in writing, at time of submission, of any deviations in the submittals from requirements of the contract documents.

E. Begin no fabrication or work which requires submittals until return of submittals with Engineer approval.

1.07 SUBMISSION REQUIREMENTS

A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the work or in the work of any other contractor.

B. Number of Submittals required:

1) Shop Drawings and Product Data: Submit one (1) set of reproducibles and two (2) sets of prints of each shop drawing submittal for review. After final review in which there are no exceptions noted or referenced the contractor shall furnish the Engineer six (6) complete sets for use by the Engineer and Owner.
2) Samples: Submit the number stated in each specification section.

C. Submittals shall contain:

1) The date of submission and the dates of any previous submissions.
2) The project title and number.
3) Contract identification.
4) The names of:
   (a) Contractor
   (b) Supplier
   (c) Manufacturer

5) Identification of the product, with the specification section number.
6) Field dimensions, clearly identified as such.
7) Relation to adjacent or critical features of the work or materials.
8) Applicable standards, such as ASTM or Federal specification numbers.
9) Identification of deviations from Contract Documents.
10) Identification of revisions on resubmittals.
11) A blank space for Contractor and Engineer stamps.
12) Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of Contract Documents.

D. Submittals should be made using the Letter of Transmittal form attached to this section as page 01 13 40 - 5. Submittals received without this submittal form will be returned to the Contractor without action. Transmittals shall be numbered in sequence for each Section of the Specifications. The number after the dash indicates the Section of the Specifications, and the number before the dash is the sequence number of the transmittal (for example, 1-15100 would be the first transmittal applicable to Section 15100 of the Specifications; 2-15100 would be the second transmittal for Section 15100, etc.).

1.08 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in the submittals required by the Engineer and resubmit until no exceptions are taken by the Engineer.

B. Shop Drawings and Product Data:

1) Revise initial drawings or data, and resubmit as specified for the initial submittal.
2) Indicate any changes which have been made other than those requested by the Engineer.

C. Samples: Submit new samples as required for initial submittal.

1.09 DISTRIBUTION

A. Distribute reproductions of Shop Drawings and copies of Product Data which carry the Engineer review stamp to:

1) Job site file
2) Record Documents file
3) Other affected contractors
4) Subcontractors
5) Supplier or Fabricator

B. Distribute samples which carry the Engineer review stamp as directed by the Engineer.

1.10 ENGINEER DUTIES

A. Review submittals within 15 calendar days.

B. Affix review stamp and initials or signature, and indicate requirements, if any, for resubmittal.

C. Return submittals to Contractor.

1.11 ENGINEER'S ACTION

A. Final unrestricted release. Work may proceed, provided it complies with contract documents, when submittal is returned with the following:

Marking: No Exceptions Taken

B. Final-But-Restricted Release. Work may proceed, provided it complies with notations and corrections on submittal and with contract documents, when submittal is returned with the following:

Marking: Revised as Noted.

C. Returned for Resubmittal. Do not proceed with work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking. Do not allow submittals with the following marking (or unmarked submittals where a marking is required) to be used in connection with performance of the work:

Marking: Amend and Resubmit or

Rejected: See Remarks

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

Transmittal of Shop Drawings, Monolith Drawings, Equipment Data, Material Samples or Manufacturer's Certificates of Compliance for Approval.	Project No.	[ ] New Transmittal [ ] Re-Submittal

Request for Engineer's Review of the following items (This section to be initiated by the Contractor):

TO:	FROM:	Transmittal No. _____ (If Any) Previous Transmittal No. _____

Item No.	Description of Item Submitted (i.e.,Type, Size, Model No., etc.)	Mfg. or Supplier	Mfg. or Contr., Catalog, Curve, Drawing or Brochure No.	Number of Copies	Project Specification Section Number	Project Drawing, Sheet, or Plat Number	Engineer's Use Only _____ Code

Distribution Requested:	Letter Dwgs. Contractor ___ ___ On-Site Rep. ___ ___	Letter Dwgs. Engr. Office ___ ___ Others ___ ___	Signature of Contractor: Date:

(THIS SECTION TO BE USED ONLY BY THE ENGINEER TO DESIGNATE ACTION)

Action Codes: The following codes are given to the items submitted: A - No exceptions taken; B - Revise as noted; C - Amend and Re-submit; D - Rejected, see remarks. Corrections and comments made on the shop drawings during this review do not relieve the Contractor from compliance with requirements of the drawings and specifications.

Enclosure Returned (List by Item No.) By: Date:

SECTION 01 13 80

CONSTRUCTION PHOTOGRAPHS AND VIDEOS

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

Contractor shall employ a competent photographer to take construction record photographs and video DVDs prior to and periodically during course of the work.

1.02 PHOTOGRAPHY REQUIRED

A. Video Survey as specified herein (pre-construction).

B. Provide five (5) photographs each month of each major portion of the work taken at each major stage of construction.

C. Provide digital files of each photograph identified with contract number, description of view and date.

1.03 COSTS OF PHOTOGRAPHY

Contractor shall pay costs for specified video and photography, and prints. Parties requiring additional photography or prints will pay photographer directly.

PART 2 – PRODUCTS

2.01 PRINTS

A. Color:

1. Paper: Single weight, white base.
2. Finish: Smooth surface, glossy.
3. Size: 4 in. x 5 in.

B. Identify each print on back, listing:

1. Name of project.
2. Facility location.
3. Orientation of view.
4. Date and time of exposure.
5. Name of Contractor.

2.02 VIDEOS

A. Specifications for Audio-Video Survey

Prior to the start of construction of the contract, the Contractor shall furnish to the Engineer the video DVDs of the construction areas. The DVDs shall be reviewed by the Engineer and either approved or additional coverage will be required to show fully the physical conditions of the work areas. The Contractor shall have the additional coverage videoed and shall not begin work, including moving equipment and/or material on the project site, until the audio-video survey has been approved by the Engineer. After approval, the Contractor shall supply two copies of the audio-video survey to the Engineer. One copy of the DVDs will remain available for viewing by the Contractor and may be reviewed by him for any assistance that the DVDs may provide in resolving disputes which arise with the property owners claiming improper restoration of their properties. That copy of the DVDs will also be used as a guide by the Engineer, prior to issuance of final payments, in determining the adequacy of restoration and the extent of damages attributable to the Contractor's work. The remaining copy of the DVD will be delivered to the Owner.

B. Technical Requirements

The total audio-video recording system and the procedures employed in its use shall be such as to produce a finished product that will fulfill the technical requirements of the project, as well as those more subjective requirements of high-quality audio and video production. The video portion of the recording shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion or any other form of picture imperfection. The audio portion of the recording shall reproduce precise and concise explanatory notes by the camera operator with proper volume, clarity and freedom from distortion.

C. Recorder

The recorder shall be DVD format.

D. Camera

The color video camera shall have a horizontal resolution of at least 550 lines at center.

PART 3 – EXECUTION

3.01 TECHNIQUE FOR STILL PHOTOGRAPHS

A. Factual presentation.

B. Correct exposure and focus.

1. High resolution and sharpness.
2. Maximum depth-of-field.
3. Minimum distortion.

3.02 VIEWS REQUIRED FOR STILL PHOTOGRAPHS

A. Contractor shall photograph from locations to illustrate adequately the condition of construction and state of progress. Consult with Engineer at each period of photography for instructions concerning views required.

B. Prior to construction of the water line, five photographs of pertinent features shall be taken at various locations at the site as selected by the Engineer and promptly submitted to the Engineer. The same views shall be re-photographed during construction of the water line showing the installation of all material and pipe. Photographs shall also be taken upon completion of the project. Additional progress photographs shall be made monthly throughout the progress of the work at the same locations as above when work has taken place at that location during the month and submitted with each of the Contractor's applications for progress payment.

3.03 TECHNIQUE AND VIEWS REQUIRED FOR VIDEO TAPING

A. At the start of production, an identification summary shall be read into the record while, at the same time, a wide-angle view with numeric displays shall be provided for a visual record. This summary will include (1) DVD number, (2) job title, (3) job location, (4) positional location at job start, (5) date and time, (6) weather, and (7) any other notable conditions.

B. Coverage

The recording shall include coverage of all surface features located within the construction zone-of-influence. This zone shall be defined as (1) the area within 500 feet of the water line and (2) areas directed by the Owner. The coverage shall be continuous (i.e., the camera shall not be turned off once photography has begun) to the greatest extent practically possible. If the camera must be turned off then a verbal message shall be inserted stating that the camera will be turned off and the reason for discontinuing coverage.

C. Visibility

No recording shall be done during periods of significant precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to illuminate properly the subjects of recording.

D. Experience

The operator in charge must have had previous experience video documenting a minimum of fifty miles of pre-construction work. Any apprentice operators must be continuously supervised by an above-described experienced operator.

3.04 DELIVERY OF PRINTS

A. Preconstruction photographs shall be delivered to the Engineer prior to the mobilization of any equipment or materials or the beginning of construction on the site.

B. Deliver progress prints to Engineer to accompany each Application for Payment.

3.05 DELIVERY OF DVDs

A. Recording Schedule

The recording shall be performed prior to the placement of any construction materials or equipment on the proposed construction site, but not more than seven weeks prior to the placement of materials or equipment.

B. DVD Indexing

All DVDs and their storage cases shall be properly identified by DVD index number, project title and general project location. Displayed on the storage case of each DVD shall be a log of that DVD's contents. That log shall describe (1) the various segments contained on that DVD, (2) coverage start, direction and endpoints, with corresponding DVD player counter numbers. A cumulative index correlating the various segments of coverage to their corresponding DVDs shall be typed and supplied to the Owner.

C. After approval of videos, deliver two record copies to Engineer.

D. Unacceptable Documentation

The Owner shall have the authority to reject all or any portion of the DVD documentation not conforming to the specifications. Those rejected portions shall be re-taped at no additional cost to the Owner.

E. Specification Deviations

Any deviation from these specifications must have the written approval of the Owner/Engineer.

F. Payment

There will be no separate payment for construction photographs and videos. Payment for the work covered under this section shall be included within the pay item for mobilization. Video documentation will be made in accordance with the project specifications.

END OF SECTION

SECTION 01 14 10

TESTING LABORATORY SERVICES

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

Owner will employ and pay for the services of an independent testing laboratory to perform specified testing upon recommendation of the Engineer.

1) The Contractor shall cooperate with the laboratory to facilitate the execution of its required services.

2) Employment of the laboratory shall in no way relieve the Contractor's obligations to perform the work of the contract.

1.02 RELATED REQUIREMENTS

A. Conditions of the contract: Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities.

B. Respective sections of Specifications: Certification of products.

1.03 LABORATORY DUTIES

A. Cooperate with the Engineer and Contractor to provide certified personnel after due notice.

B. Perform specified inspections, sampling and testing of materials and methods of construction:

1) Comply with specified standards.

2) Ascertain compliance of materials with requirements of Contract Documents.

C. Promptly notify the Engineer and Contractor of observed irregularities or deficiencies of work or products.

D. Promptly submit two (2) copies of written report of each test and inspection to the Engineer, four (4) copies to the owner and two (2) copies to the Contractor. Each report shall include:

1) Date issued.
2) Project title and number.

3) Testing laboratory name, address and telephone number.
4) Name and signature of laboratory inspector.
5) Date and time of sampling or inspection.
6) Record of temperature and weather conditions.
7) Date of test.
6) Identification of product and specification section.
9) Location of sample or test in the project.
10) Type of inspection or test.
11) Results of test and compliance with Contract Documents.
12) Interpretation of test results, when requested by the Engineer.

E. Perform additional tests as required by the Engineer or Owner.

1.04 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

Laboratory is not authorized to:

1) Release, revoke, alter or enlarge on requirements of Contract Documents.

2) Approve or accept any portion of the work.

3) Perform any duties of the Contractor.

1.05 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel; provide access to work, and to manufacturer's operations.

B. Secure and deliver to the laboratory, when requested by the Engineer, adequate quantities of representational samples of materials proposed to be used and which require testing.

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete and other materials mixes which require control by the testing laboratory.

D. Furnish copies of products test reports as required.

E. Furnish incidental labor and facilities:

1) To provide access to work to be tested.

2) To obtain and handle samples at the project site or at the source of the product to be tested.

3) To facilitate inspections and tests.

4) For storage and curing of test samples.

F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests. When tests or inspections cannot be performed after such notice, reimburse the Owner for laboratory personnel time and travel expenses incurred due to Contractor's negligence.

G. Make arrangements with the laboratory and pay for additional samples and tests required for Contractor’s convenience.

H. Contractor to pay for all retesting as a result of test failure.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 16 00

MATERIAL AND EQUIPMENT

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. Material and equipment incorporated into the work:

1) Conform to applicable specifications and standards.

2) Comply with size, make, type and quality specified, or as specifically approved, in writing, by the Engineer.

3) Manufactured and Fabricated Products:

(a) Design, fabricate and assemble in accord with the best engineering and shop practices.
(b) Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.
(c) Two or more items of the same kind shall be identical, by the same manufacturer.
(d) Products shall be suitable for service conditions.

4) Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.02 RELATED REQUIREMENTS

A. Conditions of the Contract

B. Section 01 10 10: Summary of Work

C. Section 01 13 40: Shop Drawings, Product Data and Samples

1.03 MANUFACTURER'S INSTRUCTIONS

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to the Engineer.

1) Maintain one set of complete instructions at the job site during installation and until completion.

B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.

1) Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.

2) Do not proceed with work without clear instructions.

C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.04 TRANSPORTATION AND HANDLING

A. Arrange deliveries of products in accord with construction schedules; coordinate to avoid conflict with work and conditions at the site.

1) Deliver products in undamaged condition, in manufacturer’s original containers or packaging, with identifying labels intact and legible.

2) Immediately upon delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.

B. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

1.05 STORAGE AND PROTECTION

A. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.

1) Store products subject to damage by the elements in weathertight enclosure.

2) Maintain temperature and humidity within the ranges required by manufacturer's instructions.

B. Exterior Storage

1) Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter and entrance to drainage systems.

C. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.

D. Protection after Installation

1) Provide substantial coverings as necessary to protect installed products from damage from marine traffic and subsequent construction operations. Remove when no longer needed.

E. Private Property

1) Contractor must provide to the Owner documentation of agreements for all use of private property for storage of material and equipment.

1.06 SUBSTITUTIONS AND PRODUCT OPTIONS

A. Products List

1) Within 30 days after contract date, submit to the Engineer a complete list of major products proposed to be used, with the name of the manufacturer, supplier, and the installing subcontractor.

B. Contractor's Options

1) For products specified only by reference standard, select any product meeting that standard.

2) For products specified by naming several products or manufacturers, select any one of the products or manufacturers named, which complies with the specifications.

3) For products specified by naming one or more products or manufacturers and "or equal", Contractor must submit a request as for substitutions for any product or manufacturer not specifically named.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 17 00

CONTRACT CLOSEOUT

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

Comply with requirements stated in Conditions of the Contract and in specifications for administrative procedures in closing out the work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Conditions of the Contract: Fiscal provisions, legal submittals and additional administrative requirements.

B. Section 01 17 20: Project Record Documents.

1.03 SUBSTANTIAL COMPLETION

A. When the Contractor considers the work is substantially complete, he shall submit to the Engineer:

1) A written notice that the work, or designated portion thereof, is substantially complete.

2) A list of items to be completed or corrected.

B. Within a reasonable time after receipt of such notice, the Engineer will make an inspection to determine the status of completion.

C. Should the Engineer determine that the work is not substantially complete:

1) The Engineer will promptly notify the Contractor, in writing, giving the reasons therefore.

2) The Contractor shall remedy the deficiencies in the work, and send a second written notice of substantial completion to the Engineer.

3) The Engineer will re-inspect the work.

D. When the Engineer finds that the work is substantially complete, he will:

1) Prepare and deliver to the Owner a tentative Certificate of Substantial Completion on the appropriate Owner form with a tentative list of items to be completed or corrected before final payment.

2) After consideration of any objections made by the Owner as provided in Conditions of the Contract, and when the Engineer considers the work substantially complete, he will execute and deliver to the Owner and the Contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.04 FINAL INSPECTION

A. When Contractor considers the work is complete, he shall submit written certification that:

1) Contract Documents have been reviewed.

2) Work has been inspected for compliance with Contract Documents.

3) Work has been completed in accordance with Contract Documents.

4) Work is completed and ready for final inspection.

B. Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should Engineer consider that the work is incomplete or defective:

1) Engineer will promptly notify the Contractor, in writing, listing the incomplete or defective work.

2) Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to Engineer that the work is complete.

3) Engineer will re-inspect the work.

D. When the Engineer finds that the work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.05 REINSPECTION FEES

A. Should the Engineer perform re-inspections due to failure of the work to comply with the claims of status of completion made by the Contractor:

1) Owner will compensate Engineer for such additional services.

2) Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.06 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to the Engineer.

B. Statement shall reflect all adjustments to the Contract Sum:

1) The original Contract Sum.

2) Additions and deductions resulting from:
(a) Previous Change Orders
(b) Unit Prices
(c) Penalties and Bonuses
(d) Deductions for liquidated damages
(e) Deductions for re-inspection payments
(f) Other adjustments

3) Total Contract Sum, as adjusted.

4) Previous payments.

5) Sum remaining due.

C Engineer will prepare a Final Change order, reflecting approved adjustments to the contract sum which are not previously made by change orders.

1.07 FINAL APPLICATION FOR PAYMENT

Contractor shall submit the final application for payment in accordance with procedures and requirements stated in the Conditions of the Contract.

1.08 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

A. Project Record Documents.

B. Warranties and Bonds.

C. Evidence of Payment and Release of Liens: To requirements of General and Supplementary conditions.

D. Certificates of Insurance for Products and Completed operations.

E. As-Built Drawings and Point Files as per Section 01 17 20.

F. Maintenance Manuals.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 17 20

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

The Contractor shall maintain at the site for the Owner's permanent records one copy of:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other Modifications to the Contract.
5. Engineer Field Orders or Written Instructions.
6. Approved Shop Drawings, Product Data.
7. Field Test Records.
8. Construction Photographs.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01 13 40: Shop Drawings, Product Data and Samples.

B. Section 01 17 00: Contract Closeout.

PART 2 – PRODUCTS (NOT USED).

PART 3 – EXECUTION

3.01 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. The Contractor shall store documents and samples in his office apart from documents used for construction.

B. The Contractor shall maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

C. The Contractor shall make documents and samples available at all times for inspection by the Engineer and Owner.

3.02 MARKING-UP RECORD DRAWINGS

The Contractor shall mark with red erasable pencil and, where necessary, use other pencil colors, as required.

3.03 RECORDING

A. Label each document (including record prints and shop drawings) "PROJECT RECORD" in neat large printed letters.

B. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

C. Drawings. Legibly mark field drawings to record actual construction:

1. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.

2. Field changes of dimensions and details.

3. Changes made by Change Order.

4. Details not on original Contract Drawings.

D. Specifications and Addenda. The Contractor shall legibly mark each Section to record:

1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.

2. Changes made by Field Order or by Change Order.

3.04 SUBMITTALS

A. At Contract close-out, deliver record documents to the Engineer including marked-up drawings, as-built survey, specifications, addenda, change orders and other modifications to contract; Engineers field orders and written instructions, approved shop drawings, product data, field test records and any other documents which serve as a record of actual field installation and construction different from the original contract documents. Engineer will submit them to Owner.

B. The contractor shall provide an electronic point file containing the location of all installed features and fittings including fittings, valves, hydrants, offsets, etc. (referenced to state plane coordinates system 1983, zone 1702, Louisiana State Plane South with X, Y, and Z coordinates in feet). Points shall be collected by GPS by a surveyor licensed in the state of Louisiana, and shall include a description identifying the feature. The Contractor shall provide a point file that can be utilized in Auto-Cad or GIS mapping software to show the

locations of installed features. The format shall be a text file (.txt) that can be opened in commonly available office software (i.e. Microsoft Excel).

C. Accompany submittals with transmittal letters in duplicates containing:

1. Date

2. Project title and number

3. Contractor's name and address

4. Title and number of each Record Document

5. Signature of Contractor or his authorized representative

END OF SECTION

SECTION 02 32 19

EXPLORATORY EXCAVATION

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. This work consists of excavating along the alignment of the new and existing water lines at points of potential conflict to determine the exact location of existing utilities. Approval to proceed shall be obtained from the Engineer before any exploratory excavation is to begin. An exploratory excavation plan showing proposed locations shall be submitted to the Engineer for approval before any excavation can begin. Any deviation from the approved plan must be approved in writing by the Engineer before excavation can begin.

B. Test pits shall be backfilled immediately after the desired information has been obtained. The backfilled surface shall be restored and maintained in a manner satisfactory to the Engineer. Upon completion of exploratory excavations, contractor shall submit documentation to Engineer illustrating the location of utilities and discovery of obstructions identified to the nearest permanent structure upon the plans.

PART 2 – PROODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 03 11 13

CONCRETE FORMWORK

PART 1 – GENERAL

1.01 WORK INCLUDED

A. Wood formwork for cast-in-place concrete, complete with shoring, bracing, and anchorage.

B. Coordinate installation of items supplied by other sections of work.

1.02 RELATED WORK

A. N/A

1.03 QUALITY ASSURANCE

Construct and erect concrete formwork in accordance with ACI 347 and applicable construction safety regulations for place of work.

1.04 REFERENCES

A. ACI 318 - Building Code Requirements for Reinforced Concrete.

B. ACI 347 - Recommended Practice for Concrete Formwork.

PART 2 – PRODUCTS

2.01 WOOD FORM MATERIALS

A. Plywood: Douglas Fir species; solid one side sheathing grade; sound undamaged sheets with clean true edges.

B. Lumber: Southern Pine species; No. 7 grade; with grade stamp clearly visible.

C. Nails, spikes, lag bolts, through bolts, anchorages: Sized as required; of sufficient strength and character to maintain formwork in place while pouring concrete.

2.02 PREFABRICATED FORMS

A. Steel type: Minimum 4 gage well matched, tight fitting, and adequately stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished concrete surfaces.

B. Pan type: Removable of sizes and profiles required.

2.03 FORMWORK ACCESSORIES

A. Form ties: Snap-off metal type of fixed length; minimum working strength of 3000 psi when assembled; free of defects that will leave holes larger than one inch in concrete surface.

B. Form release agent: Colorless mineral oil which will not stain concrete or impair natural bonding or color characteristics of coating intended for use on concrete.

C. Fillets of chamfered corners: Rigid foam plastic or wooden type; ¾" x ¾" size; maximum possible lengths.

2.04 ACCEPTABLE MANUFACTURERS

A. Acceptable manufacturers shall be an approved product listed in LADOTD QPL 29.

PART 3 – EXECUTION

3.01 FORMWORK ERECTION

A. Verify lines, levels, and centers before proceeding with formwork. Verify that dimensions agree with drawings.

B. Construct formwork, shoring and bracing to meet design and code requirements, so that resultant finished concrete conforms to required shapes, lines, and dimensions.

C. Arrange and assemble formwork to permit dismantling and stripping, so that concrete is not damaged during its removal.

D. Align joints and make watertight, to prevent leakage of mortar disfigured appearance of concrete. Keep form joints to minimum.

E. Obtain Engineer's review for use of earth forms. When using earth forms, hand-trim sides and bottoms, and remove loose dirt prior to placing concrete.

F. Arrange forms to allow stripping without removal of principal shores, where and when these are required to remain in place.

G. Obtain Engineer's review before framing openings in structural members, which is not indicated on drawings.

H. Provide bracing to ensure stability of formwork. Prop or strengthen previously constructed formwork liable to be overstressed by construction loads.

I. Provide chamfer strips on external corners of beams.

J. Construct formwork to maintain following maximum tolerances.

1. Deviation from horizontal and vertical lines.

a. 1/4 inch in 10 feet.
b. 3/8 inch in 20 feet.
c. 3/4 inch in 40 feet.

K. Apply form release agent on formwork in accordance with manufacturer's recommendations. Apply prior to placing reinforcing steel, anchoring devices, and embedded items.

L. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.

3.02 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for pipes, conduits, sleeves, and other work embedded in and passing through concrete members.

B. Locate and set in place items which will be cast directly into concrete.

C. Coordinate work of other sections and cooperate with trade involved in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts. Do not perform work unless specifically indicated on drawings or reviewed prior to installation.

D. Install concrete accessories in accordance with manufacturer's recommendations; straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Place formed construction joints in pattern pouring sequence. Set top screed to required elevations. Secure to resist movement of wet concrete.

F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing

water to drain. Close temporary ports or openings with tight fitting panels, flush with inside face of forms, neatly fitted so that joints will not be apparent in exposed concrete surfaces.

3.03 FIELD QUALITY CONTROL

A. Inspect and check completed formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and parts are secure.

B. Inform Engineer when formwork is complete and has been cleaned, to allow for inspection. Obtain review prior to placing concrete.

C. Allow Engineer to inspect each section of used formwork prior to reuse.

3.04 CLEANING

Clean forms as erection proceeds, to remove foreign matter. Remove cuttings, shavings, and debris from within forms. 'Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

3.05 FORM REMOVAL

A. Notify Engineer prior to removing formwork.

B. Do not remove forms, shores, and bracing until concrete has gained sufficient strength to carry its own weight, construction and design loads which are liable to be imposed upon it. Verify strength of concrete by compressive test results.

C. Remove formwork progressively and in accordance with code requirements and so that no shock loads or unbalanced loads are imposed on structure.

D. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against concrete surfaces.

E. Leave forms loosely in place, against vertical surfaces, for protection until complete removal is reviewed by Engineer

F. Store removed forms, for exposed architectural concrete, in manner that surfaces to be in contact with fresh concrete will not be damaged. Marked or scored forms will be rejected.

G. Re-shore structural members where required due to design requirements or construction conditions and as required to permit progressive construction.

Remove load supporting forms only when concrete has attained 75 percent of required 28-day compressive strength, provided construction is re-shored.

H. Remove forms not directly supporting weight of concrete as soon as stripping operations will not damage concrete.

END OF SECTION

SECTION 03 21 11

CONCRETE REINFORCEMENT

PART 1 – GENERAL

1.01 WORK INCLUDED

A. Reinforcing steel bars, welded steel wire fabric, and fabricated steel bar or rod mats for cast-in-place concrete, complete with tie wire.

B. Support chairs, bolsters, bars supports, spacers for reinforcing.

1.02 RELATED WORK

A. Section 03 30 00: Cast-in-Place Concrete

1.03 QUALITY ASSURANCE

Perform concrete reinforcing work in accordance with CRSI PRB unless specified otherwise in this section.

1.04 REFERENCES

A. ACI 318 - Building Code Requirements for Reinforced Concrete

B. CRSI PRB - Placing Reinforcing Bars

C. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement

D. ASTM A615 - Deformed and Plain Carbon Steel Bars for Concrete Reinforcement

E. ASTM A616 - Rail Steel Deformed and Plain Bars for Concrete Reinforcement

F. ASTM A617 - Axle Steel Deformed and Plain Bars for Concrete Reinforcement

G. ASTM A497 – Steel Welded Wire Reinforcement, Deformed, for Concrete.

H. AWS D1.4 – Structural Welding Code, Reinforcing Steel.

I. ACI 315 - American Concrete Institute – Details and Detailing of Concrete Reinforcement.

1.05 SHOP DRAWINGS

A. Submit shop drawings in accordance with Section 01 13 40 Shop Drawings.

B. Indicate bar sizes, spacings, locations, and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices.

C. Prepare shop drawings under seal of Professional Structural Engineer registered in the State of Louisiana.

PART 2 – PRODUCTS

2.01 REINFORCING

A. Reinforcing steel: Comply with ASTM A615, Grade 60.

B. Welded steel wire fabric: Comply with ASTM A185.

2.02 ACCESSORY MATERIALS

A. Tie wire: minimum 16 gauge annealed type, or patented system accepted by Engineer.

B. Chairs, bolsters, bar supports, spacers: Sized and shaped for strength and support of reinforcing during construction conditions.

C. Special chairs, bolsters, bar supports, spacers (where adjacent to architectural concrete surfaces) plastic coated type; sized and shaped as required.

2.03 FABRICATION

A. Fabricate concrete reinforcing in accordance with ACI 315.

B. Locate reinforcing splices, not indicated on drawings, at points of minimum stress. Location of splices shall be reviewed by Engineer.

C. Where indicated, weld reinforcing bars in accordance with AWS D1.4.

PART 3 – EXECUTION

3.01 CONCRETE PROTECTION FOR REINFORCEMENT

A. Place and hold steel reinforcement in position so the concrete cover, as measured from the surface of the bar, will be the following, except as otherwise specified or indicated on the Drawings:

1. Cast-in-place concrete (nonprestressed). The following minimum concrete cover shall be provided for reinforcement:

	Minimum Cover (inches)
a. Concrete cast against and permanently exposed to earth	3
b. Concrete exposed to earth or weather:	
#6 Through #18 Bars…	2
#5 bar, W31 or D31 wire, and smaller…	1 ½
c. Concrete not exposed to weather or in contact with ground:	
Slabs, walls, joints:	
#14 and #18 bars…	1 1/2
#11 bar and smaller	1 1/2
Beams, columns:	
Primary reinforcement, ties, stirrups, spirals	1 1/2

2. Precast concrete (manufactured under plant control conditions)

The following minimum concrete cover shall be provided for reinforcement:

a. Concrete exposed to earth or weather	
Wallpanels:	
#14 and #18 bars	1 1/2
#11 bar and smaller	3/4
Other Members:	
#14 and #18 bars	2
#6 through #11 bars	1 1/2
#5 bar, W31 or D31 wire, and smaller	1 1/4
b. Concrete not exposed to weather or in contact with ground:	
Slabs, walls, joints:	
#14 and #18 bars	1 1/4
#11 bar and smaller	5/8

Beams, columns:	
Primary reinforcement	Nominal Diameter of Bar, Wire or Strand but not less than 5/8 and need not exceed 1
Ties, stirrups, spirals	3/8

3.02 PLACING

A. Support and wire all reinforcing bars together to prevent displacement by construction loads or the placing of concrete beyond the tolerances specified. Use supporting concrete blocks on ground surfaces. Use concrete, metal, or plastic bar chairs, over forms. The portion of all accessories in contact with the formwork shall be plastic, galvanized or plastic coated where the concrete surface will be exposed to the weather in the finished structure, or where rust would impair architectural finishes.

B. Furnish and set templates for all column dowels to insure proper placement.

C. Splices, when approved by the Engineer, may be used at locations not shown on the Drawings. All splices shall comply with the Department of Public Works Standard Drawings.

D. Reinforcement shall not be bent after being embedded in hardened concrete unless approved by the Engineer.

E. Bars may be moved as necessary to avoid interference with other reinforcing steel conduits, or embedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, the resulting arrangement of bars shall be subject to approval by the Engineer.

3.03 FIELD QUALITY CONTROL

A. Physical properties of reinforcing steel are subject to testing by an independent laboratory for compliance with ASTM A-615. The Contractor shall furnish all samples required for such testing.

B. The Contractor shall give the Engineer twenty-four (24) hour notice of the completion of reinforcing steel setting, and sufficient time before the start of concrete placement to inspect the layout and for Contractor to make any required corrections.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 WORK INCLUDED

Contractor shall furnish all labor, materials, tools, equipment and related items required to do the cast-in-place concrete work as specified herein.

1.02 RELATED WORK

A. Section 03 11 13: Concrete Formwork

B. Section 03 21 11: Concrete Reinforcement

1.03 QUALITY ASSURANCE

Perform cast-in-place concrete work in accordance with ACI 318, unless specified otherwise in this section.

1.04 TESTING LABORATORY SERVICES

A. Inspection and testing will be performed by firm in accordance with Section 01 14 10.

B. Provide free access to work and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to Engineer for review prior to commencement of work.

D. Tests of cement and aggregates may be performed to ensure conformance with requirements stated herein.

E. Minimum four concrete test cylinders will be taken for every pour.

F. One slump test will be taken for each set of test cylinders taken as a minimum: However, slump tests will be taken as often as required by the Engineer or his representative.

1.05 REFERENCES

A. ASTM C33 - Concrete Aggregates

B. ASTM C150 - Portland Cement

C. ACI 318 - Building Code Requirements for Reinforced Concrete

D. ASTM C260 - Air Entraining Admixtures for Concrete

E. ASTM C494 - Chemical Admixtures for Concrete

F. ASTM C94 - Ready-Mixed Concrete

G. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete

H. ACI 305 - Recommended Practice for Hot Weather Concreting

I. ACI 306 - Recommended Practice for Cold Weather Concreting

J. ACI 301 - Specifications for Structural Concrete

PART 2 – PRODUCTS

2.01 CONCRETE MATERIALS

A. Cement: Normal-Type II, High early strength-Type III, Portland type, ASTM C150.

B. Fine and Coarse Aggregates: ASTM C33. At the time of its use, the aggregate shall be free from all foreign material or dirt which may become mixed with the aggregate stockpile. If less than 2% of the fine aggregate passes a No. 100 sieve, limestone dust shall be added to provide this minimum percentage.

C. Water: Clean, fresh and free from injurious amounts of oil, alkali, organic matter, or other deleterious material.

2.02 ADMIXTURES

Each of the following admixtures shall only be used when instructed by the Owner or Engineer. They shall comply with the appropriate specifications as indicated.

A. Air Entrainment: ASTM C260.

B. Chemical: ASTM C494 Type A - water reducing and Type B - retarding admixture.

2.03 ACCEPTABLE MANUFACTURERS

The Acceptable Manufacturers of ready mix concrete must have sufficient plant capacity and ready mix transportation trucks to insure a continuous delivery to the job site; the rate should be such that the interval between batches shall not exceed 20 minutes. The methods

of delivering the concrete shall be such that they will facilitate its placing with a minimum of rehandling and without damaging the concrete or its forms.

2.04 ACCESSORIES

A. Bonding Agent: Two component modified epoxy resin; Non-solvent two component polysulphide-epoxy; Mineral filled polysulphide polymer epoxy resin. Acceptable manufacturers shall be an approved product listed in LADOTD QPL 32.

B. Non-shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2400 psi in 2 days and 7000 psi in 28 days.

2.05 CONCRETE MIXES

A. Mix concrete in accordance with ASTM C94.

B. Provide concrete of following strength:

1. Compressive strength 4000 psi.

2. Select proportions for normal weight concrete in accordance with ACI 301 3.8 by Method 1, Method 2, or Method 3. Add air entraining agent to concrete to entrain air as indicated in ACI 301 Table 3.4.1.

C. Add air entraining agent to concrete mix for concrete work exposed to exterior.

D. Weather Conditions

1. Cold Weather
   a. The minimum temperature of the concrete when delivered at the site of the work shall conform to the following temperature limitation:

	Minimum Concrete Temperature, Degrees F.	
Air Temperatures Degrees F.	For Sections Less than 12 in. thick	For Sections 12 in. to 36 in. thick
30 to 45	60	50
0 to 30	65	55
Below 0	70	60

2. Provisions shall be made for maintaining concrete moist and at a minimum temperature of not less than 50°F for a period of at least 7 days.

3. Hot Weather

a. The maximum temperature of the concrete when delivered at the site of the work shall not exceed 85 degrees Fahrenheit.

b. The ingredients shall be cooled before mixing, or flake ice or well-crushed ice of a size that will melt completely during mixing may be substituted for all or part of the mixing water if necessary to maintain the temperature of the concrete below 85 degrees Fahrenheit.

c. A retarding agent complying with ASTM C-494 Type B shall be used under the following circumstances:

i. If the temperature of the air is above 85 degrees Fahrenheit.

ii. If the temperature of the concrete as placed is above 80 degrees Fahrenheit.

iii. Where large pours are permitted, to allow all portions to remain plastic until adjacent concrete is placed.

PART 3 – EXECUTION

3.01 PLACING CONCRETE

A. Place concrete in accordance with ACI 304.

B. Notify Engineer minimum 24 hours prior to commencement of concreting operations.

C. Verify anchors, seats, plates, and other items to be cast into concrete are placed, held securely, and will not cause hardship in placing concrete. Rectify same and proceed with work.

D. Maintain records of poured concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

E. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints, are not disturbed during concrete placement.

F. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.

G. Conform to ACI 305 when concreting during hot weather.

H. Conform to ACI 306 when concreting during cold weather.

3.02 PATCHING

Allow Engineer to inspect concrete surfaces immediately upon removal of forms. Patch imperfections as directed.

3.03 DEFECTIVE CONCRETE

A. Modify or replace concrete not conforming to required lines, details and elevations.

B. Repair or replace concrete not properly placed resulting in excessive honeycombing and other defects. Do not patch, fill touch-up, repair, or replace concrete except upon express direction of Engineer for each individual area.

3.04 CURING AND PROTECTION

Beginning immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

END OF SECTION

SECTION 33 05 33

HIGH DENSITY POLYETHYLENE PIPE AND FITTINGS

PART 1 – GENERAL

1.01 SCOPE OF WORK

Furnish all labor, materials, equipment and incidentals required and install high density polyethylene (HDPE) pipe and fittings complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK – NOT USED

1.03 SUBMITTALS

A. Submit to the Engineer, in accordance with contract documents, the following information:

1. List of materials to be furnished, the names of the suppliers and the date of delivery of materials to the site.

2. The origin of the resin to be used in the manufacturing of the pipe including the supplier's name and production plant, as well as brand name and number.

3. Documentation from the resin's manufacturer showing results of the following tests for resin identification:

   a. Melt Flow Index – ASTM D1238
   b. Density – ASTM D1505

4. Manufacturer quality control manual describing implementation of quality control procedures during pipe manufacturing process.

5. Pipe manufacturer's certification of compliance with this Section.

6. One complete, detailed shop drawing of all polyethylene pipe, including the location of all fittings, joints and connections to structures.

7. Manufacturer's recommendations for handling, storing and installing pipe and fittings.

8. For each shipment of pipe of manufacturer's certification that the pipe was manufactured from the same resins identified in Paragraph 1.03.A.2 above.

9. Name, address and telephone number for manufacturer and distributor.

1.04 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM D1238 – Standard Method for Flow Rates Thermoplastics by Extrusion Plastometer.

2. ASTM D1248 – Standard Specification for Polyethylene Plastic Molding and Extrusion Materials.

3. ASTM D1505 – Standard Test Method for Density of Plastics by the Density-Gradient Technique.

4. ASTM D1603 – Standard Test Method for Carbon Black in Olefin Plastics.

5. ASTM D2657 – Standard Practice for Heat-Joining Polyethylene Pipe and Fittings.

6. ASTM D2837 – Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.

7. ASTM D3350 – Standard Specifications for Polyethylene Plastic Pipe and Fittings Materials.

8. ASTM F593 – Standard Specifications for Stainless Steel Bolts, Hex Cap Screws, and Studs.

9. ASTM F714 – Standard Specifications for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.

B. American National Standards Institute (ANSI)

1. ANSI B16.1 – Grey Iron Fittings and Flanged Fittings.

2. ANSI B16.21 – Non-Metallic Flat Gaskets for Pipe Flanges.

C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. The Contractor shall use a swaging die or roller reduction box to radially compress

the HDPE pipe.

B. All HDPE pipe shall be manufactured by a single manufacturer who is fully experienced, reputable and qualified in the manufacture of the polyethylene pipe to be furnished. All HDPE fittings shall be supplied by a single distributor who is fully experienced, reputable, and qualified with the distribution of the pipe to be furnished. The pipe shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with these specifications.

C. All HDPE pipe to be installed under this Contract may be inspected at the factory for compliance with this Section by an independent testing laboratory provided by the Owner. The manufacturer's cooperation shall be required in these inspections. The cost of these plant inspections of all pipe approved for this Contract, plus the cost of inspection of a reasonable amount of disapproved pipe, will be borne by the Owner.

D. Inspection of the pipe may also be made by the Engineer or other representatives of the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the specified requirements. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job.

E. Resin Evaluation

All incoming resin shall be sampled for conformance testing against test results supplied by the resin manufacturer. Samples shall be taken from the top and bottom of each compartment from every hopper car received. The following conformance tests shall be performed on the sample:

1. Melt Flow Index – ASTM D1238
2. Density – ASTM D1505
3. The results of these tests shall become part of the manufacturer's permanent quality control records.

F. Finished Product Evaluation

Each length of pipe produced shall be checked by production staff for the items listed below. The results of all measurements shall be recorded on production sheets that become part of the manufacturer's permanent records.

1. Pipe in process shall be checked visually, inside and out for cosmetic defects, (grooves, pits, hollows, etc.).

2. Pipe outside diameter shall be measured using a suitable periphery tape to ensure conformation with ASTM F714.

3. Pipe wall thickness shall be measured at 12 equally spaced locations around the circumference at both ends of the pipe to ensure conformance with ASTM F714.

4. Pipe length shall be measured.

5. Pipe marking shall be examined and checked for accuracy.

6. Pipe ends shall be checked to ensure they are out square and clean.

7. Subject inside surface to a "reverse and test" to ensure the pipe is free of oxidation (brittleness).

G. Stress Regression Testing

1. The polyethylene pipe manufacturer shall provide certification that stress regression testing has been performed on the specific polyethylene resin being utilized in the manufacture of this product. This stress regression testing shall have been done in accordance with ASTM D2837 and the manufacturer shall provide a product supplying a minimum Hydrostatic Design Basis (HDB) of 1600 psi as determined in accordance with ASTM D2837.

1.06 WARRANTY

The pipe manufacturer shall provide a warranty against manufacturing defects of material and workmanship for a period of ten years after the final acceptance of the project by the Owner. The manufacturer shall replace, at no additional cost to the Owner, any defective pipe material within the warranty period.

PART 2 – PRODUCT

2.01 MATERIALS

A. HDPE Pipe:

1. HDPE pipe is a flexible conduit and shall be designed to transfer imposed loads to the surrounding embedment medium. The pipe and fittings shall be free from all defects including indentations, delaminations, cracks, bubbles, pinholes, inclusions or occlusions which, due to their nature, degree, or extent, detrimentally affect the strength and serviceability of the pipe. Any pipe or fittings with such defects that, in the judgment of the Engineer, will affect the strength and serviceability shall be repaired or rejected.

2. HDPE pipe resins shall be PE4710 characterized by ASTM 03035.

3. Polyethylene pipe shall be as manufactured by Chevron Phillips Chemical Company LP Performance Pipe; CSR Polypipe; US Fusion LLC; WL Plastic; or equal.

4. The polyethylene compound shall be suitably protected against degradation by ultraviolet light as required by ASTM D1603.

5. The pipe shall have the nominal dimensions shown on the Drawings and shall conform to the dimension requirements of the ductile iron pipe sizing system. The pipe shall meet the dimension requirements of Standard Dimension Ratio (SDR) 17.

6. All polyethylene pipe shall meet the requirements of ASTM F714 and NSF 61.

7. The pipe shall be joined with butt heat fusion joints. All joints shall be made in strict compliance with the manufacturer's recommendations. De-beading is required to remove the outside fusion roll back bead prior to compression fit lining.

8. All high-density polyethylene pipe and fittings shall be made from the same resin.

9. Fittings shall be fully pressure rated to match the pipe SDR pressure rating. All fittings shall be molded or fabricated by the manufacturer.

2.02 PIPE IDENTIFICATION

The following shall be continuously indent printed on the pipe or spaced at intervals not exceeding 5-ft:

1. Name and/or trademark of the pipe manufacturer.

2. Nominal pipe size.

3. Dimension ratio.

4. The letters PE followed by the polyethylene grade in accordance with ASTM D1248, followed by the hydrostatic design basis in 100's of psi, e.g., PE 3408.

5. Manufacturing standard reference, e.g., ASTM F714.

6. A production code from which the date and place of manufacture can be

determined.

PART 3 – EXECUTION

3.01 HANDLING

A. Handling and laying of pipe and fittings shall be in accordance with the manufacturer's instruction and as specified herein.

B. Pipes shall be stored on clean level ground, preferably turf or sand, free of sharp objects that could damage the pipe. Stacking of the polyethylene pipe shall be limited to a height that will not cause excessive deformation of the bottom layers of pipes under anticipated temperature conditions. Where necessary, due to ground conditions, the pipe shall be stored on wooden sleepers, spaced suitably and of such width as not to allow deformation of the pipe at the point of contact with the sleeper or between supports.

C. Care shall be taken in loading, transporting, and unloading to prevent injury to the pipe. The handling of the pipe shall be in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects. Ropes, fabric or rubber protected slings and straps shall be used when handling pipes. Chains, cables or hooks inserted into the pipe ends shall not be used. Two slings spread apart shall be used for lifting each length of pipe. Slings shall not be positioned at butt-fused joints. Pipe or fittings shall not be dropped.

D. All pipe or fittings shall be examined before laying and no piece shall be installed which is found to be defective. The maximum allowable depths of cuts, scratches or gouges on the exterior of the pipe are 10 percent of wall thickness. The interior pipe surface shall be free of cuts, gouges or scratches. Any damage to the pipe shall be repaired as directed by the Engineer. If any defective pipe section is discovered after it has been laid, it shall be removed completely and the ends of the pipeline rejoined, at the Contractor's expense.

3.02 TESTING

Contractor shall supply all labor, equipment, material, gauges, pumps, meters and incidentals required for testing. Pressure test each water line upon completion of installing the pipe. Testing procedures shall be as specified in the DPW General Specifications for Street Paving included as Attachment A.

3.03 CLEANING

At the conclusion of the work, the Contractor shall thoroughly clean all new pipelines by flushing with water to remove any foreign material, which may have entered during the

construction period. Debris cleaned from the lines shall be removed from the job site.

END OF SECTION

SECTION 33 05 34

COMPRESSION FIT HDPE PIPE LINING

PART 1 – GENERAL

1.01 SECTION INCLUDES

Renewal of existing pipelines by compression fit HDPE pipe lining process.

1.02 UNIT PRICES

A. Measurement for compression fit lining is on a linear foot basis for the length of pipe being lined.

B. Refer to Measurement and Payment, for unit price procedures.

1.03 REFERENCES

A. ASTM F714 – Polyethylene (PE).

B. Cuts or gouges per ASTM F585

C. HDPE Resin PE4710 as characterized by ASTM 03035

D. Ductile iron fittings comply with AWWA C110

E. Stiffener inserts per ASTM

1.04 DEFINITIONS

Compression Fit Lining: Replacement of pressurized pipeline systems by insertion of compression fit HDPE pipe into an existing host main pipeline.

1.05 SYSTEM DESCRIPTION

Compression fit lining allows a new compression fit high density polyethylene (HDPE) pipe to be placed inside a new or existing pressurized pipeline. The system uses HDPE pipe which has an outside diameter slightly larger than the inside diameter of the pipe to be renewed. After sections of PE are butt fused together to form a continuous pipe, the PE pipe is pulled through a reduction die, roller box, or similar device which temporarily reduces its diameter within the elastic limits of HDPE. This allows the HDPE pipe to be pulled through the existing pipeline. After the HDPE pipe has been pulled completely through the host pipe, the external force is removed and the HDPE pipe returns toward its original diameter until it presses

tightly against the inside wall of the host pipe. Relaxation of the HDPE pipe will be a natural process. No forced reversion will be allowed using either water, steam, heat or other means. The tight fitting HDPE pipe results in a flow capacity close to or greater than the original pipeline design.

1.06 QUALITY ASSURANCE

A. In order to assure quality execution of the compression fit HDPE pipe lining method, the Contractor must show proof of at least 3 projects in the last 36 months using Compression Fit HDPE pipe lining technology.

B. For a process to be considered as acceptable and an "or equal", a minimum of 500,000 linear feet of successful pressurized piping system installation in the US must be documented to assure commercial viability.

C. The Contractor and/or his subcontractor shall not have less than five (5) years of active experience in the installation of compression fit HDPE pipe lining and shall have experience of a minimum of 30,000 linear feet of 24-inch diameter or larger pressure pipes as required for this project. One project reference must be of 30-inches or larger.

1.07 CONTRACTOR CERTIFICATION

In order to assure quality execution of the method, the Contractor shall submit the following certifications:

1. Certificate of training endorsed by the manufacturer of the constant tension pull equipment.

2. Certificate of training endorsed by the manufacturer of thermal fusion equipment in butt fusing of HDPE pipe and evidence of training with electro-fusion couplings.

3. Certificate of training endorsed by the supplier or manufacturer of HDPE electro-fusion fusion couplers to be used in the method. In lieu of certificate, evidence of training may be substituted.

1.08 SUBMITTALS

A. The Contractor shall submit his proposed methods of construction for excavating, dewatering, sheeting, shoring and bracing, and backfilling which he plans on using to perform the work included in the contract documents. A plan is required for the insertion and receiving pits for compression fit HDPE lining. The plan shall be signed and stamped by a Professional Engineer. The plan shall include but not be limited to:

1. Type of major excavation equipment.

2. Sheeting, shoring and bracing plan.

3. Calculations that demonstrate the sheeting, shoring and bracing of pits will withstand the pulling forces which will be exerted onto them from the compression fit HDPE lining operations.

4. Dewatering plan.

5. Hauling equipment, and proposed excavation quantities.

6. Proposed haul routes of excavation and material supply equipment

7. Handling and storage of materials on site.

B. The contractor shall submit a plan for pullback operations. Documents must be signed and stamped by a Professional Engineer. The pullback operations plan shall include the following:

1. The proposed methods and equipment data sheets used to complete the operation.

2. Calculations detailing the pulling force required to successfully complete the pulling operation.

3. Calculations verifying the reduction system will be uniform around the entire circumference to ensure no distortion occurs on the HDPE pipe during pull in.

4. Calculations verifying that the pull-in load will not exceed the maximum allowable pull-in load or tensile force per the HDPE manufacturer.

PART 2 – PRODUCTS

2.01 PIPE SPECIFICATIONS

A. High Density Polyethylene Pipe must conform to ASTM F714 and NSF 61.

B. HDPE resin shall be PE4710 characterized by ASTM 03035.

C. All pipe shall be made of virgin material, no rework except that obtained from manufacturers own production.

D. Cuts or gouges, per ASTM F585 are acceptable up to 10% of wall thickness. Beyond 10% of wall, damage must be removed by cutting the damaged section from the pipe string and butt fusing the ends.

2.02 OTHER PRODUCT SPECIFICATIONS

Pipe Connection Fittings shall meet AWWA C906 and meet or exceed the pressure requirements of the HDPE Pipe.

2.03 PRODUCT COMPLIANCE

A. Certificate of compliance shall be supplied to the City that the Product Pipe is per specification.

B. All materials used with the coupling or connecting HDPE pipe must be submitted and approved by the Engineer.

2.04 PRODUCT HANDLING

A. Pipe transport and handling shall be per manufacturer's recommendation.

B. Product other than pipe must be stored and handled per manufacturer's recommendations.

2.05 DESIGN PARAMETERS

The design of the HDPE pipe shall be based on hydrostatic design pressure of the segment to be lined and the contractor’s pulling operations. The pipe shall be designed for a hydrostatic pressure of 125 psi with a factor of safety of 2. Factor of safety for pulling operations shall be a minimum of 2.

2.06 PERFORMANCE REQUIREMENTS

A. Chemical Resistance: The Polyethylene pipe shall meet the chemical resistance requirements for all pressurized potable water pipe systems.

B. Hydraulic Capacity: Overall, the hydraulic cross section shall be maintained as large as possible.

PART 3 – EXECUTION

3.01 DOCUMENTATION AND PLANNING

A. Contractor shall submit a plan to the Owner on a marked up copy of the Project Drawings showing the Contractor's construction phasing and plans at the Pre-

Construction Meeting. Plan details should include:

1. Pit locations for pipe insertion and receive locations.

2. Schedule of when various sections are to be rehabilitated.

3. Distances of each pull.

B. The Project Construction drawings provided by the Owner shall be marked by the contractor to show actual locations of services, fittings, and other reconnects. These markups shall be done the day of the actual placement. A set of marked up plans shall be returned to the Owner.

3.02 JOINING OF PIPE

A. Fusing: per Butt fusion methods in strict conformance to the pipe and/or fusing equipment manufacturer's recommendations shall be used to join sections of High Density Polyethylene Pipe.

B. Fusing of 'sticks' of pipe shall be performed in the general vicinity of the pipe insertion pit or lay down yard (staging area).

C. De-beading is required to remove the outside fusion roll back bead prior to compression fit HDPE pipe lining operations.

3.03 COMPRESSION FIT HDPE PIPE LINING OPERATION

The compression fit lining operation described within provides guidance on the basic process of compression fit HDPE pipe lining. The followings outline the requirements necessary to implement successful operations.

A. Maximum use should be made of all available records. Details of material types together with the position of existing valves, plugs, bends, tees, collars, service connections or any other internal obstructions in the pipeline should be obtained.

B. Details of all other buried utilities must be obtained. Sewer lines, water lines, gas lines, electricity cables and telecom ducts should be physically marked out on site, at the entry and exit excavation positions.

C. Wherever possible, excavations that are required for the removal of bends, tees, or other internal obstructions should be utilized as launch/reception pits or access points for the CCTV survey and pipeline cleaning operations.

D. Internal inspection with the use of CCTV or man entry is required so that unknown internal obstructions can readily be identified and removed prior to the proving pig.

E. All internal obstructions will require removal prior to the compression fit HDPE pipe lining process operation.

F. The pipeline should be thoroughly cleaned using scrapers, wire brushes etc. to ensure all scale and sediment has been removed before pipe insertion.

G. A proving pig (i.e. Bullet/plunger/gauging pig) slightly larger in diameter than the Outside Diameter of HDPE pipe (i.e. pipe diameter after exiting the reducing device) should be winched through the pipeline to ensure an unobstructed bore is available for pipe insertion.

H. A second PE pig may be used to determine the extent of any scoring which could be caused by protrusions within a host pipeline. If the depth of scoring exceeds 10% of the wall thickness, the pipe insertion operation must not be started and an investigation must be carried out to determine the cause of scoring which must then be removed.

3.04 PIT LOCATION AND EXCAVATION

A. Receive pit and insertion pit locations shall be placed such that excavations are minimized. This may be accomplished by placing either or both of these pits at the point of a service connection or fitting.

B. All pits shall be shored to ensure worker safety per OSHA or other regulations.

C. All pits shall be roped off and or covered when not active per OSHA or local regulations to ensure public safety.

D. Traffic control shall be accommodated for by Contractor as per the Contract specifications. Safe traffic passage around pit excavations that are located in or adjacent to streets or highways shall meet Permit requirements of governing Right-of-Way Department. Parking of related employee vehicles, trucks and auxiliary and equipment shall be such that congestion and traffic delays are minimized. Traffic control plan shall be in accordance to the traffic control plan details of the contract document.

3.05 ROD PAYOUT OPERATION

A. Rod payout is the process of assembling a string of rods and pushing them in a step wise manner from Receive Pit, through the interior of the host pipe to Insertion Pit. Alternatively, a winch with wire rope situated at the receiving pit shall be pulled through the interior of the host pipe to the insertion pit. The winch shall be capable of measuring pull force and cable payout length.

B. Host pipe in the Insertion Pit shall be cut or broken prior to arrival of the rod string or wire rope. Sufficient length shall be removed so as to allow the pull head to enter the host pipe and bend the product within the allowable radius specified by the pipe manufacturer. The second end of the host pipe in the Insertion Pit shall be positioned or worked so as not to damage the product pipe as it travels through the Insertion Pit.

C. Workmen shall not enter the Insertion Pit when the rod string or wire rope is nearing the Pit. A workman shall be in visual or radio contact with the machine operator so as to have the payout halted in a position that allows attachment of the pull head.

3.06 TOOLING AND ATTACHMENT

A. The Product Pipe shall be moved into position for attachment to the rod string. Appropriate traffic or pedestrian control will be exercised along the path of the Product Pipe.

3.07 BEGIN OF PULL

A. During the start of the pull, the pull speed must be reduced to allow the pull head to travel through the reduction device and into the host pipe.

B. After the first 10 feet of HDPE enters the host pipe, the speed may be increased.

3.08 REDUCTION

A. The pipe diameter of the HDPE will be temporarily reduced between 5% and 12% as the new pipe is pulled through the reduction device immediately before entering the host pipe.

B. The reduction system will be uniform around the entire circumference to ensure no distortion occurs on the HDPE during pull in.

3.09 PULL-IN LOAD

The actual pull-in load shall be continuously monitored during pull-in. It shall not be allowed to exceed the maximum allowable pull-in load or tensile force per the HDPE manufacturer.

3.10 CONSTANT TENSION

Constant tension must be applied on the HDPE pipe string until the pull head reaches the receive pit. The equipment used during the compression fit operations must be of the constant tension type.

3.11 COMMENCEMENT OF PULL

A. After the pull head reaches the receive pit, the pulling force is removed. The Contractor must use caution to pull the new HDPE a sufficient distance into the receive pit so the pipe does not retract back into the host pipe.

B. The HDPE pipe must then be allowed to relax to allow full reversion for a period of 24 to 48 hours before commissioning activities begin. The reversion period may lengthen or shorten depending on the characteristics of each pull, temperatures and other site specific conditions. The reversion process will be natural and no forced reversion will be allowed using either water, steam, heat or other methods.

3.12 ACCEPTANCE TESTING

A. HDPE resin shall be PE4710 as characterized by ASTM D 3035.

B. If a Potable Water Line, disinfection of water line shall be carried out in accordance to AWWA C651 and S&WB standard Drawing 7260-W.

C. Hydrostatic pressure test shall be performed in accordance with ASTM F 2164, AWWA M55 and PPI Handbook Chapter 2 and S&WB standard Drawing 7260-W.

3.13 ACCEPTANCE

A. The compression fit HDPE pipe lining shall be deemed acceptable when the installation is completed according to specifications and the applicable tests are satisfied and;

B. When As-Built Drawings are submitted.

END OF SECTION

SECTION 33 05 64

BUTTERFLY VALVES

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to install, complete and ready for operation, a 30" butterfly valve as shown on the drawings and as specified herein.

1.03 QUALIFICATIONS

All of the types of valves and appurtenances shall be products of well established, reputable firms who are fully experienced and qualified in the manufacture of the particular equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with standard practices and methods and shall comply with these specifications as applicable.

1.05 SUBMITTALS

A. Submit to the Engineer, within 30 days after execution of the contract, a list of materials to be furnished, the names of the suppliers and the date of delivery of materials to the site.

B. Complete shop drawings of all valves and appurtenances shall be submitted to the Engineer for approval in accordance with the requirements of Section 01 13 40 and the General Conditions.

1.06 TOOLS

Special tools, if required for normal operation and maintenance, shall be supplied with the equipment.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Butterfly Valves

1. All butterfly valves shall be of the rubber-seated, tight-closing type. The valves shall meet or exceed AWWA standard C504, latest edition, Class 150. All valves

shall be KV 4500/1450 butterfly valves or approved equal.

2. Both ends shall be flanged per ASME 816.1.

3. Valve shafts shall be ASTM A276 Type 304 stainless steel for Class 150. Each valve shaft shall be of a one-piece design for valves 12 inches and smaller and a two-piece design for valves 14 inches and larger. Valve shafts shall have a minimum diameter extending through the valve bearings and into the valve disc as specified in AWWA C504. All valve shafts must meet or exceed the minimum connection torque requirement set forth in AWWA C504.

4. Valve body and vane shall be high-strength Ductile Iron to ASTM A536 with ASTM A276 Type 316 stainless steel body seats.

5. Rubber valve seats shall be a full-circle, 360-degree seat not penetrated by the valve shaft. Valve seat shall be EPDM.

6. The valve seat will be attached to the valve vane by Type 304 stainless steel self-locking fasteners. The valve seat must be easily field adjustable and replaceable without any special tools or lengthy curing time.

7. Valve shaft seals shall be of the chevron-type for 3"- 24" and 0-ring type for 30 inches and larger utilizing the same elastomer as specified for the valve seats and the intended service. All valve shaft seals must be easily field replaceable.

8. Valve actuator shall be of the traveling nut type, sealed and lubricated for underground or in-plant service. Operator shall be capable of withstanding an overload input torque of 450 ft-lbs. at full-open or full- closed position without damage to the valve operator. Operators for valves 14 inches and larger must have a 304 stainless steel external stop limiting device and travel adjustment. The travel adjustments must be able to be operated without removing the valve from the line. All valve actuators must be sized per AWWA C504. Certification of proof of design and torque requirements shall be submitted to the Owner upon request.

9. Handcrank, handwheel or chainwheel - All manual operators for service other than underground shall have a position indicator and shall be totally enclosed and permanently lubricated. Actuators shall be designed to produce the required operating torque with a maximum rim pull of 80 lb. on handwheel or chainwheel and a maximum input of 150 ft. lb. on operating nuts.

10. Cylinder - Cylinder operator shall be of the base mounted configuration. Cylinder barrel shall be of molybdenum disulfide-lined glass fiber reinforced epoxy tubing, to provide a corrosion-free, self-lubricated high-strength barrel. Rod seal shall be of urethane, molybdenum disulfide filled to provide a self-lubricated, long life seal.

11. The valve interior and exterior surfaces shall be coated in accordance with the latest revisions of AWWA C504 and must be NSF 61 Certified.

PART 3 – EXECUTION

3.01 INSTALLATION

A. All valves and appurtenances shall be installed in the locations shown, true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of the Engineer before they are installed.

B. After installation, all valves and appurtenances shall be tested at least one (1) hour at the working pressure corresponding to the class of pipe, unless a different test pressure is specified. If any joint proves to be defective, it shall be repaired to the satisfaction of the Engineer.

3.02 INSPECTION AND TESTING

Completed pipe shall be subjected to hydrostatic pressure test for two (2) hours at full working pressure. All leaks shall be repaired and lines retested as approved by the Engineer. Hydrostatic pressure test shall be performed in accordance with ASTM F 2164, AWWA M55 and PPI Handbook Chapter 2 and S&WB standard Drawing 7260-W.

END OF SECTION

APPENDIX E

TM008 Cohn Street, Carrollton over Palmetto Canal, Florida Avenue and Elysian Fields, and Other Water Mains

SEWERAGE and WATER BOARD

of

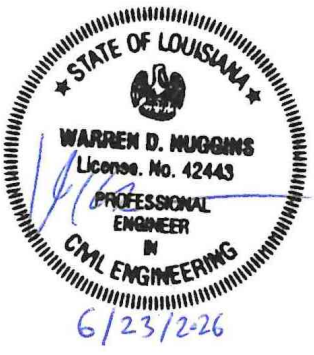
NEW ORLEANS

SPECIFICATIONS

FOR

CONTRACT **TM008**

TRANSMISSION MAIN & WATER MAIN REPLACEMENT
30" COHN ST. (PINE-BROADWAY),
20" S. CARROLLTON OVER PALMETTO CANAL,
50" FLORIDA AVE. AND ELYSIAN FIELDS,
AND OTHER WATER MAINS.



ISSUED FOR BID: JUNE 2026

Proposals To Be Opened

__:__ O'Clock __.M., Local Time on, **[C:_____]**

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Contract Change Order Tier Summary per Resolution R-063-2021 (Attachment "A")
Change Order Flowchart (Attachment "B")
Instruction to Contractor Template/Example (Attachment "C")
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PART I - SPECIAL PROVISIONS

SECTION 1.01 - GENERAL SPECIFICATIONS AND INTENT OF CONTRACT

A. The General Specifications entitled, "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, 2015 Edition (adopted 11/5/2015), shall be the General Specifications for this Contract and shall govern except as otherwise revised or supplemented by the provisions contained in these Special Specifications. The City Standard Drawings shall apply except as revised or supplemented by the project specific Construction Plans. In the event of discrepancy or conflict in provisions of the various contract documents, precedence shall be given to the provisions as contained in the document which appears first in the following list: Pro posal, Construction S pecifications, Construction Plans, General Specifications and Standard Plans for Street Paving, Sewerage and Water Board General Specifications and Standard Drawings, 2006 Edition LaDOTD Standard Specifications for Roads and Bridges. In the event of discrepancy or conflict in provisions of these Construction Specifications then precedence shall be given to the requirements of the Proposal, then to the Special Items.

B. The Sewerage and Water Board of New Orleans General Specifications, General Notes (DWG. NO. 7260-S, 7260-W, and 7260-D) and Standard Drawings, shall govern for the construction of all sewer, water, and drainage systems except as otherwise revised or supplemented by these Construction Specifications and the plan drawings. All sewer, water, and drainage work when complete, must be inspected and accepted by the Sewerage and Water Board of New Orleans before final payment can be approved.

C. The intent of the contract is to provide performance of the work described. The Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, project specifications and terms of the contract.

D. When an item in the proposal and contract contains a choice to be made by the Contractor and of the type material to be furnished, the Contractor, before the work is initiated, shall indicate his choice in accordance with the specifications for that item. Such notification shall be submitted to the Director in writing.

E. Payment for all bid items shall include all incidental materials, labor, supervision, and equipment required for installation in place according to the plans and specifications or as directed by the Director.

F. There shall be no direct pay for any work that is not listed in the bid proposal but is required to complete the construction of this project in accordance with the project plans and specifications. All costs thereof shall be included in the bid price of other items.

G. Prior to bidding, the Contractor is to examine the contract documents and visit the site to determine the extent of the work. Should the Contractor have any doubts or questions regarding Pay Items, he should, before submitting his bid, contact the Department of Finance, Purchasing Bureau.

H. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used and interpretation of these Specifications shall be made upon that basis.

I. The Director reserves the right to accept or reject any and all bids. The Director reserves the right to reduce, delete or increase the quantity of any item in the proposal.

J. Section C121.01 of the General Specifications for Street Paving, 2015 Edition shall be amended to include the following language:
"The contractor shall not sublet any portion of the contract, excluding material, without the prior written consent and approval of the Director, including work sublet to an authorized Disadvantaged Business Enterprise. If such consent is given, the contractor will be permitted to sublet a portion of the work but shall perform with the contractor's own organization work amounting to at least 50 percent of the total contract cost.
A subcontractor shall not further subcontract to a third party any portion of this authorized work, excluding material, without written consent, including work sublet to an authorized Disadvantaged Business Enterprise."

SECTION 1.02 - SCOPE OF WORK

A. Work of the Project includes replacement of 8″ and 12″ water mains, replacement of 20″, 30″, 36″ and 50″ transmission mains. Replacement of a 30″ sewer force main. Subsurface drainage replacement of 24″ pipe and smaller. Roadway restoration associated with the utility replacements. Construction of support structure to span the Palmetto Canal. Incidental sidewalk, driveway and ADA ramp construction.
B. The Director reserves the right to reduce, delete or increase the quantity of any item in the proposal.

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SECTION 1.03 - SPECIAL PROJECT REQUIREMENTS

A. All utility frames, covers, and boxes shall be tilted to generally conform to the slope of the ramp or walk. Where frames, etc. fall at the edge of a ramp or slope, adjust the tilt halfway between ramp slope and original elevation and warp the surface of ramp to blend into the edge of utility frames. Covers and boxes are to be adjusted by the Contractor. Private utility frames, covers and boxes are to be adjusted by the respective private utility company.

B. Temporary Barricades and Sidewalks: The Contractor shall provide and maintain construction fences, barricades, tree protection fencing, warning lights and temporary sidewalks as required by the Director or other authorities in approved locations affording complete protection to the public and providing security to the premises during the construction period. The Contractor shall provide all necessary items to insure pedestrian access to properties during construction. When required, flashing lights shall be installed at required locations.

C. Compliances: The Contractor shall comply with safety standards and governing regulations for cleaning operations. Waste materials shall not be burned at the site. Debris or excess materials shall not be buried on the Owner's property. Volatile or other harmful or dangerous materials shall not be discharged into drainage systems. The Contractor shall remove waste materials from the site and dispose of such waste in a lawful manner.

D. Salvageable Materials: Before the Contractor shall remove any items from the site, the Owner reserves the right to retain in his possession any demolished items that the Owner deems salvageable. All other items, after review by Owner, may be salvaged by the Contractor. All salvage materials as determined by the Director shall be delivered at the Contractor's expense to the related locations:

1. Materials such as stone curbs, cobble stone, etc. to the Public Works/Maintenance yard at 838 South Genois Street.
2. Materials such as Traffic Control devices (signs and signals) to the DPW sign shop at 2700 Lafitte St.
3. Materials such as CB, MH frames, covers, hydrants, valves, etc. to the S&WB Central Yard at 2900 Peoples Ave.
4. Materials such as tree grates to the Department of Parks &Parkway Nursery at 2829 Gentilly Blvd.
5. Recycled asphalt product

E. The Contractor shall remove existing sidewalks, driveways, and pavement to full depth in areas shown on drawings, or as directed by project engineer, and shall take care not to damage existing pavement and existing curbing that is to remain. The use of "STOMPERS" and similar gravity equipment is prohibited in order to preserve the structural integrity of the adjacent buildings and adjoining property. All excavation is to be done from the street.

F. The Contractor shall be required to protect all adjacent properties, buildings, walls, fences, steps, etc., from damage due to demolition, removal, and construction of items required by the Contract Documents. Removal of material adjacent to adjoining structures should be done in such a manner so as not to cause damage by direct blows, vibrations, or other methods of demolition or construction. The Contractor shall promptly repair damages caused to adjacent facilities by demolition and construction operations at no cost to the property Owner or City.

G. The Contractor shall clean adjacent structures and improvements of dust, dirt and debris caused by demolition and construction operations, as directed by the Director or governing authorities. The Contractor shall return adjacent areas to condition existing prior to the start of the work.

H. The Contractor shall, before removing any signpost, etc., coordinate such removal with all of the appropriate City agencies and companies involved. Existing signposts, light standards, and all other items penetrating the sidewalk shall be straightened and reset in accordance with the Director's requirements, at no direct payment. All traffic control devices and their associated hardware (sign, signal, conduit, and marking) removed or damaged during execution of this contract, other than as provided for in this contract, shall be replaced by the Contractor at no cost to the City.

I. No sign, or signal shall be removed without the approval of the Director. The Contractor accepts all liabilities during the time of removal. Contractor will notify the DPW Traffic Engineer in writing when controls are removed and reinstalled. All signs, signals and markings removed during construction, shall be restored and in place prior to the final inspection.

J. It shall be the responsibility of the Contractor to maintain all public roadways, sidewalks, driveways, etc. in a clean condition during the construction project. All mud, trash, debris, etc. deposited on said areas by the Contractor shall be removed daily, before the end of work or more frequently, as necessary to maintain a clean condition. The Contractor shall return adjacent areas to condition existing prior to the start of the work.

K. The Contractor shall ensure that mail and trash pickup services can be provided on a continuous basis during construction of the project. If necessary, the Contractor shall relocate or provide curb side mailboxes for use during the construction period. No direct payment will be made for this work. Any costs incurred by this work will be included in project bid items.

L. The Contractor may be allowed to work on the weekend but shall first request permission from the City no later than 48 hours prior to that work.

M. It shall be the responsibility of the Contractor to distribute and obtain all Construction Authorization forms during the construction project. If necessary, a Construction Authorization form will be provided to the Contractor by the City. The Construction Authorization form is to be signed by the homeowner and a witness. All signed Construction Authorization forms are to be furnished to the Director prior to any work on the property listed on the Construction Authorization form. The Contractor shall return all disturbed areas to the condition existing prior to the start of the work.

N. The Contractor shall contact all utility companies prior to starting work to verify utility locations, depths of lines, etc., prior to starting demolition. Care should be taken in excavation around all utility lines. Utility service shall be maintained at all times for adjacent property owners, etc.

O. UTILITY SERVICES: Maintain existing utilities, keep in service, and protect against damage.

1. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to the governing authorities with no direct payment.

2. Note: Locations of existing utilities shown on the drawings are approximate. The Contractor shall verify their locations in the field with the appropriate agency in order to avoid conflicts and damage to utilities. Should damage occur to any existing utility lines or equipment, the Contractor shall be responsible for all cost repairs or replacements.

SECTION 1.04 - INTERPRETATION OF DOCUMENTS

No oral interpretation will be made to any bidder as to the meaning of any of the Contract Documents which in effect would modify any of the provisions of the same. Every request for an interpretation of the Documents shall be made in writing and delivered to the Director, at least seven (7) days (excluding weekends and holidays) before the time fixed for opening of bids. Any addenda shall be issued by the Director a minimum of 72 hours (excluding weekends and holidays) in advance of the time fixed for opening of bids. All bidders are requested to direct all questions about the contract documents promptly to the Director.

SECTION 1.05 - SPECIAL SAFETY PRECAUTIONS

In addition to the requirements of the General Specifications, it shall be the Contractor's responsibility to verify with the utility owners (electric, gas, telephone, communications, cable, etc., and New Orleans Sewerage and Water Board) having facilities within the project area, that the use of the Contractor's equipment (weights, configurations, characteristics, etc. provided by the Contractor) within the project area will not adversely affect their facilities.

SECTION 1.06 - SAFETY AND HEALTH REGULATIONS

The Code of Federal Regulations, Title 29, Occupational Safety and Health Administration (OSHA) shall apply. Safety and Health Provisions of the State of Louisiana shall apply where more stringent and where not covered by OSHA. The Contractor shall notify the Director within 24 hours of any reportable injury.

SECTION 1.07 - SAFETY AND PROTECTION

The Contractor shall be responsible for initiating, providing, maintaining, and supervising all safety precautions and programs in connection with the work. He shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

a. All Employees on the work and other persons who may be affected thereby,

b. All the work and all materials or equipment to be incorporated herein, whether in storage on or off the site, and

c. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, drives, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

The Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss. He shall erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for its safety and protection. He shall notify owners of adjacent utilities when prosecution of the work may affect them.

The Contractor shall develop and provide an effective safety and health plan for inspection and training required and communicates the work practices to be applied to the work site(s). The Contractor must develop and implement a comprehensive health and safety plan for his or her employees, which covers all aspects of onsite construction operations and activities associated with the contract. This plan must comply with all applicable health and safety regulations and any project-specific requirements.

The Contractor must provide a copy of this plan to the Department of Public Works prior to issue of the NTP. Acceptance of the Contractor's health and safety plan only signifies that the plan generally conforms to the requirements of the contract; it does not relieve the Contractor of the responsibility for providing employees with a safe and healthful work environment.

The Control measures outlined in the site-specific safety plan, provides each worker assigned to the job the opportunity to complete his/her task safely. Summary of this document should include but not limited to the following:

Description	Summary	Reference

Contractor Name	Self-Explanatory	29 CFR 1910-OSHA General Industry Safety and Health
Contract No.	Self-Explanatory	
Project Name	Self-Explanatory	
Responsibility and lines of Authority	Include the identification and job responsibilities of personnel responsible for safety and the lines of authority for each level of responsibilities.	
Responsible Member (Competent Person)	Designated by employer to identify hazards that are dangerous to employees	29 CFR 1926.32 (f) Section 01 200 Special Provisions, Section 1.07
General safety and health provisions	List the steps to be taken to control the hazards	29 CFR 1926.20
Safety training and education	All employees shall be trained in the recognition and avoidance or unsafe conditions, standards, to control or eliminate any hazards or other exposure	29 CFR 1926.21(B)(2)
Housekeeping	Work areas, walkway clear of debris; garbage and flammable /hazardous waste disposed, frequently and regularly	29 CFR 1926.25
Illumination	Construction areas, roadways, trenches, ditches, and storage areas where work is in progress shall be lighted with either natural or artificial illumination	29 CFR 1926.26
Personal protective equipment	Employers are to ensure all personnel wear of protective equipment in all operations where there is an exposure to hazardous conditions	29 CFR 1926.28
Site Inspection	Designated person to make frequent and regular documented inspections of the job site/sites, materials, and equipment. Provide proof of inspector's qualifications and or training certificates	29 CFR 1926.20(b)(3)
Lockout/tagout	Procedures esta blished for unsafe equipment identified or made inoperable by tagging, locking, or removing	29 CFR 1926.20(b)(1)&(b)(2)

Representatives of the Contractor shall meet with the DPW and Engineers representative prior to the start of construction for the purpose of reviewing safety requirements and discussing implementation of all health and safety provisions pertinent to the work under the assigned contract.

The representative will review the Contractor's site-specific safety and health plan with the Contractor as well as review all required safety data sheets (SDS) submitted for proposed products to be used by the Contractor. Due to the nature of the project/contract, the Contractor may be required to provide additional written comprehensive safety and health plans for the specific contract to include but not limited to the following:

Confined Space	Entry into any Manholes, Sewer, and Storm drains must be cleared for entry.	29 CFR 1910.146
Excavation and Shoring	Safe access and egress to all excavations, including ladders, steps, ramps, or other safe means of exit for employees working in trench excavations 4 feet (1.22 meters) or deeper.	29 CFR 1926 Subpart P
Lift Plan	Jobsite lifting with hydraulic excavators and backhoes is routine and lift capacity with rigging of each lift must be established.	29 CFR 1926.252 29 CFR 1926.601 29 CFR 1926.1400

Review and Acceptance of the Contractor's health and safety plan only signifies that the plan generally conforms to the requirements of the contract; it does not relieve the contractor of the responsibility for providing employees with a safe and healthful work environment.

The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor 's superintendent unless otherwise designated in writing by the Contractor to the Director for approval.

It shall be the Contractor's responsibility to maintain safety in the construction and maintenance zones within the project's vicinity. If the Contractor deems it necessary to hire law enforcement during the project's duration, it shall be supplied by the Contractor at no direct pay.

All damage, injury or loss to any property referred to in paragraphs b and c caused, directly or indirectly, in whole or in part, by the Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by the Contractor at no direct payment. The Contractor's duties and responsibilities for the safety and protection of the work shall continue until such time as all the work is completed and the Director has issued the Notice of Project Acceptance.

In emergencies affecting the safety of persons or the work or property at the site or adjacent thereto, the Contractor without special instructions or authorization from the Director, is obligated to act, at his discretion, to prevent threatened damage, injury, or loss.

The Contractor must protect and support all water, sewer, drain, and gas pipes or other conduits and buildings, walls, fences, or other properties which are liable to be damaged during the execution of his work. He shall take all reasonable and proper precautions to protect persons, animals, and vehicles of the public from injury, and shall erect and maintain a fence or railing around all excavation and place a sufficient number of warning lights about the work and keep them burning from twilight until sunrise

and shall employ one or more watchmen as an additional security. He must, as far as practicable and consistent with good construction, permit access to private and public property and leave fire hydrants and catch basins free from encumbrances. He must restore, at his own expense, all injured property caused by any act of omission on his part, or on the part of his agent, including but not limited to sidewalks, curbing, pipes, conduits, sewers and other public or private property, to a condition as good as it was when he entered upon the work.

In case of failure on the part of the Contractor to restore such property or make good suc h damage, the City may upon forty-eight (48) hours' notice proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary, and the cost thereof, will be deducted from any monies due, or which may become due, under this contract.

Safety is the responsibility of the Contractor. There will be no direct payment for erecting and maintaining a fence or railing around excavations, placing warning lights and providing watchmen and supporting and protecting utilities as prescribed herein and the cost thereof shall be included in the prices bid for pay items in the Contract. There will be no direct payment for providing and supervising all safety precautions and programs in connection with the work and the cost thereof shall be included in the prices bid for pay items in the contract.

SECTION 1.08 - COORDINATION WITH UTILITY COMPANIES

A. All utility companies, including the Sewerage and Water Board, shall be contacted three working days prior to starting work to verify utility locations, depth of lines, etc., prior to starting demolition.

B. Contractor is responsible for contacting all utility companies so the utility companies can coordinate their efforts to move into the area to make whatever revisions they have to make to their utility installation.

C. Care shall be taken in excavation around all utility lines. Utility service shall be maintained at all times for adjacent property owners.

D. The Contractor shall notify the electric, gas, tele phone, co mmunications, and cable utility companies, utility owners, etc., three working days in advance of digging near or across their conduits or buried cables.

E. The Sewerage and Water Board must be notified three working days in advance of laying sewer and water lines called for in this contract.

F. Damage that may occur to any utility shall be repaired and paid for by the Contractor, exce pt as noted to be paid for as a Bid Item.

G. The Contractor shall notify Entergy, S&WB and all other utility companies before any demolition takes place. The utility companies and the Contractor's representative should open all covers in the area and inspect and note any damage to frames, lines, manhole walls, etc. Any additional damage that occurs during demolition shall be repaired at the Contractor's expense. The utility companies have the option of repairing items and back charge the Contractor for such repairs.

H. UTILITY SERVICE: Maintain existing utilities, keep in service, and protect against damage during demolition operations.

Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to the governing authorities.

The Contractor is hereby cautioned that many of the underground utility pipes, lines, conduits, cables, etc., are located immediately below the existing grade. Location and elevation of all utility lines have been esta blished based on information furnished to the Engineers by the respective utility companies. However, location and depth of utility lines may vary from those shown on the Plans and Profiles.

The Contractor shall be required to provide property owners a minimum forty-eight (48) hours advanced notice for any foreseen or planned interruption of utility service(s).

SECTION 1.09 - COOPERATION WITH UTILITIES

A. The Contractor shall cooperate with officials of utility companies to avoid delays in completion of work due to non-removal or non-adjustment of utilities.

B. Some utility facilities will be removed, relocated, or adjusted in accordance with agreements between the City and utility companies. Such work may be underway concurrently with the Contractor's work and within construction limits covered by this contract.

C. Contractor shall consider in his bid all permanent and temporary utilities lines and appurtenances in their present or relocated positions and that no additional compensation will be allowed for delays, inconvenience or damage sustained by him due to interference from the said utility lines and appurtenances or the operation of moving them.

SECTION 1.10 - ABOVE GROUND UTILITIES

A. The Contractor shall exercise due care and caution to prevent damage to Fire Hydrants, Traffic Lights, Street Light Standards, Parking Meters, Utility Poles, Guy Poles, etc., whenever it is necessary to remove any type of pavement around such items. The Contractor shall repair and/or replace any such item damaged by his operations to the satisfaction of the utility’s owner.

B. It shall be the responsibility of the Contractor to notify the appropriate owners of such facilities in the way of construction so that they can have representatives present, if they so desire, when the Contractor is performing such work around their facilities.

SECTION 1.11 - EXISTING UNDERGROUND AND OTHER INSTALLATIONS

Existing underground installations are indicated on the drawings only to the extent such information was made available to or discovered by Engineer in preparing the drawings. There is no guarantee as to the accuracy or completeness of such information, and all responsibility for the accuracy and completeness thereof if expressly disclaimed.

The Contractor shall be responsible for the preservation of all public and private property, monuments, highway signs, telephone lines, other utilities, etc., along and adjacent to the Work; shall use every precaution necessary to prevent damage to pipes, conduits, and other underground structures; and shall protect carefully from disturbance or damage all land monuments and property marks until

an authorized agent has witnessed or otherwise referenced their locations and shall not remove them until directed by the property owners. The street and highway signs and markers, that are to be affected by the Work, shall be carefully removed when the work begins and stored in a manner to keep them clean and dry. The Contractor must obtain all necessary information in regard to existing utilities, and shall give notice in writing to the owners of the property or the authorities in charge of streets, gas, water, pipes, electric, sewers and other underground structures, including conduits, railways, poles and pole lines, manholes, catch basins, fixtures, appurtenances, and all other property that may be affected by the Contractor's operations, at least three (3) working days before his operations will affect such property or as specified elsewhere. The Contractor shall not hinder or interfere with any person in the protection of such work or with the operation of utilities, at any time. When property or the operation of railways, telephone lines, telegraph lines or other public utilities are endangered, the Contractor shall at his own ex pense, maintain fl agmen or watchmen and any other necessary precautions to avoid interruption of service or damage to life or property, and shall promptly repair, restore, or make good injury or damage caused by his operations in an acceptable manner.

SECTION 1.12 - UTILITIES EXPLORATION

Utilities exploration shall include all labor, materials, and equipment necessary for the Contractor to conduct a field investigation including exploratory excavations in advance of construction for the purpose of determining the existing location, size, and depth of all underground utilities shown or identified on the Drawings, any and all meetings with representatives of each utility, and furnishing the information to the Engineer. In addition to those utilities indicated on the Drawings, the Contractor shall also make exploratory excavations of all utilities which could impact the construction. This work shall include all test pit excavations including backfilling with sand, compaction, dewatering, pavement removal and replacement, and other related items. No direct payment shall be made for utility exploration.

SECTION 1.13 - SECURITY

Contractor shall be responsible for protection of the site, and all work, materials, equipment, and existing facilities thereon, against vandals and other unauthorized persons.

No claim shall be made against the City by reason of any act of an employee or trespasser, and Contractor shall make good all damage to the City's property resulting from his failure to provide security measures as specified.

Security measures shall be at least equal to those usually provided by the City to protect his existing facilities during normal operation, but shall also include such additional, security fencing, barricades, lighting, watchman services, and other measures as required to protect the site.

SECTION 1.14 – TEMPORARY UTILITIES

A. Temporary Lighting: Contractor shall provide, at his expense, temporary lighting facilities for prosecution and inspection of the work. These facilities shall be installed and maintained by the Contractor. Locate in such a manner as to result in the least interference with work upon the Project site and existing facilities. Contractor shall also provide temporary street lighting where the existing street lighting is disrupted due to construction activities.

B. Temporary Power: Contractor shall provide, at his expense, temporary power facilities required for prosecution and inspection of the Work. These facilities shall be installed and maintained by the

Contractor. Locate in such a manner as to result in the least interference with work upon the Project site and existing facilities.

C. Temporary Water: The Contractor shall make the necessary arrangements, at his expense, for securing and transporting all water required in the construction, including water required for the mixing of concrete, sprinkling, flushing, flooding, or jetting, and including any temporary pipeline or equipment which may be necessary to make use of such water.

D. Temporary Sanitary Facilities: The Contractor shall provide, at his expense, adequate portable sanitary facilities on the site and shall be obscured from public view to the greatest extent possible. They shall be cleaned, deodorized, and disinfected each day construction is in progress, all at the Contractor's expense. If toilets of the chemically tested type are used, at least one toilet will be furnished for each 20 workers, in addition to the above requirement. Contractor shall enforce the use of such sanitary facilities by all personnel at the site.

SECTION 1.15 – INCLEMENT WEATHER DAYS

For this Contract, an Inclement Weather Day shall be defined as any day on which construction operations were unable to proceed for at least five (5) continuous hours of the day or 65% of the regular working hours, whichever is greater. Should the Contractor prepare to begin work on any given day in which inclement weather, or the conditions resulting from inclement weather, prevent work from beginning at the usual starting time, and the crew is dismissed as a result thereof, the day will be declared an Inclement Weather Day, whether or not conditions change during the day, resulting in the rest of the day becoming suitable for work.

SECTION 1.16 - AS-BUILT DRAWINGS

Contractor shall provide manually marked-up "red line" drawings to the project engineer for use in creating "as-built" AutoCAD® record drawings of the project. The original contract drawings shall be modified to show all additions, deletions, and other changes made during construction. Drawing modifications shall include both a markup of the graphics and a brief written explanation describing any changes. Wherever applicable, revisions shall include updates to details, sections, index, notes, drawing callouts, plan, and plan & profile views.

Each Sheet of the red line drawings shall include a stamp showing: RED-LINE DRAWINGS, name of Contractor, Superintendent's signature, and Date. Drawings shall also include: All field changes, any change in line or grade from the original drawings, location of mains and house service connections, and the limits of pavement removal and replacement.

To promote accuracy; red line drawings shall be updated on a bi-weekly basis with copies provided to the Director as work is completed for each block. Redlines shall be jointly reviewed/developed by the Contractor and Resident Inspector and discussed at each construction progress meeting. The Contractor shall furnish a final set of redline drawings prior to final inspection. The Contractor shall furnish redline drawings at no direct payment.

SECTION 1.17 - PROGRESS MEETINGS & SCHEDULE REQUIREMENTS

A. Progress meetings shall be scheduled biweekly or as requested by the Director.

B. Location of Meetings: The project field office of the Contractor or as approved by the Director.

C. Attendance: Director's Representative, Contractor, subcontractors, and suppliers as appropriate to the agenda, others as required.

D. Requirement: In addition to an updated approved schedule, the Contractor shall also provide a detailed two week look ahead schedule and present it to the Project Team as shown on the agenda. The Project Team shall review the requested schedule at the progress meeting and agree on an approved list of locations and scope of work.

E. Format: The Department will provide a two week look ahead schedule template at the Pre-Construction meeting, which shall be completed prior to all progress meetings.

F. Obligation: The Contractor shall abide by the schedule shown on the approved two week look ahead schedule. The Contractor shall not deviate from the approved schedule at any time, without obtaining prior approval. Shall deviations of the approved schedule be required, the Contractor shall submit deviations, in writing, requesting approval of the new locations and scope of work.

G. Repercussion: The Contractor shall forfeit payment for scope of work performed in locations not listed on the approved two week look ahead schedule and not inspected by the Director. This includes all work deviated from the approved schedule, including subcontractor work.

SECTION 1.18 – PRE-CONSTRUCTION VIDEO SURVEYS

Mandatory Pre-Construction Video Surveys are to be performed by the Contractor. Video Surveys are to be turned into the Owner before the Contractor's first invoice is to be processed. There shall be no direct payment for the pre-construction video surveys.

SECTION 1.19 – CONTRACTOR PROGRESS PAYMENT INVOICING AND DOCUMENTATION

Contractor shall be required to provide a detailed breakdown of each payment request that includes a summary of the work completed for each bid item by each municipal block. Additionally, a summary of the work completed for each bid item for each intersection, identified as "Intersection of (insert street name) Street and (insert cross street name) Street" shall be provided. For quantification purposed blocks begin/end at the apparent right-of-way line of intersecting streets as shown on the plans. Contractor shall be required to provide separate invoices for the following categories:

A.1.1 City of New Orleans Department of Public Works FEMA Eligible work items,
A.1.3 City of New Orleans Department of Public Works FEMA ADA Eligible work items,
A.2 City of New Orleans Department of Public Works non-FEMA Eligible work items,
B.1.1 Sewerage and Water Board of New Orleans FEMA Eligible work items,
B.1.2 Sewerage and Water Board of New Orleans FEMA ESSA Eligible work items,
B.1.3 Sewerage and Water Board of New Orleans ADA Eligible work items,
B.1.4 Sewerage and Water Board of New Orleans additional FEMA Eligible waterline work items,
B.2.1 Sewerage and Water Board of New Orleans Water non-FEMA Eligible waterline work items,
B.2.2 Sewerage and Water Board of New Orleans Water non-FEMA Eligible SSERP work items,

B.2.3 Sewerage and Water Board of New Orleans non-FEMA Eligible sewer work items,
B.2.4 Sewerage and Water Board of New Orleans non-FEMA Eligible drainage work items

The Director will provide invoice and form templates, and direction to the Contractor on which work is non-FEMA Eligible.

Each contractor payment request shall include:

1. Four (4) original invoices signed in blue ink. All invoices shall include the FEMA PW number and the DPW reference number. Invoices shall be submitted on a monthly basis and shall include the billing period.
2. Four (4) original DPW 651 forms signed in blue ink.
3. Three (3) Compact discs with all invoice forms and backup including but not limited to:
   a. Pre and post construction photographs for all completed work
   b. ADA ramp breakdown by location per funding source
   c. Certified payroll
   d. Updated Schedule
   e. Weather and working days report

SECTION 1.20 - SEQUENCE OF CONSTRUCTION

A. Section 1.05 of these Construction Specifications and Section C126 of the General Specifications are hereby supplemented as follows:

B. The Contractor shall submit construction sequence and schedule to the Director for approval prior to the start of construction in accordance with Section C126. Contractor shall be required to follow the approved sequence and schedule unless he has first obtained written approval from the Department for a deviation.

C. Contractor shall, within three (3) days of initiating any work on a street, prepare and submit to the Department for review, a practical critical path schedule and phasing plan showing the order in which the Contractor proposes to carry on the work, the dates on which he will start the phases of the work, and the anticipated dates for completion of the same. The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion at any time. The Contractor shall enter on the chart the actual progress and present the updated information at each bi-weekly contractor/owner construction meeting or at such intervals as validated by the Director and shall provide electronically to the Director.

D. To facilitate Director testing and inspection requirements once Contractor starts utility work the utility installations shall be executed on a continuous basis until substantial completion of all of the utility work. Contractor shall substantially complete all work, including pavement restoration, for any continuous roadway segment with wa ter and/or sewer work prior to initiating operations on roadway segments consisting of only roadwa y pavement restoration work, unless approved in writing by the Director. Once Contractor mobilizes to start work on a roadway segment Contractor must complete all approved work, including any necessary utility repairs or relocations in a continuous fashion within the approved scheduled time and shall maintain adequate personnel and equipment on site until such time all work is substantially complete. Work to be substantially completed includes, but is not limited to, utility replacement or rehabilitation, including all services, connections, and tie-ins; roadway repairs; curbs and gutters; drive aprons; sidewalks; ramps; proper backfilling of all cavities; and other incidental work in accordance with the project plans and specifications. Any work restricting access to any street,

drive, or sidewalk shall be completed prior to substantial completion being granted. If to meet the approved schedule the contractor elects to work on multiple sites simultaneously the contractor must ensure the proper resources are available in order to adequately handle all the work in progress as specified. Contractor is responsible for performing all tasks to substantially complete all work in a concentrated area prior to moving onto another work area.

E. When scheduling work Contractor shall phase limits of construction to allow completion of all pavement work within ten (10) working days unless otherwise approved by the Director. The Contractor shall use traffic aggregate or steel plates for pavement activities exceeding ten (10) working days to minimize impacts to traffic flow in accordance with Section C402 in the General Specifications and Section 2.06 regarding the item C402(51). Pavement repair shall commence immediately following the acceptance of the waterline installation on each block. In addition, Contractor shall only perform utility trenching operations ahead a distance sufficient for the length of pipe installation planned for the current workday, plus a reasonable additional distance ahead to reveal any obstructions that may necessitate changing the line or grade of the pipe. All other associated work within the scheduled work limits shall be completed in accordance with the approved critical path schedule and phasing plan.

F. Contractor shall phase all roadway construction including intersections to allow for the maintenance of traffic and emergency vehicle access.

G. Contractor shall notify the Sewerage & Water Board and the Director in writing at least two (2) working days prior to mobilizing and starting any utility work, including trenching, and at least two (2) working days prior to the day utility tie-ins to the existing system will be made and service will be transferred to the new main. These notifications shall be in addition to any other notification in accordance with Sewerage & Water Board requirements and per the project plans and specifications. Contractor shall notify the Director in writing at least two (2) working days prior performing any roadway restoration work detailed on the plans or include in approved plan changes, including removal operations.

H. Contractor shall receive no additional compensation for any work related to the means, methods, techniques, scheduling, sequences, or procedures that are required to complete the project in accordance with the project plans and specifications.

I. NOT USED

SECTION 1.21 – SEWER SYSTEM EVALUATION AND REHABILITATION PROGRAM REQUIREMENTS

A. This contract does not include work commissioned by the Sewerage & Water Board of New Orleans under their Sewer System Evaluation and Rehabilitation Program in response to an EPA Consent Decree. However, any sewer rehabilitation work fulfilled under this contract shall meet the sewer rehabilitation requirements included herein this section. Contractor shall refer to sections 2.07 through 2.12 and Section 3.21 for additional sewer rehabilitation requirements for consent decree and non-consent decree sewer rehabilitation work.

SECTION 1.22 – WATER POINT REPAIRS

A. The Contractor shall furnish all labor, supervision, materials, and equipment required for the repairs to the water distribution system.

B. All workmanship and materials shall conform to Section F of the S&WB General Specifications, S&WB Dwg. No. 7260-W, S&WB Standard Drawings and Section C741 of the Department of Public Works General Specifications for Street Paving, except as noted herein.

C. The existing utilities shown are approximate. The Contractor shall verify the location of utilities in the field and shall protect them from damage.

D. The Contractor shall examine the locations of every plan sheet, well in advance of any planned construction within that block, and report all leaks to the S&WB by calling in 529-2837

E. Damages to the water distribution system caused by the Contractor, shall be repaired by the Contractor at no direct pay, or repaired by the S&WB at the Contractor's expense. If in the opinion of the Engineer that damages to the water distribution system were not a result of the Contractors normal construction activities, the contractor will be paid at the unit prices in the bid form. The Contractor will be furnished a list of the locations of water and sewer house connections. This listing is from S&WB records and the listed locations could vary from the actual locations. It is the Contractor's responsibility to verify the location of these services and to protect them from damage. Furnishing this information should not be construed as a waiver of the Contractor's liability, but rather an attempt on the part of the S&WB to minimize the Contractor's hazards.

F. Point repairs of an existing water main shall consist of recaulking an existing lead bell joint and installing a bell joint clamp, repair a leak on the water main by installing a full circular stainless steel repair clamp or replacing a section of existing water main.

G. Point repairs of existing water house connections 5/8" to 2" shall consist of replacing the entire service connection from the water main to the meter. Existing 5/8" and ¾" services shall be replaced with 1" Polyethylene (PE) tubing. All other existing water house connections shall be replaced with the same size as the existing connection, unless otherwise noted. There shall be no splices allowed in the new or existing water service connections unless there is a new main being installed at this location, or if directed by the Engineer.

H. All lead service lines (LSL) exposed within the project limits, regardless of status of utility replacement at the location of the LSL, shall be reported to the S&WB project representative immediately if directed to replace the LSL must be replaced from the water main to the meter box with no splices. Temporary splices or repairs of leaking or damaged LSLs are not allowed. If directed by S&WB project representative to relocate water meter location, special care shall be taken to ensure the water service between the water meter and the property line is not of lead material. If the service line between the meter and the property line is of lead material, coordination with the property owner shall be required to ensure the entire LSL is replaced in tandem with no splicing between the water main and the structure. The LSL shall be replaced once written approval is provided by S&WB representative. Resident must receive S&WB-approved written notification at the time any LSL is located and/or replaced."

J. Contractor shall refer to section 2.13 and section 3.22 for technical specifications and special pay items specific to the work in this section.

SECTION 1.23 – CONTRACT TASK ORDERS

The successful bidder shall be awarded the work for a period of 150 working days starting from the day after the Overall Notice to Proceed, which shall constitute the overall duration or contract period. The contract prices are firm during the entirety of the project.

The quantities given in the proposal form are approximate for the comparison of bids only. The City of New Orleans Department of Public Works (DPW) reserves the right to purchase only such items and in such quantities as needed for the duration of this contract after acceptance of the lowest responsible bid. The City also reserves the right to perform part of the work with its in-house forces or hire other contractors for similar work in the project area during the contract period.

The overall project scope shall be broken down and delineated as individual Task Orders, as detailed on the Index Sheet III . Each Task Order may consist of one or multiple plan sheets, which will serve as the scope for that specific Task Order to include all utilities, roadway, and associated infrastructure work per the associated plan sheets.

Contract Task Orders shall be issued to the Contractor individually or grou ped with multi ple Task Orders at once, at the discretion of the Engineer and DPW. Prior to issuance of a Task Order, Contractor, Engineer and DPW will hold a Pre-Task Order Meeting to discuss scope, schedule, and delivery strategy. Task Order durations shall be determined by the Contractor during the Pre-Construction Meeting. Attached as Exhibit 1 is a sample Task Order to be utilized for this process.

All work within the limits of each Task Order shall be shown to the Contractor by a representative of the Department of Public Works and/or Engineer prior to commencing work. Appropriate drawings and details will be furnished to the Contractor with each Task Order. Work sites may be non-continuous blocks for an individual task order; however, every effort will be made to consolidate the work to minimize scattered work sites.

Each Task Order will be issued with appropriate drawings or other attachments and will designate a specific Task Order number. All correspondence, billing, etc., pertaining to the work should reference the Task Order number and the current job number designation.

The Contractor shall begin the work within 10 working days after issuance of an executed task order and a corresponding Task Order Notice to Proceed. If the Contractor fails to start a task order within 10 working days of the Notice to Proceed date or leaves the work incomplete for over a 30-day period, the City shall approach the next lowest bidder to start and/or complete the Task Order(s) or utilize other contractors to perform the work. However, if the Contractor has a valid reason for the lack of progress or delayed start of an issued Task Order that is beyond the Contractor's control, he must obtain written permission from the Engineer or DPW for the stipulated delay.

DPW reserves the right to put a Task Order on hold at any time as needed, without reason. If the scope of work is discontinued, the Contractor will be compensated only for the completed and accepted items of work. There will be no compensation for any claims of down time due to a Task Order being put on hold or discontinued. DPW reserves the right to modify, add, or remove scope within an issued Task Order as needed to best serve the Project.

Beyond the initial Task Order issued for said Project, additional Task Orders shall be issued only when the previously issued Task Order is deemed Substantially Complete by the Engineer and DPW. Substantial Completion, as defined for this purpose, shall be determined by one or more of the following criteria:

- Issued work within a given Task Order is 95% complete by the planned scope and cost or agreed upon scope and cost;

- All Utilities, Roadways & Driveways within the Task Order are complete and open to traffic;

- Any incomplete work consists of Punch List items which typically consist of addressing areas in need of minor backfilling, completion of pavement striping, necessary yard restorations, patching, site cleanup, etc.

Additional Task Orders on the project shall only be issued when the preceding task orders are either complete or substantially complete, as defined above. If the Contractor fails to complete a task order within the agreed time frame or leaves the work incomplete or inactive for a period of 30 calendar days, absent any previously agreed upon stipulated delay claim, DPW reserves the right to complete the remainder of that task order, as well as all additional remaining work included in the overall project scope by either the use of City work forces or other contractors.

It is understood by the Contractor that the quantities provided in the schedule of bid prices are a fair approximation of the amount of work to be done, and that the sum of the products of the approximate quantities multiplied by the unit price bid constitutes the base bid price, which sum shall be used in the comparison of bids and the awarding of the respective contracts. The actual constructed quantities may vary from the quantities listed in the proposal form.

EXHIBIT 1
JIRR FEMA
Department of Public Works Project No. RRXXX
New Orleans, LOUISIANA
TASK ORDER 01

City of New Orleans
Department of Public Works

1300 Perdido St. – Suite 6W03
New Orleans, LA 70112

Estimated Cost: $ 3,874,648.57

Date Issued: February 25, 2021

Plan Sheets: 1-10, W01-W10, S-1 – S-10

Contractor: XX Construction, L.L.C.

Project No. FEMA RRXXX

You are hereby directed to commence work within 10 days of the date of this work order and complete all work, including restoration, within XX days, in accordance with project specifications. If this task order is not substantially completed within XX days, no further task orders will be issued.

See attached Plan Sheets for details of **Task Order 01**.

Description:

Task Order 01 contains XX sheets located within XX Neighborhood in Orleans Parish. **Special attention shall be given to the roadway elevations to ensure positive drainage to the adjacent catch basins.** All work described in the attached plan sheets is subject to field verification. Variations shall be approved by the Engineer. The following is a list of the plan sheets associated with Task Order 01.

Site Location	DPW Sheet(S)	SWB Sheet(s)
XXX	XX	XX
XXX	XX	XX
XXX	XX	XX

SIGNED:

Contractor.:_____DATE: _____

Engineer.:_____DATE:_____

CNO DPW.: _____DATE:_____

Attachments

PART II – SUPPLEMENT TECHNICAL SPECIFICATIONS

SECTION 2.01 - REMOVAL OF EXISTING PAVEMENT

A. All existing pavement designated to be removed shall be removed and disposed of beyond the limits of project by the Contractor.

B. Payment for concrete and asphaltic concrete pavement removal shall include removal, hauling and disposing of pavement off of the project site.

C. Pavement consisting of asphaltic concrete over Portland cement concrete shall be considered Composite Pavement. Composite Pavement shall be removed, without regard to thickness, at the price bid per square yard for REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT. There will be no additional payment if the Contractor elects to cold mill or remove the existing asphalt surface prior to removal of the concrete pavement.

D. Payment for the pay item C202(52)(C) REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT shall be made at the contract unit price, including removal and disposal of existing curb at no direct pay.

SECTION 2.02 - CURBS OR CURB AND GUTTER BOTTOMS

The Contractor shall remove and dispose of all existing curb or curb and gutter bottoms in accordance with the plans. Existing stone curb to be removed shall be delivered to the Department of Public Works Maintenance Yard located at 838 South Genois Street unless directed by the Owner (No additional pay for disposal).

Price for new dowel curbs in new concrete pavement shall in clude horizontal dowels and longitudinal reinforcement as detailed on the standard plan by the City of New Orleans Department of Public Works (DPW).

Price for new curb shall include transitions, depression or hand forming curbs at obstructions as may be directed by the Director or required by the Department of Parks and Parkways.

The Contractor shall backfill and compact behind curb with select material obtained from roadway excavation or other approved sources and install the top 4 inches with batture sand behind the curb for dressing and beneath sidewalks and driveways at no direct pay. Payment shall be included in the unit price bid for curbs, sidewalks, or driveways as applicable.

Price for new curb and gutters associated with new asphalt pavement shall include all transverse and longitudinal reinforcement in conformance with the details on standard plan by DPW included with these specifications.

Price for new curb or curb and gutters associated with Handicapped Ramp construction shall be measured and paid for as subsidiary to unit price bid for ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS.

SECTION 2.03 - REMOVAL OF EXISTING SIDEWALKS, DRIVEWAYS, AND FOOTLAPS

Existing concrete sidewalk, driveway, and footlaps shown to be removed shall be removed and properly disposed of by the Contractor. At locations where sidewalk, driveway, or footlaps are to be removed but are not to be replaced, the contractor shall backfill the area with selected excavated or other suitable approved material at no direct payment.

SECTION 2.04 - EXCAVATION

A. Limits of roadway excavation are shown on the plans and are measured from the bottom of the existing pavement to the bottom of the base course, and/or sub-base (where applicable). All excavated material shall be hauled and disposed of off the project site.

B. The quantity shown in the proposal form is approximate and is included for information purposes only. Partial payments for excavation will be made on a percentage basis computed from the ratio of linear foot of roadway excavation completed to the total length of roadway in the project.

SECTION 2.05 - CONSTRUCTION ROUTING AND MAINTENANCE

The Contractor must minimize damage to streets used for access to the project for the delivery of materials and equipment by observing weight and speed limits as defined in the City Code in Section 38-169 and 38-73 (h) respectively. Access routes to the work site from designated "truck routes" will be established at the preconstruction meeting. The Contractor and his subcontractor(s) will be required to adhere to these routes to and from the project site. The routes may be revised by the Director to accommodate the work as it progresses. The Contractor is required to keep the work site clean, particularly the roadways adjacent to the work site. The Contractor shall clear such roadways of dirt, silt sand or other such material as often as necessary, or as specified by condition at the close of each workday.

SECTION 2.06 - TRAFFIC MAINTENANCE AGGREGATE

When required by the Owner the Contractor shall satisfactorily place, shape, compact and maintain areas requiring traffic maintenance aggregate in accordance with Section C402 in the General Specifications except as modified here-in. The Owner shall determine if measurement for the item C402(51) should be considered for payment. Crushed stone or crushed concrete used for temporary surfacing of utility trenches, driveways, and roadways before paving, including the cost of materials, labor, and equipment will be provided and placed at no direct pay.

SECTION 2.07 - SHEETING AND BRACING

A. Sheeting and bracing shall meet the design, material, installation, and maintenance requirements of all SAFETY AND HEALTH REGULATIONS.

B. The cost of sheeting and bracing shall be included in the unit price bid per linear foot for drain, sewer, or water lines.

C. The Contractor shall provide design services, materials, and labor necessary for sheeting, shoring, and bracing of excavations as required for trenches in a safe working condition. The Contractor shall provide for protections and supports of utilities, r oadways, buildings, and structures, etc. when performing project work. The Contractor shall provide an adequate system to withstand lateral pressure

in trenches, in accordance with local, state, and federal regulations. Where required to be designed by a licensed engineer, the sheeting and shoring plan must be submitted to the Engineer for his records.

SECTION 2.08 - SANITARY SEWER SYSTEM REHABILITATION

A. The supplemental specifications within this section are applicable to all sewer rehabilitation work within the scope of the SSERP or FEMA sewer rehabilitation program as per paragraphs 1.21A and 1.21B. Any general conditions, materials or methods not discussed within this section shall be governed by the SPW standard specifications section 742 and the S&WB standard details and specifications.

B. Sewer Flow Control

1. Contractor is responsible for all sewer flow control. There will be no direct pay for flow isolation, flow diversion (bypass) pumping or any other outreach and coordination required as part of flow isolation.

2. Contractor is responsible to determine the method of sewer flow control for any pipe size and flow quantity. S&WB cannot provide any guarantees to draw the system down to reduce surcharging.

3. Contractor shall ensure that sewer does not back-up into private property and shall have a plan to prevent sewer back-ups prior to start of work in case of unforeseen delays. A sewer flow control plan is required to be submitted prior to start.

4. Where it becomes necessary to shut down a private sewer service line while work in progress, and before the service lines are reconnected, the residents are to be notified by the Contractor at least one week prior to work and again 24 hours prior to shut down. Sewer service shutdowns shall be limited to 8 hours in duration and between the hours of 8:00 am and 6:00 pm, otherwise an alternate means of sewer flow shall be provided, including but not limited to by-pass pumping.

5. Under no circumstances shall sewer be removed from the system or discharged onto the ground or into the drainage system or other waterway. Refer to section 1.21G in cases of accidental spills or discharges.

6. Only pneumatic (inflatable) pipe plugs, specifically designed for municipal sewer applications, shall be installed in the gravity sewer system for flow control or diversion. Each plug shall bear a permanent identification tag with the installer's emergency contact information. A photo of a typical plug, showing the attached identification tag, must be submitted to the Engineer for approval. Plugs without ID tags will not be permitted on the jobsite or inside vehicles on the jobsite. The Engineer may direct the immediate suspension of work and removal from the worksite of unapproved flow control devices.

a. Under no circumstances shall any plug be left inside a pipe or manhole overnight. Pipe plugs are to be removed from the jobsite at the end of each workday.

7. Flow diversion pumping shall be performed to the satisfaction of the S&WB networks engineering representative, shall be complete with all pumps, piping and other appurtenances

required to pump the required sewer flow around the work site continuously with capacity for unforeseen wet weather flows and shall not adversely impact upstream or downstream sewer flow conditions or levels. Flow diversion pumping setups shall be always manned by an experienced operator the pump is required to operate or sit in standby. Flow diversion pumping equipment and piping shall be drained back into the sanitary sewer system prior to disassembly. Contractors are required to submit a flow diversion plan to the engineer 5 business days prior to setting up a flow diversion pumping setup.

8. Any sewerage removed from the gravity system, such as dewatering of surcharged manholes or line segments shall be disposed into the sanitary sewer system.

9. When sewer flow control is used to perform CCTV inspection, the following depths of flow shall be maintained at a maximum:

a. For 10" and smaller diameter pipe, flow depth shall be maintained at or less than 10% of the pipe diameter.

b. For 12" through 24" diameter pipe, flow depth shall be maintained at or less than 15% of the pipe diameter.

c. For pipes larger than 24" diameter pipe, flow depth shall be maintained at or less than 20% of the pipe diameter.

10. For every location where flow diversion is required, the Contractor shall submit a site-specific flow diversion plan to the Engineer at least five (5) business days prior to mobilizing flow diversion equipment. The plan shall include pipe sizes and lengths, pump make/manufacturer, pump capacities, pump curves, a scaled drawing or diagram showing limits of the work, location of suction and discharge hoses, adjoining sewer segments and manholes, flow direction and plug locations, and any additional information requested by the Engineer.

11. The Contractor must conduct sewer flow control, isolation, and diversion in accordance with the approved plan and must have a Competent Person at the site throughout the flow control operation. Flow diversion pumps shall be always manned by and experienced operator.

C. Gravity Sewer and Service Lateral Rehabilitation

1. Contractor is responsible to obtain sewer service location records from the S&WB and to verify the location sewer service connections prior to excavation.

2. Contractor shall perform gravity sewer and service lateral rehabilitation in accordance with the sewer rehabilitation sheets.

3. Any service connections located within the limits of an excavated point repairs, or mainline replacement (excavated or otherwise) shall be fully replaced, including the wye and the 6" service lateral from the main line sewer to the property line. Abandoned service connections shall not be replaced unless directed by the S&WB.

4. All service line replacements shall include replacement of the tee or wye fitting at the main line sewer at no additional cost. The contractor shall perform a standard mainline point

repair to replace the service tie-in, which will be paid for separately under the respective bid item price.

5. Sewer service laterals and main line sewers shall be installed at the same grades and elevations of the pipe being replaced. However, in cases where the sewer service lateral provides less than 2% slope, the contractor shall re-grade the service lateral from the property line to the main line sewer to provide a 2% slope where possible.

6. Contractor shall provide rigid non-shear couplings or flexible elastomer couplings with stainless steel shear bands where a mainline point repair or a service later replacement results in the connection between dissimilar pipe materials. These couplers shall conform to ASTM C425 for connections to vitrified clay pipe and otherwise ASTM C1173. The bands shall be stainless steel 316 and on conformance to ASTM A240. The shear rings shall be in conformance to ASTM A240. There will be no direct pay for these provisions; contractor shall include this cost in their respective bid items of work.

7. All tees, wyes, cleanouts, plugs and other fittings shall be of the same material as the mainline pipe and/or service repair piping used in the rehabilitation.

8. Trenching for gravity sewer and service lateral rehabilitation shall be in accordance with the S&WB standard drawings, unless additional requirements are necessary for compliance with local, state, or federal regulations pertaining to health and safety. Any existing foundation or trenching lumber shall remain in place.

9. Contractor shall completely close the sewer system prior to the end of his workday. The Contractor may not leave any open main line repairs or service laterals with the site unattended. The Contractor is responsible to complete all opened work or to provide temporary piping prior to leaving the site at no additional cost.

10. The Contractor shall not begin backfilling operations over excavated sewer rehabilitation until the work has been inspected by a representative of the S&WB.

11. The S&WB reserves the right to request a mandrel test of any mainline sewer replacements at no additional cost in accordance with DPW standard specifications section C742.03(b).

12. All mainline sewer point repairs and replacements shall be recorded via CCTV immediately after completion of the rehabilitation, backfilling, compaction but prior to final pavement restoration of the site. The site is defined as the full work zone contained to a mainline sewer line segment bound by two manholes inclusive of the full length of main line sewer and all connecting service laterals.

D. Backfill Requirements for Work Near Mississippi River Levee. All sewer rehabilitation excavations within 1,500-ft Mississippi River Levee (MRL) centerline shall be limited within the following US Army Corps of Engineers (USACE) restrictions itemized below:

1. All excavation work within 400-feet of the Mississippi River levee is performed, completed, and backfilled while the stage of the Mississippi River is below +11.0 feet on the Carrollton Gage, at New Orleans, Louisiana.

2. All excavation work more than 400-feet but less than 1,500-feet from the Mississippi River levee is performed, completed, and backfilled while the stage of the Mississippi River is below +15.0 feet on the Carrollton Gage, at New Orleans, Louisiana.

3. Information concerning current river stages may be obtained on our website at www.mvn.usace.army.mil.

4. Sewer pipe bedding must be grouted after compaction. The grout shall meet the following criteria: The slurry shall consist of one part cement, two parts bentonite, and six parts sand mixed with enough water to produce a slurry viscous enough to thoroughly fill the voids. The resulting slurry shall have no less than 12 pounds of solids per gallon.

5. All non-bedding backfill must be impermeable clay – no sand at no direct pay.

6. All work must be coordinated with the Orleans Levee District (OLD) in advance and will be subject to OLD inspection and approval prior to S&WB acceptance.

7. Any damage to the levee or floodwalls resulting from the applicant's activities is repaired at the applicant's expense.

8. The contractor shall provide a detailed schedule for all sewer rehabilitation excavations for coordination with the OLD and USACE. This schedule shall be updated and resubmitted at any time the work dates for these sites has changed.

SECTION 2.09 – GRAVITY SEWER PIPEBURSTING

A. General requirements

1. This Specification covers the work necessary to furnish and install, complete and in-place, high–density polyethylene pipe (HDPE) by the pipe bursting method specified herein. The CONTRACTOR shall provide all materials, labor, equipment, and services necessary for bypass pumping diversion of sewage flows, installation of HDPE pipe, reconnection of all service connections, and closed-circuit television (CCTV) pre- and post-inspection and air testing of the completed pipe system.

2. The CO NTRACTOR shall locate receiving/insertion pits to suit the pipe bursting operation. Pits located in areas where new manholes are not being installed shall be excavated, backfilled, and compacted at no additional cost to the owner. This includes providing a new manhole at no additional cost to the owner if an existing manhole is removed or damaged.

B. Qualifications

1. The pipe bursting contractor shall be certified and satisfactorily trained by the pipe bursting system manufacturer that such company is fully trained and is a licensed installer of their pipe bursting system.

2. Polyethylene pipe joining shall be performed by personnel trained in the use of butt-fusion equipment by the specific manufacturer of said equipment and recommended methods

for new pipe connections. Personnel directly involved with installing the new pipe shall receive training in the proper methods for handling and installing the polyethylene pipe. Training shall be performed by a qualified and certified representative of the equi pment and pipe manufacturer.

3. The CONTRACTOR shall hold the BOARD and ENGINEER whole harmless in any legal action resulting from patent infringements.

C. Reference specifications, codes, and standards

1. The following references are part of this Specification. In case of conflict between the requirements of this Specification and those of the listed documents, the requirements of this Specification shall prevail.

2. The latest edition of the following references shall be used:

a. ASTM D1248 - Polyethylene Plastics Molding and Extrusion Materials

b. ASTM D2657 - Heat Joining of Thermoplastic Pipe and Fittings
ASTM D3035 - Polyethylene Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter

c. ASTM D3261 - Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

d. ASTM D3350 - Polyethylene Plastic Pipe and Fittings Materials
e. ASTM F714 - Standard Specification for Polyethylene Plastic Pipe Based on Outside Diameter

D. Contractor submittals

1. Shop Drawings:

a. The CONTRACTOR shall submit catalog cuts, s pecifications, dimensioned drawings, installation details and sketches, and other pertinent information for the HDPE pipe installation work. All materials provided shall be fully in accordance with the requirements of the reference specifications specified above.

b. The CONTRACTOR shall verify with the pipe manufacturer all connection details.

c. The CONTRACTOR shall submit detail drawings and a written descri ption of the construction procedure and sequence including its locations to bypass insertion and receiving bypass sewage flow of the host sewer and service laterals, install new hose sewer and service laterals, and disconnection and reconnection of the sewer service lateral connections.

2. Certification: The CONTRACTOR shall furnish a certified affidavit of compliance for all HDPE pipe and fittings furnished confirming that the materials supplied fully conform to the requirements specified herein.

3. Warranty as specified in Paragraph 1.06 Warranty of this Specification

4. The CONTRACTOR shall submit a complete plan for a sewage bypass pumping system in accordance with paragraph 2.08B.

5. The CONTRACTOR shall perform trial fusion welds in the field for both main line and lateral connections and submit samples to the ENGINEER for review prior to installation of the pipe. Full penetration welds shall provide a homogeneous material across the cross section of the weld. The fusion machine employed for the trial welds shall be the same machine to be utilized for the complete project installation work.

6. Fusion equipment shall be operated only by technicians who have been certified by the pipe manufacturer or supplier and who have a minimum of 2 years' experience of fusion welding 8 inches or larger diameter pipelines. The technician's experience and verifiable references shall be documented in the HDPE pipe submittal.

E. Quality assurance

1. Quality assurance procedures shall be performed by the pipe manufacturer fully in accordance with the requirements of this Specification. The certification shall include certified laboratory data confirming that said tests have been performed on a sample of the pipe to be provided under this contract, or pipe from that production run, and that satisfactory results were obtained prior to any installation of said pipe.

2. Fusion joining and other procedures necessary for correct assembly of the polyethylene pipe shall be done only by personnel trained in those skills to the satisfaction of the ENGINEER and the pipe supplier.

3. Only those tools designed for the aforementioned procedures and approved by the pipe manufacturer or supplier and the ENGINEER, shall be used for assembly of pipe fittings to ensure proper installation. The heater plate shall be equipped with suitable means to measure the temperature of plate surfaces and to assure uniform heating such as thermometers or pyrometers.

4. Pipe (bursting) insertion equipment shall be operated only by technicians who have a minimum of 2 years' experience in the installation of the polyethylene pipe, using pipe bursting lining technology as specified herein. The technician's experience and references shall be documented in the HDPE pipe submittal.

5. The CONTRACTOR shall televise the installed pipe after existing services have been reconnected and manhole reconnection and sealing procedure work has been completed. The original post-television inspection video tape shall be provided to the ENGINEER for final approval.

F. The CONTRACTOR shall provide to the OWNER a warranty to be in force and effect for a period of 1 year from the date of final acceptance by the OWNER. The warranty shall require the CONTRACTOR to repair or replace the pipe should leakage, separation, collapse, or other failure result from faulty materials or installation as determined by the ENGINEER.

G. Materials

1. The CONTRACTOR shall provide polyethylene pipe as specified. The pipe shall be made to diameter and tolerances in accordance with ASTM D3035. The minimum ratio of orthogonal diameters prior to installation shall be 0.95. All pipes shall be made from virgin grade material. The pipe shall be of the diameter and class shown or specified and shall be furnished complete with all fabricated fittings, and other appurtenances as necessary for a complete and functional system.

2. Markings: Pipe materials shall be legibly marked by the pipe manufacturer. The following shall be printed on the pipe:

a. Name and trademark of manufacturer.

b. Nominal pipe size.

c. Dimension ratio.

d. The letters PE followed by the polyethylene grade per ASTM D1248, followed by the Hydrostatic Design Basis in hundreds of psi.

e. Manufacturing Standard Reference.

f. A production code from which the date and place of manufacture can be determined.

H. Pipe Material

1. Pipe: Pipe shall be high molecular weight, high-density polyethylene pipe. The material shall be listed by the Plastic Pipe Institute (PPI) with a designation of PE 3408 and have a minimum cell classification of 345434C, D, or E (inner wall shall be light in color) as described in ASTM D3350. The pipe material shall meet the requirements for Type III, Class B or C, Category 5, Grade P34 material as descri bed in ASTM D1248. The pipe shall contain no recycled compound except that generated in the manufacturer's own plant from resin of the same specification from the same raw material pipe. Pipe (excluding black colored pipe) stored outside shall not be recycled. Pipe and fittings shall be made in conformance with ASTM F714 and ASTM D3261 as modified for the specified material. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, or other injurious defects. It shall be uniform in density a nd other physical properties. Any pipe not meeting these criteria shall be rejected.

2. Pipe Color, Pipe shall conform to the following color scheme:

a. Inside: The inner wall shall be soft white only (Opticore or equal),

b. Outside: The outer wall shall be black only.

3. Standard Dimension Ratio (SDR): Pipe shall conform to the following:

a. Nominal Size: 8 to 12 inches.

b. Outside Diameter: 8 to 12 inches.

c. SDR: Minimum 17.

I. Polyethylene pipe shall be joined by butt fusion welding, as specified in Paragraph O, Pipe Joing, herein.

J. Connection of new service lateral to the sewer main shall be accomplished by use of electrofusion saddle type fittings. The service connection shall be specifically designed for connection to the HDPE sewer main being installed, and shall be Central Electrofusion System, as manufactured by Central Plastics Company, Shawnee, Oklahoma.

K. The CONTRACTOR shall protect existing and new facilities including utilities, road pavement, and private property from damage by forces generated by the pipe bursting equipment. Any damage to any existing facilities as a result of the pipe bursting operation shall be the responsibility of the CONTRACTOR. If it is found that the damage is a result of the pipe bursting operation, the cost to repair or replace the damage facility shall be the responsibility of the CONTRACTOR.

L. Preparation

1. All work shall be performed as specified herein and supervised by personnel experienced in the installation of the pipe.

2. All sewer service connections shall be identified and located by CCTV prior to the start of any pipe bursting operation and pipe insertion. Upon commencement, pipe insertion shall be continuous and without interruption from one manhole to another, except as approved by the ENGINEER. Upon completion of the insertion and installation of the new pipe, the CONTRACTOR shall expedite the reconnection of lateral service connections so as to minimize any inconvenience to the customers.

3. The project foreman assigned to the project by the CONTRACTOR shall be onsite at all times from the time of inception to the time of completion.

M. Handling and storage

1. The CONTRACTOR shall exercise special care during the unloading, handling, and storage of all polyethylene pipe to ensure that the pipe is not cut, gouged, scored, or otherwise damaged. Any pipe segment, which has cuts in the pipe wall exceeding 10 percent of the wall thickness, shall be cut out and removed from the site at the CONTRACTOR's cost. The pipe shall be stored so that it is not deformed axially or circumferentially, which may hinder pipe installation. After the unloading of any pipe material ordered to the project site and before installation of the pipe, the CONTRACTOR shall inspect all pipe to verify its condition prior to installation with the ENGINEER and/or the project inspector. A pipe condition inspection report provided by the CONTRACTOR shall be filed with and approved by the ENGINEER prior to installation.

2. All polyethylene pipe, without an ultraviolet inhibitor, shall not be stored unprotected against the outside elements.

N. Repairs to the existing line

1. If the pre-installation video inspection reveals a sag in the existing sewer greater than one-half the diameter of the existing pipe, the CONTRACTOR shall take necessary measures to eliminate these sags by the system of pipe replacement, digging a sag elimination pit and bringing the bottom of the pipe trench to a uniform grade in line with the existing pipe invert or by other measures that shall be approved by the ENGINEER. There is no additional pay for this work.

2. The CONTRACTOR shall repair the pipe where point repairs are identified on the Drawings. If not shown, it will constitute extra work when approved by the ENGINEER. Any required point re pairs shall be performed as per these specifications and will be paid for separately under the respective bid items for the work.

O. Pipe joining

1. Sections of polyethylene pipe shall be joined into continuous lengths on the jobsite above ground. The joining method shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. Fusion equipment used in the joining procedure shall be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, fusion temperature, alignment, and fusion pressure. Electrofusion may be used for field closures as necessary when appropriate fusion equipment can be utilized in a trench type environment. For end sections or "tail" pipe, the use of electrofusion couplings as manufactured by Central Plastics Company can be utilized.

2. A fire-retardant bag or suitable enclosure shall be used with the heater plate to facilitate control of heating process and to protect the heater plate surfaces from dirt and other debris when not in use. The heater plate surfaces shall be cleaned regularly as needed to prevent accumulation of fusion welding residues or other substances that may result in faulty pipe joining.

3. Butt fusion shall conform to ASTM D2657 and pipe manufacturer's criteria for the type of joining. Joint strength shall be equal to that of the adjacent pipe.

4. The inside and outside of pipe ends shall be cleaned with a cotton or non-synthetic cloth to remove dirt, water, grease, and other foreign materials. The pipe ends shall be cut square and carefully aligned just prior to heating.

5. After achieving the proper melt pattern, the pipe ends shall brought together in a firm, rapid motion applying sufficient pressure to form a pipe bead (1/8 inch to 3/16 inch in height) around and inside the entire circumference of the pipe.

P. Pipe installation

1. The CONTRACTOR shall excavate, expose, and isolate all sewer service connections prior to replacing the existing sewer. The existing service connections may be encased in

mortar, concrete, or reinforced concrete. There will be no additional compensation for demolition of this concrete.

2. The CONTRACTOR shall install the pipe by utilizing a constant tension system with a hydraulic or pneumatic bursting device that breaks away the existing pipe. A static "cone cracking" method may be used, but only by advancing the mole bursting head with a "solid steel tow rod" pulled by a constant tension hydraulic pulling wrenching system. The advancement of the bursting mole head with a "chain" shall be prohibited. The void created by the bursting device shall be sufficient in size to accommodate the HDPE pipe, which shall be installed immediately after the void has been formed. The CONTRACTOR shall be responsible to provide adequately designed pipe bursting equipment to accomplish the replacement of the existing pipe under all adverse conditions.

3. The CONTRACTOR may utilize existing manholes where practical. Location of pits outside of existing manholes should be considered as replacement of existing manholes that are not designated to be replaced shall be at the sole cost of the CONTRACTOR. Manhole inverts and benches and channels shall be removed to permit access for installation equipment as appropriate. When installing through an existing manhole, the input and output pipe openings shall be enlarged as appropriate to accommodate to the maximum OD size of the bursting device. At no time shall the bursting device and/or the installation process put any undue stress on the existing surface. Benches and channels shall be reconstructed to proper elevations after the new pipe is in–place.

4. The CONTRACTOR shall secure the pipe to concrete structures or manholes after the pipe has been installed along the length of sewer replaced. The CONTRACTOR shall use a water stop or flange adapter, as supplied by the pipe manufacturer, that is fused and seated perpendicular to the pipe axis, around the pipe exterior, and grouted into the structure wall to create a watertight seal. The new pipe shall be installed 12 inches inside of the manhole opening. The structure or manhole connections shall be made a minimum of 12 hours after pipe insertion.

Q. Low pressure air testing

1. After a manhole-to-manhole section of sanitary sewer has been pipe bursted and prior to any service lines being connected to the replacement pipe, the pipe shall be plugged at each manhole with pneumatic plugs. The design of the plugs shall be such that they will hold against the test pressure without requi ring external blocking or bracing. One of the plugs shall have three air hose connections; one for inflating of the plug; one for reading the air pressure in the sealed line; and one for introducing air into the sealed line.

2. Low pressure air shall then be introduced into the sealed line until the interlay air pressure reaches 4.0 psig greater than the average back pressure resulting from any groundwater that may be over the pipe. At least 2 minutes shall elapse to allow the pressure to stabilize.

3. The time required for the internal pressure to decrease from 3.5 to 2.5 psig greater than the average backpressure resulting from any groundwater that may be over the pipe, shall not be less than the time shown for a given diameter in the following table:

Carrier Pipe Diameter (inches)	Minimum Elapsed time (minutes)
8	4
10	5
12	6
15	7

R. Reconnection of sewer service connections

1. The CONTRACTOR shall successfully test the installed pipe prior to reconnecting sewer services.

2. All sewer service laterals shall be replaced from the new main line to the respective property line and will be paid for separately under the respective unit bid items.

3. Service connections shall be connected to the new pipe and installed in a hole that shall be drilled the full inside diameter of the outlet or as recommended by the connection manufacturer. Service connections shall only be connected to the mainline with the use of fused service fittings as per the requirements in this section.

S. Final cleaning and television inspection

1. Prior to final acceptance and final inspection of the pipe by the ENGINEER, the CONTRACTOR shall flush and clean all parts of the system by removing all accumulated construction debris, rocks, gravel, sand, silt, and other foreign material from the pipe.

2. After com pletion of the pipe installation, service reconnections, finish work at the manholes and final cleaning, the sewer shall be televised with a color CCTV tilt-head camera recorded in VHS format. The original tape shall be provided to the ENGINEER.

SECTION 2.10- PRE- AND POST-REHABILITATION CCTV INSPECTION AND CLEANING

A. Scope of work

1. Cleaning: The Contractor shall furnish all labor, materials, equipment, and incidentals required to clean sanitary sewer line segments and manholes to remove all debris, solids, sand, grease, grit, etc. as specified herein.

2. Sewer Flow Control: The Contractor shall provide all the labor, materials, equipment, and incidentals necessary to di vert wastewater flow in accordance with Subsection 2.08B of this specification.

3. Contractors shall perform line cleaning and CCTV inspection of sewer lines for the following conditions. There is no direct pay for CCTV inspections unless noted otherwise.

a. Pre-rehabilitation of Find and Fix lines, at direct pay.

b. Pre-rehabilitation of sewer line segments requiring full length CIPP lining.

c. Pre-rehabilitation of sewer line segments requiring full length replacement via pipe bursting or other trenchless methods.

d. Post-rehabilitation of any sewer line segments inclusive of all rehabilitation methods (replacement, point repair, lining, etc.).

e. Upon written request by the engineer to perform additional CCTV inspections, at direct pay.

f. In the case of a CCTV performed as a Pre-rehabilitation inspection for a full length CIPP and then the CIPP is canceled as a result of the CCTV findings, the Contractor will be reimbursed for the line cleaning and CCTV at direct pay.

g. For pre-rehabilitation of sewer service laterals requiring CIPP lining see Paragraph G.

h. For post-rehabilitation of sewer service laterals requiring CIPP lining see Paragraph G.

B. Submittals

1. The Contractor shall maintain a master copy of all DVD's and CCTV inspection reports submitted, until final acceptance of contract. All DVDs, and CCTV inspection reports submitted by the Contractor will become the property of the Board.

2. The Contractor shall submit two (2) DVD's, one (1) hard copy, and one (1) electronic copy of corresponding CCTV inspection reports on a weekly basis for all work accom plished the previous week.

3. For pre-rehabilitation and post-rehabilitation CCTV inspection, the Contractor shall submit to the Engineer for review two (2) DVD's, one (1) hard copy, and one (1) electronic copy of the CCTV inspection reports on-line segments identified herein as requiring pre-rehabilitation CCTV inspection.

4. Where defect coding is required, the Contractor shall provide the defect coding in the Microsoft Access database provided by the Board. Defect coding shall be performed in accordance with the Sewerage & Water Board of New Orleans' Sewer Condition Classification Manual.

5. The Contractor shall submit documentation that the CCTV inspection equipment to be utilized meets the requirements in these specifications.

6. Forms and reports the Contractor proposes using to document cleaning work.

C. Camera distortions, inadequate lighting, dirty lens, blurred/hazy or unsteady video will be grounds to reject pre- and post-rehabilitation CCTV inspections. If quality of the pre- and post-rehabilitation CCTV inspections and inspection reports is not adequate as determined by the Engineer,

the Contractor shall provide a new pre- or post-rehabilitation CCTV inspection or inspection report. No additional payment shall be made for pre- and post-rehabilitation re-inspections.

D. When water from the public water supply is needed to meet the cleaning requirements of the equipment and the sewer, the Contractor shall obtain transient water meters from the Board with payment of a deposit. The Contractor shall be billed monthly by the Board for water usage. As a general rule, prior written approval from the Board is not needed to use fire hydrants located within this project area under this contract. However, fire hydrant keys are required and are available from the Sewerage and Water Board's Networks Department with payment of a deposit. The Contractor will be responsible for payment of deposit and payment of a monetary fine should the hydrant key(s) not be returned.

E. All high velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a variety of high velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 degrees to 45 degrees in all size lines to be cleaned. In addition to conventional nozzles, use a nozzle or series of nozzles which direct the cleaning force to the bottom of the pipe for sewers 18 inches and larger. The equipment shall include a water tank, auxiliary engines, pumps, and hydraulically driven hose reel all contained within one single unit. All controls shall be located so the equipment can be operated above ground. A gauge shall be installed to indicate working pressure on the discharge of high-pressure water pumps.

F. CCTV inspection

1. The Contractor shall supply camera skids and floating skids or rafts as required to complete pre- and post- rehabilitation CCTV inspection as required in the Contract. The Contractor shall inspect sewer lines with pan and tilt conventional television equipment. The operation of the television equipment shall be controlled by a skilled technician or supervisor who shall be located at the control panel in the mobile television studio. The CCTV equipment including reels and the television studio are to be contained within a single vehicle.

2. The camera system shall be able to navigate around minor objects, roots, and debris. The camera cable shall be retracted to remove slack and to ensure an accurate footage reading.

3. The distance between manholes shall be verified by measuring tape. If the counter distance and the taping distance differ by more than 2 feet per 100 feet, the run shall be re-televised by CCTV Contractor.

G. Pre-reh abilitation CCTV

The Contractor shall perform pre-rehabilitation CCTV inspection as required herein.

1. The Contractor shall perform cleaning activities prior to pre-rehabilitation CCTV inspection.

2. The purpose of the pre-rehabilitation CCTV inspection is to provide defect coding data to the Engineer to determine the extent of rehabilitation for line segments identified as find and fix line segments. In addition, pre-rehabilitation CCTV inspection is intended to verify the location of service connections and to verify that additional repairs are not required for line segments and service laterals identified to receive full length CIPP liners.

3. Defect coding for line segments identified as find and fix line segments is required. The Contractor shall submit defect coding of find and fix line segments in the Microsoft Access database provided by the Board

4. The Engineer will make the final determination of rehabilitation for line segments identified as find and fix line segments.

5. The Contractor shall determine if a change or addition in the rehabilitation method(s) is necessary for line segments identified to receive a full length CIPP liner. If the Contractor determines that a change or addition in the rehabilitation method(s) is necessary, the Contractor shall provide the pre-rehabilitation CCTV ins pection, DVD, and inspection report to the Engineer for review and approval.

H. Post-rehabilitation CCTV

1. The Contractor shall perform post-rehabilitation CCTV inspection as required herein.

2. Sewer line segments repaired by full-length replacement or by full-length lining will require cleaning prior to CCTV inspection and will require defect coding in accordance with the Board's Sewer Condition Classification Manual, latest edition.

3. Sewer line segments re paired by excavated point repair will require cleaning prior to CCTV inspection. The Contractor shall inspect the main from manhole to manhole, but defect coding of the line segments is not required.

4. Service laterals repaired by CIPP lining shall receive post-rehabilitation CCTV inspection. Defect coding of the service lateral is not required.

I. Cleaning

1. All interior surfaces of sewer lines shall be cleaned adequately to provide for a camera used in internal inspection to discern structural defects, misalignment, and infiltration and inflow sources. Cleaning shall be performed prior to internal inspection to preclude the buildup of debris from infiltration and inflow sources and discharges from upstream sewer line segments sections.

2. Cleaning: Cleaning shall be defined as the use of high velocity jet nozzle cleaning equipment to clean the line to the satisfaction of the Engineer.

3. Specialty cleaning: Specialty cleaning is defined as removal of o bstructions such as roots and intruding connections . Obstruction removals may require the use of special equipment such as rodding or bucket machines, and/or expanding cutters. The Contractor will obtain authorization from the Engineer prior to conducting any specialty cleaning. Authorization shall be required for each individual sewer reach. No payment shall be made for specialty cleaning without prior approval by the Engineer.

4. No fire hydrant shall be obstructed so as to prevent its use in case of a fire in the area served by the hydrant.

5. The Contractor shall provide the Board with monthly readings of water consumption for billing purposes. All cleaning equipment must be equipped with a backflow preventer to prevent any contamination to the public water supply. When utilizing water from the public water supply, the Contractor shall remove water meters, fitting, and piping from fire hydrants at the end of each working day. The Contractor shall not waste water from public water supplies due to poor connections to hydrants.

6. If cleaning of an entire line segment cannot be successfully performed from one manhole, the equipment shall be re-setup at the manhole on the opposite end of the pipe segment being cleaned and cleaning shall be re-attempted.

7. The Contractor shall use a nozzle that directs the cleaning force to the full circumference of the pipe.

8. When using hydraulically propelled devices, the Contractor shall take necessary precautions to ensure that the water pressure created does not cause damage or flooding to public or private property.

9. The Contractor is responsible for the disposal of waste from cleaning operations at a permitted disposal site. The Board's East Bank Sewage Treatment Plant is available for disposal of waste from cleaning operation under this Contract. The Contractor shall a bide by the operational policies and normal administrative working hours for the East Bank Sewage Treatment Plant when used for disposal.

10. Acceptance of sewer cleaning work is contingent upon the successful completion of the television inspection. If television ins pection shows de bris, solids, sand, grease, or grit remaining in the line, the cleaning is considered unsatisfactory. The Contractor, at no additional cost to the Board, shall repeat the cleaning, inspection, and televising of the sewer line until cleaning is acceptable by the Engineer.

J. Television equipment

1. Closed Circuit TV Equipment: The Contractor shall select and use closed-circuit television equipment that will produce color video recordings. The Contractor shall supply camera skids and floating skids or rafts as required to complete the CCTV portion of the Contract.

2. Pipe Inspection Camera

a. The television camera used for the sewer line inspection shall be one specifically designed and constructed for sewer pipeline inspection. The camera shall be waterproof and shall be operative in any conditions that may be encountered in the inspection environment. The camera shall be operative in 100% humidity conditions. The Contractor shall produce video recordings using a pan-and-tilt, radial viewing pipe inspection camera that pans ±275 degrees and rotates 360 degrees.

b. Television inspection of an entire line segment cannot be successfully completed from one manhole; a reverse set-up must be performed to obtain a complete television inspection. If successful televising of the entire line segment cannot then be accomplished, the inspection effort shall be abandoned. The Contractor will be paid for the inspection of the actual length of line segment televised. There will be no additional payment for reverse set-ups.

c. The camera shall be moved through the line segment in either direction at a rate not to exceed 30 feet per minute. Any means of propelling the camera through the sewer line which would produce non-uniform or jerky movement of the camera, will not be acceptable, Stop the camera at all defects so that a clear picture of the defect remains on the video screen for the operator to verbally describe the defect on the tape. Record a full 360^{O} pan view at all service lateral lines.

3. Wherever prevailing conditions allow, the CCTV camera head shall be positioned to reduce the risk of picture distortion. In circular sewers, position the television camera lens centrally (in prime position) within the sewer. In non-circular sewers, camera location shall be at mid-height of the sewer, unless otherwise agreed, and centered horizontally. In all instances, orient the camera along the longitudinal axis of the sewer when in prime position. A positioning tolerance of plus or minus 10% of the vertical sewer dimension shall be allowed when the camera is in prime position.

4. The adjustment of focus and iris shall provide a minimum focal range from 2 inches in front of the camera's lens to infinity. The distance along the sewer in focus from the initial point of observation shall be a minimum of twice the vertical height of the sewer. The illumination must be such as to allow an even distribution of the light around the sewer perimeter without the loss of contrast, flare out of picture, or shadowing.

5. The Contractor shall use a camera with camera height adjustment so that the camera lens is always centered at one-half the inside diameter or higher in the pipe being televised. The Contractor shall provide remote and/or automatic focus and aperture control.

6. The television inspection equipment shall be of such high quality as to enable the following to be achieved:

a. Color: With the monitor adjusted for correct saturation, the six colors plus black and white shall be clearly resolved with the primary and complementary colors in order of decreasing luminance.

b. Resolution: The live picture must be displayed on a monitor capable of providing a clear, stable image free of electrical interference with a minimum horizontal resolution not less than 450 lines.

7. The Closed-Circuit Television monitor display shall incorporate an automatically updated record in feet and tenths of a foot of the distance along the line from the cable calibration point to the center point of the camera. The Contractor shall use a suitable metering device that enables the cable length to be accurately measured; this shall be accurate to ±2%. The Contractor shall demonstrate that the tolerance is being complied with, by tape measurement between manholes on the surface. This taped measurement must be included on each television inspection log both written and electronic. If the Contractor fails to meet the

required standard of accuracy, the Engineer shall instruct the Contractor to re-survey those lengths of sewer at no additional cost to the Board.

8. Video recordings shall be high quality. The video recording shall reproduce clearly discernable sound and video information on the television monitor. The recording shall be free of interference and shall produce a clear, stable image.

9. The audio portion of the recording shall be clear and complete, and easily discernible. The audio portion shall record the location or identification of the line segment, the manhole-to-manhole direction of travel, and the distance traveled on the specific inspection. The audio portion shall record and identify all visible defects and include the information required by the Sewerage and Water Board of New Orleans' Sewer Condition Classification Manual, latest edition.

10. The video recording equipment shall be continuously connected to the television inspection and monitoring equipment. The video recording and monitoring equipment shall have the built-in capability to allow the Engineer and the Contractor to instantly evaluate both the audio and video quality of the video recording at all times during the television survey. Video recordings shall be enclosed in plastic containers which shall clearly indicate the date the tape was recorded, the designated section(s) of sewer lines contained on the tape, and the referenced sewer inspection report covering the sections of the sewer lines so included.

11. Lateral Inspection Camera

a. The television camera used for the lateral inspection shall be one specifically designed and constructed for lateral inspection. The Contractor shall provide a portable "mini-cam" CCTV inspection system. This system shall provide a color video satisfactory to the Engineer and contain footage readings displayed on the monitor and videotape at all times. The accuracy of the distance meter shall be checked by the use of tape measurement and the accuracy shall be within 2%.

b. When the cleanout for a service line is inaccessible, the Contractor shall perform CCTV inspection of the service lateral from the mainline utilizing a lateral camera launcher system. A sewer main line television camera shall be used to position the lateral camera launcher.

12. DVD

a. The Contractor shall provide video recordings with audio comments in the DVD format, recorded at Standard Play (SP).

b. Complete sewer line segments shall be included on the same video recordings (i.e., CCTV inspections for sewer line segments shall not be divided among videotapes).

c. The video format shall be an MPEG-1 compressed video, and resolution video format shall be QSIF (Quarter-size Sta ndard Image Format) of 176 x 112 pixels for NTSC video format.

d. Two labels are required on each DVD. One label shall be placed on the DVD Case and the other on the face of the DVD. The Contractor shall permanently label each as follows:

DVD Case

PRECONSTRUCTION AUDIO-VIDEO SURVEY
Contract No. Tape No.

Face of DVD

Project Title: Contractor:

Date Televised (MM/YY): Date Submitted

Manhole No. From	Manhole No. To	Pipe Diameter	Pipe Length	Street	Starting Counter No.

K. Television Inspection Report

1. The Contractor shall complete a Television Inspection Report covering the television inspection work and the information acquired, as described in the Sewerage and Water Board of New Orleans' Sewer Condition Classification Manual, latest edition.

2. The same television inspection code sheet shall be used throughout the Contract. The code sheet shall include abbreviations for specific defects as detailed in the Sewer Condition Classification Manual. Submit all electronic data files for the previous week's work to the Engineer weekly CD-ROM. Include hard copy printouts of the correlating inspection reports with each submittal. Submit electronic files on CD-ROM and DVDs for corresponding lines concurrently. Submit all electronic data files in a Microsoft Access database format provided by the Board. The manual and data entry database are available for review at the office of the SSERP Program Manager.

3. At the start of each line segment video recording, record and report the measured length of the sewer line being inspected. Begin with zero at the inside face of the start manhole, and end at the inside face of the end manhole.

4. At the start of each line segment video recording, electronically generate and clearly display, on the viewing monitor and video recording, a record of data in alphanumeric form containing the following information:

a. Size and Length of Line;

b. Automatic update of the camera's position, in feet and tenths, in the sewer line from adjusted zero;

c. Type of pipe material;

d. Upstream manhole name and downstream manhole name;

e. Date of inspection;

f. Road name or line segment location description;

g. Direction of inspection (upstream or downstream);

h. Starting time of the inspection.

5. Once the survey of the sewer line is under way, continuously display specific data on the viewing monitor and video recording. The size and position of the data display shall not interfere with the main subject of the picture yet shall be easily readable when the recording is replayed. At a minimum, the following data should be displayed:

a. Automatic update of the camera's position, in feet and tenths, in the sewer line from adjusted zero.

b. Upstream manhole name and downstream manhole name.

6. Each sewer length, i.e., the length of sewer between two consecutive manholes, shall be entered on a separate coding sheet. Thus, where a Contractor elects to "pull through" a manhole during a CCTV Survey, he shall start a new coding sheet at the manhole "pulled through" and shall re-set the distance to zero on the coding sheet.

7. The Contractor shall make submittals as required herein, on a weekly basis for all work accomplished the previous week.

L. Camera operation

1. All efforts should be made to prevent damage to the sewer conduit during the television inspection. In the case where damage is caused by the Contractor, for any reason, such as would be caused by incorrect deployment of bonds or retrieval of lodged equipment, the cost of repair or remedy shall be absorbed by the Contractor and shall be considered an incidental part of the Work. No separate measurement or payment will be made.

2. The CCTV operator shall accomplish simultaneous video and audio recording of defects, services, on site.

3. The camera shall be moved through the line in either direction at a uniform rate, stopping when necessary to insure proper documentation of the sewer's condition. Manual winches, power winches, TV cable, powered rewinds, and crawler devices or other devices that do not obstruct the camera view and do not interfer e with proper documentation of the sewer conditions shall be used to move the camera through the entire sewer line section. The

Contractor shall reposition his equipment as necessary so that the inspection can be performed from manhole on the opposite end of the pipe segment being viewed.

4. The lateral inspection camera video shall contain the forward and backward movement of the camera up to the mainline and back to the cleanout. If an attempt to video the service lateral line cannot be completed to the sewer main line, the blockage will be reported to the Engineer in writing and the service lateral line CCTV inspection will be abandoned.

5. When utilizing a lateral camera launcher system from the mainline, a maximum of 100 linear feet of the lateral or to the property cleanout, whichever is closer to the sewer main line, shall be inspected. Actual footage inspected may vary depending on lateral condition, bends, roots, launcher limitations, etc.

SECTION 2.11 - SANITARY SEWER MANHOLE REHABILITATION

A. Scope of work

1. The Contractor shall furnish all labor, materials, equipment, and incidentals required for the purpose of restoring structural integrity, eliminating water infiltration, repair of voids, and providing corrosion protection of the sanitary sewer manholes as shown on the Drawings and specified herein and assumed to be approximately 48" in diameter.

2. Sanitary sewer manhole rehabilitation shall include the following:

a. Leak-proofing of deteriorated, leaking, or structurally unsound manholes by lining with lightweight structurally reinforced concrete systems.

b. Repair and sealing of the manhole base, benches, channel, walls, corbel/cone, and chimney of brick, block, or precast manholes, including the removal of any unsound material.

c. Injection of chemical grout.

d. Cleaning and preparatory patching of manholes receiving liners.

e. Removal of flush valves and water service lines.

3. Sanitary sewer manhole rehabilitation for frames and covers replacement or adjustments shall be performed in accordance with section 3.15 of these special provisions (Items CF-371 through CF-378).

B. Submittals

1. The Contractor must submit for approval the manufacturers' specifications for all products that will be used for manhole rehabilitation. Only materials approved by the Engineer shall be on the job site.

2. The Contractor must, upon request by the Engineer, submit all other product information deemed necessary by the Board.

3. The Contractor must submit a written Vacuum Test Report for each test location of the concrete lining system indicating pressures, duration, actual leakage amounts, and other data to the Engineer for approval as a condition of acceptance. Testing is to be performed only when the Board inspector is present.

4. For the installation of the lightweight spray applied structural concrete lining system the Contractor shall submit a Warranty Certificate showing that the Contractor, the Applicator, and the Manufacturer will warrant the installed cementitious lining system against infiltration and corrosion for a minimum of 1 year from Final Acceptance of the Contract by the Board.

5. The Contractor shall provide certification from each product manufacturer utilized that the applicator is certified to apply the product and the manufacturer has witnessed and approved the application in the first manhole to be rehabilitated with the product.

C. Manhole rehabilitation materials

1. General

a. All materials shall be designed, manufactured, and intended for sewer manhole rehabilitation and the specific application in which they are used.

b. Each material shall be designed for application over damp surfaces (not wet surfaces or surfaces with actively running water) without degradation of the final product or the bond between the product and the manhole surface.

2. Infiltration Control: Stopping active leaks in concrete and masonry manholes shall be achieved by using the following:

a. Hydraulic Cement:

i. The hydraulic cement shall be a fast-setting, volume-stable, waterproofing, cementitious plugging material. The material shall consist of hydraulic cement, graded silica aggregates, and special plasticizing/accelerating agents. It shall not contain chlorides, gypsum, plasters, iron particles, aluminum powder or gas-forming agents, nor shall it promote the corrosion of steel.

ii. The material shall meet the following physical property requirements:

Set time (max)	ASTM C403	60 to 90 sec
Compressive strength (1hr)	ASTM C109	1000 psi
Bond strength (1hr)	ASTM C321	50 psi.

iii. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

b. Chemical Grout:

i. The chemical grout shall be a hydrophilic liquid that is water reactive

and will change from a free-flowing liquid to a water impermeable elastomeric gel upon injection to stop excessive infiltration to a manhole. The reaction (curing) shall produce a chemically stable and non-biodegradable, tough, flexible gel. The chemical grout shall be a urethane liquid in uncured form with a moderate viscosity suitable for pumping and variable curing times. ii. The polyurethane chemical grout shall be Scotch-Seal 5610 by 3M, Avanti AV-254, or approved equal.
The material shall meet or exceed the following requirements:

- The liquid shall have a solids content of 80% and a specific gravity of 1.04 to .11.
- The liquid shall have a viscosity of 300 to 1000 centipoise at 70-degree Fahrenheit.
- Gel times shall be in accordance with the manufacturer's recommendations.
- The grout shall have the ability to increase viscosity, density, gel strength and resistance to shrinkage by the use of additives in the reaction water.

iii. A reinforcing agent shall be added to the reaction water at the manufacturer's suggested rate. This agent is intended to increase the polyurethane gel's resistance to wet/dry cycles, freeze/thaw cycles, and solid movement stresses. The reinforcing agent shall be appropriate for the specific grout product that is to be used.

iv. Additional chemical grout additives, such as catalysts or accelerators, needed to make the grout function properly shall be as manufactured by 3M, Avanti, or approved equal and shall be used in a manner approved by the manufacturer.

3. Patching

a. Material - Patching, repointing, filling, and repairing nonleaking holes, cracks, and spalls in concrete and masonry manholes, including trough repair shall be achieved by using the following material:

b. A premixed non-shrink, cement-based, patching material. T he material shall consist of hydraulic cement, graded silica aggregates, special plasticizing/accelerating agents, which has been formulated for vertic al or overhead use. It shall not contain chlorides, gypsums, plasters, iron particles, aluminum powder, or gas-forming agents, nor shall it promote the corrosion of steel.

i. The material shall meet the following physical property requirements:

Set time (max)	ASTM C403	30 min
Compressive strength (1 hr)	ASTM C109	800 psi
Compressive strength (28 day)	ASTM C109	3000 psi.

ii. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

D. Spray applied and centrifugally cast lining materials

1. The material applied to the surface of the manhole shall be a lightweight structurally reinforced cementitious blend of siliceous aggregates, non-metallic fibers, and other additives. The material shall produce a monolithic liner that is impervious to the flow of water, resistant to sulfide attack, and restores structural integrity to the existing manhole walls. The material shall be Permacast MS-10,000, Quadex QM-1s, SCM Reliner MSP, Strong Seal MS-2A, or approved equal.

2. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

3. The cementitious lining system shall result in a monolithic structure conforming to the interior shape and contour of the existing manhole and covering all interior surfaces. The lining system shall be completely watertight and free of any joints or openings other than pipe inlets, pipe outlets, and the rim opening. The junction of the lining material with the pipe material at the inlets and outlets shall be watertight.

4. The cementitious lining system shall allow rehabilitation of a concentric, eccentric, or flat top manhole without removing the manhole frame casting and top section or corbel.

5. For manholes greater than 12 feet in depth, the lining shall withstand the pressures associated with a groundwater depth equal to the manhole depth. Linings for all other manholes shall withstand the pressures associated with a minimum depth of 12 feet. The manufacturer's recommended lining thickness dimensions to withstand groundwater pressure shall be submitted to the engineer for review.

6. The material shall have the following minimum requirements:

Compressive Strength (28 days), psi	ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars	3,000
Tensile Strength, psi	ASTM C496 - Standard Test Method for S plitting Tensile Strength of Cylindrical Concrete Specimens	300
Flexural Strength, psi	ASTM C293 - Standard Test Method for Flexural Strength of Concrete	600
Bond Strength, psi	ASTM C321 - Standard Test Method for Bond Strength of Chemical-Resistant Mortars	130
Shrinkage, %	ASTM C596 - Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement	0

Density, lb/cf	(when applied)	105

7. The material shall be designed for the selected method of application.

E. Wall cleaning material

1. Pressure Washing Equipment shall have the following minimum requirements:

a. Operating Pressure – 3,000 psi with the capability to produce a continuous flow of water at a minimum temperature of 210-degree Fahrenheit at a minimum force of 3,000 psi.

2. Cleaners: Detergent or muriatic acid capable of removing dirt, grease, oil, and other matter which would prevent bonding of the sealing material to the manhole wall. The Contractor shall refer to the lining material manufacturer's recommendations for preparatory surface cleaning.

F. New manhole frames and covers shall be East Jordan Iron Works (Vulcan) V-1501, or approved equal, as detailed on S&WB STD Drawings 3143-E-1. Work shall be performed and will be paid for as per section 3.15.

G. Manhole casting embedment sealant

1. The sealant shall be a premium, extruded, bituminous, tacky rubber sealant in rope form for use on manholes as an embedment material for the frame to adjusting brick/mortar corbel. Work shall be performed and will be paid for as per section 3.15.

2. Sealant shall conform to the latest version of ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants and Federal Specification SS-S-210A – Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints, Type I.

3. The sealant shall have the following properties:

Physical Properties	REQUIRED
Initial Elongation, %, min.	300
Elongation, %, min., at two weeks in total water immersion	300
Storage Life	Indefinite
Service Temperature Range, ^{0}F	-20 to 200

H. The Contractor shall perform all work needed to structurally repair manholes, improve sewer flow, prevent entrance of inflow or groundwater, and prevent entrance of soil or debris.

I. Delivery, storage, and handling

1. The materials shall be delivered to the job site in original unopened packaging and clearly labeled with the manufacturer's identification and printed instructions. The Contractor shall handle and store all material in accordance with manufacturer instructions and shall dispose of all wastes in accordance with applicable regulations.

2. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods.

J. Project conditions

1. Manholes Containing Flow Monitoring Equipment:

a. Drawings may not show locations of flow monitoring equipment. If a manhole contains any mechanical hardware or electrical flow monitoring equipment, the Contractor shall immediately notify the Engineer.

b. Work in such manholes shall be rescheduled at no additional cost to the Board until the Board has removed the equipment and the Contractor has been given further instructions.

c. Manholes with mechanical hardware or electrical equi pment shall not be subjected to diversion pumping.

d. Any damage to installed equipment, resulting from the Contractor's failure to adhere to the above, shall be repaired by the Board at the Contractor's expense.

2. Field Location of Manholes:

a. The Contractor shall be responsible for locating and uncovering all manholes. If the Contractor is una ble to locate a manhole after due diligence with measuring tapes, metal detectors, and probing, the Contractor shall notify the Engineer in writing for Board assistance.

b. The Contractor is cautioned that manholes that are not part of the subsystem being rehabilitated may be located within the project limits. No payment will be made to the Contractor for work in manholes not indicated on the Drawings or as directed in writing by the Engineer.

K. Manhole covers, frames, and adjusting rings from abandoned, broken, or adjusted castings shall remain the property of the Board. The Contractor shall deliver salvaged items at a time and to a property location designated by the Board.

L. Rehabilitation of manhole structure

1. Disposal Sites: The Contractor may dispose of sludge, sand, debris, grit, and liquid wastes resulting from performance of operations in this contract at the East Bank Sewage Treatment Plant (6501 Florida Avenue). There will be no charge for disposal at this location.

The Contractor may utilize and coordinate other licensed disposal sites at no additional cost to the Board, upon approval by the Engineer.

2. Cleaning: All concrete and masonry surfaces to be rehabilitated shall be cleaned prior to the application of rehabilitation products. All grease, oil, laitance, coatings, loose bricks, mortar, unsound brick, or concrete and other foreign materials shall be completely removed. Water blasting utilizing 210-degree Fahrenheit steam unit and proper nozzles shall be the primary method of cleaning; however, other methods such as wet or dry sandblasting, acid wash, concrete cleaners, degreasers and/or mechanical means may be required to properly clean the surface. All surfaces on which these methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products. Debris resulting from cleaning shall not be washed downstream but shall be removed from the manhole.

3. Infiltration Control: After surface reparation and prior to the application of mortars and coatings, infiltration shall be stopped by use of an approved water stop compound or chemical grout. All large holes or voids around steps, joints or pipes, all spalled areas and all holes caused by missing or cracked brick shall be patched and all missing mortar shall be removed from the area to be patched or repointed, exposing a sound subbase. All cracks not subject to movement and greater than 1/16 inch in width shall be grouted with approved non-shrink-patching mortar.

4. Channel Repair: The Contractor shall remove all loose grout and rubble from existing channel. The Contractor shall rebuild channel if required by reshaping, repairing slope of shelves or benches. Work shall include aligning inflow and outflow ports in such a manner as to prevent the deposition of solids at the transition point. All inverts shall follow the grades of the pipe entering the manhole. Changes in direction of the sewer and entering branch or branches shall have a true curve of as large a radius as the size of the manhole will permit, but will be shaped to allow easy entrance of maintenance equipment including buckets, CCTV, etc.

5. Manhole Steps: All existing non-stainless-steel manhole steps shall be cut smooth with the wall or be removed completely prior to lining.

6. Full Depth Wall Liner: The lining system shall be installed in accordance with the manufacturer's recommendation to withstand groundwater pressures. Cementitious lining shall be applied to manhole wall, bench, and channel surfaces. All cementitious linings shall have a minimum thickness of 5/8 inch. All multi-component polymeric lining shall have a minimum thickness of 1/2 inch.

a. Application of all products shall be by manufacturer certified applicators.

b. Manholes requiring lining shall be cleaned no more than 2 hours before lining. The surface prior to lining shall be damp without noticeable free water droplets or running water. Materials shall be applied to a minimum uniform thickness ensuring that all cracks, crevices, and voids are filled, and a smooth surface remains after light troweling.

c. For spray applied lining, the first application shall take an initial set (disappearance of surface sheen which could be 15 minutes to 1 hour depending on ambient conditions) before the second application, if necessary, to assure a minimum total finished thickness of 5/8 inch. For centrifugally cast lining, the rotating casting applicator shall be positioned to evenly apply the material and shall be withdrawn at a

rate to ensure a final minimum thickness of 5/8 inch. A depth gauge shall be used during application, at various locations, to verify the required thickness.

d. The Contractor shall apply light troweling to compact the material into voids and set the bond. The surface shall be troweled to a smooth finish with care taken not to over trowel and bring additional water to the surface.

e. The bench covers used to catch debris shall be removed and the bench and channel lined to produce a gradual slope from the walls to the channel with the thickness at the edge of the channel being no less than 5/8 inch. The wall and channel intersection shall be rounded to a uniform radius along the circumference of the intersection.

f. No application shall be made to a frozen surface or if freezing is ex pected to occur within the manhole for 24 hours after application. If ambient temperatures are in excess of 90-degree Fahrenheit, precautions shall be taken to keep the mix temperature at the time of application below 90-degree Fahrenheit.

g. The application shall have a minimum cure time as recommended by the manufacturer before being subjected to active sewer flow.

h. Liner samples shall be taken by the Board assigned testing laboratory on a weekly basis or as directed by the Engineer.

M. Testing and acceptance of full depth liners

1. Cementitious Liners

a. All rehabilitated manholes utilizing a full depth comprehensive lining system shall be tested by using a vacuum method. This testing shall follow the manufacturer's recommendations for proper a nd safe procedures. Vacuum testing of manholes and structures shall be performed following proper curing of the lining. Any visible leakage in the manhole or structure, before, during, or after the test shall be repaired regardless of the test result at no additional cost to the Board.

b. All pipes for vacuum testing shall be installed at the top access point of the manhole. A vacuum of 10 inches of mercury (5.0 psi) shall be drawn on the manhole and the time for the pressure vacuum to drop 9 inches of mercury (4.5 psi) shall be measured. Manholes will be considered to have failed the air test if the time to dro p 1 inch of mercury is less than the value shown in the following table.

Vacuum Test Timetable

Depth - feet	48" Diameter	60" Diameter	72" Diameter	96" Diameter
4	10 sec.	13 sec.	16 sec.	19 sec.
8	20 sec.	26 sec.	32 sec.	38 sec.
12	30 sec.	39 sec.	48 sec.	57 sec.
16	40 sec.	52 sec.	64 sec.	76 sec.

20	50 sec.	65 sec.	80 sec.	95 sec.
24	60 sec.	78 sec.	96 sec.	114 sec.
+ Each 2'	+ 5 sec.	+ 6.5 sec.	+ 8.0 sec.	+ 9.5 sec.

c. When testing, manhole depths shall be rounded to the nearest foot. Testing times for intermediate values of manhole depth shall be interpolated. For manhole depths greater than 24 feet, the values shown in the last line of the table shall be added to the 24-foot value for each additional 2 feet of depth.

d. If the manhole or structure fails the vacuum test the Contractor shall perform additional repairs and repeat the test procedures until satisfactory results are obtained at no additional cost to the Board.

e. After the manhole rehabilitation work has been completed, the Contractor shall allow the manhole to be visually inspected by the Engineer. The finished surface shall be free of blisters, “runs”, “sags”, or other indications of uneven lining thickness. There shall be no evidence of visible leaks.

N. Manhole benches and channels

1. The Contractor shall remove obstructions and all loose materials from benches, troughs, and pipe inverts prior to shaping the channel. The Contractor shall form a smooth, U-shaped channel having a minimum depth of one-half exiting pipe diameter and connecting the inlet and exiting pipes of the manhole using an approved manhole rehabilitation material. The Contractor shall control flow to allow sufficient setting time for material used.

2. The Contractor shall form a smooth transition between the reshaped channel and a raised manhole bench to eliminate sharp edges of pipe, concrete bench, and channel. The Contractor shall make finished benches and channels smooth and without defects which would allow for accumulation of debris.

O. Removal of Flush Valve Apparatus and Water Service Lines

1. For each sewer manhole with a flush valve present, the Contractor is required to remove the flush valve apparatus from the manhole (ITEM NO. CSS742(X10) below). Prior to starting this work, Contractor must send written notification, including manhole ID numbers, to the Engineer. The Engineer’s inspector must witness all work performed.

2. Remove the service line from the manhole to a distance of two (2) feet beyond the exterior face of the manhole wall as directed by the Engineer’s inspector. [See SSERP Detail for Flush Valve Removal]. The water line penetration hole shall be filled from both inside and outside of the manhole with non-shrink grout, (ITEM NO. CSS742(X11) below). The Engineer’s inspector must witness all work performed.

3. For each sewer manhole with a water service line present, locate and disconnect the service line at the water main (ITEM NO. CSS742(X12) below). [See SSERP Detail for Flush Valve Removal]. Prior to starting this work, Contractor must send written notification,

including manhole ID numbers, to the Engineer. The Engineer's inspector must witness all work performed.

4. The Contractor shall refer to the S&WB unit sheets to find the closest water main. To locate the point of connection at the water main, identify the shortest distance between the water main and the point where the service line penetrates the manhole. [See SSERP Detail for Flush Valve Removal]. Typically, the actual connection is within six feet in either direction of the theoretical connection point. On the manhole si de of the water main, and at approximately twelve (12) inches clear from the outside of the water main, carefully sawcut any pavement and excavate parallel to the main until the water service line is located. Once located, trace the service line to the main. Limits of pavement saw cutting and removal shall be limited to within panels and not extend beyond panel joints without engineer's approval.

5. At the water main, the service line may or may not be connected to the water main with a corporation cock. If a corporation cock is present, the corporation cock should be turned off and the service line disconnected. The cock should be inspected to determine if it is leaking. If there is no corporation cock, or if the corporation cock is leaking, it will be necessary for the S&WB to shut down the water main. The Contractor shall then remove the direct connection or leaking corporation cock and seal the tap hole using a full circle stainless steel repair clamp approved by the Engineer (ITEM NOS. CSW741-01 or CSW741-02).

6. The remainder of the water service line shall be abandoned in place.

7. Restore the site to pre-construction condition in accordance with the restoration specifications and pay items in this contract.

P. Final Acceptance of the Contract will be granted via Sewerage and Water Board Resolution. All Contract work is not considered final accepted until the Resolution has been passed by the Board of Directors.

SECTION 2.12 – CURED-IN-PLACE PIPE LINING

A. The Contractor shall provide all labor, materials, equipment, and incidentals to accomplish the Cured-In-Place Pipe (CIPP) Lining of all existing sewer pipe and service laterals as shown on the Drawings and specified herein.

B. The Contractor shall furnish an extended warranty for liner materials from the liner manufacturer for a total of 5 years from the date of Final Acceptance.

C. The Contractor shall have a minimum of two (2) years' experience in sewer line repairs by CIPP liner installation. The CIPP liner product manufacturer shall have a minimum installation history of two (2) years and 100,000 linear feet of furnished product including the sizes applicable for this project. Verifiable experience shall be submitted to the Board upon request.

D. Liner

1. All CIPP lining products shall comply with the latest versions of ASTM F1216 - Rehabilitation of Existing Pi pelines and Condu its by the Inversion and Curing of a Resin-Impregnated Tube, or ASTM F1743 - Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP). The Contractor shall furnish a general purpose unsaturated, polyester, or thermosetting vinyl ester resin and catalyst system that provides cured physical strengths specified herein.

2. The flexible tube shall consist of one or more layers of needled felt or equivalent woven or non-wo ven material manufactured und er quality-controlled conditions set by the manufacturer and be capable of carry resin and withstanding installation pressures and curing temperatures. The tube shall be compatible with the resin system used and shall contain no intermediate layers that delaminate after resin curing. It shall not be possible to separate any layers with a probe or knife blade such that the layers separate cleanly or the probe or knife blade moves freely between the layers.

3. The flexible tube material shall be able to stretch to fit irregular pipe sections and negotiate bends. The tu be shall be fabricated to a size that when installed will neatly fit the internal circumference and length of the existing sanitary sewer main lines and service lateral lines when installed. Allowance shall be made for circumferential stretching during insertion so that the final cured product is snug against the wall of the host pipe and free of fins and buckles.

4. The resin used shall be a thermoset resin system that is compatible with the CIPP installation. The resin shall be able to cure in the presence of water and the initiation temperature for cure shall not be more than 180o F.

5. The liner thickness shall be sized for a minimum hydrostatic and earth load of 8 feet. The earth load and hydrostatic load shall be increased to the manhole depth for bury depths in excess of 8 feet unless otherwise noted.

6. The wall color of the interior pipe surface of the CIPP after installation shall not be of a dark or nonreflective nature that could inhibit proper CCTV inspection.

7. The liner shall be structurally designed for a fully deteriorated host pipe/direct bury condition, prism loading, and AASHTO Standard Specification for Highway Bridges HS-20-44 live loading due to traffic. The liner shall be designed for the following conditions:

DESIGN PARAMETER	VALUE
Minimum Service Life	50 years
Soil Density	120 pounds per cubic foot (lb/cf)
Soil Modulus	1000 pounds per square inch (psi)
Minimum Safety Factor	2.0
Ovality Factor 2%	
Maximum Deflection	5% in vertical axis
Long Term Modulus Reduction Factor	50%

8. The final CIPP liners shall conform to the minimum structural standards as listed below in accordance with the latest versions of ASTM D790 - Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials and ASTM F1216 -

Rehabilitation of Existing Pi pelines and Condu its by the Inversion and Curing of a Resin-Impregnated Tube:

FINAL CIPP	MINIMUM REQUIRED
Flexural Stress	4,500 psi
Short Term Flexural Modules	250,000 psi
Long Term Flexural Modules	125,000 psi

9. The liner shall be fabricated from materials which when complete are chemically resistant to and will withstand internal exposure to domestic sewage having a pH range of 5 to 11 and temperatures up to 125o F. CIPP liners shall meet the minimum chemical resistance requirements in accordance with the latest version of ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.

10. The liner shall be furnished to the following minimum thickness, or the thickness based upon design criteria as specified herein, whichever is greater:

Pipe Diameter (inch)	Depth of Sewer Invert (feet)	CIP Nominal Thickness (millimeter)_	(inches)
6	to 20	4.5	0.177
8	to 20	6.0	0.236
10	0 to 15	6.0	0.236
10	15.1 to 20	7.5	0.295
12	0 to 10	6.0	0.236
12	10.1 to 20	7.5	0.295
15	0 to 10	7.5	0.295
15	10.1 to 15	9.0	0.354
15	15.1 to 20	10.5	0.413
18	0 to 10	9.0	0.354
18	10.1 to 15	10.5	0.413
18	15.1 to 20	12.0	0.472
Pipe Diameter (inch)	Depth of Sewer Invert (feet)	CIP Nominal Thickness (millimeter)_	(inches)
21	0 to 10	10.0	0.374
21	10.1 to 20	15.0	0.555

24	0 to 10	12.0	0.472
24	10 to 22	15.0	0.590
27	0 to 10	12.0	0.465
27	10.1 to 20	18.0	0.705
30	0 to 10	15.0	0.590
30	10 to 22	21.0	0.817
36	0 to 20	24.0	0.921

E. Expanding hydrophilic rubber joint seal

1. The rubber joint seal shall be an extended hydrophilic rubber com pounded from chloroprene (Neoprene) rubber and hydrophilic resin, which expands on contact with water.

2. The rubber joint seal shall be bonded with adhesive on one face to hold it in place during assembly.

3. On contact with water, the rubber shall swell a minimum of 8 times its original volume, if necessary, and mold itself to completely fill any gaps and exert pressure evenly to ensure the seal. High compression or bolt up forces shall not be necessary to affect a complete and watertight seal.

F. Chemical grout - Chemical Grout in accordance with SECTION 2.11 - SANITARY SEWER MANHOLE REHABILITATION, Subsection C, Paragraph 2, Subparagraph b.

G. Delivery, storage, and handling

1. The Contractor shall comply with the pipe manufacturer's printed recommendations for delivery, storage, and handling of all products.

2. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods at no additional cost to the Board.

H. All required flow isolation of private services shall be in accordance with section 2.08B of these special provisions.

I. Preparation

1. The Contractor shall carry out his operations in accordance with all OSHA and manufacturer’s safety requirements. Particular attention is drawn to those safety requirements involving the entering of confined spaces.

2. The Contractor shall take field measurements to verify the existing pipe diameter, ovality and length prior to manufacturing liners. The manufacturer shall incorporate these

measurements into the manufacturing process of the liner. The outside of the flexible tube shall be marked along its full length at regular intervals not to exceed five (5) feet. It shall be the responsibility of the Contractor to remove all internal debris such as solids and roots and clean the existing sewer line prior to installation of the liner in accordance with Section 2.10 Pre-and Post-Rehabilitation CCTV Inspection and Cleaning.

3. Inspection of existing sewer lines shall be performed by experienced personnel trained in locating breaks, obstacles, and service connections by CCTV. The interior of the line shall be carefully inspected to determine the location of any conditions which may prevent proper installation of the CIPP liner into the main lines or service lateral lines, and such conditions shall be noted so they can be corrected. A videotape and log shall be kept as specified in Section 2.10 Pre-and Post-Rehabilitation CCTV Inspection and Cleaning.

4. The Contractor shall provide for the flow of sewage around the section or sections of pipe designated for lining as specified in Section 2.08B, Sewer Flow Control. The Contractor shall be completely responsible for preventing service line back-ups during the CIPP liner installation and curing periods.

5. The Contractor shall clear the line of obstructions such as solids, protruding gaskets, dropped joints, protruding service connections, or collapsed pipe that will prevent the insertion of the liner, as noted during pre-rehabilitation CCTV inspection. If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment, the Contractor, upon approval from the Engineer, shall make a point repair to uncover and remove or repair the obstruction prior to lining.

6. Location and distance from the upstream and downstream manholes of all internal and external point repairs shall be determined before rehabilitation commences.

7. Only those sewer services that are live and active shall be repaired or reinstated after the sewer main has been lined or replaced. The Contractor shall note that not all sewer lines segments have been televised in their entirety due to obstructions blocking further entry, etc. These obstructions shall be cleared to allow CCTV viewing of the entire segment length before lining is commenced. The number of service connections on some sewer segments may exceed the number of buildings actually served. It is the Contractor's responsibility to determine through dye testing, CCTV inspection or other acceptable methods, the services that are live and require reinstatement prior to commencing lining of the sewer main. Services that are confirmed to be inactive shall not be reinstated. Services that are inactive, but reinstated, shall be plugged at no additional expense to the Board.

J. Installation

1. Installation shall be accomplished by inversion or winched-in-place methods and cured in place by ambient temperature or circulating hot water or steam to produce a hard, jointless, impermeable pipe repair. Installation procedures shall be in accordance with the latest versions of ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube or ASTM F1743 - Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP), and the manufacturer's recommendations.

2. The Contractor shall designate a location where the reconstruction tube will be vacuum impregnated prior to installation. The Contractor shall allow the Engineer to inspect the materials and "wet out" procedure. Sufficient excess resin shall be used in accordance with the latest version ASTM F1216. A roller system shall be used to uniformly distribute the resin throughout the tube.

3. Before installation begins, the tube manufacturer shall provide the minimum pressure required to hold the tube tight against the existing conduit, and the maximum allowable pressure so as not to damage the tube. Once the installation has started the pressure shall be maintained between the minimum and maximum pressures until the installation has been completed.

4. The curing of the CIPP must take into account the existing pipe material, the resin system, and ground conditions (temperature, moisture level, and thermal conductivity of soil). The post-cure tem perature should be held fo r a period as recommended by the resin manufacturer, during which time the recirculation of the water and cycling of the head source to maintain the temperature continues.

5. The bond between all CIPP layers shall be strong and uniform. All layers, after cure, shall be completely saturated with resin.

6. The CIPP shall be cooled to a temperature below 100oF before relieving the hydrostatic head. Care should be taken in release of the static head so that a vacuum will not be developed that could damage the newly installed liner.

7. Where practicable, liners can be installed in continuous runs through manholes where there are two of more continuous sewer segments requiring lining, especially to connect several short segments with continuous lining.

8. The temperature of water discharged to the sewer system from processing liners shall not exceed 125o F maximum, or the level allowed by State or local standards if less than 125o F.

9. The Contractor shall furnish on-site on a continuous basis one (1) additional operational robotic cutter assembly train and key spare components as a "stand-by" unit in the event of primary equipment breakdowns.

K. Post installation

1. After installation of the liner in a full segment pipe, a minimum of one (1) inch of the liner material shall be left to protrude from the wall of the entrance and the exit manhole.

2. The Contractor shall install a joint seal at all manhole in let and outlet connections to seal the area where the line enters or leaves each manhole. The Contractor shall use grout to dress up around the end of the liner. This space may be sealed with a mechanical seal, chemical seal, or combination of both. The method used shall be as approved by the Engineer.

3. The upstream and downstream manholes shall be inspected and any holes or voids in the manhole wall immediately surrounding the new liner shall be sealed with a hydrophilic rubber joint seal and chemical grout as specified herein. The Engineer shall approve the seal.

4. Where liners of any type are installed in two or more continuous manhole segments, the liner invert through the trough of intermediate manholes shall be left intact. Final finishing of the installation in those intermediate manholes shall require removal of the top of the exposed liner with a horizontal cut and neat trimming of the liner edge along the top edge of the bench and any cut portions removed from the system.

5. Portions of any piece of liner material removed during installation shall be available for inspection and retention by the Engineer. Any unrestrained samples shall not be used for testing purposes.

6. The Contractor shall reinstate openings for all drop assemblies after relining the mainline sewer.

7. Service connections shall be reinstated without excavation, utilizing a remotely controlled cutting device monitored by a CCTV camera. The coupons from this action shall be collected downstream and submitted to the Engineer. The Contractor shall provide certification that he has the required equipment to reinstate the service connections as specified herein.

8. After the liner has been installed, in the event that the Contractor chooses to temporarily reinstate service lines, all active existing services may be temporarily reinstated by punching through the liner from the interior of the pipeline. Temporary reinstatements shall allow normal flow from the service line into the mainline. Final reinstatement of all active services within a rehabilitated line segment shall be performed internally using a robotic cutter within 48 hours of curing and buffed to a minimum of 95% of the original service opening size. The finished opening shall contain no jagged edges.

L. Testing

1. During the cool down process, after installation and curing of the liner, the Contractor shall perform tests on the sewer line to determine if it is watertight. No separate payment will be made for testing.

2. The Contractor shall furnish all necessary equipment to conduct the test.

3. The sewer shall be tested using either exfiltration test methods in accordance with the latest version of ASTM F1216 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated tube or air test methods as specified herein.

4. After completing lining and service reinstatement, every liner shall be CCTV inspected in accordance with Section 2.10 of the Special Provisions. Segments not fully conforming to these Specifications must be immediately brought to the Engineer's attention. The Contractor shall furnish a written proposed method of correction within 24 hours for approval by the Engineer.

5. The Board will have a certified independent testing lab analyze finished liner samples taken from the restrained sample located at the manhole invert. The Contractor shall furnish samples directly to the Engineer within 2 days after installation.

a. A minimum of one (1) sample shall be taken from every four (4) segments

installed. The restrained samples shall be a minimum of one (1) foot in length. The Contractor shall place a sample mold aligned with and the same size as the existing sewer in such a manner as to allow the installation of the liner material through the restraining sample mold. This sample mold shall be made of SDR 35 PVC, or an Engineer approved equal.

b. The resin-impregnated tube shall be installed and cured through this restraining mold in order to obtain a liner sample representative of the actual liner physical characteristics. The sample shall be removed from the mold and shall be labeled with the project number, date of installation, pertinent manhole numbers, nominal thickness, flow direction, and location of installation. The Contractor and Engineer shall acknowledge receipt and transfer of all samples.

c. Tests in accordance with the latest versions of the ASTM standards for flexural strength, flexural modulus and wall thickness will be conducted by the independent testing lab.

d. A sample will be provided by the Contractor to the Engineer for all CIPP installation over 18" inches in diameter to be tested in accordance with ASTM standards.

M. Acceptance

1. The finished CIPP liner shall be fully rounded and free from visible defects, including but not limited to damage, deflection, holes, delamination, ridges, cracks, uncured resin, foreign inclusions, or other objectionable defects as determined by the Engineer.

2. There shall be no visible infiltration through the liner, or around the liner at manhole or service line connections. The Contractor shall be required to repair any visible leaks in a manner approved by the Engineer.

N. Non-conforming work

1. If either the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP liner are less than 80% of the approved design values, the product is considered unacceptable. A method of repair or replacement shall be submitted for review and approval by the Engineer. All work required to remedy non-conforming work shall be at no additional expense to the Board.

2. For all instances, as described in this Subsection, other than thickness, flexural strength, and flexural modulus of elasticity, where the CIPP liner is deemed unacceptable, the Contractor shall submit a method of repair or replacement for review and approval by the Engineer. All work required to remedy non-conforming work shall be at no additional expense to the Board.

3. Where post-installation thickness measurements and/or physical property testing is performed, payment for installed cured-in-place pipe shall be made in accordance with the following:

a. If the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP are 90% or greater than the approved design values, full payment shall be made accordingly.

b. If the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP are between 90% and 80% of the approved design values, with all at least 80% of the approved design values, payment shall be based on:

Adjusted Unit Price = Unit Price Bid x Value Factor, where:

Value Factor = [__*__ thickness + __*__ flexural strength + __*__ flexural modulus of elasticity] / 3.

* Insert actual measured or tested result expressed as a percentage of specified value. Maximum allowable percentage is 100%.

4. If a defect repair is required after the liner has cured, a short segment tube shall be used to splice across the defect repair. The overlap on each defect shall be twice the diameter, or 12 inches, whichever is greater.

O. Measurement and payment for Cured In Place Liners shall be in accordance with the DPW Standard Specifications Section C742.05(k).

SECTION 2.13 – WATER POINT REPAIRS

A. Installation of water point repairs shall be in accordance with DPW General Specifications Section C741.02.2.

B. Lubricant for gasketed pipe and fittings shall be in accordance with DPW General Specifications Section C741.02.3.

C. All inspection of the water main and related appurtenances will be performed under the inspection of, and to the satisfaction of, the S&WB. Final acceptance of water point repairs is subject to a one-year maintenance period following the substantial completion date of the contract accepted by the S&WB.

D. It is the intent of these specifications and of the contract based thereon, that all pipe joints be watertight under all service conditions. Any and all leaks from improperly laid or defective joints which are discovered at any time prior to the elapse of one year following the final acceptance by the S&WB of the entire work, will be repaired by and at the expense of the Contractor.

E. It is the intent of these specifications and of the contract based thereon, that all pipe joints be watertight under all service conditions. Any and all leaks from improperly laid or defective joints which are discovered at any time prior to the elapse of one year following the final acceptance by the S&WB of the entire work, will be repaired by and at the expense of the Contractor.

F. The Contractor shall follow ANSI/AWWA C651-14 standard for disinfection water mains for new & repaired mains in the presence of the S & WB field representative prior to proceeding.

G. The Contractor shall use either sodium hypochlorite or calcium hypochlorite to provide the disinfectant for the chlorination process. If calcium hypochlorite is used, the Contractor shall pre-mix the calcium hypochlorite into solution before application. All hypochlorite raw materials must be certified as suitable for the treatment of drinking water by an accredited certification organization in

accordance with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals – Health Effects.

H. The Contractor shall follow AWWA Standard C651-14, latest revision, these Special Specifications and shall meet the requirements of the Louisiana Department of Health and Hospitals (LA-DHH) for installation and disinfection of potable water mains. Transporting, storage, and handling of all disinfection products, utilized for chlorination, shall be performed in accordance with all applicable Federal, State, Local Laws and Regulations.

I. The Contractor shall chlorinate the new water main system, including fire hydrants, fire hydrant leads, valves, and service connections, under the direct supervision of the S&WB, such that the minimum chlorine concentration throughout the system is 50 mg/l. The chlorinated water shall be retained in the pipe for 24 hours for water mains less than 30 inches in diameter, and for 48 hours for water mains greater than or equal to 30 inches in diameter. After the required retention time, the chlorinated residual shall be at least 5 mg/l free chlorine, as measured by the S&WB. If the residual is less than 5 mg/l at any point in the system, the initial flushing and disinfection procedure shall be repeated by the Contractor until a 5 mg/l free chlorine residual is obtained. The Contractor shall contact the S&WB Water Purification Department (504) 865-0572, a minimum of 72 hours prior to chlorinating the new main to schedule the sample collection.

J. The Contractor shall flush the chlorinated water from the new main using potable water. Disposal of chlorinated water shall be in accordance with AWWA Standard C651-14 and all federal, state, and local requirements. The Contractor's chlorination and flushing setup shall include provisions for the S&WB to collect a sample, via a ¾" faucet without hose bib threads, on the inlet and each discharge standpipe.

K. The S&WB shall collect and analyze samples for coliform bacteria, chlorine residual, and turbidity from all pipe extremities and from representative points. All samples must be free from contamination by coliform bacteria and have acceptable turbidity levels as determined by the S&WB. The Contractor shall be responsible for final flushing and coordinating sample collection by the S&WB.

L. In the event that a new water main tests positive for coliform bacteria following chlorination, the Contractor will be responsible for reflushing the main and coordinating resampling for coliform analysis. If the second set of coliform samples test positive, the Contractor shall be required to repeat the chlorination procedure. A fee may be imposed on the Contractor for the additional supervision, sampling, and analysis required of S&WB employees as the result of the necessity of resampling and/or re-chlorination.

M. Before the water service is interrupted, the Contractor shall:

1. Expose the existing water main at the re pair point location and verify the type, size, and elevation of the existing service.

2. Have sufficient materials, equipment, and manpower available at the job site.

3. Verify materials on hand will meet the job needs after uncovering the existing mains.

4. Request a water test closure through the S&WB Networks Department (942-3891) a minimum of thirty (30) working days in advance of the scheduled repair.

5. Have notified all residents and the New Orleans Fire Department a minimum of seventy-two (72) hours in advance of interruption of service.

N. Any damage caused by the Contractor, will be at the Contractor's own expense.

SECTION 2.14 – GEOTEXTILE FOR STABILIZATION

A. General: This work consists of furnishing and placing geotextile fabric in accordance with these specifications and in conformance with the details shown on the plans.

B. Materials: The geotextile fabric shall conform to Section 1019, Class D.

C. Construction Requirements: Rolls of geotextile fabric shall be kept covered at all times until used. Geotextile fabric that has been installed shall be covered with embankment within 7 calendar days. When ultraviolet damage occurs, the geotextile fabric shall be removed and replaced. The geotextile fabric shall be placed at the locations shown on the plans or as directed. Adjacent rolls of geotextile fabric will be overlapped or sewn. When rolls are overlapped, the overlap shall be a minimum of three (3') feet, including the ends of the rolls. The top layer of the geotextile fabric shall be parallel with adjacent rolls and in the direction of construction.

1. Geotextile fabric shall be placed as smooth as possible with no wrinkles or folds, except curved road sections. For curved road sections, the geotextile fabric shall be folded to accommodate the curve. The fold shall be in the direction of construction and pinned or stapled. Ruts that occur during construction shall be filled and compacted prior to placement of geotextile fabric.

2. Damaged geotextile fabric shall be either removed and replaced with new geotextile fabric or covered with a second layer of geotextile fabric extending three (3') feet in each direction from the damaged area.

SECTION 2.15 - GEOGRID

A. The contractor shall install a prior approved geogrid over the geotextile fabric in full compliance with manufacturer's recommendations, to the alignment and grades designated, in locations shown on the plans or as directed by the manufacturer or Engineer.

B. Quality Assurance.
1. Use only material that has been approved by the Engineer.
2. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

C. DELIVERY, STORAGE, AND HANDLING.

1. The Contractor shall check the geogrid, upon delivery, to assure the proper material has been received.

2. Special care shall be taken in the handling of geogrids manufactured from polypropylene when temperatures are at or below 0ûF (-18 ûC).

D. PRODUCTS.

1. Definitions

a. Geogrid – an integrally-formed, punched, and drawn polypropylene grid structure specifically fabricated for use in base stabilization applications.

2. Acceptable Products

a. The geogrid shall be a regular grid structure formed by punching and drawing a continuous sheet of select polypropylene material and shall have aperture geometry and rib and junction cross-sections sufficient to permit significant mechanical interlock with the material being stabilized. The geogrid shall have high flexural rigidity and high tensile modulus in relation to the material being stabilized and shall also have a high level of continuity through all ribs and junctions of the grid structure. The geogrid shall maintain its confinement and interlock capabilities under repeated dynamic loads while in service and shall also be resistant to ultraviolet degradation, to damage under normal construction practices, and to all forms of biological or chemical degradation normally encountered in the material being stabilized.

Standard performance geogrid shall conform in all respects to the property requirements listed below.

PROPERTY	TEST METHOD	UNITS	VALUE
Geometry			
Aperture size	I.D. Calipered		
MD		in	1.0 (nom)
CMD		in	1.3 (nom)
Open Area	COE Method	%	70 (min)
Thickness	Calipered		
Ribs		in	0.05 (nom)
Junctions		in	0.10 (nom)
Physical Characteristics (MD x CMD)			
Flexural Rigidity	ASTM D7748	mg-cm	750,000 (min)
True Initial Modulus in Use	ASTM D6637	lb/ft	27,420 x 44,550 (min)
Aperture Stability	ASTM D7864	m-N/deg	0.65
Junction Strength	ASTM D7737	lb/ft	1200 x 1800 (min)
Junction Efficiency	ASTM D6637 & D7737	%	93 (min)
Material			
Polypropylene	ASTM D-4101 Group 1/Class 1/Grade 2	%	98 (min)
Carbon Black	ASTM 4218	%	0.5 (min)

High performance geogrid shall conform in all respects to the property requirements listed

below.

Option 1 – Triaxial Geogrid

PROPERTY	TEST METHOD	UNITS	VALUE
Geometry			
Aperture size	Observed		Equilateral Triangle
Ribs per Junction	Observed		6
Aperture Size (pitch between parallel ribs)	Calipered	in	1.6 (nom)
Open Area	COE Method	%	70 (min)
Thickness	Calipered		
Ribs		in	0.05 (nom)
Junctions		in	0.13 (nom)
Physical Characteristics			
Radial Stiffness at 0.5% strain	ASTM D6637	lb/ft	18,495 (min)
Junction Efficiency	ASTM D6637 & D7737	%	93 (min)
Material			
Polypropylene	ASTM D-4101 Group 1/Class 1/Grade 2	%	98 (min)
Carbon Black	ASTM 4218	%	0.5 (min)

Option 2 – Biaxial Geogrid

PROPERTY	TEST METHOD	UNITS	VALUE
Geometry			
Aperture size	I.D. Calipered		
MD		in	1.3 (nom)
CMD		in	1.3 (nom)
Thickness			
Ribs			
MD	Calipered	in	0.09 (nom)
CMD	Calipered	in	0.06 (nom)
Junctions	Calipered	in	0.125 (nom)
Physical Characteristics			
Overall Flexural Stiffness	ASTM D7748	mg-cm	2,150,000 (min)
Radial Stiffness at 0.5% strain	ASTM D6637	lb/ft	38,500 (min)
Aperture Stability	ASTM D7864	m-N/deg	0.80 (min)
Junction Efficiency	ASTM D6637 & D7737	%	93 (min)
Material			
Polypropylene	ASTM D-4101 Group 1/Class 1/Grade 2	%	98 (min)
Carbon Black	ASTM 4218	%	0.5 (min)

b. As the project permits and at the contractors' discretion, two layers of standard

performance geogrid may be used in lieu of a single layer of high-performance geogrid; with a minimum 5" compacted lift of aggregate over each geogrid layer.

c. Alternate high-performance geogrids that do not meet the requirements above will be considered if they can demonstrate quantifiable performance enhancement equal to or greater than the performance criteria required for the project. For approval, alternate high performance geogrid products should have testing that quantifies the benefit of the geogrid in accordance with AASHTO R50.09.
    a. If this testing is not available, an alternate design may be considered provided the following criteria are met.
        i. The alternate design is signed and sealed by a Professional Engineer licensed to practice in the State of Louisiana.
        ii. The alternate design must be submitted at least 2 weeks prior to bid date.

E. EXECUTION.

1. Subgrade Soil Preparation

Subgrade soil shall be prepared as per section C203. PREP ARATION OF ROADWAY PAVEMENT SUBGRADE of the City of New Orleans General Specifications for Street Paving and as indicated on the construction drawings or as directed by the Engineer.

2. Geogrid Installation.

a. Geogrid shall be laid at the proper elevation and alignment as shown on the construction drawings.
b. Geogrid shall be oriented such that the roll length runs parallel to the road direction.
c. Overlaps:
   Minimum overlap is 2 feet. There is no extra pay for overlapped area.
   Care shall be taken to ensure that geogrid sections do not separate at overlaps during construction.
d. Placement of geogrid around corners will require cutting of geogrid product and diagonal overlapping of same to ensure that excessive buckling of grid material does not occur.
e. Exercise care during placement of embankment over geogrid so as not to damage geogrid.

F. PAYMENT.

1. Measurement: Geogrid will be measured as a single layer by the square yard in place regardless of whether single layer or double layer geogrid option is used by the contractor. There will be no measurement for overlaps.

2. Payment: Geogrid will be paid for by the square yard, in place as approved at the contract unit price.

SECTION 2.16 – VIBRATIONS DUE TO CONSTRUCTION ACTIVITIES

The Owner will retain the services of an independent testing laboratory to perform vibration monitoring for the duration of the construction. Payment for these services will be the responsibility of the Owner.

The Project Engineer shall determine the need for vibration monitoring. The Project Engineer shall direct the number and placement of monitors to be used for each activity or condition. Monitoring equipment shall directly measure particle velocity (rate of ground movement) in three mutually perpendicular directions (longitudinal, transverse and vertical) and be capable of recording the vector sum of these three measurements to an accuracy of 0.01 in/sec. In addition, the monitoring equipment shall be capable of producing a continuous written record of all measurements taken. A daily report will be furnished to the Engineer including, at a minimum, a monitoring location plan, all recorded data and a narrative of construction activities which is referenced to the recorded data.

The Contractor shall report to the Engineer's field representative at least twenty-four (24) hours in advance of starting any new construction related activity (or if site conditions change) and request that proper vibration monitoring be provided for this activity and/or condition.

If, at any time, any monitor records a reading of 0.20 inches per second in any direction, the laboratory technician shall notify the Contractor and the Owner's field representative immediately. The Contractor shall record the activity and location causing the reading. If, at any time, any monitor records a reading of 0.25 inches per second or greater in any direction, the laboratory technician shall notify the Contractor and the Owner's field representative immediately and the affecting construction activity shall be suspended. The Contractor shall propose to the Engineer corrective measures for the affecting construction activity to ensure that vibration-monitoring limits will not be exceeded. Upon approval by the Engineer, the modified construction activity may resume. Repair of any damage caused by the vibrations above safe limits as specified herein shall be the full responsibility of the Contractor.

SECTION 2.17 – SUPERPAVE ASPHALTIC CONCRETE REQUIREMENTS

All Superpave asphaltic concrete placement shall conform to Section C502 except where modified here within.

Superpave asphaltic concrete binder course placement shall consist of ¾ inch (0.75") maximum nominal aggregate size. Superpave asphaltic concrete wearing course mixture shall consist of ½ inch (.5") maximum nominal aggregate size. Grade of Asphalt Cement shall be at minimum a PG 67-22. The Engineer shall verify the correct material is used and ensure that roadway density requirements are met in accordance with the contract documents.

The thickness of Superpave binder course shall be placed with a 5" section. Two (2) lifts shall be used: one at 3" and then one at 2".

The thickness of Superpave wearing course shall be placed with a 2" section using one single lift.

NTSS-1HM (trackless tack) shall be considered as an acceptable prime coat when requested by the Contractor, approved by the Engineer, and follows the requirements of Section 505 from the latest version of LaDOTD Louisiana Standard Specifications for Roads and Bridges.

When the Owner determines that a core sample shall be obtained, the samples will be drilled by the Contractor at the locations determined by the Director at no direct pay and those samples shall be provided to the Department.

SECTION 2.18 – BASE COURSE

All Base Course materials shall conform to section C302 except where modified here within.

Gray Limestone stone conforming to section C302.03 part C is the acceptable material for base course.

Recycled Portland Cement Concrete is not acceptable as a base course material. This is acceptable as a Traffic Maintenance Aggregate.

PART III – SPECIAL ITEMS

SECTION 3.01 – TEMPORARY SIGNS, BARRICADES, PAVEMENT MARKINGS, CONSTRUCTION SIGNING, TRAFFIC MAINTENANCE AND PUBLIC SAFETY

This item shall be governed by the provisions of General Specifications Section C129 Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety except as follows:

There shall be no direct payment for Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety. All costs associated with Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety shall be included in other major items of the proposal.

SECTION 3.02 – MOBILIZATION

For this project mobilization will be considered as a subsidiary obligation of the contractor under other bid proposal items. There shall be no direct payment for mobilization, or for any items that may be referenced as subsidiary to or included in mobilization. All costs associated with mobilization shall be included in other major items of the proposal.

SECTION 3.03 – CLEARING AND GRUBBING AND DISPOSAL OF MATERIALS

There shall be no direct payment for any required Clearing and Grubbing and removal and disposal of material not listed for removal in the proposal. There shallbe no direct payment for removal and disposal of culverts, metal curb protection at intersections, metal plates at driveways, existing drain lines or drainage structures and other materials other than Portland Cement Concrete Pavement and

Asphaltic Cement Concrete Pavement. All costs associated with Clearing and Grubbing, and removal and disposal of other material shall be considered subsidiary to and included in Roadway Excavation or other major bid items of the proposal.

SECTION 3.04 – CONSTRUCTION LAYOUT

A. This item shall be governed by the requirements of Standard Specification Item C740(51) except as modified here-in. The Contractor willbe responsible for laying out the work prior to beginning of construction and establishing grades for all roads to maintain positive drainage when the profile of the road is altered. The Contractor shall initiate a Request for Information to the Engineer for review if any changes to the existing road profile are to be made. The Contractor shall provide elevations to the Engineer in order to evaluate the effect of grade changes to the adjacent driveways, sidewalks, and residential lots. The Contractor shall submit a detailed sketch to the Engineer that shows existing roadway elevations and the proposed gutter line. This effort shall consist of adjusting catch basins or drop inlets as the low points of this profile. Any change to the existing road profile shall be approved by the engineer and DPW prior to making any changes. The Engineer shall review and approve the proposed gutter line to assert that the road is laid out adhering to City Standards. Any changes made to the existing road profile without the City's approval may be rejected and replaced at the Contractor's expense.

B. Prior to starting construction in each block, the Contractor shall be required to mark using survey marking paint the limits of the pavement, driveway, sidewalk, and handicapped ramp removal as shown on the plans, and mark using a contrasting color any areas the contractor recommends as additional removal/replacement due to constructability concerns.

C. There shall be no direct payment for Construction Layout. All costs associated with the requirements included in Section C740 of the General Specifications shall be included in other major items of the proposal.

SECTION 3.05 – TRAFFIC CONTROL PLAN

The requirements of General Specifications Section C128 PERMITS AND REGULATIONS shall apply except a detailed traffic control plan shall be required for this project.

A. The Contractor shall maintain fifty (50%) percent of the roadway accessible to vehicular traffic at all times, and for major streets shall maintain 100% of roadway accessible to vehicular traffic between the hours of 7-9 A.M. and 4-6 P.M. A traffic control plan indicating, in detail, the location of all signs, lights, and barricades must be prepared by the Contractor for the written approval of the Director, no less than two, nor more than ten working days in advance of implementation. It shall be the Contractor's responsibility to obtain these approvals in writing. There is no direct pay for this requirement.

B. The Police Department, Fire Department, all affected utilities as well as any and all residents and/or businesses affected must be informed a minimum of twenty-four (24) hours in advance of anticipated closures and the duration thereof.

C. Construction traffic control signs, barricades, warning lights, devices, and methods, shall comply with Part VI of Manual on Uniform Traffic Control Devices for Streets and

Highways (MUTCD) unless otherwise directed by the Director. There is no direct pay for this.

D. All traffic control devices (roadway markings, signs, signals, signal controls, etc.) destroyed as a result of construction shall be replaced at the Contractor's expense.

E. The Contractor shall notify the Director immediately if the project requires changes or modifications to existing traffic control signs, parking meters, etc.

The Contractor performing work under this contract shall be required to coordinate and cooperate in scheduling his operations with the Director and S&WB prior to finalizing pavement repairs to accommodate other contractor's activities. There shall be at no direct payment for traffic control plans.

SECTION 3.06 – SAW CUTTING (SIDEWALK, DRIVEWAY AND CURBS)

A. This item shall be governed by the requirements of General Specification Item C202 (55) except as modified here-in. To ensure against ragged connections between old and new work, saw cutting will be required at sidewalks, driveways, curbs, and/or at other paved construction areas as may be designated by the Engineer.

B. The saw cuts in sidewalks shall be full depth with an appropriate saw to ensure the straight vertical edge for the upper portion on the patch. After the edges have been cut, the areas to be removed are broken in small pieces with pneumatic chisels or drills and the pieces removed. The resulting broken edge of the concrete below the saw cut is left fairly rough and irregular but in approximately vertical plane so that it will provide aggregate interlocks between the patch and existing concrete. Joints and typical joint spacing within the repair area shall be established or reestablished in accordance with the details shown on City of New Orleans Department of Public Works Standard Drawings.

The saw cuts in driveways and curbs shall be full depth with an appropriate saw to ensure the straight vertical edge for the upper portion on the patch. After the edges have been cut, the areas to be removed are broken in small pieces with pneumatic chisels or drills and the pieces removed. The resulting broken edge of the concrete below the saw cut is left fairly rough and irregular but in approximately vertical plane so that it will provide aggregate interlocks between the patch and existing concrete. When breaking the concrete driveway pavement an attempt shall be made to save a minimum twelve (12) inches of the existing welded wire fabric on each side.

Joints and typical joint spacing within the repair area shall be established or reestablished in accordance with the details shown on City of New Orleans Department of Public Works Standard Drawings.

C. Measurement and payment for saw cutting required to establish joints interior to the work area as required by the DPW Standard Details and General Specifications shall not be allowed.

D. Measurement and payment for saw cutting of sidewalks, driveways, or curbs along the ends or perimeter of removal areas as required to protect existing concrete that is to remain in-place shall be made at the unit price bid per linear foot for Special Bid Item No. CF-3 SIDEWALK, DRIVEWAY AND CURB SAW CUTTING when listed on the Unit Price Form.

E. There shall be no Measurement and payment for the de pth of saw cutting of sidewalks, driveways, or curbs along the ends or perimeter of removal areas. The depth of saw cutting shall follow the plan drawings regarding the pavement section thickness.

SECTION 3.07 – PAVEMENT SAW CUTTING ADJACENT TO EXISTING PAVEMENT AND AT PATCHES AND UTILITY TRENCHES

A. This item shall be governed by the requirements of Standard Specification Item C202 (56) except as modified here-in. The cut in roadway pavement adjacent to existing pavement that is to remain in place, and for patching, and for utility trenches shall be made prior to demolition of the paved area to be removed and shall be sawcut full pavement depth to ensure the adjacent paved areas that are to remain in place are protected from damage during the demolition process. If the contractor damages the edge of sawcut pavement the contractor shall be required to re-sawcut the entire concrete panel, or as approved by the engineer, to remove the damaged area. Any saw cutting, pavement, and related items that are required due to Contractor damage of existing pavement shall be at no direct cost.

B. This item shall include saw cutting for both Portland cement concrete and asphaltic concrete pavement along the ends or perimeter of removal areas as required to protect existing pavement that is to remain in-place. The pavement saw cut, assuming a full pavement-depth saw cut up to a 10" maximum depth, shall be made with an appropriate saw to ensure the straight vertical edge for the upper portion on the patch. After the edges have been cut, the areas to be removed shall be broken in small pieces with pneumatic chisels or drills and the pieces removed.

C. Measurement and payment for saw cutting required to establish or reestablish contraction and expansion joints interior to the work area as required by the DPW Standard Details and General Specifications shall not be allowed.

D. Measurement and payment for saw cutting existing pavement along the ends or perimeter of removal areas adjacent to patches and utility trenches shall be made at the unit price bid per linear foot for Special Bid Item No. CF-4 PAVEMENT SAW CUTTING ADJACENT TO EXISTING PAVEMENT AND AT PATCHES AND UTILITY TRENCHES when listed on the Unit Price Form.

SECTION 3.08 - REMOVAL OF ADA-ACCESSIBLE RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS INCLUDING SAW CUTTING

A. This item shall be governed by the requirements of Standard Specification Item C202 except as modified here-in. The unit price bid per Square Yard for this item shall include all saw cutting of curb, curb and gutter bottom, sidewalk, and pavement, removal and proper disposal of existing pavement, curb, curb and gutter bottom, sidewalk, ramps, and curb transitions, including all excavation, associated with handicapped ramp removal and at the locations shown on the plans.

B. Measurement and payment for Handicap Ramps and Concrete sidewalks at intersection shall be made at the unit price bid per square yard for Special Bid Item No. CF-5 REMOVAL OF HANDICAPPED RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS INCLUDING SAW CUTTING when listed on the Unit Price Form.

SECTION 3.09 - ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS

A. This item shall be governed by the requirements of General Specification Item C706 (54) except as modified here-in. Concrete sidewalks at intersection shall include the handicap ramp Type B as detailed on the Construction Documents, and the latest ADA standards, unless otherwise approved by

the Director in writing on a case-by-case basis. Concrete shall be 3000 psi compressive strength at 28 days reinforced with 6x6 - W2.9xW2.9 reinforcing mesh weighing forty-two (42) lbs. per 100 sq. ft. placed at 2" from the top of slab.

B. Breaking out and removing existing pavement, curb, and sidewalk will be paid for under another item. Transitional sidewalk, where required, will be paid for under for under other items of the proposal.

C. Measurement and payment for Handicap Ramps and Concrete sidewalks at intersection shall be made at the unit price bid per square yard for Special Bid Item No. CF-6 ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS, when listed on the Unit Price Form, and shall include: detectable warning surfaces, all necessary sand, backfill, concrete, transitional flares, transitional curbs, the curb with thickened section and gutter bottom, and all additional curb transitions required for ramp construction in accordance construction requirements of the Standard New Orleans DPW details.

All non-compliant ADA Handicap Ramps within the limits of construction shall be replaced with ADA compliant ramps unless otherwise approved by the Director.

Price shall include all backfill and compaction behind curb and along the edges of walk with select material obtained from roadway excavation or other approved sources and installation of the top 4 inches with batture sand for dressing and beneath sidewalks and curbs as required.

Price shall include removal and replacement of adjacent roadway pavement as required to form curb, gutter, and ramp transition areas, where adjacent pavement is not included on the drawings and quantified in other items of the proposal.

Price shall include all dowelling and transverse and longitudinal reinforcement in conformance with the Standard New Orleans DPW details.

Price for new curb or curb and gutters associated with Handicapped Ramp construction shall be measured and paid for as subsidiary to Square Yard unit price bid for ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS.

SECTION 3.10 - SIDEWALK TRANSITION ADJACENT TO ADA-ACCESSIBLE CURB RAMP AREAS

A. This item shall be governed by the requirements of Standard Specification Item C706 (51) Concrete Sidewalk, C706 (57) Brick Sidewalk, and C706 (59) Stone Sidewalk except as modified herein. This item shall include all necessary work associated with transitioning line and grade of existing sidewalk and non-roadway paved transition areas adjacent to proposed handicapped ramp locations.

B. The unit price bid per Square Yard for SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS shall include all saw cutting, removal and proper disposal of existing sidewalk and non-roadway paved transition areas, all excavation, subgrade preparation, setting bed, concrete foundation, grading, compaction, tamping, and furnishing and placing all necessary fill material, backfill, dressing, sand for adjustment, joints, reinforcement, grout, finishing, curing, and sidewalk or non-roadway paved transition area constructed of a material to match the existing type and surface course unless otherwise directed by the Director. Where existing sidewalk or non-roadway paved transition areas to be removed is Portland Cement Concrete the new surface course

shall be 4 inches thick 3,000 psi concrete at 28 days reinforced with 6x6 - W2.9xW2.9 reinforcing mesh. Where existing sidewalk or non-roadway paved transition areas to be removed is Brick or Stone the new surface course shall be replaced in-kind and compliant with the construction requirements of the General Specifications for the type material removed. Where feasible and accepted by the Director existing salvaged material, if reusable, can be removed, properly cleaned, and re-installed. Price shall include all backfill and compaction behind curb and along the edges of walk with select material obtained from roadway excavation or other approved sources and the installation of the top four inches with Batture sand for dressing as required. The Contractor is solely responsible for coordinating with the respective utility for any required adjustments or relocations as required. If approved by the respective utility any necessary utility box adjustments shall be performed by the contractor in accordance with the appropriate standards and requirements at no direct payment.

C. When SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS has been shown on the unit price proposal the extent of transition area allowable for measurement and payment shall be a maximum of 8'-0" in length in each direction from proposed handicapped ramps where existing sidewalk requires replacement to meet line and grade dictated by compliance with the latest ADA standards. The width of the sidewalk transition shall match the width of the material to be removed to meet line and grade dictated by compliance with the latest ADA standards. Locations eligible for use of this pay item shall be recommended by the contractor to the project engineer's Resident Inspector (RI) for submission to the Director of an approved amount per each location proposed. The Contractor shall consult directly with the RI and provide field measurements, recommendations, and existing and proposed grades as needed to install ADA compliant sidewalk transitions to proposed handicapped ramp locations. Only locations and extents specifically pre-approved by the Director during construction will be eligible for payment. SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS shall not be considered a material part of the work contemplated, and only amounts specifically approved in writing from the Director shall be measured and paid for at the contract unit price bid with no adjustment to the unit price for an increase or decrease in the final quantity approved.

D. Measurement and payment:

1. SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS, not shown on the Construction Drawings but included in the unit price proposal, shall only be measured and paid for each location and specific quantity approved in writing by the Director for Special Bid Item No. CF-13 SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS.
2. All sidewalk areas that are shown on the Construction Drawings are measured and paid for in other applicable pay items of the proposal.

SECTION 3.11 - ADA-ACCESSIBLE CURB RAMP RETROFIT

A. DESCRIPTION

1. This item shall include all necessary work associated with adding ADA compliant tactile / detectable warning surface tiles to existing curb ramps. This Section includes Specifications for furnishing and installing Surface Applied Tactile / Detectable Warning Surface Tiles (SA) in an inline truncated dome pattern on all curb ramps and walking surfaces at the locations and to the dimensions shown on the Drawings, in accordance with the Contract Documents and as directed by the Director. (Surface Applied Tactile is also known as Surface Mount Tactile Warning Tiles or Retrofit

Tactile Warning Tiles).

B. RELATED DOCUMENTS

1. Drawings and general provisions of the Contract Documents.

2. Americans with Disabilities Act (ADA) Title 49 CFR Transportation, Part 37.9 Standards for Accessible Transportation Facilities, Appendix A, Section 4.29.2 Detectable Warnings on Walking Surfaces. FHA Memo (5-06-02) titled Truncated Domes. Federal Register Volume 71, No. 209, 49 CFR Part 37 (10-30-06), ADA Standards for Transportation Facilities (11-29-06, DOT): Sections 406, 705, and 810. ADA Standards for Accessible Design – 2010 (9/05/11, DOJ), ADAAG: Sections 705 and 810. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board), PROWAG: Sections R208, R304, R305, R308, and R309.

3. American Society for Testing and Materials (ASTM) Test Methods B117, C501, C1028, D543, D570, D638, D695, D790, G151, G155, and E84.

4. American Association of State Highway and Transportation Officials (AASHTO): Test Method AASHTO-H20

C. SUBMITTALS

1. Product Data: Submit manufacturer's literature describing products, installation procedures and maintenance instructions.

2. Samples for Verification Purposes: Submit two (2) Tactile Warning Surface samples minimum 8" x 8" of the kind proposed for use. Samples shall be properly labeled and shall contain the following information: Name of Project, Submitted by, Date of Submittal, Manufacturer's Name, and Catalog Number.

3. Shop Drawings: Submit Standard Manufacturer Shop Drawings showing all pertinent characteristics of the Surface Applied Tactile Warning Tile (SA) including profile, sound on cane contact amplification feature, fastener locations and installation methods.

4. Material Test Reports: Submit current test reports from qualified, accredited independent testing laboratory in accordance with ASTM guidelines and indicating that materials proposed for use are in compliance with specification requirements and meet the properties indicated. All test reports submitted shall be representative of the Surface Applied Tactile Warning Tile (SA) delivered to the Project.

5. Maintenance Instructions: Submit copies of manufacturer's specified maintenance practices for each type of Tactile Warning Surface Tile and accessory.

D. GUARANTEE

1. SA Tiles shall be guaranteed in writing for a period of five (5) years from date of Contract's final completion. The guarantee includes manufacturing defects, breakage,

and deformation.

E. MATERIALS

1. Composition: SA Tiles shall be manufactured using a matte finish exterior grade homogeneous (uniform color throughout thickness of product) glass and carbon reinforced polyester based Sheet Molding Compound (SMC) composite material. Truncated domes must contain fiberglass reinforcement within the truncated dome for superior structural integrity and impact resistance. A matte finish will be required on the Tactile Warning Surface for superior slip resistance performance superior to that offered by a gloss finish. Use of Tactile Warning Surface Products employing coatings or featuring layers of material with differing composition, performance, or color properties is expressly prohibited under this Section.

2. Color: Color shall be homogeneous throughout SA Tile, Dark Gray (G) per Federal Standard 595B Table IV, Color No. 36118.

3. Domes: Square grid pattern of raised truncated domes of 0.2" nominal height, base diameter of 0.9" and top diameter of 0.45". The Federal Code of Regulations permits a truncated dome spacing range of 1.6"-2.4." For superior wheelchair, walker and shopping cart mobility, the preferred truncated dome spacing shall have a center-to-center (horizontally and vertically) spacing of 2.35", measured between the most adjacent domes on square grid.

4. Configuration: SA Tile sizes shall be as indicated on the Contract Drawings. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry. At a minimum, the thickness of the body of SA Tile shall measure 3/16" (nominal). The SA Tile thickness shall not exceed ½" maximum when measured from the curb ramp surface to the top of the truncated dome. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry.

5. In compliance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board, "PROWAG") Section R302.7.2 and California Code of Regulations (CCR 2007) Section 1127B.5.5 and Section 1133B.8.5, the Composite Tactile Warning Surface Tiles shall have a perimeter beveled edge with a maximum slope of 1:2 in order to minimize the potential for a pedestrian tripping.

6. Radius SA Tile:

   a. Radius SA Tile measures 24"x 33.25" and features reverse score lines on each 24" dimension for a 10', 15', and 20' radius condition. The Radius SA Tile out of the box measures 11' - 6" radius.

   b. Truncated domes feature proper dome alignment for a radius application. Radius SA Tile shall be cut to the appropriate configuration using the reverse score lines as a guide.

7. Follow Tactile Warning Surface Manufacturer's installation procedures.

8. Dimensions: SA Tiles shall be held within the following dimensions and tolerances:

    a. Length and Width:

        i. Rectangular SA Tile: 2.35” Dome Spacing

        ii. Radius SA Tile: 1.6” - 2.4” Dome Spacing

9. Fasteners: The Tactile Warning Surface Tile shall have minimum twelve (2’x3’ Tactile Warning Surface Tile) to twenty-four (3’x5’ Tactile Warning Surface Tile) countersunk fastening holes. Color matched, stainless steel 304, flat head drive anchor: ¼” diameter x 1 1/2” long.

10. Adhesive:

    a. Polyether Structural Adhesive/Sealant by Chem Link (M-1)

    b. Urethane Elastomeric Adhesive by Bostik (Hydroment Ultra-Set Advanced or Durabond D-818)

    c. Approved equal.

11. Sealants:

    a. Single Component Urethane Sealant:

        i. Sources: BASF NP1 by BASF Building Systems or Sikaflex 1A by Sika Corp.

        ii. Colors: Black, Limestone, Redwood Tan

    b. Polyether Structural Adhesive/Sealant by Chem Link (M-1)

        i. Colors: Black, Gray, Limestone, White

    c. Approved Equal

12. Available manufacturers, subject to compliance with these Specifications include, but are not limited to, the following:

    a. ADA Solutions Inc. of Chelmsford, MA (Phone: 800-372-0519, Fax: 978-262-9125, Web Site: www.adatile.com, Email: info@adatile.com, or owner approved equal.

F. EXECUTION

1. Preparation

a. Transmit submittals and deliverables required by this Section.

b. Furnish products as indicated.

c. Substrate Condition: Ensure substrate is in suitable condition, and in compliance with the Tactile Warning Surface manufacturer recommendations, to receive work of this Section. Prior to construction, refer any and all discrepancies to the Engineer for further action.

2. Installation

a. Contractor will not be allowed to install Tactile Warning Surface Tiles until all submittals have been reviewed and approved by the Engineer.

b. SA Tile shall be installed per manufacturer's instructions.

c. To the maximum extent possible, the SA Tiles shall be oriented such that the rows of in-line truncated domes are parallel with the direction of the ramp. When multiple SA Tiles regardless of size are used, the truncated domes shall be aligned between the tactile warning surface tiles and throughout the entire tactile warning surface installation.

d. In accordance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board): Sections 304 + 305), Tactile Warning Surface Tile shall be located relative to the curb line as shown within Sections 304+305 of the Guidelines.

e. Cutting of SA Tiles may be required to accommodate specific site conditions. All possible attempts shall be made to minimize cutting of the SA Tiles. Minimum acceptable width of the cut SA Tile shall be 9".

f. Environmental Conditions: Air and substrate temperatures must exceed 40 degrees for at least 8 daytime hours for a sound and proper installation. A "weed torch" may be used to boost the substrate temperature to expedite cure of adhesives and sealants.

g. Immediately prior to installing the SA Tiles, the concrete surfaces must be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound with a minimum four (4) day concrete cure period (unless otherwise directed by the SA Tile manufacturer) and that the surface is flat. As necessary, substrate may be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material although a broom or leaf blower is usually adequate for cleaning of the substrate.

h. Apply adhesive on the backside of the SA Tiles following the perimeter border and internal cross pattern established by the SA Tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the 2-inch width of the adhesive locator.

i. Set the SA Tile(s) true and square to the curb ramp areas as detailed in the Drawings. Allow 1/8" separation between successive SA Tiles for

expansion/contraction.

j. Drill holes true and straight to a depth of 2” by 1/4” using the recommended bit. As necessary, additional countersunk holes may be added to the SA Tile by using a 5-point ½” (82 degree) countersink to create the necessary holes.

k. Mechanically fasten SA Tile to the concrete substrate using a 32oz. to 48oz. hammer to set the composite sleeve anchors. Ensure that the fastener has been set to full depth, straight and true. Care should be taken when setting the fastener to avoid any advertent blows with the hammer to the SA Tile.

l. Following the installation of the SA Tile, the sealant system should be applied to the perimeter edge. Follow the Tactile Warning Surface manufacturer’s recommendations when applying the sealant in a cove type profile to blend and seal the SA Tile edge to the adjoining surfaces.

m. Do not allow foot traffic on installed SA Tile until the perimeter edge sealant has cured sufficiently to avoid tracking. If the SA Tile must be placed into immediate pedestrian service, apply baby powder to the sealant to minimize the possibility of tracking while the sealant cures. Foot imprints may appear in the fully cured sealant application

n. A Urethane Sealant such as Sikaflex 1a or BASF NP1 shall be applied to the edge treatment for a watertight Tactile Warning Surface Tile installation.

3. Cleaning and Protecting

a. Protect SA Tiles against damage during construction period to comply with SA Tiles manufacturer’s Specifications.

b. As necessary, while the Project remains under construction, protect SA Tiles against damage from rolling loads following installation by covering with plywood or hardwood.

c. If requested by the Director, clean SA Tiles not more than four (4) days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean SA Tile by method specified by Tactile Warning Surface Products manufacturer.

G. MEASURMENT AND PAYMENT

1. When the Surface Applied Tactile / Detectable Warning Surface Tiles pay item has been shown on the unit price proposal the final approved quantity for installation, measurement, and payment shall be determined by and subject to written approval of the Director and shall not be considered a material part of the work contemplated. Only locations specifically approved in writing by the Director during construction shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the final amount approved.

2. The unit price bid per square foot for Surface Applied Tactile / Detectable Warning

Surface Tiles shall include all cost to prepare, furnish, install, clean, protect and warrant the tiles in accordance with the specifications and the manufacturer's recommendations.

3. Surface Applied Tactile / Detectable Warning Surface Tiles shall be measured based on approved actual square footage of installed final product in-place.

4. Surface Applied Tactile / Detectable Warning Surface Tiles, not shown on the Construction Drawings but included in the unit price proposal, shall only be measured and paid for at location approved in writing by the Director for Special Bid Item No. CF-14 SURFACE APPLIED TACTILE / DETECTABLE WARNING SURFACE TILES.

SECTION 3.12 - CONCRETE PAVEMENT (8" THICK)

A. This item shall be governed by the requirements General Specification Item C601 except as modified here-in.

B. The final finish and texture shall be obtained using a broom, or other acceptable methods approved by the Director, in accordance with the latest edition of LaDOTD Louisiana Standard Specifications for Roads and Bridges Section 601.

C. At all locations proposed concrete pavement abuts existing concrete pavement that is to remain in place:

All concrete pavement within the designated area is to be removed and the subgrade area prepared to receive an eight (8") inch compacted crushed stone base course as shown on the typical roadway cross sections contained in the Construction Drawings. Compacted pumped sand covered by a geotextile fabric as required shall be used to bring subgrade to the required elevation. It shall also be used to replace unsuitable subgrade or to fill voids as directed.

No. 5 (#5) dowels 24" long at 12" on center shall be drilled and epoxy grouted into the existing concrete to allow for a proper tie-in.

Just prior to placing the new concrete, the vertical faces of the old concrete pavement are to be coated with an approved concrete epoxy per ASTM C 881 Type II. The new roadway pavement shall consist of four thousand (4,000) psi P.C.C.P. reinforced with 6 X 12 - W 7.5 X W 6.5 welded wire fabric, seventy-seven (77) pounds per one hundred (100) square feet. The new mesh shall be tied to the existing mesh where possible. Full width sheets are to be used and overlapped a minimum of 12", no partial or scrap pieces are to be used.

Wherever a joint (any type) or a part thereof falls within the affected area, the same shall be reestablished in kind and shall be incidental to the work included as concrete pavement.

After all roadway pavement repairs have been completed at a location, Bituminous Wearing Course material, if required, shall be placed in a continuous operation.

D. Unit Price bid shall include all preparation work and drilling and dowelling between existing and proposed pavement in accordance with the CONCRETE PAVEMENT REPAIR detail shown on City of New Orleans Department of Public Works Standard Drawing STD5, except epoxy grout shall also be required.

E. Measurement and payment for concrete pavement shall be made at the unit price bid per square yard for Bid Item No. C601 (54) REINFORCED CONCRETE PAVEMENT (8" THICK) when listed

on the Unit Price Form.

SECTION 3.13 - ROOT PRUNING, TREE PROTECTION, LANDSCAPING, AND SIDEWALK GRAVEL BED

Landscaping shall be in accordance with Section C719 of the General Specifications for Street Paving Department of Public Works 2015 Edition (Revised 11/05/2015), Department of Parks and Parkways Specifications Section 02480 *Landscape Protection During Construction,* 02481 *Installation of Plant Materials* and Section 02485 *Seeding and Sodding,* and amended as follows:

A. Root Pruning – All tree roots, of City owned trees, damaged during removal of curbs, sidewalks and driveways shall be root pruned. All tree roots damaged during any excavation operations; yard drains, collector lines, etc. shall be root pruned. Tunneling and boring shall be required when working within the critical root zone. Trenching is prohibited from this area. Air spading may be required in order to reveal the roots under circumstances where construction occurs within the critical root zone as directed by the Parks & Parkways Department (PPD) arborist.

1. Air spading requirement - When working within the critical root zone, air spading is required to expose the top seven to ten inches of the critical root zone to reveal root conflicts.
2. Aerial pruning requirement – When root pruning occurs, aerial pruning is required as per the direction of the Chief Urban Forester to mitigate damage by reducing the canopy in proportion to the root reduction.
3. Lac Balsam is prohibited from use to dress severed roots as a tree wound treatment.
4. A living root that will be buried below grade following pruning shall be treated with a rooting hormone approved by the Chief Urban Forester.
5. A root flare that must be cut and remain exposed shall be treated with a copper paste approved by the Chief Urban Forester.
6. All root pruning shall occur prior to excavation.
7. When circumstance require that roots be exposed for more than 48 hours, the roots shall be re-cut to living tissue, re-treated, buried and irrigated promptly.
8. Approved root cutting tools – Sharp instruments that make clean cuts, including hand saw, loppers, snips or hand pruners, chain saw or reciprocating saw with unpainted blades. Dull blades are prohibited. Trenchers and excavators are prohibited.

B. Fertilization – All trees' roots pruned due to construction shall be fertilized using a water-soluble fertilizer injected into the soil. The fertilization plan shall be based upon soil lab test reports furnished by the Contractor. The minimum acceptable N-P-K ratio shall be 30-5-5. The nutrient complex and ratio (gal. /sq. ft.) must be approved by the Urban Forester overseeing the project.

C. Mycorrhizal Fungal Inoculate – Treatment equal to or better than Mycor Tree Saver, Cambistat, and mulching shallbe applied to all construction damaged tree root zones per manufacturer's directions. Cost shall be included in the bid price for root pruning.

D. Termite Treatment – All tree roots pruned due to construction shall be treated for termites. A termiticide equal to or better than Premise manufactured by Bayer Corporation shall be used per manufacturer's directions. Cost shall be included in the bid price for root pruning.

E. Tree Permit Requirements – When necessary, the Contractor will be required to obtain a Tree Permit from the Department of Parks and Parkways.

1. Pre-Permit: In order to obtain a tree permit, the Contractor must satisfy the following conditions:

- The Contractor will ensure that the tree permit application will be made by a Louisiana Licensed Arborist certified by the International Society of Arboriculture
- A signed contract and a written detailed plan are required for issuance of the permit. The plan shall include the location of the proposed excavation, measurements of depth, length, and proximity to the main trunk of the tree, tools and methodology and exact time when work will be performed.

2. Post-Permit: Once PPD approves the tree permit, the Contractor must ensure the following on-going requirements are met:

- The Contractor will ensure that the Arborist is present on the construction site for all excavation and/or root pruning within protected areas of the tree.
- The Contractor will ensure that the Arborist visits the construction site for a minimum of one hour per day during active construction that is near to or involves trees.
- The Contractor will ensure that the Arborist will submit a weekly log of hours to the Chief Urban Forester with each invoice.

F. Canopy Pruning – When aerial pruning occurs, the resulting canopy shall be symmetrical and balanced as per the direction of the Chief Urban Forester.

G. Tree Replacement – Trees determined by the Chief Urban Forester to no longer be viable due to damage inflicted by the Contractor shall be replaced as directed by the Department of Parks and Parkways. At a minimum, trees shall be replaced on the basis of inch caliper per inch diameter lost. In the event that there is not sufficient space for planting, an alternative location may be designated off site, or the Contractor my donate a sum equal to the cost of replacement to the Department of Parks and Parkways Plant-A-Tree Trust Fund.

H. Tunneling and Boring Requirement – When work cannot be redirected away from the Critical Root Zone, tunneling and boring is required for the installation of lines. Trenching is prohibited within the critical root zone. Air spading may be required in order to reveal the roots under circumstances where construction occurs within the critical root zone as directed by the Chief Urban Forester.

I. Root Barrier – When work includes installation of root barrier, the barrier may not be constructed from wood.

J. Restricted Use Instruments – Permission must be obtained from the Chief Urban Forester in advance for use of any machines intended for trenching or mechanical digging. When stump grinders are employed, it must be followed by the use of an approved cutting instrument that will remove any torn or shredded tissue back to a clean, living cut.

F. These items shall be governed by the requirements of General Specification Item C719 except as modified here-in.

G. When Root Pruning has been shown on the unit price proposal the extent of root pruning allowable shall be determined by the Parks & Parkways Department (PPD) and require written approval by the Director. The Contractor shall consult directly with the PPD and provide a licensed arborist as

needed to perform root pruning. Only root pruning locations specifically approved by the Director during construction will be eligible for payment. Root Pruning shall not be considered a material part of the work contemplated, and only Root Pruning locations specifically approved in writing from the Director shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the number of items approved. Measurement and payment for Root Pruning shall be made for each approved location at the unit price bid per each tree for Special Bid Item No. CF-10 ROOT PRUNING. When Root Pruning has not been shown on the unit price proposal then any required Root Pruning shall be at no direct payment.

H. There shall be no direct payment for Root Trenching. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the engineer. All costs associated with Root Trenching shall be included in other major items of the proposal.

I. There shall be no direct payment for tree protection. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the Director. All costs associated with tree protection shall be included in other major items of the proposal. Tree protection shall be in place and approved by the PPD arborist prior to commencement of any work on site, including clearing and grubbing.

J. There shall be no direct payment for Sidewalk Gravel Bed as required for ramping over tree roots that interfere with placement of sidewalk. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the engineer. All costs associated with Gravel Bed and Filter Cloth over Tree Roots shall be included in other major items of the proposal.

K. There shall be no direct payment for Tree Trimming required to obtain needed clearance to perform the work. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the engineer. All costs associated with Tree Trimming shall be included in other major items of the proposal. There shall be no direct payment for air spading and tunnel and boring required to work within the critical root zone as directed by the PPD arborist.

SECTION 3.14 - GRANULAR MATERIAL AND FILL MATERIAL

A. Granular material shall be governed by the requirements of Standard Specification Item C723 except as modified here-in. The Contractor shall be responsible for importation and placement of granular fill material as required for placement of timber or concrete curb and structures. There shall be no direct payment for Granular Material or Batture Sand. Payment for Item C723 Granular Material item no. C723 (52) Batture Sand for Dressing, Granular Material for other Adjustments shall not be allowed. All costs for Batture Sand for Dressing, Granular Material for other Adjustments shall be included in the unit price bid for curbs, sidewalks, or driveways, roadways, or other major items of the proposal as applicable.

B. Fill material shall be required as fill, backfill or dressing material to ensure positive drainage within the limits of the area disturbed by construction, areas adjacent to sidewalk or driveway repairs, and between sidewalk repairs and the roadway to comply with the typical roadway cross sections shown on the plans or as directed. The fill material shall be suitable on-site excavated earth material,

subject to approval of the Director, or borrow material compliant with the requirements Standard Specification Item C723 Granular Material with subsection 1003.07 referencing 2006 Edition LaDOTD Standard Specifications for Roads and Bridges. Fill and borrow materials shall be free from waste, rubbish, large rocks, or other unsuitable or foreign material.

Suitable excavated material is to be used if available as fill or dressing to comply with the typical roadway cross sections shown on the plans. In the absence of a sufficient amount of suitable on-site material the Contractor shall provide and import borrow material. There shall be no direct payment for Fill Material. All costs associated with furnishing, hauling, storing, placement and compaction of material used as fill, backfill, or dressing in accordance with the typical sections or as required to ensure positive drainage shall be included in the unit price bid for curbs, sidewalks, or driveways, roadways or other major items of the proposal as applicable.

SECTION 3.15 - CATCH BASIN AND MANHOLE REPAIRS AND VERTICAL ADJUSTMENTS

A. This work consists of the re placement of co mponents and repair or vertical adjustment of vertical catch basins, mountable catch basins, drop inlet catch basins, and drain manholes as described and in accordance with the details, dimensions, and grades shown on plans or as directed by the Director. These items shall be governed by the requirements of the latest addition of standard Sewerage and Water Board New Orleans (SWBNO) drawings for the type of structure described and Standard Specification Item C702 except as modified herein. When Catch Basin and Manhole Repairs and Adjustments pay items have been shown on the unit price proposal the final approved quantity for installation, measurement, and payment shall be determined by and subject to written approval of the Director and shall not be considered a material part of the work contemplated. Only locations specifically approved in writing by the Director during construction shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the number of items approved.

B. Measurement and payment for Catch Basin and Manhole Repairs and Vertical Adjustments items shall be made at the unit prices bid under Special Bid Item Numbers CF-301 through CF-378 for Vertical Catch Basin, Drop Inlet Catch Basin, Mountable Catch Basin, and Drain Manhole in conjunction with Cover or Grate; Frame; Front Grate; and Repair or Vertical Adjustment of Single or Double Basins or Manhole Reusing Existing Metal Castings or Repair or Vertical Adjustment of Single or Double Basins or Manhole Brick Work Only, for each type of Special Bid Item. Measurement shall be per each or per foot height, as specified for each type of repair or vertical adjustment item.

C. Unit prices bid for Catch Basin and Manhole Repairs and Vertical Adjustments items shall include any related preparation and finishing work, all excavation, soil and debris removal and proper disposal, sheeting, shoring, bracing, bedding material, granular backfill, backfill and compaction, cement, mortar, sealants, fa bric, shagging, materi als, castings, transitions to match adjacent improvements, protection and restoration of adjacent areas, labor and workmanship required to provide each individual repair or adjustment as described. All required removal and replacement of adjacent improvements and any damage caused by the contractor to the bordering roadway, adjacent non-paved area, sidewalk, driveway, ramp, curb, existing structure or components, or other existing assets shall be considered incidental to the unit price paid for the Catch Basin and Manhole Repairs and Adjustments items and the contractor shall be required to replace improvements or repair the damages to comply with SWBNO and DPW approved standards at no direct pay. Each Catch Basin and Manhole Repairs and Adjustments pay item may be required individually, or in combination with other Catch

Basin and Manhole Repairs and Adjustments pay items, but the unit price bid shall prevail for each item individually.

D. Vertical Catch Basin items - At no time is a vertical catch basin is to be installed in a driveway, in the event that an existing vertical catch basin is located in the face of a drive apron within project limits and the scope of adjacent work includes full depth restoration, the catch basin will need to be converted to a mountable catch basin conforming SWBNO Std. Drawing No. D-3431-A. Curb inlet type vertical catch basins shall conform to the requirements shown on SWBNO Standard Drawings D-873 and D-873A for single or double vertical catch basins, except:

CF-301 Vertical Catch Basin Cover

Work to provide and install Catch Basin Cover shall include furnishing and installing a cover on the catch basin existing frame. Catch Basins shall receive new covers made of fiberglass material sized to properly to fit flush in the existing metal frame. Fiberglass covers for Catch Basins shall be Grate Glass "M" Solid Composite Plate by Road Masters International or approved equal and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing cover as identified by the Director, cleaning the existing frame, and to fit/retrofit a new cover in the existing frame, measured per each Vertical Catch Basin Cover.

CF-302 Vertical Catch Basin Frame

Catch Basin frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of catch basin repaired. This work will include removing the damaged/missing cover and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged cover or in conjunction with a new cover pay item(s) as directed by the Director. Work and materials for Catch Basin Frame includes the removal of the existing cover and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the basin for the new frame installation, measured per each Vertical Catch Basin Frame. If no structural repair or vertical adjustment work is required, then Vertical Catch Basin Frame placement shall include any incidental brick and mortar work required for the installation of the frame. If structural repairs or vertical adjustment are required, then the Vertical Catch Basin Frame pay item may be used in conjunction with other pay item(s) for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-311 Vertical Catch Basin Front Grate No. 1,

CF-312 Vertical Catch Basin Front Grate No. 2, and

CF-313 Vertical Catch Basin Front Grate No. 3

No. 1, 2, or 3 Catch Basin Front Grate shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing grate and to fit/retrofit a new grate to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged frame and cover, or in conjunction with a new frame and/or cover pay item(s) as directed by the Director. Work and materials for Catch Basin Front Grate includes the removal and reinstallation of the existing cover and frame if necessary, and removal of the existing front grate and furnishing and installing a new front grate including and all components and any related preparation or finishing work to the basin for the new grate installation, measured per each Vertical Catch Basin Front Grate No. 1, 2, or 3. If no structural repair or vertical adjustment work is required then Catch Basin Front Grate placement shall include any incidental brick and mortar work required for the installation of the grate. If structural repairs or vertical adjustments are required, then the Catch Basin Front Grate pay item may be used in conjunction with other pay item for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-315 Single Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal

Castings, and

CF-316D Double Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of catch basin reusing existing metal castings shall consist of: remove and salvage the existing frame and cover, or frame, cover and grate, remove all of the existing brick and mortar structure to the lowest elevation of brick area requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, and clean and reinstall the salvaged frame and cover, or frame, cover and grate, measured per each.

CF-317 Single Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only, and

CF-318D Double Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only

Work to repair or provide brick work only for vertical adjustment of Vertical Catch Basins shall consist of removing all or a portion of the existing brick and mortar structure down to the lowest brick course elevation requiring repair and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure, measured per each. Vertical Catch Basin Repair or vertical Adjustment Brick Work only shall be used in conjunction with a pay item for installing a new frame and/or a pay item for installing a new front grate.

E. Drop Inlet Catch Basin items - Drop inlet type Catch basins shall conform to the requirements shown on SWBNO Standard Drawings D-3264 for Standard 24"x30" Clear Opening Drop Inlet Catch Basins, except:

CF-331 Drop Inlet Catch Basin Grate

Work to provide and install Drop Inlet Catch Basin Grate shall include furnishing and installing a grate on the drop inlet catch basin existing frame. Drop Inlet Catch Basins shall receive new grates made of fiberglass material sized to properly to fit flush in the existing metal frame. Fiberglass grate for Catch Basins shall be Grate Glass "M" Mesh Composite Drain by Road Masters International or approved equal and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing grate as identified by the Director, cleaning the existing frame, and to fit/retrofit a new grate in the existing frame, measured per each Drop Inlet Catch Basin Grate.

CF-332 Drop Inlet Catch Basin Frame

Drop Inlet Catch Basin frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of catch basin repaired. This work will include removing the damaged/missing grate and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged grate, or in conjunction with a grate pay item(s) as directed by the Director. Work and materials for Drop Inlet Catch Basin Frame includes the removal of the existing grate and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the basin for the new frame installation, measured per each Drop Inlet Catch Basin Frame. If no structural repair or vertical adjustment work is required, then Drop Inlet Catch Basin Frame placement shall include any incidental brick and mortar work required for the installation of the frame. If structural repairs or vertical adjustments are required, then the Drop Inlet Catch Basin Frame pay item may be used in conjunction with other pay item(s) for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-335 Drop Inlet Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of drop inlet catch basin reusing existing metal castings shall consist of: remove and salvage the existing frame or frame and grate, remove all of the existing brick and mortar structure to the lowest elevation of brick area requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, and clean and reinstall the salvaged frame or frame and grate, measured per each.

CF-336 Drop Inlet Catch Basin Repair or Vertical Adjustment Brick Work Only

Work to repair or provide brick work only for vertical adjustment of Drop Inlet Catch Basins shall consist of removing all or a portion of the existing brick and mortar structure down to the lowest brick course elevation requiring repair and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure. Drop Inlet Catch Basin Repair or vertical Adjustment Brick Work Only, measured per each, shall be used in conjunction with a pay item for installing a new drop inlet frame.

F. Mountable Catch Basin items - Mountable catch basin shall conform to the requirements shown on SWBNO Standard Drawings D-3431-A Standard Single Mountable Catch Basin and D-3431-B Standard Double Mountable Catch Basin, except:

CF-351 Mountable Catch Basin Grate

Work to provide and install Mountable Catch Basin Grate shall include furnishing and installing a grate in the mountable catch basin existing frame. Mountable Catch Basins shall receive new grates made of fiberglass material sized to properly to fit flush in the existing metal frame. Fiberglass grates for Catch Basins shall be Grate Glass "M" Mesh Composite Plate by Road Masters International or approved equal and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing grate as identified by the Director, cleaning the existing frame, and to fit/retrofit a new grate in the existing frame, measured per each Mountable Catch Basin Grate.

CF-352 Single or Double Mountable Catch Basin Frame

Mountable Catch Basin frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of catch basin repaired. This work will include removing the damaged/missing grate and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and curb, transition to match the adjacent roadway and curb, and cleaning and reinstallation of the existing salvaged grate, or in conjunction with a grate pay item(s) as directed by the Director. On rigid pavement streets, after installation of mountable catch basin frame an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item. Work and materials for Single or Double Mountable Catch Basin Frame includes the removal of the existing grate and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the basin for the new frame installation, measured per each Single or Double Mountable Catch Basin Frame. If no structural repair or vertical adjustment work is required, then Mountable Catch Basin Frame placement shall include any incidental brick and mortar work required for the installation of the frame. If structural repairs or vertical adjustments are required, then the Single Mountable Catch Basin Frame or Double Mountable Catch Basin Frame pay item may be used in conjunction with other pay item(s) for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-355 Single Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, and

CF-356D Double Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of single or double mountable catch basin reusing existing metal castings shall consist of: remove and salvage the existing frame(s) or frame(s) and grate(s), remove all of the existing brick and mortar structure to the lowest elevation of brick area requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, and clean and reinstall the salvaged frame or frame and grate, measured per each. On rigid pavement streets, after adjustment of the mountable catch basin an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings STD9 and included in the unit price bid for this item.

CF-357 Single Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only, and
CF-358 Double Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only

Work to repair or provide brick work only for vertical adjustment of Single or Double Mountable Catch Basins shall consist of removing all or a portion of the existing brick and mortar structure down to the lowest brick course elevation requiring repair and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure. Single or Double Mountable Catch Basin Repair or vertical Adjustment Brick Work Only, measured per each, shall be used in conjunction with a pay item for installing a new mountable catch basin frame.

G. Manhole items - Manhole items shall conform to the requirements shown on SWBNO Standard Drawings D-870 Standard Drain Brick Manhole and D-871 Drain Manhole Frame & Cover or 3143-E-1 Sewer and Water Manhole Castings to match the type utility repaired. Manholes that are approved as described here-in, shall be adjusted to match with the level of the new surface using brick and mortar. Only City of New Orleans Department of Public Works and Sewerage and Water Board manholes and structures shall be adjusted to grade under this contract. Other manholes and structures shall be adjusted to grade by the respective utility company.

CF-371 Manhole Cover

Work to provide and install Manhole Covers shall include furnishing and installing a cover on the manhole existing frame. The new manhole cover shall be sized and installed properly to fit flush in the existing metal frame and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing cover as identified by the Director, cleaning the existing frame, and to fit/retrofit a new cover to the existing frame, measured per each Manhole Cover.

CF-372 Manhole Frame

Manhole frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of manhole repaired. This work will include removing the damaged/missing cover and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged grate, or in conjunction with a grate pay item(s) as directed by the Director. Work and materials for Manhole Frame includes the removal of the existing cover and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the manhole for the new frame installation, measured per each Manhole Frame. On rigid pavement streets, after installation of the frame an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

Manhole Frame placement shall include any brick-and-mortar work required for the adjustment of the frame to the existing or new road pavement grade, inclusive of the requirements of item CF-377 at no additional compensation. The Director and the S&WB will have authority in determining whether structural repairs or vertical adjustments are required.

CF-375, Manhole Repair or Vertical Adjustment up to 6” Reusing Existing Metal Castings

Work to repair or provide a vertical adjustment of manholes up to 6” reusing existing metal castings shall consist of: remove and salvage the existing frame or frame and cover, excavation, remove all of the existing brick and mortar structure requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, backfill, and clean and reinstall the salvaged frame or frame and cover, to repair or provide a vertical increase or decrease elevation adjustment to grade up to six inches (6”), measured per each (location). On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public

Works Standard Drawings and included in the unit price bid for this item.

CF-376, Manhole Repair or Vertical Adjustment over 6" Reusing Existing Metal Castings
Work to repair or provide vertical adjustment of manholes over 6" reusing existing metal castings shall consist of: remove and salvage the existing frame or frame and cover, excavation, remove all of the existing brick and mortar structure requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, backfill, and clean and reinstall the salvaged frame or frame and cover, to repair or provide a vertical increase or decrease elevation adjustment to grade over six inches (6"),measured per foot height, or any fraction of a foot to the nearest 0.1'. On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

CF-377, Manhole Repair or Vertical Adjustment up to 6" Brick Work Only
Work to repair or provide brick work only for vertical adjustment up to 6" for manholes shall consist of excavation, removing all or a portion of the existing brick and mortar structure requiring repair or adjustment, and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, and backfill to repair or provide a vertical increase or decrease elevation adjustment to grade up to six inches (6"). Manhole Repair or Vertical Adjustment up to 6" Brick Work Only, measured per each (location). This item shall be used in conjunction with the appropriate pay items for installing a new manhole frame and cover. On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

CF-378, Manhole Repair or Vertical Adjustment over 6" Brick Work Only
Work to repair or provide brick work only for vertical adjustment over 6" for manholes shall consist of excavation, removing all or a portion of the existing brick and mortar structure requiring repair, and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, and backfill. Manhole Repair or Vertical Adjustment over 6" Brick Work Only, to repair or provide a vertical increase or decrease elevation adjustment to grade over six inches (6"), shall be measured per foot height or any fraction of a foot to the nearest 0.1'. This item shall be used in conjunction with the appropriate pay items for installing a new manhole frame and cover. On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

H. Measurement and payment of Special Bid Items for Catch Basin and Manhole Repairs and Vertical Adjustment:

ITEM NO. PAY ITEM PAY UNIT

CF-301, Vertical Catch Basin Cover, per each*
CF-302, Vertical Catch Basin Frame, per each*
CF-311, Vertical Catch Basin Front Grate No. 1, per each*
CF-312, Vertical Catch Basin Front Grate No. 2, per each*
CF-313, Vertical Catch Basin Front Grate No. 3, per each*
CF-315, Single Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-316D, Double Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal

Castings, per each
CF-317, Single Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-318D, Double Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-331, Drop Inlet Catch Basin Grate, per each
CF-332, Drop Inlet Catch Basin Frame, per each
CF-335, Drop Inlet Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-336, Drop Inlet Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-351, Mountable Catch Basin Grate, per each*
CF-352, Single or Double Mountable Catch Basin Frame, per each
CF-355, Single Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-356D, Double Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-357, Single Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-358D, Double Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-371, Manhole Cover, per each
CF-372, Manhole Frame, per each
CF-375, Manhole Repair or Vertical Adjustment up to 6" Reusing Existing Metal Castings, per each
CF-376, Manhole Repair or Vertical Adjustment over 6" Reusing Existing Metal Castings, per foot height
CF-377, Manhole Repair or Vertical Adjustment up to 6" Brick Work Only, per each
CF-378, Manhole Repair or Vertical Adjustment over 6" Brick Work Only, per foot height

*Note, double catch basins requiring two covers, frames, or grates each shall be paid for separately.

SECTION 3.16 - DRAIN LINE REPAIRS / REPLACEMENT

3.16.01 GENERAL

A. These items shall be governed by the requirements of the "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, latest edition, Section C701 Storm Drains shall be the General Conditions for this Contract and shall govern except as modified here-in. All workmanship, material and tests shall conform to Section E of the General Specifications of the S&WB and the S&WB Standard Drawing No. 7260-S or 7260-D for the type of pipe material installed. When Culverts and Storm Drains replacement or repair items have been shown on the unit price proposal the final approved quantity for installation, measurement, and payment shall be determined by and subject to written approval of the Director and shall not be considered a material part of the work contemplated. Only locations specifically approved in writing by the Director before or during construction shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the bid quantity for approved work.

B. The Contractor shall conduct his operations in such manner as to cause the least possible interruption to service. The Contractor shall maintain drainage and driveway access at the end of the day's pipe laying. Open trenches shall only be as long as the length of pipe to be laid that day. At the end of the day's work, the end of the last length of pipe laid shall be blanked with a cover to prevent intrusion of trash. The Contractor shall provide bracing at power poles as per instructions from the

utility owner where the trench excavation is adjacent to the poles (no direct pay). The Contractor shall exercise caution when placing and compacting backfill and bedding material as not to damage the pipe or cause joints to move out of place. The Contractor shall replace, at his own expense, any pipe, fittings, and other materials in existing installation which are damaged due to his operations. All pipe installations shall be inspected by the engineer's field representative before backfilling operations commence.

C. New pipe between two existing structures an d pipe used for point repairs shall match the alignment and elevations of the existing pipe to be replaced unless otherwise shown in the plans or directed by the Director or the S&WB.

3.16.02 REPLACEMENT

A Pipe used for the replacement of the entire length of existing drain lines between manholes or structures may be either new reinforced concrete pipe or solid wall polyvinyl chloride (PVC) pipe.

B. New Class IV Reinforced Concrete Pipe shall be required when the cover over the pipe within the roadway between 2.0-3.0 ft. The installation of reinforced concrete pipe shall be installed as shown on SWBNO Standard Drawing No. D-3809, D-3810, D-3933 or D-3934.

C. The installation of solid wall polyvinyl chloride (PVC) pipe shall only be installed when the cover over the pipe within the roadway is greater than 3 ft. PVC pipe used for replacement up to 30" diameter shall be installed as shown on SWBNO Standard Drawing No. 4697-E5-A. PVC pipe connecting to brick manholes shall be installed as shown on SWBNO Standard Drawing No. 6178-B-6. Solid wall PVC pipe less than 18-inches in diameter, unless otherwis e noted, shall be SDR 26 (PS115) Polyvinyl Chloride (PVC) pipe manufactured in accordance with ASTM D3034, latest edition, and shall be U.L. listed. Solid wall PVC pipe sizes 18-inches through 30-inches in diameter, unless otherwise noted, shall be SDR 26 (PS115) Polyvinyl Chloride (PVC) pipe manufactured in accordance with ASTM F679, latest edition, and shall be U.L. listed. The elastomeric gaskets and retainer rings shall be installed in accordance with ASTM D3212 and F477, or per latest Sewerage & Water Board requirements. The fittings for solid wall PVC pipe shall be SDR 35 and shall have the same inside diameter as the solid wall PVC.

3.16.03 DRAIN LINE REPAIRS

A. Pipe used for Point Repairs of Existing Drain Lines may be new reinforced concrete pipe conforming to Section E of the S&WB General Specifications or solid wall polyvinyl chloride (PVC) pipe, if approved by the Department of Public Works Director

B. New Class IV Reinforced Concrete Pipe shall be required when the cover over the pipe within the roadway is between 2.0-3.0 ft.

C. The installation of solid wall polyvinyl chloride (PVC) pipe shall only be installed when the cover over the pipe within the roadway is greater than 3 ft. PVC pipe used for drain point repairs up to 30" diameter shall be installed as shown on SWBNO Standard Drawing No. 4697-E5-A. PVC pipe connecting to brick manholes shall be installed as shown on SWBNO Standard Drawing No. 6178-B-6. Solid wall PVC pipe less than 18-inches in diameter, unless otherwis e noted, shall be SDR 26 (PS115) Polyvinyl Chloride (PVC) pipe manufactured in accordance with ASTM D3034, latest edition,

and shall be U.L. listed. Solid wall PVC pipe sizes 18-inches through 30-inches in diameter, unless otherwise noted, shall be PS115 Polyvinyl Chloride (PVC) pipe manufactured in accordance with ASTM F679, latest edition, and shall be U.L. listed. The elastomeric gaskets and retainer rings shall be installed in accordance with ASTM D3212 and F477, or per latest Sewerage & Water Board requirements. The fittings for solid wall PVC pipe shall be SDR 35 and shall have the same inside diameter as the solid wall PVC.

D. PVC corrugated pipe with smooth interior shall conform to the requirements of ASTM Designation F949. Pipe and fittings shall be homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. Pipe shall be manufactured to 46 psi stiffness when tested in accordance with ASTM Test Method D2412. There shall be no evidence of splitting, cracking, or breaking when the pipe is tested per ASTM Test Method D2412 in accordance with ASTM F949 Section 7.5 and ASTM F794 Section 8.5. The pipe shall be made of PVC compound having a minimum cell classification of 12454 as defined in ASTM Specification D1784. All fittings for PVC corrugated pipe with smooth interior shall conform to ASTM F949 Section 5.2.3 or F794 Section 7.2.4.

3.16.04 PAYMENT

A. Payment for drain line replacement or repairs shall conform to the "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, latest edition, Section C701 Culverts and Storm Drains, C701.08 PAYMENT when listed on the Unit Price Form proposal.

B. Payment for furnishing and installing SDR 26 (PS115) Polyvinyl Chloride (PVC) pipe for replacement shall be made at the unit price bid per linear foot, including all main line fittings (bends, wyes, tees, etc.), of the types and sizes specified for Special Bid Item No. CF-C701(53) PVC (SIZE) when listed on the Unit Price Form.

SECTION 3.17 - TIMBER CURB

A. This item shall be governed by the requirements of Standard Specification Item C707 (64) Timber Curb except as modified here-in. The unit price bid per horizontal Linear Foot of finished timber curb for this item shall include removal and proper disposal of existing timber curb and posts, grading, furnishing, and installing all required timber posts and timber curb, and final grading.

B. Measurement and payment for Timber Curb, including posts, shall be made at the contract unit price per Linear Foot (LF) of timber curb under Special Bid Item No. CF - 15 TIMBER CURB when listed on the Unit Price Form.

SECTION 3.18 - TYPE-A DEAD END INSTALLATION

A. The Dead-End Installation shall be governed by the requirements of 2006 Edition LADOTD Standard Specifications for Roads and Bridges section 729.06 except as modified here-in. The Contractor shall be responsible for providing all materials including guard rail, u-channel signposts and required signs and construction of guard rail and installation of signs as required by standard plan HS-03. Payment for Item CF-16, when listed on the Unit Price Form, shall include all material, equipment, and labor necessary to complete installation including guard rail as noted.

B. Dead end road installations shall be as specified and located as shown on the project plans. Posts shall be vertical. Guard rail shall be constructed in accordance with 2006 Edition LaDOTD Standard Specifications for Roads and Bridges section 704. Contractor shall re-grade and ensure positive drainage within the limits of the area disturbed by construction. Any fill material shall be placed at no direct pay and shall meet all requirements for fill material of this project. Fill material shall be suitable on-site excavated earth material, subject to approval of the Director, or borrow material compliant with the requirements Standard Specification Item C723 Granular Material with subsection 1003.07 referencing 2006 Edition LaDOTD Standard Specifications for Roads and Bridges. Fill and borrow materials shall be free from waste, rubbish, large rocks, or other unsuitable or foreign material.

SECTION 3.19 - CONCRETE BARRIER OR MOUNTABLE CURB WITH LAYING STRIP

A. This item shall be governed by the requirements of Standard Specification Section C707 except as modified here-in.

B. See details for Concrete Barrier Curb and Laying Strip and for Concrete Mountable Curb and Laying Strip on the Construction Drawings Typical Roadway and Section Details sheets for additional concrete strip required to be placed between the concrete pavement and concrete curb for construction of composite roadways.

C. There shall be no direct measurement and payment for the laying strip portion of the concrete barrier curb or concrete mountable curb. All associated costs shall be included in other major items of the proposal.

SECTION 3.20 – PROJECT SIGN

A. This item shall be governed by the requirements of Standard Specification Section C729 except as modified here-in.

B. The CONTRACTOR shall provide one project identification sign in accordance with the Contract Documents at no direct pay.

PROJECT SIGN CONSTRUCTION

B. The sign shall be constructed of 1/2-inch exterior plywood with 4-inch by 4-inch supports and 2-inch by 4-inch cross bracing.

C. The sign face shall be 4-feet vertical by 8-feet horizontal.

C. The sign will be printed in color on 10-mil Coroplast®.

SIGN CONTENT

A. The sign shall include the following information and graphic elements:

1) The City of New Orleans Fleur De Lis Logo at Left as shown on the Sign Example.

2) New Day New Orleans at top center as shown on the Sign Example.
3) The project name or title underneath New Day New Orleans as shown on the Sign Example.
4) Underneath project name: City Agency: Department of Public Works as shown on the Sign Example.
5) Underneath City Agency: Project Engineer: (company name) as shown on the Sign Template.
6) Underneath Project Engineer: Contractor (company name) as shown on the Sign Template.
7) Underneath Contractor: Track our progress at nola.gov, as shown on the Sign Example.
8) The Mayor's name underneath City of New Orleans at right as shown on the Sign Example. Mayor Mitchell J. Landrieu
9) Underneath the Mayors name, the Councilmembers at Large as shown on the Sign Example.
10) Underneath the Councilmembers at Large, Council District members as shown on the Sign Example.

B. The DPW PM shall provide the editable sign file (in full-size PDF format) to the Contractor at the Pre-Construction meeting. Sign template provided may require editing to reflect the Project Name and General Contractor. Contractor shall verify content of template and submit PROOF to the Director for approval of Copy & Placement.

SIGN LOCATION, MAINTENANCE, AND REMOVAL

A. The project sign shall be located on the site as directed by the Director.

B. The sign shall be set 4 feet above the ground, measured from grade to the lower edge of the plywood sheet.

C. The CONTRACTOR shall maintain the sign in excellent condition throughout the duration of the project.

D. The CONTRACTOR shall remove the project sign and restore the area when directed by the owner upon preparation of the Notice of Completion.

SIGN EXAMPLE

SECTION 3.21 – <u>SEWER REHABILITATION</u>

A. This section identifies special pay items applicable to the sewer rehabilitation work outlined in section 1.21 and 2.08 through 2.12 above.

B. Sanitary sewer rehabilitation including adjustment to sewer manhole covers shall be performed, measured, and paid for in accordance with the standard DPW specifications section C702 or the Special Provisions (this section) paragraph 3.15 above, where the Special Provisions supersede the standard specifications.

C. Sanitary sewer rehabilitation including replacement of sanitary sewer manhole covers shall be performed, measured, and paid for in accordance with the standard DPW specifications section C742 or the Special Provisions (this section) paragraph 3.15 above, where the Special Provisions supersede the standard specifications.

D. Sanitary sewer rehabilitation including the replacement of main line sanitary sewers, replacement of sanitary sewer lateral service connections and the lining of main line sanitary sewers, including the reinstatement of lateral service connections, shall be performed, measured, and paid for in accordance with the standard DPW specifications section C742.

E. Sewer Line Replacement by Pipe Bursting. In cases where main line sanitary sewer lines cannot be fully replaced by conventional excavation (due to trees or obstructions), the S&WB may direct the contractor to perform sanitary sewer line replacement by means of pipe bursting. Replacement of the existing sewer house connections shall be performed in accordance with DPW standard specifications section C742.03.

1. CSS742(X1), Install Sewer Mains by Pipe Bursting (Size). Payment shall be made at the contract unit price per linear foot of the size specified for work including replacement of existing sewer main lines by pipe bursting as approved by the S&WB. Contractor shall include all labor materials and equipment to replace the main line sewer for the entire length from manhole to manhole. This work will be measured and paid for by the linear foot in the same

manner as pay item C742(51) but without any provisions for depth.

2. CSS742(X2), Cut Pipe to Replace Existing Sewer House Connection from New Main to Back of Curb. Payment shall be made at the contract unit price per each for work including excavation and reinstatement of service connections disturbed from Install Sewer Mainsby Pipe Bursting and the replacement of the service connection from the new main line to the back of the curb. Contractor shall include all labor materials and equipment to excavate, locate and expose each fitting, install a new fusible saddle, or tap for the appropriately sized main line sewer pipe, replace the sewer service lateral to the back of curb, including all required fittings and adjustments, and backfill and compact the excavation. With exception to the fusible saddle fitting, the work shall be performed as per DPW standard specification C742.03 and 742.05. This work will be measured and paid for by each in the same manner as pay item C742(60).

F. Sewer Line Point Repairs, Up to Twelve Feet. For the sewer rehabilitation work in this contract, sewer line point repairs shall be performed as specified in the DPW standard specification section C742.03 except that the length of the point repairs shall be twelve feet (12-ft).

1. CSS742(X3), Sewer Point Repair up to Twelve Feet (Size & Depth). Payment shall be made at the contract unit price per each of the size and depth specified for work including excavation, foundation lumber, bedding, drainage fabric, backfill, complete shoring, pumping as necessary and tie-ins. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

2. CSS742(X4), Sewer Point Repair beyond Twelve Feet (Size & Depth). Payment shall be made at the contract unit price per linear foot of the size and depth specified for work to including excavation, foundation lumber, bedding, drainage fabric, backfill, complete shoring, pumping as necessary and tie-ins. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

G. Find and Fix Lines. In some contracts the sewer rehabilitation work may include “Find and Fix” lines. These are line segments that were not locatable during inspection. The Contractor is responsible to locate the manholes for these line segments, perform sewer line cleaning and CCTV inspection. The manholes should then be secured to protect the safety of the public until the scope of rehabilitation has been determined. Manholes requiring vertical adjustment will be directed in the field and paid for under the respective bid unit item (Section 3.16.G above or Section C702). There is no direct payment for the coordination, locating or exposing of the manholes for lines identified as “Find and Fix” 2.09.E.

1. CSS742(X5), Sewer Main Line Cleaning (Size). Payment shall be made at the contract unit price per linear foot of the size specified for work including the cleaning of main line sewers in accordance with paragraph 2.09.E above in preparation for CCTV Inspection. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

2. CSS742(X6), Sewer Main Line CCTV Inspection (Size). Payment shall be made at the contract unit price per linear foot of the size specified for work including the CCTV inspection of main line sewers in accordance with paragraph 2.09.E above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

H. Sewer Service Lateral CIPP Lining. In some cases, sanitary sewer lateral house connections will require replacement but not be accessible due to oak trees, construction, or other obstructions. In

these cases, with authorization from the S&WB, the Contractor will perform rehabilitation on these house connections by means of lateral CIPP lining from the sanitary sewer main line. Work shall be performed in accordance with paragraph 2.09.D above.

1. CSS742(X7), Sewer Service Lateral CIPP Lining. Payment shall be made at the contract unit price per linear foot of lateral service house connection including cleaning, CCTV inspection prior to the lining, the CIPP lining and the CCTV inspection upon completion of the lining in accordance with paragraph 2.09.D above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

I. Sewer Manhole Lining Rehabilitation. The sewer rehabilitation included in this contract will include the rehabilitation of manholes via a cementitious grout liner for either a partial depth or full depth. This work shall be performed in accordance with paragraph 2.09.F above.

1. CSS742(X8), Manhole Rehabilitation, Cementitious Liner, Partial Depth (2-feet). Payment shall be made at the contract unit price per each manhole and include the cleaning and cementitious liner application in the top 2 feet of the manhole in accordance with paragraph 2.09.F above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

2. CSS742(X9), Manhole Rehabilitation, Cementitious Liner, Full Depth. Payment shall be made at the contract unit price per vertical foot height of interior manhole walls from the top of bench to the underside of the frame and include the cleaning and cementitious liner application for the full height of the manhole in accordance with paragraph 2.09.F above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

J. Measurement and payment of Special Bid Items for Sewer Rehabilitation include:

ITEM NO.	PAY ITEM	PAY UNIT
CSS742(X1)	Install Sewer Mains by Pipe Bursting (Size)	Linear Foot
CSS742(X2)	Fuse Service Tee and Drill Pipe to Replace Existing Sewer House Connection from New Main to Back of Curb	Each
CSS742(X3)	Sewer Point Repair up to Twelve Feet (Size & Depth)	Each
CSS742(X4)	Sewer Point Repair beyond Twelve Feet (Size & Depth)	Linear Foot
CSS742(X5)	Sewer Main Line Cleaning (Size)	Linear Foot
CSS742(X6)	Sewer Main Line CCTV Inspection (Size)	Linear Foot
CSS742(X7)	Sewer Service Lateral Lining (6” CIPP)	Linear Foot
CSS742(X8)	Manhole Rehabilitation, Cementitious Liner, Partial Depth (2-feet)	Each
CSS742(X9)	Manhole Rehabilitation, Cementitious Liner, Full Depth	Foot Height
CSS742(X10)	Removal of Cast Iron Flush Valve Apparatus from Sewer Manhole	Each
CSS742(X11)	Removal of water service line from sewer manhole	Each

CSS742(X12)	Locate and disconnect flush valve water service line from water main	Each

K. Measurement and payment of for flush valve removal items CSS742(X10), CSS742(X11) and CSS742(X12) are specified in Section 2.11 above each item will be measured as a quantity of no more than one each per manhole containing a flush valve apparatus and/or water service connection.

SECTION 3.22 – WATER POINT REPAIRS

A. This section identifies special pay items applicable to the water point repairs work outlined in sections 1.22 and 2.13 above.

B. Payment for the accepted quantities will be made at the contract unit price.

C. Payment for furnishing and installing water point repairs shall be made at the contract unit price including main line point repair installed as a complete system, including tie-ins, excavation, removal of existing pipe, pumping as necessary to prevent contaminating the existing system, bedding, complete shoring, backfilling material, hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.

D. Payment for furnishing and installing 1-inch through 2-inch Polyethylene Pipe for water house connections (LSL replacement) shall be made at the contract unit price per each, including excavation, backfilling, service saddles, corporation cock and removal of existi ng pipe and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for tie-ins to the main or meter. LSLs replaced in sequence and conjunction with new water main installation after tie-in will be paid at the contract unit price per each for C741(55)(A), (B), or (C).

E. All other items of work necessary to the performance of the project, for which no specific unit price and/or lump sum pay item is established, shall be considered and designated part of the construction, and the existing pay items shall be full compensation. Items including but not limited to, trench safety, traffic control, contract closeout, shop drawings, submittals, and office support shall be merged into the prices bid.

F. There will be no direct payment for temporary water mains, temporary water service connections, and any related work including temporary tie-ins, removal of temporary work after installation of permanent work, and other incidentals. The cost of all work shall be included in the water point repair unit bid prices.

G. Measurement and payment of Special Bid Items for Water Point Repairs include:

ITEM NO.	PAY ITEM	PAY UNIT
CSW741-01	Repair Water Main with Full Circle Clamp (Pipe Size 4” – 8”)	Each
CSW741-02	Repair Water Main with Full Circle Clamp (Pipe Size 12” – 16”)	Each
CSW741-03	Repair Water Main with Bell Joint Clamp (Pipe Size 4” – 12”)	Each
CSW741-04	Repair Water Main with Bell Joint Clamp (Pipe Size 16” – 24”)	Each
CSW741-05	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 4” – 12”)	Each

CSW741-06	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 16” – 24”)	Each
CSW741-07	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 4” – 12”)	LF
CSW741-08	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 16” – 24”)	LF
CSW741-09	Replace 5/8” to 1” Lead Service Line Water House Connection with 1” Polyethylene Water House Connection (From Main to Meter)	
CSW741-10	Replace 1.5” Lead Service Line Water House Connection (From Main to Meter)	
CSW741-11	Replace 2” Lead Service Line Water House Connection (From Main to Meter)	

SECTION 3.23 – PRE AND POST REHABILITATION CCTV INSPECTION AND CLEANING DRAIN STRUCTURE(S)

SECTION 3.23.A – VIDEO RECORDING

A. The Contractor shall furnish all labor, equipment, supplies, and supervision and shall perform all work required in accordance with these specifications. CCTV inspection shall be performed in the areas selected and approved by the Owner.

B. It shall be the responsibility of the Contractor to schedule and perform investigations to prevent system overflows. If flows are such that they interfere with the Contractor's ability to collect accurate data, then the Contractor shall be responsible to schedule his work during low flow periods or to request written permission to perform by-pass pumping around the site. The Contractor may provide by-pass pumping only with specific approval from the City.

C. Inspection of storm drain infrastructure by means of CCTV equipment shall be performed to determine the location and extent of any obstructions and defects such as offset joints, protruding tees, broken pipe, and other pipe defects. Logs shall note the existence of any significant defects. Cleaning by the Contractor shall be performed prior to each CCTV inspection on each pipeline to be inspected.

D. CCTV inspections shall be performed on one drainage structure-to-drainage structure pipe segment at a time. The inspection shall be performed by moving the CCTV camera through the line along the axis of the pipe at a rate not to exceed 30 feet per minute. Any means of propelling the camera through the pipe that would exceed this rate of speed or produce non-uniform or jerky movements shall not be acceptable. The camera shall be stopped for a minimum of 5 seconds at each identifiable defect to ensure proper documentation of the line’s condition. In addition, the camera shall be stopped at each service connection, and the camera shall pan the service connection to video inside the service line. CCTV inspection is performed from the upstream manhole/catch basin to the downstream manhole/catch basin when the conditions allow. If conditions do not allow an upstream to downstream inspection, the inspection will be performed in reverse (from the downstream to the upstream drainage structure).

E. A header screen showing tape number, segment number, and manhole number shall be taped for 10 seconds at the beginning of each televised line segment. All header information shall be recorded on the log forms.

F. At the Contractor's discretion the camera shall be stopped or backed up to view and analyze conditions that appear to be unusual or uncommon for a sound storm drain line. At all times, the operating technician shall be able to move the camera through the line in either direction without loss of quality in the video presentation on the monitor. The picture shall be free of electrical interference and provide a clear, stable image of the specified resolutions at all times. The camera lens shall be cleaned, as required, to provide a clear image within the storm drain lines.

G. In the event that equipment becomes lodged in the line segment, the Contractor shall notify the City immediately. The City will remove the camera at no cost to the Contractor. Timely excavation is necessary to maintain project schedules and to eliminate the possibility of overflows resulting from the lodged equipment creating a blockage.

H. Continuous video recordings of the inspection view as it appears on the television monitor shall be taken. It is intended that a video recording will be made of the complete television inspection of all storm sewer lines as part of this project. The video recording shall be one on which both sound and video information can be reproduced with a video image equal to or better than the quality of the original picture on the television monitor.

A pan tilt zoom (PTZ) camera shall be used to conduct the inspection. The camera shall be waterproof and corrosion resistant and able to operate in temperatures between 0-50 degrees C (32-122F). The sensor shall be ¼" color CCD with minimum 1.5 lux sensitivity for resolution of minimum 460 NTSC TV lines. A full 360-degree axial pan is required with a variable pan speed not to exceed 25 degrees/second. The camera shall have a minimum 40:1 zoom lens capable of 10X optical and 4X digital, with auto or remote manual focuses. The adjustment of focus and iris shall allow optimum picture quality to be achieved and shall be remotely operated. The illumination shall be such as to allow an even distribution of light around the pipeline perimeter without the loss of contrast or flare out of picture shadowing.

The replay of the recorded video information, when reviewed on a mon itor-receiver, shall be free of electrical interference and shall produce a clear, stable image with a horizontal resolution equal to that of the television monitor in the television inspection studio. The audio portion of the completed signal shall be sufficiently free of electrical interference and background noise to produce an oral report that is clear and complete, and easily discernible. The audio portion of the tape report shall include the location or identification of the section, the manhole-to-manhole direction of travel, and the distance traveled on the specific run encountered. The audio portion of the tape shall also identify all defects. The video equipment shall be continuously connected to the television inspection or monitoring equipment. The video and monitoring equipment shall have the built-in capability to allow the technician to instantly review both the audio and video quality of the video productions at all times during the television survey. Playback speed shall be continuously adjustable from one-third normal speed for slow motion viewing to normal playback speed.

A suitable distance-reading device which uses cable length to accurately measure the location of the camera in the pipe shall be provided. This device shall be accurate to +/- 1% of the length of the inspection.

I. Laser Equipment Inspection: If determined necessary by DPW, 2-D Laser scanning shall be conducted continuously and simultaneously with other inspection technology for the entire length of the selected pipe segment. Laser equipment shall be moved through the pipe on a transport vehicle capable of supporting the laser inspection equipment above the water level. Tracked platforms must be capable of forward/stop/reverse mobility for detailed high-resolution scans to be collected at a specified interval.

The laser equipment shall be designed and manufactured to produce a high resolution of measurement resulting in 0.25% of internal diameter, with a laser sensor accuracy of 0.5% or greater (i.e., an accuracy of 0.5 inches at 100 inches in pipelines up to 30 inches in diameter and a repeatability of 0.10% or greater for pipelines from 15 inches to 30 inches in diameter). The laser equipment shall be properly calibrated per the manufacturer's documentation and the calibration shall be recorded for verification.

The laser equipment shall be capable of measuring the distances to objects and surfaces in drain lines and shall be capable of imaging drain lines less than 36" in diameter. The laser shall support 75 Hz scan rates or higher and be Class 1: eye-safe for operator safety. The laser sensor resolution shall be at least 1mm.

The laser equipment shall be operated in a manner to minimize measurement error sources attributable to the effects of the following:

1. Horizontal displacement from off-axis meander or pipeline alignment curvature that distorts cross-section measurement;
2. Vertical displacement due to sediment, debris, offset joints or other physical environment conditions that distorts cross-section measurement; and
3. Vertical displacement due to flow condition or other hydraulic environment factors that distorts cross-section measurement.

An overview of data collected by laser equipment is to be presented in a color-coded format as 2-D cross sections conveying pipe condition above the laser's centerline over the length of the inspection segment. The report shall provide a 2-D representation of an integrated overview of pipe wall thickness loss or increase data revealed from laser scanning and shall be presented in a color-coded format as an unrolled illustration of the pipe condition above the waterline over the length of the inspection segment. The pipe interior is to be flattened into a graphic whose y-axis represents pipe diameter, whose x-axis represents pipe length and whose color represents deviation from expected values indicating a gradation and severity of corrosion or buildup. Measured pipe internal diameter (ID) that coincides with expected values must be coded in a color that positively identifies and differentiates the measurement of the expected values from pipe wall loss or increase. Measured pipe ID that coincides with expected values must be coded green. Outward deformations, as measured by increasing pipe ID, must be colored on a yellow/red color scale, advanced deformation. Material gain (buildup) or inward deformation, as measured by decreasing pipe ID, must be on a blue color scale.

If DPW determines that Laser Inspection is necessary, it will negotiate a unit price for that inspection upon the first use of this type of inspection. The unit price developed will be entered into the contract and used for the duration of the contract at the fixed established unit price.

J. Video recordings shall be enclosed in plastic containers which shall clearly indicate the date the tape was recorded, the designated section(s) of storm sewer lines contained on the tape, and the referenced storm sewer inspection report covering the sections of the storm sewer lines so included. Two permanent labels are required. One label shall be placed on the spine and the other on the face of the video. Recording of a single segment shall not span more than one video. The recording of a segment between manholes shall be continuous and complete. The videos become the property of the City, once submitted. The Contractor shall maintain a master copy of all videos and associated Inspection Reports for one year after Contract completion. Additional copies of the videos, if requested, shall be made by the Contractor on professional duplication equipment. Two permanent labels are required. One label shall be placed on the spine and the other on the face of the video. Permanently label each tape with the following information:

Spine of DVD Case

Contract No. _____ Disc No. _____

Face of DVD Case

Start Manhole	Finish Manhole

K. CCTV inspection footage of service laterals shall be included on separate videos. The Contractor may include as many service lateral inspections as possible on each video provided that all service lines from the same mainline are on the same video. The DVD spine label shall be identical to those for mainline inspection. The face label of the video shall include the following information: mainline information (upstream manhole to downstream manhole), service line location, survey start point, and survey finishing point.

SECTION 3.23.B - DRAIN LINE CLEANING

A. Standard line cleaning shall be performed to remove foreign material and restore pipe capacity to 95%. Standard cleaning shall be defined as three (3) complete passes of the storm drain line with the cleaning equipment. The term "complete passes" shall mean cleaning from the upstream manhole all the way to the downstream manhole. Cleaning shall be performed with combination cleaning / vacuum trucks.

B. Heavy line cleaning shall be performed, only if required and approved by the City, to remove foreign material and restore pipe capacity to 95%. Heavy line cleaning shall be defined as four (4) or more complete passes of the storm drain line with the cleaning equipment. The term "complete passes" shall mean cleaning from the upstream manhole all the way to the downstream manhole. Cleaning shall be performed with combination cleaning / vacuum trucks.

C. Conditions such as broken pipe and major blockages may prevent cleaning from being accomplished, especially where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered and the contractor is unable to clean the entire line from all reasonable points of access and directions, the Contractor shall not be required to clean those specific pipe sections unless the Owner removes the apparent obstruction.

D. During cleaning operations, satisfactory precautions shall be taken by the Contractor in the use of cleaning equipment. Precautions shall be taken to ensure that damage to or flooding of public or private property does not occur during the cleaning procedure.

E. Selection of the equipment shall be the sole discretion of the Contractor and based on the conditions of lines at the time the work commences. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the storm drain lines and manholes. There shall be no change in cost for use of additional or different equipment utilized at the discretion of the contractor to perform work. Contractor shall notify project engineer and Owner of equipment to be used prior to use or initiation of any work.

F. All sludge, dirt, sand, rocks, grease, and other solid or semi-solid materials resulting from the cleaning operation shall be removed at the downstream manhole/catch basin of the section being cleaned. Passing materials from pipe segment to pipe segment, which could cause line stoppages, accumulations of debris in wet wells, interference with in-line permanent flow monitoring equipment or damage to pumping equipment will not be permitted.

G. If the CCTV inspection shows the cleaning to be unsatisfactory, the Contractor shall re-clean and re-inspect the pipe segment at his sole expense until the cleaning is shown to be satisfactory.

H. All sludge, dirt, sand, rocks, grease, and other solid or semisolid materials removed from the storm drain lines during the cleaning operation shall be drained of water and transported to an approved licensed landfill facility. All costs associated with debris disposal will be the responsibility of the Contractor or as otherwise specified herein.

SECTION 3.23.C - LATERAL DRAIN LINE CLEANING

A. Contractor will use a lateral launch inspection system, consisting of a robotic tractor and a lateral launch CCTV camera, to remotely deploy a pan & rotate camera into lateral pipes connected to a mainline storm drainpipe. Should Contractor encounter multi ple laterals converging in a single tap, Contractor shall utilize a steera ble lateral camera with guide pin to

inspect the adjoining laterals separately. Each pipe shall be identified as an inde pendent inspection for data submittal and invoicing purposes.

B. A mainline television camera is used to position the lateral camera launcher. The lateral camera is used to inspect each lateral from the mainline.

C. The television inspection of the lateral will be attempted from inside the mainline up into the lateral or attempted from the service manhole towards the mainline. Lateral lines inspected from the service manhole towards the mainline will be attempted by using a mini push camera if necessary.

D. In the event a lateralpipe segment cannot be fully inspected after reasonable attempts to remove obstructions or traverse because of poor structural condition is not successful, Contractor shall provide all the information to the City and the City will determine alternate possible solutions or whether enough information has been obtained to safely assess the proximity of uninspected portions of pipe.

E. Under no circumstances shall a lateral line be cleaned or inspected on private property or beyond public right-of-way of non-local City street (i.e. federal, federal-aid or state routes) limits. Any cleaning or inspection services performed outside the City approved scope of work, private property, or otherwise specified herein will not reimbursable and all associated costs contractor responsibility. The connections points for all laterals at the mainline or connecting structure shall be inspected at no direct cost. The limits of lateral lines cleaning and inspection operations for lateral lines connecting a drainage structure to the mainline may end at the drainage structure; however, where feasible the contactor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. For lateral lines not connected to a drainage structure the lateral line shall be cleaned and inspected from the connection point to the mainline to the extent feasible on the private property side (side opposite the mainline). If the contractor is unable to reasonably clean or inspection a lateral linebeyond the connection to the mainline the contractor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. Field reports and video logs shall clearly document distinguish whether the line cleaned or inspected is a mainline or lateral.

SECTION 3.23.D - <u>DRAINAGE STRUCTURE CLEANING</u>

A. The Contractor shall furnish all labor, equipment, supplies and supervision and shall perform all work required in accordance with these specifications. Drainage structure cleaning, including catch basins, drop inlets, conflict boxes, manholes, etc. shall be performed in the areas selected and approved by the City. Only manholes / catch basins with large debris such as rocks, bricks, trash, tree limbs, etc. will require cleaning. Also, cleaning will be required if small deposits or water has accumulated at greater than or equal to 1/3 of the depth of the manhole / catch basin (measured from rim to invert of the lowest pipe).

B. Selection of the equipment shall be the sole discretion of the Contractor and based on the conditions of drainage structures at the time the work commences. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the drainage structures.

C. All sludge, dirt, sand, rocks, grease, and other solid or semisolid materials removed from the storm drainage structures during the cleaning operation shall be drained of water and transported to an approved licensed landfill facility. All costs associated with debris disposal will be the responsibility of the Contractor or as otherwise specified herein.

SECTION 3.23.E – TELEVISION INSPECTION REPORTS

A. Television Inspection Report: The Contractor shall complete a television inspection report covering the television inspection work and the information acquired. The television inspection report shall be completed by the Contractor.

B. A television inspection code sheet shall be used consistently throughout the contract. All electronic data files shall be submitted on CD-ROM, or flash drive, as directed and approved by the City.

C. Video Data Display: At the start of each storm sewer leng th being surveyed, th e length o f pipeline from zero up to the cable calibration point shall be recorded and re ported in order to obtain a full record of the storm sewer length. The length reading entered on to the data display at the cable calibration point must allow for the distance from the start of the survey is zero. In the case of surveying through a manhole where a new header sheet is required, the distance shall be set at zero with the camera focused on the outgoing pipe entrance.

D. Television Inspection Record: AT the start of each manhole length a data generator shall electronically generate and clearly display on the viewing monitor and video recording a record of data in alphanumeric form containing the following minimum information:

   a. Automatic update of the camera's position, in feet and tenths, in the storm sewer line from adjusted zero;
   b. Size and Length of Line, Type of material line composed of, etc.;
   c. Upstream manhole and downstream drainage structure reference numbers;
   d. Date of inspection;
   e. Road name/location;
   f. Direction of inspection (upstream or downstream);
   g. Starting time of the inspection;
   h. Pipe ID references;

   Once the survey of the pipeline is under way, specific data should be continuously displayed on the viewing monitor and video recording. The size and position of the data display shall be such as not to interfere with the main subject of the picture yet shall be easily readable when the recording is replayed. At minimum, the following data should be displayed:

   Automatic update of the camera's position, in feet and tenths, in the storm sewer line from adjusted zero; \

   Upstream manhole and downstream manhole reference numbers

   Each storm sewer length, i.e., the length of the storm sewer between two consecutive drainage structures, shall be entered on a separate coding sheet. Thus, where a Contractor elects to "pull through" a manhole during a CCTV Survey, he shall start a new coding sheet at the manhole "pulled through" and shall re-set the distance to zero on the coding sheet.

All blind drainage structures and buried drainage structures shall be noted in the inspection report and logged on a separate log with the GPS location and type of structure. The log shall be provided to the City with each pay request.

The videos and corresponding reports shall be submitted to the City on a weekly basis for all work accomplished the previous week.

E. Laser Inspection Reporting: Laser scan final reporting shall include the pipe's true diameter, ovality (per ASTM FI216), x/y diameter, and maximum diameter. Segments or areas revealing deflection in horizontal alignment greater than 2% must be identified in the report. Where the presence of flow in the pipeline requires interpolation and estimation calculations to fill data gaps and complete the full circumference view, the method and calculations used to su pport these assumptions must be presented. Other data sources such as as-built data, if used for these calculations, must be identified in the report. To support identified radial localization of defects, individual ID measurements as computed from the axis of the inspected pipe must be presented in an illustrated ovality and deflection graphs covering the length of the inspection segment. Laser scan results identifying ovality and deflection must be presented in 2-D cross-sections. The color coding is to be identical to the aforementioned requirements. Where the presence of fluids in the pipe necessitates interpolation and estimation, calculations to fill gaps and complete the full circumference view will be performed. The method and calculations used to support these assumptions must be presented. Any high-resolution scan obtained during the inspection are to be provided along with the report in a 3-D point cloud (VRML) format including software for viewing on a PC.

Precision Ovality Scans including but not limited to Sensor Error, Axis Alignment Error, and Processing Errors must be accurate to +/- 1%.

The report shall provide a 2-D representation of an integrated overview identifying concentricity, and deviation from concentricity resulting in ovality and eccentricity, presented in a color-coded format as an unrolled illustration of the pipe condition to include the entire pipe circumference (above the flow line) as well as a cross-section view. The pipe interior is to be flattened into a graphic whose y-axis represents pipe diameter, whose x-axis represents pipe length and whose color represents deviation from expected values indicating a gradation and severity of the deviation from concentricity. Measured pipe internal diameter (ID) that coincides with expected values must be coded in a color that positively identifies and differentiates the measurement of the expected values from actual concentricity measurements

The report shall provide a 3-D representation with variations in pipe wall shown in sharp relief for easy visual analysis for each of the aforementioned 2-D representations.

SECTION 3.23.F – SUBMITTALS

A. DATA: Data in CD-ROM, or flash drive, format shall be submitted to the City within ten (10) business days from time of inspection. Three (3) hard copies of the inspection report listed above shall be submitted.

B. CCTV Inspections: The Contractor shall provide videos with audio comments in DVD, or flash drive, format recorded at Standard Play (SP).

a. Complete storm sewer line segments can be included on the same video (i.e., CCTV inspections for storm sewer line segments shall not be divided among videos).
b. The video format shall be an MPEG-1 compressed video, and resolution video format shall be QSIF (Quarter-size Standard Image Format) of 176 x 112 pixels for NTSC video format.
c. Two labels are required on each DVD. One label shall be placed on the spine of the DVD Cover and the other on the face of the DVD.

C. Other Required Submittals: The Contractor shall provide the following backup information to support and document each location that has been cleaned/inspected:
   a. Brief narrative describing scope of work for location and any findings after inspection.
   b. Maps/GIS Data of each location showing work completed
   c. Field logs and misc. informa tion generated during field investigation. A log shall be made by the Contractor when each drainage structure-to- drainage structure pipe segment is televised. The log shall include at a minimum:
      a. Street name with munici pal addr ess hundred block number, and any intersecting street
      b. Location of each point of leakage
      c. Location of each service connection or other pipe entering the televised line
      d. Location and degree of offsets
      e. Location of any damaged sections, and nature of damage
      f. Location of buried structures or blind junctions
      g. Location and amount of any deflection in alignment or grade of pipe; also the total length of pipe sag
      h. Pipe ID reference number, materials, diameter, and distance between pipe joints
      i. Date, city, drainage structure-to- drainage structure segment, reference drainage structure ID number
      j. Name of operator, and inspector
      k. Direction of flow
      l. If a reverse-set up
      m. Video Filename
   d. Confined space entry form (when required) per industry standards and any applicable federal or state requirements.
   e. The Contractor shall prepare and submit a list of any encountered defects, obstructions, and blockage locations on a weekly basis. Any locations with defects which appear to require immediate corrective action based on their size and/or type on a daily and weekly basis.

D. Progress Reports: The Contractor will be required to provide a weekly progress report to the City showing, at a minimum, the status of all locations previously worked on in the prior week. The report shall include the location/address, size of drain line being inspected, date the notice to proceed was issued for the location, the status (complete, ongoing, etc.), and the anticipated completion date. A final overall project report shall also be provided upon completion of all work. A hard copy and CD with PDF copy of all reports within the billing period shall be provided with each invoice submitted and the final report submitted with or prior to the final retainage invoice.

SECTION 3.23.G – MEASUREMENT AND PAYMENT

A. CCTV Inspection of Main Lines (and/or Laterals). Drain line laterals shall be considered any drain line or pipe connecting stubbed or otherwise tied into the main drain line. Laterals may originate from drainage structures or other connecting features to facilitate the flow of stormwater into the primary drainage system. Under no circumstances shall a lateral line be cleaned or inspected on private property or beyond public right-of-way of non-local City street (i.e., federal, federal-aid or state routes) limits. Any cleaning or inspection services performed outside the City approved scope of work, private property, or otherwise specified herein will not reimbursable and all associated costs contractor responsibility. The connections points for all laterals at the mainline or connecting structure shall be inspected at no direct cost. The limits of lateral lines cleaning and inspection operations for lateral lines connecting a drainage structure to the mainline may end at the drainage structure; however, where feasible the contactor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. For lateral lines not connected to a drainage structure the lateral line shall be cleaned and inspected from the connection point to the mainline to the extent feasible on the private property side (side opposite the mainline). If the contractor is unable to reasonably clean or inspection a lateral line beyond the connection to the mainline the contractor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. Field reports and video logs shall clearly document distinguish whether the line cleaned or inspected is a mainline or lateral.

a. *Measurement:* CCTV Inspection of existing storm sewer pipe including drainage structures will be measured in place on a linear foot basis to the nearest foot. Measurement will be along the horizontal centerline of the pipe with no deductions for drainage structures and will be from center of drainage structures to center of drainage structures for the actual storm sewer line televised. CCTV of mainlines will include a view of the upstream and downstream drainage structures where possible to indicate the relative condition of said drainage structures. Measurement will be made for a various range of pipeline diameters listed under this item on the Proposal Form.
    i. The pipe segment length, with respect to the referenced drainage structure, shall be determined with a meter device, accurate to within ±2%. Markings on the cable, instruments requiring observation inside a drainage structure, or correction of each reading for the depth of the referenced drainage structure shall not be allowed. Accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape, or other suitable device.

b. *Payment:* Payment for CCTV inspection of the existing storm sewer pipe and drainage structures will be made for the respective quantities as determined above at the unit price bid in the Proposal Form. This price and payment shall be full compensation for all material, labor, and equipment, required for television set-up, including, storm sewer flow, camera retrieval, hard copy report, electronic report, video recording, measurement, etc.

B. Cleaning of Main Lines (and/or Catch Basin Laterals)

a. *Measurement:* Cleaning of existing storm sewer pipe including drainage structures will be measured in place on a linear foot basis to the nearest foot. Measurement will be along the horizontal centerline of the pipe with no deductions for drainage structures and will be from center of drainage structures to center of drainage structures for the

actual storm sewer line televised. Cleaning of mainlines will include a view of the upstream and downstream drainage structures where possible to indicate the relative condition of said drainage structures. Measurement will be made for a various range of pipeline diameters listed under this item on the Proposal Form.

i. If cleaning of an entire section cannot be successfully performed from one manhole/catch basin, the equipment shall be set up at the other manhole/catch basin and cleaning again attempted. If successful cleaning still cannot be performed or the equipment fails to traverse the entire manhole-to-manhole or catch basin to catch basin pipe segment, it will be assumed that a major blockage exists, and the cleaning operation will be abandoned. The cleaning operator will note these occurrences in his daily cleaning log. The C ontractor will be compensated for cleaning for only the length associated with the portions thereof pipe successfully cleaned should this occur.

b. *Payment:* Payment for cleaning of the existing storm sewer pipe and drainage structures will be made for the respective quantities as determined above at the unit price bid in the Proposal Form. This price and payment shall be full compensation for all material, labor, and equipment, required for television set-up, including, storm sewer flow, camera retrieval, hard copy report, electronic report, video recording, measurement, etc.

C. Heavy Cleaning of Main Lines (and/or Catch Basin Laterals)

a. *Measurement:* Heavy cleaning of existing storm sewer pipe including drainage structures will be measured in place on a linear foot basis to the nearest foot. Heavy cleaning is defined as making four or more complete passes in the specific line segment being cleaned. Measurement will be along the horizontal centerline of the pipe with no deductions for drainage structures and will be from center of manhole to center of drainage structures for the actual storm sewer line televised. Heavy cleaning of mainlines will include a view of the upstream and downstream drainage structures where possible to indicate the relative condition of said drainage structures. Measurement will be made for a various range of pipeline diameters listed under this item on the Proposal Form.

b. *Payment:* Payment for heavy cleaning of the existing storm sewer pipe and drainage structures will be made for the respective quantities as determined above at the unit price bid in the Proposal Form. This price and payment shall be full compensation for all material, labor, and equipment, required for television set-u p, including, storm sewer flow, camera retrieval, hard copy report, electronic report, video recording, measurement, etc.

SECTION 3.23.H – OBSTRUCTIONS AND BLOCKAGES

A. The Contractor will notify the City of any obstructions and blockages preventing the Contractor from completing his/her work. The City shall be notified after an attempt for standard cleaning has taken place. The Contractor shall submit a partial inspection report as outlined above in Sections 3.23.E & 3.23.F. The City will review the submittal and provide further guidance to the Contractor on a case-by-case basis. City may authorize "Heavy Cleaning" as outlined herein or approve additional means, as requested by the contractor. Any additional co sts associated with additional services to address obstructions and blockages shall be approved by the City prior to starting work, or incurring any mobilization or material, equipment, and labor costs. Contractor shall submit a

request in writing for City approval complete with all necessary supporting backup and detailed estimate inclusive of all material, equipment, labor, and other incidental costs, in addition to any applicable taxes, fees, markup, profit, overhead, insurance, and bond, etc. costs in accordance with City requirements.

B. If a blockage or obstruction is encountered and conditions allow, the Contractor shall attempt to conduct the inspection and cleaning from the opposite end of the pipe and continue back towards the blockage or obstruction in order to ensure maximum data collection of the pipe segment. Any reverse set-up mobilization costs shall be at no direct pay.

    a. If a reverse set-up is required because the cleaning or CCTV in the downstream direction could not be completed, a new coding sheet shall be prepared for the start of the reverse set-up cleaning or CCTV. In no instance shall the pipe ID be altered so that the downstream drainage structure reference number is listed first and upstream drainage structure reference number listed. All reverse set-ups shall be logged on a separate log.

C. It shall be the responsibility of the Contractor to schedule and perform investigations to prevent system overflows. If flows are such that they interfere with the Contractor's ability to collect accurate data, then the Contractor shall be responsible to schedule his work during low flow periods or to request written permission to perform by-pass pumping around the site. The Contractor may provide by-pass pumping only with specific approval from the City.

D. Inspection of storm drain infrastructure by means of CCTV equipment shall be performed to determine the location and extent of any obstructions and defects such as offset joints, protruding tees, broken pipe, and other pipe defects. Field logs / reports shall note the existence of any significant defects. Cleaning by the Contractor shall be performed prior to each CCTV inspection on each pipeline to be inspected.

E. Measurement and Payment Bid Items:

ITEM NO.	PAY ITEM	PAY UNIT
CSD701-01	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	Linear Feet
CSD701-02	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	Linear Feet
CSD701-03	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	Linear Feet
CSD701-04	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	Linear Feet
CSD701-05	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	Linear Feet
CSD701-06	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	Linear Feet

CSD701-07	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	Linear Feet
CSD701-08	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	Linear Feet
CSD701-09	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	Linear Feet
CSD701-10	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	Linear Feet
CSD701-11	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	Linear Feet
CSD701-12	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	Linear Feet

SECTION 3.23.I – POST REHABILITATION CCTV AND INSPECTION

In accordance with Section C204 Environmental Protection and Stormwater Pollution Prevention Plan from the General Specifications, the Contractor is responsible for the long-term operation and maintenance of the related best management practices. Post rehabilitation CCTV and inspection is required, at no direct pay, to evaluate the storm sewer’s capacity and ensure that the restored pipe is free from debris, obstructions, or foreign material which would have been caused by construction activities of the Contractor. Post rehabilitation CCTV and inspection shall follow the requirements of Sections 3.23.A through Section 3.23.F.

- END OF SECTION -

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Contract description.
3. Work by Owner or others.
4. Owner-furnished products.
5. Contractor's use of Site.
6. Work restrictions.
7. Owner occupancy.
8. Permits.
9. Specification conventions.

B. Related Requirements:

1. Section 012000 - Price and Payment Procedures.
2. Section 012600 - Contract Modification Procedures
3. Section 013216 - Construction Progress Schedule.
4. Section 015000 - Temporary Facilities and Controls: Limitations and procedures governing temporary use of Owner's facilities.
5. Section 017000 - Execution and Closeout Requirements.

1.2 PROJECT INFORMATION

A. Name: TM008 Transmission Main & Water Main Replacement

1. Project Location: Neighborhoods throughout New Orleans, see cover sheet of project drawings for individual locations.

B. Owner: Sewerage and Water Board of New Orleans.

1. Owner's Representative: Randall Schexnayder, P.E.

C. Project Engineer: Neel-Schaffer, Inc.

1. Engineer's Representative: Warren Huggins, P.E.

D. Engineer's Consultants: Engineer retains the following design professionals, who prepare designated portions of the Contract Documents:

1. Kenall Inc.: Geotechnical & SUE
2. BFM Corporation, LLC.: Survey.

1.3 CONTRACT DESCRIPTION

A. Work includes replacement of 8” and 12” water mains, replacement of 20”, 30”, 36” and 50” transmission mains. Replacement of a 30” sewer force main. Subsurface drainage r eplacement of 24” pipes and smaller. Roadway restoration associated with the utility replacement. Construction of support structure to span the Palmetto Canal. Incidental sidewalk, driveway and ADA ramp construction.

1.4 WORK BY OWNER OR OTHERS

A. None.

1.5 CONTRACTOR'S USE OF SITE

A. Limits on Use of Site: Limit use of Project Site to Work in areas indicated. Do not disturb portions of Project Site beyond areas in which the Work is indicated.

1.6 WORK RESTRICTIONS

A. On-Site Work Hours: Limit Work to b etween 7:00 a.m. to 7:00 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner.

B. Employee Identification: Provide identification tags for Contractor personnel working on Project Site. Require personnel to use identification tags at all times.

C. Employee Screening: Comply with Owner's requirements for drug screening of Contractor personnel working on Project Site.

1. See Attachment No. 1 to the Supplementary Conditions.

1.7 OWNER OCCUPANCY

A. Owner will occupy Site during entire period of construction for conduct of normal operations.

B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

C. Schedule Work to accommodate Owner occupancy.

1.8 PERMITS

A. Furnish necessary permits for construction of Work, including the following:
1. Stormwater permit.

1.9 SPECIFICATION CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.

B. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 011000

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SECTION 012000 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Schedule of Values.

B. Application for Payment.

C. Change procedures.

D. Defect assessment.

E. Unit prices.

F. Alternates.

1.2 SCHEDULE OF VALUES

A. Submit printed schedule on Progress Estimate schedule on EJCDC C-620.

B. Submit Schedule of Values within 15 days after date of Owner-Contractor Agreement.

C. Revise schedule to list approved Change Orders with each Application for Payment.

1.3 APPLICATION FOR PAYMENT

A. Submit using Procore Application for Payment on EJCDC C-620 - Contractor's Application for Payment.

B. Content and Format: Use Schedule of Values for listing items in Application for Payment.

C. Submit updated construction schedule with each Application for Payment.

D. Payment Period: Submit at intervals stipulated in the Agreement.

E. Submit submittals with transmittal letter as specified in Section 013300 - Submittal Procedures.

F. Submit waivers requested by Owner.

G. Substantiating Data: When Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:

1. Current construction photographs specified in Section 013300 - Submittal Procedures.
2. Partial release of liens from major Subcontractors and vendors.
3. Record Documents as specified in Section 017000 - Execution and Closeout Requirements, for review by Owner, which will be returned to Contractor.
4. Affidavits attesting to off-Site stored products.

5. Construction Progress Schedule, revised and current as specified in Section 013300 - Submittal Procedures.

1.4 CHANGE PROCEDURES

A. Submittals: Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Engineer of any error, inconsistency, omission, or apparent discrepancy.

C. Requests for Interpretation (RFI) and Clarifications: Allot time in construction scheduling for liaison with Engineer; establish procedures for handling queries and clarifications.

1. Engineer may respond with a direct answer on the Request for Interpretation form, EJCDC C-942 - Field Order.

D. Engineer will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions on EJCDC C-942.

E. Engineer may issue Proposal Request including a detailed description of proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change. Contractor will prepare and submit estimate within 10 days.

F. Contractor may propose changes by submitting a request for change to Engineer, describing proposed change and its full effect on the Work. Include a statement describing reason for the change and the effect on Contract Sum/Price and Contract Time with full documentation.

G. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's price quotation or Contractor's request for Change Order as approved by Engineer.

H. Unit Price Change Order: For Contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of that which are not predetermined, execute Work under Work Directive Change. Changes in Contract Sum/Price or Contract Time will be computed as specified for Force Account Change Order.

I. Work Directive Change: Engineer may issue directive, on EJCDC C-940 - Work Change Directive signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.

J. Force Account Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. Engineer will determine change allowable in Contract Sum/Price and Contract Time as provided in Contract Documents.

K. Maintain detailed records of Work done on force account basis. Provide full information required for evaluation of proposed changes and to substantiate costs for changes in the Work.

L. Document each quotation for change in Project Cost or Time with sufficient data to allow evaluation of quotation.

M. Change Order Forms: EJCDC C-941 - Change Order.

N. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in Conditions of the Contract.

O. Correlation of Contractor Submittals:

1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
2. Promptly revise Progress Schedules to reflect change in Contract Time, revise subschedules to adjust times for other items of Work affected by the change and resubmit.
3. Promptly enter changes in Record Documents.

1.5 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of Engineer, it is not practical to remove and replace the Work, Engineer will direct appropriate remedy or adjust payment.

C. Individual Specification Sections may modify these options or may identify specific formula or percentage sum/price reduction.

D. Authority of Engineer and Owner to assess defects and identify payment adjustments is final.

E. Nonpayment for Rejected Products: Payment will not be made for rejected products for any of the following reasons:

1. Products wasted or disposed of in a manner that is not acceptable.
2. Products determined as unacceptable before or after placement.
3. Products not completely unloaded from transporting vehicle.
4. Products placed beyond lines and levels of the required Work.
5. Products remaining on hand after completion of the Work.
6. Loading, hauling, and disposing of rejected products.

1.6 UNIT PRICES

A. Authority: Measurement methods are delineated in individual Specification Sections.

B. Measurement methods delineated in individual Specification Sections complement criteria of this Section. In event of conflict, requirements of individual Specification Section govern.

C. Take measurements and compute quantities. Engineer will verify measurements and quantities.

D. Unit Quantities: Quantities and measurements indicated on Bid Form are for Contract purposes only. Actual quantities provided shall determine payment.

1. When actual Work requires more or fewer quantities than those quantities indicated, provide required quantities at contracted unit sum/prices.
2. When actual Work requires 25 percent or greater change in quantity than those quantities indicated, Owner or Contractor may claim a Contract Price adjustment.

E. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application, or installation of item of the Work; overhead and profit.

F. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Engineer multiplied by unit sum/price for Work incorporated in or made necessary by the Work.

G. Measurement of Quantities:

1. Weigh Scales: Inspected, tested, and certified by applicable State weights and measures department within past year.
2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
3. Metering Devices: Inspected, tested, and certified by applicable State department within past year.
4. Measurement by Volume: Measured by cubic dimension using mean length, width, and height or thickness.
5. Measurement by Area: Measured by square dimension using mean length and width or radius.
6. Linear Measurement: Measured by linear dimension, at item centerline or mean chord.
7. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.

1.7 ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement. The Owner-Contractor Agreement may identify certain Alternates to remain an Owner option for a stipulated period of time.

B. Coordinate related Work and modify surrounding Work. Description for each Alternate is recognized to be abbreviated but requires that each change shall be complete for scope of Work affected.

1. Coordinate related requirements among Specification Sections as required.
2. Include as part of each Alternate: Miscellaneous devices, appurtenances, and similar items incidental to or necessary for complete installation.
3. Coordinate Alternate with adjacent Work and modify or adjust as necessary to ensure integration.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 012000

SECTION 012020 - MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 Refer to Proposal Form

1.2 Payment shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles , and for all labors, operations, and incidentals appurtenant to complete the work being described, as necessary to complete the various items of the work all in accordance with the requirement of the Contract Documents, including all costs of compliance with the regulations of public agencies having jurisdiction. The Contractor is hereby on notice that no separate payment will be made for any item not specifically called out, but that is required to properly complete the project.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

PART 4 – MEASUREMENT AND PAYMENT

4.01 SCOPE

The Total Bid Price shall cover all work required by the Contract Documents. All costs in connection with the proper and successful completion of the work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in the unit and lump sum prices bid. All work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid.

4.02 ESTIMATED QUANTITIES

All estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used only (a) as a basis for estimating the probable cost of the work, and (b) for the purpose of comparing the bids submitted for the work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished. No compensation will be given for any quantities not used.

4.03 DPW GENERAL SPECIFICATION PAY ITEMS

Measurement and Payment: All items assigned a DPW General Specification pay item number shall be measured and payed as per the DPW General Specifications for Street

Paving. The following items are to be measured and paid per the DPW General Specifications for Street Paving and DPW Special Provisions:

A. C202(52)(C) – REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT
B. C202(52)(D) – REMOVAL AND DISPOSAL OF EXISTI NG SI DEWALK, DRIVEWAY, FOOTLAP
C. C202(52)(F) – REMOVAL OF EXISTING CURB AND GUTTERBOTTOM
D. C202(52)(I) – REMOVAL AND DISPOSAL OF EXISTING ASPHALT CONCRETE PAVEMENT
E. C203(51) – ROADWAY EXCAVATION
F. C203(58) – UNSUITABLE SUBGRADE EXCAVATION AND SAND FILL
G. C203(59) - GEOTEXTILE FABRIC FOR STABILIZATION
H. C203(60) – GEOGRID
I. C402(51) – TRAFFIC MAINTENANCE AGGREGATE
J. C501(54) – GEOTEXTILE FABRIC FOR PAVING
K. C502(53)-1– 2” THICK SUPERPAVE ASPHALTIC CO NCRETE WEARI NG COURSE
L. C502(53)-2– 5” THICK SUPERPAVE ASPHALTIC CONCRETE BINDER COURSE
M. C509(51) – COLD PLANING ASPHALTIC CONCRETE (2.5” AVERAGE THICK)
N. C601(54) – REINFORCED CONCRETE PAVEMENT (8” THICK)
O. C701(53)(E) - REINFORCED CONCRETE PIPE (12")
P. C701(53)(F) - REINFORCED CONCRETE PIPE (15")
Q. C701(53)(I) - REINFORCED CONCRETE PIPE (24")
R. C701(72) - Collector Line to Catch Basins for Drain House Connections (6")
S. C701(74) - REMOVAL AND DISPOSAL OF EXISTING DRAIN LINES (NOT IN SAME TRENCH) INCLUDING RIVER SAND BACKFILLING
T. C701(68)E – POINT REPAIR OF EXISTING DRAIN LINES UP TO 10 FEET (12”)
U. C701(68)F – POINT REPAIR OF EXISTING DRAIN LINES UP TO 10 FEET (15”)
V. C702(52)J - NO.1 STANDARD DRAIN MANHOLE
W. C702(58) - SINGLE COMBINATION CATCH BASIN MANHOLE (8319-D)
X. C702(53)L - TYPE C CATCH BASIN ADJUSTMENT
Y. C702(53)M - SINGLE VERTICAL CATCH BASIN
Z. C706(51) – CONCRETE SIDEWALK (4” THICK)
AA. C706(52) – CONCRETE DRIVEWAY (6” THICK)
BB. C706(58) – RELAYING BRICK PAVERS
CC. C706(54) – SIDEWALK AT INTERSECTIONS INCLUDING HANDICAPPED RAMPS (6” THICK)
DD. C706(61) – LETTER OR NUMBER FOR TILE STREET NAME
EE. C706(62) – RESETTING STREET TILE NAME
FF. C707(55) – CONCRETE MOUNTABLE CURB WITH DOWELS
GG. C707(56) – 6” CONCRETE BARRIER CURB WITH DOWELS
HH. C707(59) – CONCRETE MOUNTABLE CURB AND GUTTER BOTTOM

II. C707(60) – 6” BARRIER CURB AND GUTTERBOTTOM OR ROLLING STRIP
JJ. C732(52) – PLASTIC PAVEMENT STRIPING
KK. C741(51)(C)(1) – 8” PVC NEW WATER MAIN WITH MAIN LINE FITTINGS
LL. C741(51)(C)(2) - 8" DUCTILE IRON NEW WATER MAIN WITH MAIN LINE FITTINGS
MM. C741(51)(E) - 12" PVC NEW WATER MAIN WITH MAIN LINE FITTINGS
NN. C741(51)(E)(1) - 12” DUCTILE IRON NEW WATER MAIN w/MAIN LINE FITTINGS
OO. C741(51)(H)(2) - 20” DUCTILE IRON NEW WATER MAIN w/MAIN LINE FITTINGS
PP. C741(51)(J)(2) - 30” DUCTILE IRON NEW WATER MAIN w/MAIN LINE FITTINGS
QQ. C741(52)(B) – NEW 6” VALVE
RR. C741(52)(C) – NEW 8” VALVE
SS. C741(52)(E) - NEW 12” VALVE
TT. C741(54) – NEW FIRE HYDRANT
UU. C741(55)(A) – REPLACE 5/8” TO 1” WATER HOUSE CONNECTION WITH 1” WATER HOUSE CONNECTION (FROM MAIN TO METER)
VV. C741(55)(B) - REPLACE 1-1/2" WATER HOUSE CONNECTION (FROM MAIN TO METER)
WW. C741(55)(C) - REPLACE EXISTING 2" WATER HOUSE CONNECTION (FROM MAIN TO METER)
XX. C741(55)(D) – REPLACE 4” WATER HOUSE CONNECTION (FROM MAIN TO METER)
YY. C741(55)(E) – REPLACE 6” WATER HOUSE CONNECTION (FROM MAIN TO METER)
ZZ. C741(71)(C-01) – 8” WATER MAIN OFFSET UP TO 24”
AAA. C741(71)(C-02) – 8” WATER MAIN OFFSET OVER 24”
BBB. C741(74)(A) – NEW WATER VALVE MANHOLE (4” THROUGH 12” VALVES)
CCC. C741(75) – REMOVE MUD AND DEBRIS FROM INSIDE OF METER BOX
DDD. C741(76) – ADJUST COMPLETE WATER METER BOX TO GRADE
EEE. C741(77) – REPLACE BROKEN WATER MENTER BOX 5/8” TO 1”
FFF. C741(78)(A) – PLUG EXISTING WATER MAIN 4” THROUGH 12” AND FILL WITH FLOWABLE FILL MATERIAL (SAND/CEMENT MIXTURE)
GGG. C741(78)(B) - PLUG EXISTING WATER MAIN GREATER THAN 12" AND FILL WITH FLOWABLE MATERIAL (SAND/CEMENT MIXTURE)
HHH. C742(51)(K) - INSTALL SEWER MAINS 30" (10.0' - 14.0')
III. C742(55) - INSTALL SEWER MANHOLE
JJJ. C742(64) - ADJUST SEWER HOUSE CONNECTION
KKK. CSS-25 - MANHOLE REHABILITATION, CEMENTITIOUS LINER, FULL DEPTH
LLL. CF-3 - SIDEWALK, DRIVEWAY AND CURB SAW CUTTING
MMM. CF-4 - PAVEMENT SAW CUTTING ADJACENT TO EXISTING PAVEMENT AND AT PATCHES AND UTILITY TRENCHES

NNN. CF-5 - REMOVAL OF HANDICAP RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS INCLUDING SAW CUTTING

OOO. CF-6 - ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS

PPP. CF-10 - ROOT PRUNING

QQQ. CF-13 - SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS

RRR. CF-315 - SINGLE VERTICAL CATCH BASIN REPAIR OR VERTICAL ADJUSTMENT REUSING EXISTING METAL CASTINGS

SSS. CF-375 - MANHOLE REPAIR OR VERTICAL ADJUSTMENT UP TO 6" REUSING EXISTING METAL CASTINGS

TTT. CF-378 - MANHOLE REPAIR OR VERTICAL ADJUSTMENT OVER 6" BRICK WORK ONLY

4.04 ITEM NO. SP-01 – STEEL SUPPORT SYSTEM FOR 20 ” WATERMAIN CROSSING OVER PALMETTO CANAL

A. Measurement: Measurement will be by the lump sum for the satisfactorily completed work as shown on the Drawings and as specified in related sections. These items include all work associated with the crossing except 20” ductile iron piping which is measured separately.

B. Payment: Payment shall be at the lump sum price stated in the Bid Schedule. Payment shall include full compensation for furnishing, fabricating, erecting, galvanizing, and painting; furnishing all required labor, plants, equipment, tools, staging, falsework, forms, power welding, bolts, bearings, and other hardware; and, performance of all work necessary to complete this item.

4.05 ITEM NO. SP-02 - EXPLORATORY EXCAVATION (0.0’-10.0’)

A. Measurement: Measurement for exploratory excavation will be made per each exploratory excavation satisfactorily completed. Payment will be made at the contract unit price for each excavated area up to ten (10) feet long, no more than the width of the water line trench wide, and up to ten (10) feet deep.

B. Payment: Payment for this item will be made per each exploratory excavation approved by the Engineer and will be paid at the unit price bid. The work will include excavation, backfill, labor, equipment, tools, materials, disposal of debris, and submitted documentation in accordance with the plans and specifications.

4.06 ITEM NO. SP-03 – VAULT FOR 36” WATER VALVE

A. Measurement: Measurement for valve vault will be made on a per each item basis.

B. Payment: Payment per each valve vault will constitute full installation of valve vault including furnishing all materials, equipment, tools, labor and incidentals required to install the valve vault. Excavation, backfill, geotextile fabric, bedding, shoring, forming, reinforcing steel, concrete, and any other materials required for installation of the valve vault shall be considered

incidental to the unit price. There shall be no direct payment for plugging and abandoning existing vaults and filling with sand.

4.07 ITEM NO. SP-04 – VAULT FOR 48" WATER VALVE

A. Measurement: Measurement for valve vault will be made on a per each item basis.

B. Payment: Payment per each valve vault will constitute full installation of valve vault including furnishing all materials, equipment, tools, labor and incidentals required to install the valve vault. Excavation, backfill, geotextile fabric, bedding, shoring, forming, reinforcing steel, concrete, and any other materials required for installation of the valve vault shall be considered incidental to the unit price. There shall be no direct payment for plugging and abandoning existing vaults and filling with sand.

4.08 ITEM NO. SP-05 - 36" BUTTERFLY VALVE

A. Measurement: Measurement for payment for 36" Butterfly Valve will be made per each item installed.

B. Payment: Payment for each 36" butterfly valve will constitute full compensation for installation of 36" butterfly valve. All equipment, materials, tools and labor shall be considered incidental to the unit price.

4.09 ITEM NO. SP-06 - 48" BUTTERFLY VALVE

A. Measurement: Measurement for payment for 48" Butterfly Valve will be made per each item installed.

B. Payment: Payment for each 48" butterfly valve will constitute full compensation for installation of 48" butterfly valve. All equipment, materials, tools and labor incidentals shall be considered incidental to the unit price.

4.10 ITEM NO. SP-07 - 36" LINE STOP

A. Measurement: Measurement for payment of 36" line stop will be made on a per each basis.

B. Payment: Payment for this item will constitute full compensation for material installing the line stop, completion plug, including furnishing all equipment, tools, labor, incidentals, and thrust blocks. Excavation to expose the existing 36" steel water main, procurement, shoring, and bracing shall be considered incidental to the unit price.

4.11 ITEM NO. SP-08 - 50" LINE STOP

A. Measurement: Measurement for payment of 50" line stop will be made on a per each basis.

B. Payment: Payment for this item will constitute full compensation for installing the line stop (with reduced bypass capability), completion plug, including furnishing all equipment, tools, labor, incidentals, and thrust blocks. Excavation to expose the existing 50" steel water main, procurement, shoring, and bracing shall be considered incidental to the unit price.

4.12 ITEM NO. SP-09 – 24" TEMPORARY WATER MAIN BYPASS (D.I., PVC OR HDPE)

A. Measurement: Measurement for payment of 24" bypass will be made on a per each basis.

B. Payment: Payment for this item will constitute full compensation for installing the bypass system and shall include all labor, materials, tools and equipment necessary to install the temporary water main of the size and type indicated. All material and construction methods required for installation of the temporary water main shall be considered incidental to the unit price, including fittings, spool pieces, joint restraints, flanges, tie-ins to line stop bypass machine valves and protection of temporary water main.

4.13 ITEM NO. SP-10 - 36" DUCTILE IRON PIPE WITH FITTINGS

A. Measurement: 36" Ductile Iron Pipe with Fittings shall be measured for payment by field measurement of the linear feet installed, measured along the centerline of the pipe for the size and type of water main indicated.

B. Payment: The actual total linear feet of 36" ductile iron pipe installed and accepted, measured as stated above, will be paid at the unit price bid and shall include all labor, materials, tools and equipment necessary to install the water main of the size and type indicated. All material and construction methods required for installation of the water main shall be considered incidental to the unit price, including ductile iron fittings, ductile iron spool pieces, joint restraints, flanges, tie-ins to valves and existing water mains, and excavation, shoring and backfilling.

4.14 ITEM NO. SP-11 - 48" DUCTILE IRON PIPE WITH FITTINGS

A. Measurement: 48" Ductile Iron Pipe with Fittings shall be measured for payment by field measurement of the linear feet installed, measured along the centerline of the pipe for the size and type of water main indicated.

B. Payment: The actual total linear feet of 48" ductile iron pipe installed and accepted, measured as stated above, will be paid at the unit price bid and shall include all labor, materials, tools and equipment necessary to install the water main of the size and type indicated. All material and construction methods required for installation of the water main shall be considered incidental to the unit price, including ductile iron fittings, ductile iron spool pieces, joint restraints, flanges, tie-ins to valves and existing water mains, and excavation, shoring and backfilling.

4.15 ITEM NO. SP-12 – WATER MAIN CROSSING OF LOWERLINE BOX CULVERT

A. Measurement: Measurement will be by the lump sum for the satisfactorily completed work as shown on the Drawings and as specified in related sections. These items include all work associated with the crossing except 8" ductile iron piping which is measured separately.

B. Payment: Payment shall be at the lump sum price stated in the Bid Schedule. Payment shall include full compensation for furnishing, fabricating, erecting; furnishing all required labor, equipment, tools, staging, core drilling, forms, power welding, fittings, grouting, rubber gaskets/boots, bolts, bearings, and other hardware; and, performance of all work necessary to complete this item.

END OF SECTION

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Quality assurance.

B. Product options.

C. Product substitution procedures.

1.2 QUALITY ASSURANCE

A. Contract is based on products and standards established in Contract Documents without consideration of proposed substitutions.

B. Products specified define standard of quality, type, function, dimension, appearance, and performance required.

C. Substitution Proposals: Permitted for specified products except where specified otherwise. Do not substitute products unless substitution has been accepted and approved in writing by Owner.

1.3 PRODUCT OPTIONS

A. See Section 016000 - Product Requirements.

1.4 PRODUCT SUBSTITUTION PROCEDURES

A. Instructions to Bidders specifies time restrictions for submitting requests for substitutions.

B. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.

C. Document each request with complete data, substantiating compliance of proposed substitution with Contract Documents, including:

1. Manufacturer's name and address, product, trade name, model, or catalog number, performance and test data, and reference standards.
2. Itemized point-by-point comparison of proposed substitution with specified product, listing variations in quality, performance, and other pertinent characteristics.
3. Reference to Article and Paragraph numbers in Specification Section.
4. Cost data comparing proposed substitution with specified product and amount of net change to Contract Sum.
5. Changes required in other Work.
6. Availability of maintenance service and source of replacement parts as applicable.
7. Certified test data to show compliance with performance characteristics specified.
8. Samples when applicable or requested.

9. Other information as necessary to assist Engineer's evaluation.

D. A request constitutes a representation that Contractor:

1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
2. Will provide same warranty for substitution as for specified product.
3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension that may subsequently become apparent.
5. Will coordinate installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
6. Will reimburse Owner and Engineer for review or redesign services associated with reapproval by authorities having jurisdiction.

E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals without separate written request or when acceptance will require revision to Contract Documents.

F. Substitution Submittal Procedure:
1. Submit three copies of Request for Substitution for consideration. Limit each request to one proposed substitution.
2. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.
3. Engineer will notify Contractor in writing of decision to accept or reject request.

1.5 INSTALLER SUBSTITUTION PROCEDURES

A. Instructions to Bidders specifies time restrictions for submitting requests for substitutions.

B. Document each request with:

1. Installer's qualifications.
2. Installer's experience in work similar to that specified.
3. Other information as necessary to assist Engineer's evaluation.

C. Substitution Submittal Procedure:

1. Submit three copies of Request for Substitution for consideration. Limit each request to one proposed substitution.
2. Engineer will notify Contractor in writing of decision to accept or reject request.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 012500

SECTION 01 26 00
CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 DEFINITIONS

A. Owner – The Sewerage and Water Board of New Orleans (SWBNO).

B. Designer – The entity or individual who is to act as the Engineer-of Record under the oversight and administration of the Owner. The term Designer may refer to a third-party Engineering Firm or a (SWBNO) department or individual.

C. Change Order Request (COR) – A formal proposal written by the Contractor that requests changes to the Contract Price and/or Contract Times. Document will include reference number for tracking purposes and detailed description of and reason for proposed change, and such additional information as appropriate and as may be required for Contractor to accurately estimate cost and time impact on Project. Change to Contract Times must prove impact to the critical path of the project.

D. Work Change Directive (WCD) – A written statement to Contractor signed by the Owner, recommended by the Designer, and acknowledged by the Contractor ordering an addition, deletion, or revision in the Work, or responding to emergencies or differing or unforeseen conditions under which the Work is to be performed. A Work Change Directive will not change the Contract Price or Contract Times but is evidence that the parties expect that the change ordered will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Times.

E. Instruction to Contractor (ITC) – A document or written communication issued by the Owner or Designer directing the Contractor to prepare a proposal for a Change Order. An ITC may or may not influence the Contract Price or Times. An ITC may also be issued to clarify the drawings, specifications, or procedures.

F. Field Change Order (FCO) – A document formalizing the approval of a Change Order. This document will include all paperwork submitted by the Contractor and Designer to initiate the change, including the WCD or ITC, the COR, all supporting documentation submitted by the Contractor, and an analysis of the changes requested by the Designer justifying the increase/decrease to the Contract Prices/Times. Multiple FCOs may be combined into a single Change Order as defined below.

G. Change Order – A document authorizing an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times. Approval of a Change Order is determined by SWBNO Policy and may be modified. Table 12-1 is included at the end of this document for reference on the Signature

authority for Change Orders. This Table was approved by Board Resolution R-063-2021. This approval may be either a Board of Directors Resolution or an Executive Director's Change Authority document. A Change Order may consist of multiple changes to Contract Price and/or Times that would be memorialized in multiple Field Change Orders (FCOs) if necessary.

H. Request for Information (RFI) – A written request, from the Contractor to the Designer and/or Owners that asks for additional information or to clarify some aspect of the project, such as procedures, equipment, materials, specification details or drawing details.

I. Work – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

1.02 INSTRUCTION TO CONTRACTOR (ITC)

A. Owner may, in anticipation of ordering an addition, deletion, or revision to the Work, request Contractor to prepare a detailed proposal of cost and times to perform contemplated change via an ITC.

B. The ITC will include a reference number for tracking purposes and detailed description of and reason for proposed change, and such additional information as appropriate and as may be required for Contractor to accurately estimate cost and time impact on Project.

C. Proposal requests via ITCs are for information only. Contractor is neither authorized to execute a proposed change nor to stop Work in progress as result of such request.

D. Contractor's written proposal shall be transmitted to Designer for their review no later than 10 business days after Contractor's receipt of ITC.

E. Owner's request for proposal or Contractor's failure to submit such proposal within the required time period will not justify a Claim for an adjustment in Contract Price or Times.

1.03 CHANGE ORDER REQUEST (COR)

A. Include, at a minimum as part of the Contractor's Change Order Request (COR),

a. Specific references including Drawing numbers, Specification section and article/paragraph number, and Submittal type, Submittal number, date reviewed, Designer's comment, as applicable, with appropriate attachments.

b. Stipulated facts and pertinent documents, including photographs and statements.
c. Interpretations relied upon
d. Description of nature and extent of Claim, who or what caused the situation, impact to the Work and work of others, and discussion of claimant's justification for requesting a change to Contract Price or Times or both.
e. Estimated adjustment in price claimant believes it is entitled to with full documentation and justification. Estimate is to be detailed in nature, addressing all elements, materials, parts, equipment, labor, components, and the like affected by and/or incorporated into the Work as a result of the claimed adjustment.
f. Requested Change in Contract Times: include at least progress schedule documentation showing logic diagram for request, documentation that float times available for Work have been used, and revised activity logic with durations including sub-network logic revisions, duration changes, and other interrelated schedule impacts, as appropriate.
g. Documentation and/or information as may be necessary as set forth below for Work Change Directive, and as Designer may otherwise require.

B. For Work that will be performed by subcontract, Contractor is to submit three independent quotes that clearly reflect the scope of the respective modification. Additional supporting information as requested by the Designer shall be provided within 5 business days of request.

C. For Work that is to be self-performed, the Contractor is to provide a detailed breakdown of the Work by labor, materials, and equipment, detailing the labor force, equipment requirements, and providing three independent quotes for the required materials. Labor rates are to be consistent with the wage rate schedule included within these Documents, and equipment rates are to be consistent with those terms established in the General and Supplementary Conditions, and expanded on herein below, as applicable. Again, additional supporting information as requested by the Designer shall be provided within 5 business days of request.

1.04 WORK CHANGE DIRECTIVES

A. Designer will:
   a. Initiate, including a description of the Work involved and any attachments
   b. Sign and transmit electronic file to Owner for authorization.
   c. Provide any additional documentation as requested per RFI.

B. Owner will:
   a. Sign, demonstrating approval of the changes involved.
   b. Transmit electronic copies to Designer and Contractor

C. Contractor will:

a. Upon completion of Work covered by the WCD, submit COR documentation for inclusion in a Change Order
b. Provide documentation including, but not limited to:

i. Detailed records of Work performed
ii. Information required to substantiate resulting change in Contract Times and Contract Price for Work
iii. Support Data such as: dates Work was performed and by whom; time records, wage rates paid, equipment rental rates; invoices and receipts for materials, equipment, and subcontracts
1. Subcontracted Work: supply three independent quotes or documentation of cost reasonableness
2. Self-performed Work: supply three independent pricing quotes for materials or documentation of cost reasonableness

1.05 CHANGE ORDERS

A. Designer will prepare one electronic copy of proposed Change Order and transmit such with Designer's written recommendation based on one or multiple Field Change Orders.
B. Upon receipt of recommended Change Order, Owner will either:
a. Execute Change Order, or
b. Return to Designer unsigned copies with written justification for not executing Change Order.
C. Upon receipt of Owner-executed Change Order, Designer will transmit electronic packages to the Contractor, the Resident Project Representative or other field representative, and retain the package as part of the project file, or if Owner fails to execute the Change Order, Designer will promptly so notify Contractor and transmit Owner's justification to Contractor.
D. Upon receipt of documentation of the Owner-executed Change Order, Contractor shall:
a. Perform Work covered by Change Order.
b. Revise Schedule of Values to adjust Contract Price and submit with next Application for Payment.
c. Revise Progress Schedule to reflect changes in Contract Times, if any, and to adjust times for other items of Work affected by change.
d. Enter changes in Project record documents after completion of change related Work.
E. In signing a Change Order, Owner and Contractor acknowledge and agree that:
a. Stipulated compensation (Contract Price or Contract Times, or both) set forth includes payment for (i) the Cost of the Work covered by the Change Order, (ii) Contractor's fee for overhead and profit, (iii) interruption of Progress Schedule, (iv) delay and impact, including

cumulative impact, on other Work under the Contract Documents, and (v) extended overheads.

b. Change Order constitutes full mutual accord and satisfaction for the change to the Work.
c. Unless otherwise stated in the Change Order, all requirements of the original Contract Documents apply to the Work covered by the Change Order.

1.06 CHANGE ORDER PROCESS SUMMARY

This Section is to be used in conjunction with the *Change Order Flowchart* included.

A. Change Condition is identified by the Contractor.
B. Contractor initiates and submits an RFI
C. Designer responds to RFI indicating a Change Order is necessary.
D. If the Change Condition could delay the overall project schedule by waiting for approval at the next SWBNO Board of Directors meeting, then a WCD is issued by the Designer/Owner. Otherwise, skip to step (E).
    a. The Contractor begins Work as indicated in RFI Response/WCD.
    b. Contractor submits costs incurred as COR.
    c. If COR costs are justifiable, Designer/Owner creates FCO for Contractor signature.
    d. Owner submits Change Order to Executive Director (ED Change Authority) or Board of Directors based on Table 12-1 copied at the end of this document.
    e. After Approval of ED Change Authority or Board of Directors Resolution, Designer and/or Owner sign and return fully executed FCO(s) to Contractor.
    f. Contractor may include costs in the next Pay Application.
E. If the Change Condition does not impact the critical path of the project schedule, then the Designer/Owner submits an ITC to Contractor.
    a. The Contractor takes instructions from ITC and creates a proposal to complete the Work and submits as an COR.
    b. If COR costs are justifiable, Designer/Owner creates FCO for Contractor signature.
    c. Owner submits Change Order to Executive Director (ED Change Authority) or Board of Directors based on Table 12-1 copied at the end of this document.
    d. After Approval of ED Change Authority or Board of Directors Resolution, Designer and/or Owner sign and return fully executed FCO(s) to Contractor. Owner may concurrently issue a Notice to Proceed to Contractor for this Work.
    e. Contractor may include costs as incurred in following Pay Application(s)

1.07 REFERENCE DOCUMENTS

A. Contract Change Order Tier Summary per Resolution R-063-2021 (Attachment “A”)
B. Change Order Flowchart (Attachment “B”)
C. Instruction to Contractor Template/Example (Attachment “C”)
D. Work Change Directive Template/Example (Attachment “D”)
E. Field Change Order Template/Example (Attachment “E”)
F. ED Change Authority Template/Example (Attachment “F”)

PART 2 PRODUCTS (NOT USED)

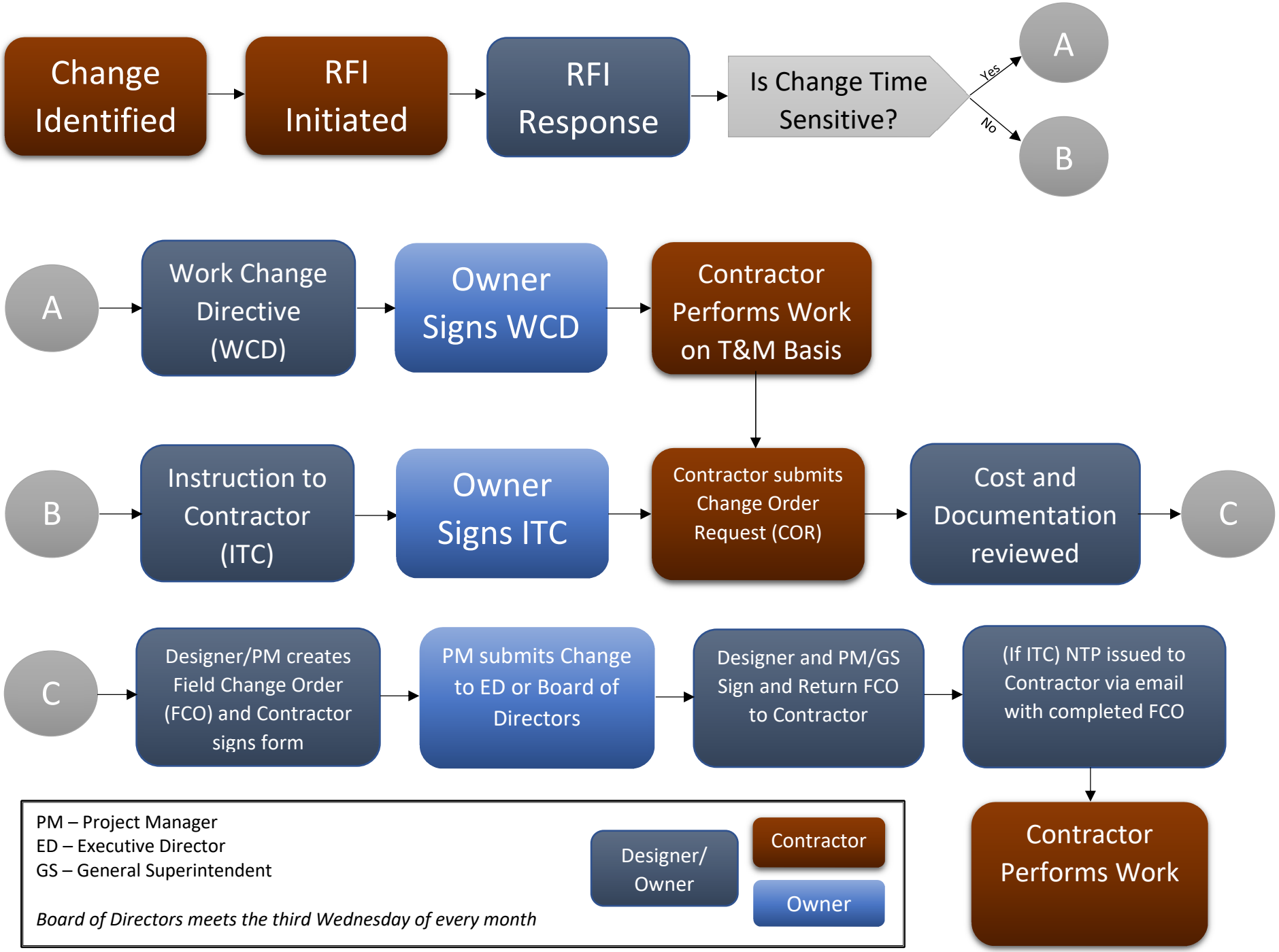
PART 3 EXECUTION (NOT USED)

END OF SECTION

Table 12-1. Contract Change Order Tier Summary

Contract Tier	Change Order Parameter	Signature Requirements
Tier One: Contract Aggregate <$1,000,000		
Change Order Scenario 1	If a change order is below 10% of the original contract value	Executive Director approves change order and SWBNO Board of Directors is notified during monthly meetings
Change Order Scenario 2	If a change order exceeds 10% of the original contract value, and total contract value remains below $1M	Executive Director approves change order and SWBNO Board of Directors is notified during monthly meetings
Tier Two: Contract Aggregate between $1,000,000 and $4,999,999.99		
Change Order Scenario 1	If a change order is less than $250,000 or 20% of the original contract value (whichever is less considering cumulative amount of change orders)	Executive Director approves change order and SWBNO Board of Directors is notified during monthly meetings
Change Order Scenario 2	If a change order or aggregate of change orders exceeds $249,999.99 or 20% of the original contract value (whichever is less considering cumulative amount of change orders)	SWBNO Board of Directors approves via F&A Committee. Executive Director signs resolution.
Tier Three: Contract Aggregate $5,000,000 and above		
Change Order Scenario 1	If a change order is less than $500,000 or 10% of the original contract value (whichever is less considering cumulative amount of change orders)	Executive Director approves change order and SWBNO Board of Directors is notified during monthly meetings
Change Order Scenario 2	If a change order or aggregate of change orders exceeds $499,999.99 or 10% of the original contract value (whichever is less considering cumulative amount of change orders)	SWBNO Board of Directors approves via F&A Committee. Executive Director signs resolution.

CHANGE ORDER FLOWCHART



INSTRUCTION TO CONTRACTOR

_____ **SWBNO Contract No.:** _____

Contract Name

Reference RFI No.
(If applicable) _____

_____

Contractor

Instruction No. 001

_____

Contract Description/Specification Section

Date: _____

This instruction is issued to:

- ☐ Clarify drawings, specifications, or procedures.
- ☐ Request a proposal.
- ☐ Transmit drawings or documents for incorporation into the work.

The SWBNO is directing the Contractor to:

Recommended by Designer: _____

Authorized by Owner: _____

IF, IN THE CONTRACTOR'S OPINION, A CLARIFICATION INVOLVES WORK WHICH CHANGES THE CONTRACT PRICE OR TIME, YOU MUST SUBMIT A CHANGE ORDER REQUEST OR NOTICE AS REQUIRED IN THE CONTRACT DOCUMENTS.

WORK CHANGE DIRECTIVE NO.: 001

Owner: Sewerage & Water Board of New Orleans
Designer:
Contractor:
Owner's Project No.: Contract No.
Contract Name:

Date Issued: **Effective Date of Work Change Directive:**

Contractor is directed to proceed promptly with the following change(s):

Description:

Attachments:

Purpose for the Work Change Directive:

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to:

☐Non-agreement on pricing of proposed change. ☐Necessity to proceed for schedule or other reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price: _____ ☐ increase ☐ decrease ☐ not yet estimated
Contract Time: _____ days ☐ increase ☐ decrease ☐ not yet estimated

Basis of estimated change in Contract Price:

☐ Lump Sum ☐ Unit Price ☐ Cost of the Work ☐ Other

	Recommended by Designer	Authorized by Owner	Received by Contractor
By:			
Title:			
Date:			

SWBNO FIELD CHANGE ORDER

FCO No.	Contract No.
Project Manager	Date
Project Name	**Contractor**
	Dated _____,_____ (Year)

**You are hereby requesting to make the following (In Scope) change(s) in acordance with the terms and conditions of the above contract

((Description of Change))

FOR THE (Additive/Deductive) Sum of	**$**	**-**
Original Contract Amount	$	1,000,000.00
Sum of Previous Changes	$	3,000.00
Present Contract Amount	$	1,003,000.00
This Change Add (Deduct)	$	2,000.00
Proposed Contract Amount	$	1,005,000.00

Commencement of Contract Times	1/1/2022
Contract Time (days)	365
Original Completion Date	1/1/2023
Previous Changes to Contract Times (days)	15
This Change to Times (days)	10
Revised Contract Completion Date	1/26/2023

Your acceptance of this Change Order shall constitue a modification to our Contract and will be performed subject to all the same terms and conditions in our Contract indicated above, as fully as if the same were repeated in this acceptance.

The adjustment, if any, to this Contract shall constitute a full and final settlement of any and all claims arising out of or related to the change set forth herein, including claims for impact and delay costs.

The Director of Procurement will direct the Contractor to increase the penal sum of the existing Performance, Payment Bonds and Insurance or to obtain additional bonds on the basis of a $100,000.00 or greater value change order. The Contractor Shall: Provide written confirmation within one (1) week of request: from their bonding company/agent (attorney-in-fact) that the amounts of the Performance, Payment Bonds and Insurance have been adjusted to 100% of the new contract amount. NOTE: No Invoices for change order work shall be paid without approved supporting documentation.

Contractor _____

Designer _____

Project Manager _____

General Superintedent _____

Executive Director's Approval of Change Order No. X **ED-00X-20XX**

Contract
Number/Name:

Contractor:

This Change Order, in the amount of XXXXXXX, represents additional construction costs (labor, material, and equipment) for_____. This change brings the accumulated contract change order total to $XXXX, or XXX% of the original contract. The cumulative contract total is now $XXXXXXXXX.

Provide Details

Attachments: Board of Directors Contractor Fact Sheet, S&WB Cost Estimate, and Contractor's Proposals

Recommended by: _____
M. Ron Spooner
Interim General Superintendent

Pursuant to the approval authority vested in the Executive Director by Resolution R-063-2021, I hereby approve Change Order X as indicated above.

_____
Ghassan Korban
EXECUTIVE DIRECTOR
SEWERAGE AND WATER BOARD OF NEW ORLEANS

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Coordination and Project conditions.

B. Preconstruction meeting.

C. Progress meetings.

D. Preinstallation meetings.

E. Closeout meeting.

F. Alteration procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.

B. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.

C. Coordinate completion and clean-up of Work of separate Sections in preparation for Substantial Completion.

1.3 PRECONSTRUCTION MEETING

A. Owner will schedule and preside over meeting after Notice of Award.

B. Attendance Required: Engineer, Owner, Resident Project Representative, appropriate governmental agency representatives, major Subcontractors, and Contractor.

C. Minimum Agenda:

1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of products, schedule of values, and Progress Schedule.
5. Designation of personnel representing parties in Contract and Engineer.
6. Communication procedures.
7. Procedures and processing of requests for interpretations, field decisions, field orders, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
8. Scheduling.

9. Critical Work sequencing.

D. Contractor: Record minutes and distribute to participants within five days after meeting, to Engineer, Owner, and those affected by decisions made.

1.4 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.

B. Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.

C. Attendance Required: Job superintendent, major Subcontractors, Contractors and suppliers, and Engineer, Owner, as appropriate to agenda topics for each meeting.

D. Minimum Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittal schedule and status of submittals.
6. Review of off-Site fabrication and delivery schedules.
7. Maintenance of Progress Schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on Progress Schedule and coordination.
13. Other business relating to Work.

E. Contractor: Record minutes and use Procore to distribute to participants within five days after meeting, to Engineer, Owner, and those affected by decisions made.

1.5 PREINSTALLATION MEETINGS

A. When required in individual Specification Sections, convene preinstallation meetings at Project Site before starting Work of specific Section.

B. Require attendance of parties directly affecting, or affected by, Work of specific Section.

C. Notify Engineer four days in advance of meeting date.

D. Prepare agenda and preside over meeting:

1. Review conditions of installation, preparation, and installation procedures.
2. Review coordination with related Work.

E. Contractor: Record minutes and use Procore to distribute to participants within two days after meeting, to Engineer, Owner, and those affected by decisions made.

1.6 CLOSEOUT MEETING

A. Schedule Project closeout meeting with sufficient time to prepare for requesting Substantial Completion. Preside over meeting and be responsible for minutes.

B. Attendance Required: Contractor, major Subcontractors, Engineer, Owner, and others appropriate to agenda.

C. Notify Engineer four days in advance of meeting date.

D. Minimum Agenda:

1. Contractor's inspection of Work.
2. Contractor's preparation of an initial "punch list."
3. Procedure to request Engineer inspection to determine date of Substantial Completion.
4. Completion time for correcting deficiencies.
5. Inspections by authorities having jurisdiction.
6. Partial release of retainage.
7. Final cleaning.
8. Preparation for final inspection.
9. Closeout Submittals:

    a. Project record documents.
    b. Affidavits.

10. Final Application for Payment.
11. Contractor's demobilization of Site.
12. Maintenance.

E. Contractor: Record minutes and use Procore to distribute to participants within five days after meeting, to Engineer, Owner, and those affected by decisions made.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 ALTERATION PROCEDURES

A. Entire facility will be occupied for normal operations during progress of construction. Cooperate with Owner in scheduling operations to minimize conflict and to permit continuous usage.

B. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion. Comply with Section 017000 - Execution and Closeout Requirements

C. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

D. Prepare surface and remove surface finishes to permit installation of new Work and finishes.

E. Remove, cut, and patch Work to minimize damage and to permit restoring products and finishes to specified condition.

F. Where new Work abuts or aligns with existing Work, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

G. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Engineer for review.

H. Where change of plane of 1/4 inch or more occurs, submit recommendation for providing smooth transition to Engineer for review and request instructions from Engineer.

I. Patch or replace portions of existing surfaces that are damaged.

J. Finish surfaces as specified in individual product Sections.

END OF SECTION 013000

SECTION 013216 - CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Digital Project data licensing.

B. Submittals.

C. Quality assurance.

D. Format for network analysis schedules.

E. Network analysis schedules.

F. Bar chart schedules.

G. Review and evaluation.

H. Updating schedules.

I. Distribution.

1.2 DIGITAL PROJECT DATA LICENSING

A. Use of Engineer's Digital Data Files: Digital data files of Engineer's CAD drawings will be provided by Engineer for Contractor's use during construction.

B. Conditions for Use:

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
2. Engineer makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
3. Digital Drawing Software Program: Contract Drawings are available in AutoCAD.
4. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Engineer.

    a. Subcontractors and other parties granted access by Contractor to Engineer’s digital data files shall execute a data licensing agreement in the form of Agreement acceptable to Owner and Engineer.

1.3 SUBMITTALS

A. Within 10 days after date established in Notice to Proceed, submit proposed preliminary network diagram defining planned operations for first 60 days of Work, with general outline for remainder of Work.

B. Participate in review of preliminary and complete network diagrams jointly with Engineer.

C. Within 20 days after joint review of proposed preliminary network diagram, submit draft of proposed complete network diagram for review.

D. Within 10 days after joint review, submit complete network analysis consisting of network diagrams and mathematical analyses.

E. Submit updated network schedules with each Application for Payment.

F. Submit network schedules under transmittal letter form specified in Section 013300 - Submittal Procedures.

G. Schedule Updates:

1. Overall percent complete, projected and actual.
2. Completion progress by listed activity and sub-activity, to within five working days prior to submittal.
3. Changes in Work scope and activities modified since submittal.
4. Delays in submittals or resubmittals, deliveries, or Work.
5. Adjusted or modified sequences of Work.
6. Other identifiable changes.
7. Revised projections of progress and completion.

H. Narrative Progress Report:

1. Submit with each monthly submission of Progress Schedule.
2. Summary of Work completed during the past period between reports.
3. Work planned during the next period.
4. Explanation of differences between summary of Work completed and Work planned in previously submitted report.
5. Current and anticipated delaying factors and estimated impact on other activities and completion milestones.
6. Corrective action taken or proposed.

1.4 QUALITY ASSURANCE

A. Scheduler: Contractor's personnel specializing in CPM scheduling with two years' minimum experience in scheduling construction work of complexity comparable to the Project.

1.5 NETWORK ANALYSIS SCHEDULES

A. Format For Network Analysis Schedule

1. Listings: Reading from left to right, in ascending order for each activity. Identify each activity with applicable Specification Section number.
2. Scale and Spacing: To allow for notations and revisions.

B. Prepare network analysis diagrams and supporting mathematical analyses using critical path method.

C. Illustrate order and interdependence of activities and sequence of Work; how start of given activity depends on completion of preceding activities, and how completion of activity may restrain start of subsequent activities.

D. Illustrate complete sequence of construction by activity, identifying Work of separate stages. Indicate dates for submittals and return of submittals; dates for procurement and delivery of critical products; and dates for installation and provision for testing. Include legend for symbols and abbreviations used.

E. Mathematical Analysis: Tabulate each activity of detailed network diagrams using calendar dates, and identify for each activity:

1. Preceding and following event numbers.
2. Activity description.
3. Estimated duration of activity, in maximum 15-day intervals. Status of critical activities.
4. Earliest start date.
5. Earliest finish date.
6. Actual start date.
7. Actual finish date.
8. Latest start date.
9. Latest finish date.
10. Total and free float; accrue float time to Owner and to Owner's benefit.
11. Monetary value of activity, keyed to Schedule of Values.
12. Percentage of activity completed.
13. Responsibility.

F. Analysis Program: Capable of accepting revised completion dates, and of recomputing of scheduled dates and float.

G. Required Sorts: List activities in sorts or groups:

1. By preceding Work item or event number from lowest to highest.
2. By longest float, then in order of early start.
3. By responsibility in order of earliest possible start date.
4. In order of latest allowable start dates.
5. In order of latest allowable finish dates.
6. Contractor's periodic payment request sorted by Schedule of Values list.
7. List of basic input data-generating report.
8. List of activities on critical path.

H. Prepare subschedules for each stage of Work identified in Section 011000 - Summary.

I. Coordinate contents with Schedule of Values in Section 013300 - Submittal Procedures.

J. Bar Chart Schedules

1. Format: Bar chart Schedule, to include at least:

a. Identification and listing in chronological order of those activities reasonably required to complete the Work, including:

1) Subcontract Work.

2) Major equipment design, fabrication, factory testing, and delivery dates including required lead times.
3) Move-in and other preliminary activities.
4) Equipment and equipment system test and startup activities.
5) Project closeout and cleanup.
6) Work sequences, constraints, and milestones.

b. Listings identified by Specification Section number.
c. Identification of the following:

2. Horizontal time frame by year, month, and week.
3. Duration, early start, and completion for each activity and subactivity.
4. Critical activities and Project float.
5. Subschedules to further define critical portions of Work.

1.6 REVIEW AND EVALUATION

A. Participate in joint review and evaluation of schedules with Engineer at each submittal.

B. Evaluate Project status to determine Work behind schedule and Work ahead of schedule.

C. After review, revise schedules incorporating results of review, and resubmit within 10 days.

1.7 UPDATING SCHEDULES

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity. Update schedules to depict current status of Work.

C. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

D. Upon approval of a Change Order, include the change in the next schedule submittal.

E. Indicate changes required to maintain Date of Substantial Completion.

F. Submit sorts as required to support recommended changes.

G. Prepare narrative report to define problem areas, anticipated delays, and impact on schedule. Report corrective action taken or proposed and its effect.

1.8 DISTRIBUTION

A. Following joint review, distribute copies of updated schedules to Procore.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 013216

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SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Definitions.

B. Submittal procedures.

C. Construction progress schedules.

D. Proposed product list.

E. Product data.

F. Use of electronic CAD files of Project Drawings.

G. Shop Drawings.

H. Samples.

I. Other submittals.

J. Design data.

K. Test reports.

L. Certificates.

M. Erection Drawings.

N. Construction photographs.

O. Contractor review.

P. Engineer review.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Engineer's and Construction Manager's responsive action.

B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

C. Procore is a construction management software company. The SWB will be using their software to manage this project.

1.3 SUBMITTAL PROCEDURES

A. Transmit each submittal with Engineer-accepted form using Procore.

B. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.

C. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.

D. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.

E. Schedule submittals to expedite Project, and submit electronic submittals via Procore as PDF electronic files. Coordinate submission of related items.

F. For each submittal for review, allow 15 days.

G. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.

H. Allow space on submittals for Contractor and Engineer review stamps.

I. When revised for resubmission, identify changes made since previous submission.

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

K. Submittals not requested will not be recognized nor processed.

L. Incomplete Submittals: Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Engineer.

1.4 CONSTRUCTION PROGRESS SCHEDULES

A. Comply with Section 013216 - Construction Progress Schedule

1.5 PROPOSED PRODUCT LIST

A. Within 15 days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.6 PRODUCT DATA

A. Product Data: Action Submittal: Submit to Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.

B. Submit electronic submittals via Procore as PDF electronic files.

C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.7 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.

B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:

1. Use of files is solely at receiver's risk. Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
4. Receiver shall not hold Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
5. Receiver shall understand that even though Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
6. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

1.8 SHOP DRAWINGS

A. Shop Drawings: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.

B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.

1. Include signed and sealed calculations to support design.
2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
3. Make revisions and provide additional information when required by authorities having jurisdiction.

D. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.9 SAMPLES

A. Samples: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.

B. Include identification on each Sample, with full Project information.

C. Submit number of Samples specified in individual Specification Sections; Engineer will retain one Sample.

D. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.

E. Samples will not be used for testing purposes unless specifically stated in Specification Section.

F. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.10 OTHER SUBMITTALS

A. Closeout Submittals: Comply with Section 017000 - Execution and Closeout Requirements.

B. Informational Submittal: Submit data for Engineer's knowledge as Contract administrator or for Owner.

C. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.11 TEST REPORTS

A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.

B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.12 CERTIFICATES

A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Engineer, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

1.13 ERECTION DRAWINGS

A. Informational Submittal: Submit Drawings for Engineer's knowledge as Contract administrator or for Owner.

B. Submit Drawings for information assessing conformance with information given and design concept expressed in Contract Documents.

C. Data indicating inappropriate or unacceptable Work may be subject to action by Engineer or Owner.

1.14 CONSTRUCTION PHOTOGRAPHS

A. Provide photographs of Site and construction throughout progress of Work.

B. Each month submit digital images with Application for Payment.

C. Take two Site digital images from different directions indicating relative progress of the Work, 5 days maximum before submitting.

D. Identify name of Project, orientation of view, date and time of view.

E. Digital Images: Deliver complete set of digital image electronic files on CD-ROM to Owner with Project record documents. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as sensor, uncropped.

1. Digital Images: Uncompressed TIFF format, produced by digital camera.
2. Date and Time: Include date and time in filename for each image.

1.15 CONTRACTOR REVIEW

A. Review for compliance with Contract Documents and approve submittals before transmitting to Engineer.

B. Contractor: Responsible for:

1. Determination and verification of materials including manufacturer's catalog numbers.
2. Determination and verification of field measurements and field construction criteria.
3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
4. Determination of accuracy and completeness of dimensions and quantities.
5. Confirmation and coordination of dimensions and field conditions at Site.
6. Construction means, techniques, sequences, and procedures.
7. Safety precautions.
8. Coordination and performance of Work of all trades.

C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.

D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Engineer.

1.16 ENGINEER REVIEW

A. Do not make "mass submittals" to Engineer. "Mass submittals" are defined as six or more submittals or items in one day or 15 or more submittals or items in one week. If "mass submittals" are received, Engineer's review time stated above will be extended as necessary to perform proper review. Engineer will review "mass submittals" based on priority determined by Engineer after consultation with Owner and Contractor.

B. Informational submittals and other similar data are for Engineer's information, do not require Engineer's responsive action, and will not be reviewed or returned with comment.

C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.

D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order or Work Change Directive.

E. Owner may withhold monies due to Contractor to cover additional costs beyond the second submittal review.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Quality control.

B. Tolerances.

C. References.

D. Testing and inspection services.

1.2 QUALITY CONTROL

A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.

B. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

C. Perform Work using persons qualified to produce required and specified quality.

D. Products, materials, and equipment may be subject to inspection by Engineer and Owner at place of manufacture or fabrication. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.

E. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.3 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current as of date of Contract Documents except where specific date is established by code.

C. Obtain copies of standards and maintain on Site when required by product Specification Sections.

D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Engineer shall be altered from Contract Documents by mention or inference in reference documents.

1.5 TESTING AND INSPECTION SERVICES

A. Owner will employ and pay for specified services of an independent firm to perform testing and inspection except as otherwise noted in these specifications.

B. Employ and pay for services of an independent testing agency or laboratory acceptable to Owner to perform specified testing.

1. Before starting Work, submit testing laboratory name, address, and telephone number, and names of full-time specialist and responsible officer.
2. Submit copy of report of laboratory facilities' inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of deficiencies reported by inspection.

C. Independent firm will perform tests, inspections, and other services specified in individual Specification Sections and as required by Engineer.

1. Laboratory: Authorized to operate in State of Louisiana.
2. Laboratory Staff: Maintain full-time Professional Engineer on staff to review services.
3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.

D. Testing, inspections, and source quality control may occur on or off Project Site. Perform off-Site testing as required by Engineer or Owner.

E. Reports shall be submitted by independent firm to Engineer, Contractor, and authorities having jurisdiction indicating observations and results of tests and compliance or noncompliance with Contract Documents.

1. Submit final report indicating correction of Work previously reported as noncompliant.

F. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.

1. Notify Engineer and independent firm 24 hours before expected time for operations requiring services.
2. Make arrangements with independent firm and pay for additional Samples and tests required for Contractor's use.

G. Employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.

H. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Engineer. Payment for retesting or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

I. Agency Responsibilities:

1. Test Samples of mixes submitted by Contractor.
2. Provide qualified personnel at Site. Cooperate with Engineer and Contractor in performance of services.
3. Perform indicated sampling and testing of products according to specified standards.
4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Engineer and Contractor of observed irregularities or nonconformance of Work or products.
6. Perform additional tests required by Engineer.
7. Attend preconstruction meetings and progress meetings.

J. Agency Reports: After each test, promptly submit two copies of report to Engineer, Contractor, and authorities having jurisdiction. When requested by Engineer, provide interpretation of test results. Include the following:

1. Date issued.
2. Project title and number.
3. Name of inspector.
4. Date and time of sampling or inspection.
5. Identification of product and Specification Section.
6. Location in Project.
7. Type of inspection or test.
8. Date of test.
9. Results of tests.
10. Conformance with Contract Documents.

K. Limits on Testing Authority:

1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency or laboratory may not approve or accept any portion of the Work.
3. Agency or laboratory may not assume duties of Contractor.
4. Agency or laboratory has no authority to stop the Work.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Temporary Utilities:

1. Temporary electricity.
2. Temporary lighting for construction purposes.
3. Communication services.
4. Temporary water service.
5. Temporary sanitary facilities.

B. Construction Facilities:

1. Vehicular access.
2. Parking.
3. Progress cleaning and waste removal.
4. Project identification.

C. Temporary Controls:

1. Security.
2. Noise control.
3. Pollution control.

D. Removal of utilities, facilities, and controls.

1.2 TEMPORARY ELECTRICITY

A. Provide and pay for power service required as needed for construction operation.

1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain lighting for construction operations.

1.4 TEMPORARY WATER SERVICE

A. Provide and pay for suitable quality water service as needed for construction operations.

1.5 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide facilities at time of Project mobilization.

1.6 VEHICULAR ACCESS

A. Locate as approved by Owner.

1.7 PARKING

A. Arrange for surface parking areas to accommodate construction personnel.

B. Locate as approved by Owner.

C. Maintenance:

1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, and the like.
2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original condition.

D. Removal, Repair:

1. Remove temporary materials and construction before Substantial Completion.
2. Repair existing facilities damaged by use, to original condition.

E. Mud from Site vehicles: Provide means of removing mud from vehicle wheels before entering streets.

1.8 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.

B. Collect and remove waste materials, debris, and rubbish from Site periodically and dispose of off-Site.

1.9 PROJECT IDENTIFICATION

A. Project Identification Sign:

1. Two painted signs, 32-sq ft area, bottom 6 feet aboveground.
2. Content:

    a. Project number, title, logo, and name of Owner.
    b. Names and titles of authorities.
    c. Names and titles of Engineer and Consultants.
    d. Name of Prime Contractor.

3. Graphic Design, Colors, and Style of Lettering: Designated by Engineer.

B. Sign Painter: Experienced as professional sign painter.

C. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

D. Show content, layout, lettering, and color.

E. Sign Materials:

1. Structure and Framing: Wood, structurally adequate.
2. Sign Surfaces: Exterior grade plywood with medium-density overlay, minimum of 3/4 inches thick, standard large sizes to minimize joints.
3. Rough Hardware: Galvanized.
4. Paint and Primers: Exterior quality, two coats; sign background of color as selected.
5. Lettering: Exterior quality paint, contrasting colors as selected.

F. Installation:

1. Install Project identification sign within 15 days after date established by Notice to Proceed.
2. Erect at designated location.
3. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
4. Install sign surface plumb and level, with butt joints. Anchor securely.
5. Paint exposed surfaces of sign, supports, and framing.

G. Maintenance: Maintain clean signs and supports; repair deterioration and damage.

H. Removal: Remove signs, framing, supports, and foundations at completion of Project and restore area.

1.10 SECURITY

A. Security Program:

1. Protect Work on existing premises and Owner's operations from theft, vandalism, and unauthorized entry.
2. Initiate program in coordination with Owner's existing security system at Project mobilization.
3. Maintain program throughout construction period until Owner's acceptance precludes need for Contractor's security.

B. Entry Control:

1. Restrict entrance of persons and vehicles to Project Site.
2. Allow entrance only to authorized persons with proper identification.
3. Owner will control entrance of persons and vehicles related to Owner's operations.

C. Personnel Identification:

1. Provide identification badge for each person authorized to enter premises.
2. Maintain list of accredited persons and submit copy to Owner on request.

1.11 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.

B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.12 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials before Final Application for Payment inspection.

B. Clean and repair damage caused by installation or use of temporary Work.

C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Product delivery requirements.

C. Product storage and handling requirements.

D. Product options.

1.2 PRODUCTS

A. At minimum, comply with specified requirements and reference standards.

B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.

C. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.

D. Domestic Products: Except where specified otherwise, domestic products are required and interpreted to mean products mined, manufactured, fabricated, or produced in United States or its territories.

E. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products according to manufacturer's instructions.

B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products according to manufacturer's instructions.

B. Store products with seals and labels intact and legible.

C. For exterior storage of fabricated products, place products on sloped supports aboveground.

D. Provide bonded off-Site storage and protection when Site does not permit on-Site storage or protection.

E. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.

F. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.

G. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and complying with Specifications; no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit Request for Substitution for any manufacturer not named, according to Section 012500 - Substitution Procedures.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 016000

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Examination.

B. Preparation.

C. Field engineering.

D. Cutting and patching.

E. Protecting installed construction.

F. Closeout procedures.

G. Project record documents.

H. Product warranties and product bonds.

I. Final cleaning.

1.2 EXAMINATION

A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual Specification Sections.

D. Verify that utility services are available with correct characteristics and in correct locations.

1.3 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer-required or -recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

1.4 FIELD ENGINEERING

A. Locate and protect survey controls and reference points. Promptly notify Engineer of discrepancies discovered.

B. Confirm Drawing dimensions and elevations.

C. Provide field engineering services. Establish elevations, lines, and levels using recognized engineering survey practices.

D. Maintain complete and accurate log of control and survey Work as Work progresses.

E. Protect survey control points prior to starting Site Work; preserve permanent reference points during construction.

F. Promptly report to Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.

G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.

1.5 CUTTING AND PATCHING

A. Employ skilled and experienced Installers to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements affecting the following:

1. Structural integrity of element.
2. Integrity of weather-exposed or moisture-resistant elements.

C. Execute cutting, fitting, and patching to complete Work and to accomplish the following:

1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and nonconforming Work.
4. Remove samples of installed Work for testing.

D. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.

E. Restore Work with new products according to requirements of Contract Documents.

F. Identify the hazardous substances or conditions exposed during the Work to Engineer for decision or remedy.

1.6 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual Specification Sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.

1.7 CLOSEOUT PROCEDURES

A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:

1. Submit Project record documents, digital images of construction photographs, and other similar final record data in compliance with this Section.
2. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
3. Discontinue or change over and remove temporary facilities and services from Project Site.
4. Perform final cleaning according to this Section.

B. Substantial Completion Inspection:

1. When Contractor considers Work to be substantially complete, submit to Engineer:

    a. Written certificate that Work, or designated portion, is substantially complete.
    b. List of items to be completed or corrected (initial punch list).

2. Within seven days after receipt of request for Substantial Completion, Engineer will make inspection to determine whether Work or designated portion is substantially complete.
3. Should Engineer determine that Work is not substantially complete:

    a. Engineer will promptly notify Contractor in writing, stating reasons for its opinion.
    b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Engineer.
    c. Engineer will reinspect Work.
    d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.

4. When Engineer finds that Work is substantially complete, Engineer will:

    a. Prepare Cert ificate of Su bstantial Com pletion on EJCDC C-625 - Certifi cate o f Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Engineer and Owner (final punch list).
    b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.

5. After Work is substantially complete, Contractor shall:

    a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
    b. Complete Work listed for completion or correction within time period stipulated.

C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.

1. When Contractor considers Work to be complete, submit written certification that:

    a. Contract Documents have been reviewed.

b. Work has been examined for compliance with Contract Documents.
c. Work has been completed according to Contract Documents.
d. Work is completed and ready for final inspection.

2. Submittals: Submit following:

a. Final punch list indicating all items have been completed or corrected.
b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
d. Accounting statement for final changes to Contract Sum.
e. Contractor's affidavit of payment of debts and claims.
f. Final lien and privilege certificate.
g. Consent of surety to final payment.

3. Perform final cleaning for Contractor-soiled areas according to this Section.

D. Final Completion Inspection:

1. Within seven days after receipt of request for final inspection, Engineer will make inspection to determine whether Work or designated portion is complete.
2. Should Engineer consider Work to be incomplete or defective:

a. Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
b. Contractor shall remedy stated deficiencies and send second written request to Engineer that Work is complete.
c. Engineer will reinspect Work.
d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.

1.8 PROJECT RECORD DOCUMENTS

A. Maintain on Site one set of the following record documents; record actual revisions to the Work:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed Shop Drawings, product data, and Samples.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:

1. Manufacturer's name and product model and number.
2. Product substitutions or alternates used.
3. Changes made by Addenda, bulletin, Change Order, and modifications.

F. Record Drawings: Legibly mark each item to record actual construction as follows:

1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
2. Include locations of concealed elements of the Work.
3. Identify and locate existing buried or concealed items encountered during Project.
4. Field changes of dimension and detail.
5. Details not on original Drawings.

G. Submit marked-up paper copy documents to Engineer before Substantial Completion.

H. Submit PDF electronic files of marked-up documents to Engineer with claim for final Application for Payment.

1.9 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers within ten days after completion of applicable item of Work.

B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Include table of contents and assemble in binder with durable cover.

F. Submit prior to final Application for Payment.

G. Time of Submittals:

1. Make other submittals within ten days after date of Substantial Completion, prior to final Application for Payment.
2. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

1.10 FINAL CLEANING

A. Execute final cleaning prior to final Project assessment.

B. Remove waste and surplus materials, rubbish, and construction facilities from Site.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 017000

SECTION 020000 - TECHNICAL SPECIFICATIONS

1.01 GENERAL

STANDARD SPECIFICATIONS

Except as superseded by the Contract Documents for this specific project, the specifications for this project are the "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, 2015 Edition (adopted 11/5/2015).

1.02 PRODUCTS - Not Used

1.03 EXECUTION - Not Used

END OF SECTION 020000

SECTION 023219 - EXPLORATORY EXCAVATION

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

This work consists of excavating along the alignment of the new and existing water lines at points of potential conflict to determine the exact location of existing utilities. Approval to proceed shall be obtained from the Engineer before any exploratory excavation is to begin. An exploratory excavation plan showing proposed locations shall be submitted to the Engineer for approval before any excavation can begin. Any deviation from the approved plan must be approved in writing by the Engineer before excavation can begin.

Test pits shall be backfilled immediately after the desired information has been obtained. The backfilled surface shall be restored and maintained in a manner satisfactory to the Engineer. Upon completion of exploratory excavations, contractor shall submit documentation to Engineer illustrating the location of utilities and discovery of obstructions identified to the nearest permanent structure upon the plans.

END OF SECTION

SECTION 031113 - CONCRETE FORMWORK

PART 1 – GENERAL

1.01 WORK INCLUDED

A. Wood formwork for cast-in-place concrete, complete with shoring, bracing, and anchorage.

B. Coordinate installation of items supplied by other sections of work.

1.02 RELATED WORK

A. Cast in Place Concrete – Section 033000

1.03 QUALITY ASSURANCE

Construct and erect concrete formwork in accordance with ACI 347 and applicable construction safety regulations for place of work.

1.04 REFERENCES

A. ACI 318 - Building Code Requirements for Reinforced Concrete.

B. ACI 347 - Recommended Practice for Concrete Formwork.

PART 2 – PRODUCTS

2.01 WOOD FORM MATERIALS

A. Plywood: Douglas Fir species; solid one side sheathing grade; sound undamaged sheets with clean true edges.

B. Lumber: Southern Pine species; No. 7 grade; with grade stamp clearly visible.

C. Nails, spikes, lag bolts, through bolts, anchorages: Sized as required; of sufficient strength and character to maintain formwork in place while pouring concrete.

2.02 PREFABRICATED FORMS

A. Steel type: Minimum 4 gage well matched, tight fitting, and adequately stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished concrete surfaces.

B. Pan type: Removable of sizes and profiles required.

2.03 FORMWORK ACCESSORIES

A. Form ties: Snap-off metal type of fixed length; minimum working strength of 3000 psi when assembled; free of defects that will leave holes larger than one inch in concrete surface.

B. Form release agent: Colorless mineral oil which will not stain concrete or impair natural bonding or color characteristics of coating intended for use on concrete.

C. Fillets of chamfered corners: Rigid foam plastic or wooden type; ¾" x ¾" size; maximum possible lengths.

2.04 ACCEPTABLE MANUFACTURERS

A. Acceptable manufacturers shall be an approved product listed in LADOTD QPL 29.

PART 3 – EXECUTION

3.01 FORMWORK ERECTION

A. Verify lines, levels, and centers before proceeding with formwork. Verify that dimensions agree with drawings.

B. Construct formwork, shoring and bracing to meet design and code requirements, so that resultant finished concrete conforms to required shapes, lines, and dimensions.

C. Arrange and assemble formwork to permit dismantling and stripping, so that concrete is not damaged during its removal.

D. Align joints and make watertight, to prevent leakage of mortar disfigured appearance of concrete. Keep form joints to minimum.

E. Obtain Engineer's review for use of earth forms. When using earth forms, hand-trim sides and bottoms, and remove loose dirt prior to placing concrete.

F. Arrange forms to allow stripping without removal of principal shores, where and when these are required to remain in place.

G. Obtain Engineer's review before framing openings in structural members, which is not indicated on drawings.

H. Provide bracing to ensure stability of formwork. Prop or strengthen previously constructed formwork liable to be overstressed by construction loads.

I. Provide chamfer strips on external corners of beams.

J. Construct formwork to maintain following maximum tolerances.

1. Deviation from horizontal and vertical lines.

a. 1/4 inch in 10 feet.
b. 3/8 inch in 20 feet.
c. 3/4 inch in 40 feet.

K. Apply form release agent on formwork in accordance with manufacturer's recommendations. Apply prior to placing reinforcing steel, anchoring devices, and embedded items.

L. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.

3.02 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for pipes, conduits, sleeves, and other work embedded in and passing through concrete members.

B. Locate and set in place items which will be cast directly into concrete.

C. Coordinate work of other sections and cooperate with trade involved in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts. Do not perform work unless specifically indicated on drawings or reviewed prior to installation.

D. Install concrete accessories in accordance with manufacturer's recommendations; straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Place formed construction joints in pattern pouring sequence. Set top screed to required elevations. Secure to resist movement of wet concrete.

F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain. Close temporary ports or openings with tight fitting panels, flush with inside face of forms, neatly fitted so that joints will not be apparent in exposed concrete surfaces.

3.03 FIELD QUALITY CONTROL

A. Inspect and check completed formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and parts are secure.

B. Inform Engineer when formwork is complete and has been cleaned, to allow for inspection. Obtain review prior to placing concrete.

C. Allow Engineer to inspect each section of used formwork prior to reuse.

3.04 CLEANING

Clean forms as erection proceeds, to remove foreign matter. Remove cuttings, shavings, and debris from within forms. 'Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

3.05 FORM REMOVAL

A. Notify Engineer prior to removing formwork.

B. Do not remove forms, shores, and bracing until concrete has gained sufficient strength to carry its own weight, construction and design loads which are liable to be imposed upon it. Verify strength of concrete by compressive test results.

C. Remove formwork progressively and in accordance with code requirements and so that no shock loads or unbalanced loads are imposed on structure.

D. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against concrete surfaces.

E. Leave forms loosely in place, against vertical surfaces, for protection until complete removal is reviewed by Engineer

F. Store removed forms, for exposed architectural concrete, in manner that surfaces to be in contact with fresh concrete will not be damaged. Marked or scored forms will be rejected.

G. Re-shore structural members where required due to design requirements or construction conditions and as required to permit progressive construction. Remove load supporting forms only when concrete has attained 75 percent of required 28-day compressive strength, provided construction is re-shored.

H. Remove forms not directly supporting weight of concrete as soon as stripping operations will not damage concrete.

END OF SECTION

SECTION 032111 - CONCRETE REINFORCEMENT

PART 1 – GENERAL

1.01 WORK INCLUDED

A. Reinforcing steel bars, welded steel wire fabric, and fabricated steel bar or rod mats for cast-in-place concrete, complete with tie wire for proposed valve vaults.

B. Support chairs, bolsters, bars supports, spacers for reinforcing proposed valve vaults.

1.02 RELATED WORK

A. Section 033000: Cast-in-Place Concrete

1.03 QUALITY ASSURANCE

Perform concrete reinforcing work in accordance with CRSI PRB unless specified otherwise in this section.

1.04 REFERENCES

A. ACI 318 - Building Code Requirements for Reinforced Concrete

B. CRSI PRB - Placing Reinforcing Bars

C. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement

D. ASTM A615 - Deformed and Plain Carbon Steel Bars for Concrete Reinforcement

E. ASTM A616 - Rail Steel Deformed and Plain Bars for Concrete Reinforcement

F. ASTM A617 - Axle Steel Deformed and Plain Bars for Concrete Reinforcement

G. ASTM A497 – Steel Welded Wire Reinforcement, Deformed, for Concrete.

H. AWS D1.4 – Structural Welding Code, Reinforcing Steel.

I. ACI 315 - American Concrete Institute – Details and Detailing of Concrete Reinforcement.

1.05 SHOP DRAWINGS

A. Submit shop drawings in accordance with Section 013300.

B. Indicate bar sizes, spacings, locations, and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices.

C. Prepare shop drawings under seal of Professional Structural Engineer registered in the State of Louisiana.

PART 2 – PRODUCTS

2.01 REINFORCING

A. Reinforcing steel: Comply with ASTM A615, Grade 60.

B. Welded steel wire fabric: Comply with ASTM A185.

2.02 ACCESSORY MATERIALS

A. Tie wire: minimum 16 gauge annealed type, or patented system accepted by Engineer.

B. Chairs, bolsters, bar supports, spacers: Sized and shaped for strength and support of reinforcing during construction conditions.

C. Special chairs, bolsters, bar supports, spacers (where adjacent to architectural concrete surfaces) plastic coated type; sized and shaped as required.

2.03 FABRICATION

A. Fabricate concrete reinforcing in accordance with ACI 315.

B. Locate reinforcing splices, not indicated on drawings, at points of minimum stress. Location of splices shall be reviewed by Engineer.

C. Where indicated, weld reinforcing bars in accordance with AWS D1.4.

PART 3 – EXECUTION

3.01 CONCRETE PROTECTION FOR REINFORCEMENT

A. Place and hold steel reinforcement in position so the concrete cover, as measured from the surface of the bar, will be the following, except as otherwise specified or indicated on the Drawings:

1. Cast-in-place concrete (nonprestressed). The following minimum concrete cover shall be provided for reinforcement:

		Minimum Cover (inches)
a.	Concrete cast against and permanently exposed to earth	3
b.	Concrete exposed to earth or weather:	
	#6 Through #18 Bars…	2
	#5 bar, W31 or D31 wire, and smaller…	1 ½
C.	Concrete not exposed to weather or in contact with ground: slabs, walls, joints:	
	#14 and #18 bars…	1 1/2
	#11 bar and smaller	1 1/2
	Beams, columns: Primary reinforcement, ties, stirrups, spirals	1 1/2

2. Precast concrete (manufactured under plant control conditions)

The following minimum concrete cover shall be provided for reinforcement:

a. Concrete exposed to earth or weather Wallpanels:	
#14 and #18 bars	1 1/2
#11 bar and smaller	3/4
Other Members:	
#14 and #18 bars	2
#6 through #11 bars	1 1/2

#5 bar, W31 or D31 wire, and smaller	1 1/4

b. Concrete not exposed to weather or in contact with ground:

slabs, walls, joints:	
#14 and #18 bars	1 1/4
#11 bar and smaller	5/8
Beams, columns:	
Primary reinforcement	Nominal Diameter of Bar, Wire or Strand but not less than 5/8 and need not exceed 1
Ties, stirrups, spirals	3/8

3.02 PLACING

A. Support and wire all reinforcing bars together to prevent displacement by construction loads or the placing of concrete beyond the tolerances specified. Use supporting concrete blocks on ground surfaces. Use concrete, metal, or plastic bar chairs, over forms. The portion of all accessories in contact with the formwork shall be plastic, galvanized or plastic coated where the concrete surface will be exposed to the weather in the finished structure, or where rust would impair architectural finishes.

B. Furnish and set templates for all column dowels to insure proper placement.

C. Splices, when approved by the Engineer, may be used at locations not shown on the Drawings. All splices shall comply with the Department of Public Works Standard Drawings.

D. Reinforcement shall not be bent after being embedded in hardened concrete unless approved by the Engineer.

E. Bars may be moved as necessary to avoid interference with other reinforcing steel conduits, or embedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, the resulting arrangement of bars shall be subject to approval by the Engineer.

3.03 FIELD QUALITY CONTROL

A. Physical properties of reinforcing steel are subject to testing by an independent laboratory for compliance with ASTM A-615. The Contractor shall furnish all samples required for such testing.

B. The Contractor shall give the Engineer twenty-four (24) hour notice of the completion of reinforcing steel setting, and sufficient time before the start of concrete placement to inspect the layout and for Contractor to make any required corrections.

END OF SECTION

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 WORK INCLUDED

Contractor shall furnish all labor, materials, tools, equipment and related items required to do the cast-in-place concrete work as specified herein.

1.02 RELATED WORK

A. Section 031113: Concrete Formwork

B. Section 032111: Concrete Reinforcement

1.03 QUALITY ASSURANCE

Perform cast-in-place concrete work in accordance with ACI 318, unless specified otherwise in this section.

1.04 TESTING LABORATORY SERVICES

A. Inspection and testing will be performed by firm in accordance with Section 014000.

B. Provide free access to work and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to Engineer for review prior to commencement of work.

D. Tests of cement and aggregates may be performed to ensure conformance with requirements stated herein.

E. Minimum four concrete test cylinders will be taken for every pour.

F. One slump test will be taken for each set of test cylinders taken as a minimum: However, slump tests will be taken as often as required by the Engineer or his representative.

1.05 REFERENCES

A. ASTM C33 - Concrete Aggregates

B. ASTM C150 - Portland Cement

C. ACI 318 - Building Code Requirements for Reinforced Concrete

D. ASTM C260 - Air Entraining Admixtures for Concrete

E. ASTM C494 - Chemical Admixtures for Concrete

F. ASTM C94 - Ready-Mixed Concrete

G. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete

H. ACI 305 - Recommended Practice for Hot Weather Concreting

I. ACI 306 - Recommended Practice for Cold Weather Concreting

J. ACI 301 - Specifications for Structural Concrete

PART 2 – PRODUCTS

2.01 CONCRETE MATERIALS

A. Cement: Normal-Type II, High early strength-Type III, Portland type, ASTM C150.

B. Fine and Coarse Aggregates: ASTM C33. At the time of its use, the aggregate shall be free from all foreign material or dirt which may become mixed with the aggregate stockpile. If less than 2% of the fine aggregate passes a No. 100 sieve, limestone dust shall be added to provide this minimum percentage.

C. Water: Clean, fresh and free from injurious amounts of oil, alkali, organic matter, or other deleterious material.

2.02 ADMIXTURES

Each of the following admixtures shall only be used when instructed by the Owner or Engineer. They shall comply with the appropriate specifications as indicated.

A. Air Entrainment: ASTM C260.

B. Chemical: ASTM C494 Type A - water reducing and Type B - retarding admixture.

2.03 ACCEPTABLE MANUFACTURERS

The Acceptable Manufacturers of ready mix concrete must have sufficient plant capacity and ready mix transportation trucks to insure a continuous delivery to the job site; the rate should be such that the interval between batches shall not exceed 20 minutes. The methods of delivering the concrete shall be such that they will facilitate its placing with a minimum of rehandling and without damaging the concrete or its forms.

2.04 ACCESSORIES

A. Bonding Agent: Two component modified epoxy resin; Non-solvent two component polysulphide-epoxy; Mineral filled polysulphide polymer epoxy resin. Acceptable manufacturers shall be an approved product listed in LADOTD QPL 32.

B. Non-shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2400 psi in 2 days and 7000 psi in 28 days.

2.05 CONCRETE MIXES

A. Mix concrete in accordance with ASTM C94.

B. Provide concrete of following strength:

1. Compressive strength 4000 psi.

2. Select proportions for normal weight concrete in accordance with ACI 301 3.8 by Method 1, Method 2, or Method 3. Add air entraining agent to concrete to entrain air as indicated in ACI 301 Table 3.4.1.

C. Add air entraining agent to concrete mix for concrete work exposed to exterior.

D. Weather Conditions

1. Cold Weather

a. The minimum temperature of the concrete when delivered at the site of the work shall conform to the following temperature limitation:

Air Temperatures Degrees F.	Minimum Concrete Temperature, Degrees F. For Sections Less than 12 in. thick	For Sections 12 in. to 36 in. thick
30 to 45	60	50
0 to 30	65	55
Below 0	70	60

2. Provisions shall be made for maintaining concrete moist and at a minimum temperature of not less than 50°F for a period of at least 7 days.

3. Hot Weather

a. The maximum temperature of the concrete when delivered at the site of the

work shall not exceed 85 degrees Fahrenheit.

b. The ingredients shall be cooled before mixing, or flake ice or well-crushed ice of a size that will melt completely during mixing may be substituted for all or part of the mixing water if necessary to maintain the temperature of the concrete below 85 degrees Fahrenheit.

c. A retarding agent complying with ASTM C-494 Type B shall be used under the following circumstances:

    i. If the temperature of the air is above 85 degrees Fahrenheit.

    ii. If the temperature of the concrete as placed is above 80 degrees Fahrenheit.

    iii. Where large pours are permitted, to allow all portions to remain plastic until adjacent concrete is placed.

PART 3 – EXECUTION

3.01 PLACING CONCRETE

A. Place concrete in accordance with ACI 304.

B. Notify Engineer minimum 24 hours prior to commencement of concreting operations.

C. Verify anchors, seats, plates, and other items to be cast into concrete are placed, held securely, and will not cause hardship in placing concrete. Rectify same and proceed with work.

D. Maintain records of poured concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

E. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints, are not disturbed during concrete placement.

F. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.

G. Conform to ACI 305 when concreting during hot weather.

H. Conform to ACI 306 when concreting during cold weather.

3.02 PATCHING

Allow Engineer to inspect concrete surfaces immediately upon removal of forms. Patch

imperfections as directed.

3.03 DEFECTIVE CONCRETE

A. Modify or replace concrete not conforming to required lines, details and elevations.

B. Repair or replace concrete not properly placed resulting in excessive honeycombing and other defects. Do not patch, fill touch-up, repair, or replace concrete except upon express direction of Engineer for each individual area.

3.04 CURING AND PROTECTION

Beginning immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

END OF SECTION

SECTION 05 12 00 - STRUCTURAL STEEL

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Furnish all labor, materials, equipment, and incidentals, and install structural steel including bearing plates, columns, beams and miscellaneous shapes and plates required to erect the structural framing as shown on the Drawings and as specified herein.
   2. Furnish anchor bolts with templates to be installed under Division 03. Furnish and install nuts and washers for anchor bolts.

1.2 RELATED SECTIONS

A. Section 055000 – Miscellaneous Metal.

1.3 SUBMITTALS

A. Submit, in accordance with Section 011340, shop drawings and product data including the following:
   1. Erection drawings, detailed shop drawings, anchor bolt placement drawings, schedules, and data for all structural steel. Approval will be for strength only and shall not relieve the Contractor of responsibility for proper fit of members and for supplying all material required by the Contract Documents. Clearly identify the portion of the work represented by the shop drawings, and clearly identify the placement of each piece shown on the detail drawings. Identify all welds in conformance with AWS A2.4. Mark numbers painted on the shop assembled pieces of steel shall be the same mark numbers used on the detailed shop and erection drawings.
   2. Product data and installation instructions for Contractor proposed load indicator bolts or direct tension indicators.
   3. Documentation of certification of the steel fabricator under the AISC Quality Certification Program.

B. Samples:
   1. Submit two samples of Contractor’s proposed load indicator bolts or direct tension indicators.

C. Test Reports:
   1. Certified mill test reports for the structural steel and the bolting materials.
   2. Certifications that welders are qualified, in accordance with AWS D1.1, on the shop and field welding procedures to be used. Welders shall have been certified within the previous 12 months.

1.4 REFERENCE STANDARDS

A. American Institute of Steel Construction (AISC):
   1. AISC 303-10 - Code of Standard Practice for Steel Buildings and Bridges.
   2. AISC 325-11 - Steel Construction Manual, 14th Edition.

3. ANSI/AISC 360-10 - Specification for Structural Steel Buildings.
4. AISC 348-09 - Specification for Structural Joints Using High Strength Bolts (Research Council on Structural Connections).

B. ASTM International:
1. ASTM A36 - Standard Specification for Carbon Structural Steel.
2. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
3. ASTM A123 - Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.
4. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
5. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
6. ASTM A490 - Standard Specification for Heat-Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength.
7. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
8. ASTM A 572 – Standard Specification for High Strength Low Alloy Columbium-Vanadium Structural Steel
9. ASTM A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coating.
10. ASTM A992 - Standard Specification for Structural Shapes.
11. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
12. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55 and 105-ksi Yield Strength.
13. ASTM F2329 - Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.

C. American Welding Society (AWS):
1. AWS A2.4 - Standard Symbols for Welding, Brazing and Non-destructive Examination.
2. AWS A5.1 - Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding.
3. AWS D1.1 - Structural Welding Code - Steel.

D. Code of Federal Regulations (CFR):
1. 29 CFR - Part 1926 Subpart R - Steel Erection.

E. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply, unless otherwise noted.

1.5 QUALITY ASSURANCE

A. Structural steel shall be in accordance with ANSI/AISC 360-10 and AISC 303-10, unless otherwise specified herein.

B. Welding shall be in accordance with AWS D1.1 unless otherwise specified herein.

C. High strength bolt materials, accessories, and installation shall be in accordance with AISC 348-09.

D. When pre-tensioning of high strength bolts is required, the Contractor shall provide a tension calibrator on site for pre-installation verification of fastener assemblies and bolt tensioning procedures. Where calibrated wrench pre-tensioning is used, each installation wrench shall be calibrated daily.

E. Connections not fully detailed on the Drawings shall be designed by a registered professional engineer engaged by the Contractor. Connections shall be designed to resist the loads indicated on the Drawings or as specified. The professional engineer shall seal the cover sheet of the connection design calculations and shall seal each drawing depicting the connection details. The professional engineer shall be registered in the State of Louisiana.

F. Erection of structural steel shall be in conformance with OSHA 29 CFR Part 1926, Subpart R - Steel Erection.

1.6 SYSTEM DESCRIPTION

A. Design all steel connections not fully detailed on the Drawings, to resist the loads shown on the Drawings or specified herein. Calculations and drawings for these connections shall be sealed by a Louisiana registered professional engineer.

B. Beam connections shall be designed for the beam end reactions and axial loads shown on the Drawings and shall be framed beam connections conforming to AISC 325-11, Part 3 “Design of Flexural Members”.

C. Connections for diagonal bracing shall be designed for the tension and/or compression forces noted on the Drawings. Bracing connections shall be designed by the Uniform Force Method as described in AISC 325-11, unless otherwise approved. Work points for bracing shall be at the intersection of the centroids of the structural framing, such that additional moments are not induced into the standard framing, unless otherwise noted or approved. Shop connections may be bolted or welded. Field connections shall be bolted unless shown otherwise on the drawings or approved in writing by the Engineer.

D. Bolted connections shall be snug tightened connections unless otherwise noted.

E. Where connections are specified to be designed by a professional engineer engaged by the Contractor, the following requirements shall apply at bolted connections: (1) All connections subject to load reversals, including all diagonal bracing connections, and all connections in which loads may be induced into welded connections due to slippage at bolts shall be designed and installed in accordance with the requirements for slip-critical connections; (2) All bolts which are required to transmit direct tension loads, including bolts in beam connections which are required to transmit axial tension loads, shall require full pre-tensioning.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver materials promptly so as to cause no delay with other parts of the work.

B. Store materials on skids and not on the ground. Pile and block materials so that they will not become bent or otherwise damaged.

C. Handle materials with cranes or derricks as far as practicable. Do not dump steel off cars or trucks nor handle in any other manner likely to cause damage.

PART 2 PRODUCTS

2.1 MATERIALS

A. Rolled steel wide flange shapes: ASTM A992.

B. Structural steel shapes other than wide flange shapes, unless otherwise noted: ASTM A36.

C. Plates, rods, and bars: ASTM A572, GR50

D. Square or rectangular hollow structural sections (HSS): ASTM A500, Grade B.

E. Structural pipe: ASTM A53, Type S, Grade B.

F. Welding electrodes: AWS A5.1, E70XX.

G. High strength steel bolts, nuts and washers: ASTM A325 or ASTM A490. When galvanized material is to be connected; use ASTM A325, Type 1, mechanically galvanized to ASTM B695, Class 50, Type II. Minimum bolt size 3/4-inch diameter.

H. Anchor bolts: ASTM F1554, Grade 36. Provide threaded rods with heavy hex nuts and Grade A washers. Where galvanized anchor rods are shown or specified, provide heavy hex nuts and Grade A washers, all galvanized in accordance with ASTM F2329.

I. Shop primer: As specified in Section 099113.

J. Galvanizing: Zinc with 0.05 percent (minimum) nickel added.

2.2 FABRICATION

A. Match-mark materials for field assembly. Ream unmatched holes in shop assembly of field connections. Reject and replace with new pieces any piece weakened by reaming to a point where the strength of the joint is impaired, at no additional cost to the Owner.

B. Welding of parts shall be done only where shown on the Drawings or specified herein and by welders and welding operators qualified for the procedures used.

2.3 SURFACE PREPARATION AND SHOP COATINGS

A. Prepare and shop prime paint non-galvanized members as specified in Section 099113 – Exterior Painting.

B. Galvanize members and their attachments exposed in whole or part to the weather, including beams supporting exterior masonry. Galvanize other members as indicated on the Drawings. Galvanizing shall be done after fabrication and in accordance with ASTM A123. Hardware galvanizing shall be in accordance with ASTM A153 unless specified otherwise. Thoroughly

clean, pickle, flux and immerse members in bath of molten zinc until their temperature becomes the same as the bath. Coating shall be 2-oz per square foot.

PART 3 EXECUTION

3.1 INSTALLATION

A. Furnish and install temporary bracing to provide stability during erection and to prevent distortion or damage to the framing due to wind, seismic, or erection forces. Remove temporary bracing when erection is complete.

B. Use drift pins only to bring members into position and not to enlarge or distort holes.

C. Make all steel to steel connections by high strength bolting except where field welding is shown or specified. Provide not less than two 3/4-inch bolts per connection and use not less than 1/4-inch thick clip angles, unless noted otherwise on the Drawings.

D. Tighten all bolted connections to full pretension by turn-of-nut or calibrated wrench tightening unless load indicator bolts or direct tension indicators have been approved. All erection bolts shall be tightened and left in place.

E. Field welding shall be done only where shown or specified and only by welders qualified for the procedures used. No welding shall be done when surfaces are wet, exposed to rain, snow or wind, or when welders are exposed to inclement conditions that will hamper good workmanship. Field welds shall be continuous unless noted otherwise.

F. Each bolting crew and each welder shall be assigned an identification mark. This mark shall be made at each completed connection with a paint stick.

G. After erection and field testing of connections, prime paint abrasions, field welds, and unprimed surfaces using shop primer, except surfaces designated to be unpainted or surfaces in contact with concrete.

H. After erection and field testing of connections, repair damaged galvanizing and prime paint abrasions and field welds at galvanized surfaces with surface primer containing zinc dust in accordance with ASTM A780. Provide a dry film thickness not less than 6 mils.

3.2 FIELD TESTING

A. Allow the Engineer free access to the work. Notify the Engineer in writing 4 working days in advance of high strength bolting and field welding operations, including pre-installation verification of high strength bolt assemblies.

B. Fastener assemblies which include bolts to be pre-tensioned shall be tested on site in a tension calibrator for pre-installation verification in accordance with AISC 348-09 using ASTM A325 or ASTM A490 bolts.

C. All high strength bolting will be inspected visually. High strength bolts to be pre-tensioned by the turn-of-nut method shall have the turned portion marked with reference to the steel being

connected after the nut has been made snug and prior to final tightening. Retighten rejected bolts or remove and provide new bolts. In cases of disputed bolt installations, the bolts in question shall be checked using a calibrated wrench, at no additional cost to the Owner.

D. Field welding will be inspected visually and by non-destructive testing by AWS certified welding inspectors provided by the Owner. Non-destructive testing procedures will include penetrant dye. Comply with all requests of inspectors to correct deficiencies.

E. The fact that steel work has been accepted at the shop and mill will not prevent its final rejection at the site, before or after erection, if it is found to be defective.

F. Remove rejected steel work from the site within 10 working days after notification of rejection.

END OF SECTION

SECTION 05 50 00 - MISCELLANEOUS METAL

PART 1 GENERAL

1.1 SUMMARY

A. This section includes furnishing all labor, materials, equipment and incidentals required for platforms and other miscellaneous metals as detailed in the plans, complete as shown on the Drawings and as specified herein.

1.2 RELATED SECTIONS

A. Section 051200 – Structural Steel

1.3 REFERENCE STANDARDS

A. Aluminum Association (AA):
   1. M12: Anodized Finish, Clear Anodize
   2. C22: Finish, Medium Matte.
   3. A41: Clear Anodic Coating, Class I.

B. ASTM International:
   1. ASTM A36 - Standard Specification for Carbon Structural Steel.
   2. ASTM A48 - Standard Specification for Gray Iron Castings.
   3. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
   4. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   5. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   6. ASTM A240 - Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Plate, Sheet, and Strip Pressure Vessels.
   7. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.
   8. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
   9. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
   10. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
   11. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
   12. ASTM A536 - Standard Specification for Ductile Iron Castings.
   13. ASTM A570 - Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality.
   14. ASTM A572 – Standard Specification for High Strength, Low Alloy Columbium-Vanadium Structural Steel
   15. ASTM A786 - Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.

16. ASTM A992 - Standard Specification for Structural Steel Shapes.
17. ASTM A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
18. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
19. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
20. ASTM B429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
21. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
22. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
23. ASTM F2329 - Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon Screws, Washers, Nuts, and Special Threaded Fasteners.

C. American Welding Society (AWS):
1. AWS A5.1 - Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding.
2. AWS D1.1 - Structural Welding Code - Steel.
3. AWS D1.2 - Structural Welding Code - Aluminum.
4. AWS D1.6 - Structural Welding Code - Stainless Steel.

D. Federal Specifications:
1. FS-FF-B-575C - Bolts, Hexagonal and Square.

E. Occupational Safety and Health Administration (OSHA).

F. International Building Code - 2012 (IBC-12).

G. Military Specification:
1. MIL-P-15145: Paint, Zinc-Dust-For Fresh Water.

1.4 SUBMITTALS

A. Submit, in accordance with Section 011340, shop drawings and product data showing materials of construction and details of installation for:
1. Shop drawings, showing sizes of members, method of assembly, anchorage, and connection to other members.

B. Samples:
1. Submit samples as requested by the Engineer during the course of construction.

C. Design Data:
1. Calculations shall be stamped by a professional engineer registered in the State of Louisiana.
2. Submit manufacturer's load and deflection tables.

D. Test Reports:
1. Certified copy of mill test reports on each steel, stainless steel, and aluminum proposed for use showing the physical properties and chemical analysis.

E. Certificates:
   1. Certify that welders have been qualified under AWS, within the previous 12 months, to perform the welds required under this Section.

1.5 QUALITY ASSURANCE

A. The work of this Section shall be completely coordinated with the work of other sections. Verify, at the site, both the dimensions and work of other trades adjoining items of work in this Section before fabrication and installation of items herein specified.

B. Furnish to the pertinent trades all items included under this Section that are to be built into the work of other sections.

C. All welding shall be performed by qualified welders and shall conform to the applicable AWS welding code. Welding of steel shall conform to AWS D1.1 and welding of aluminum shall conform to AWS D1.2 and welding of stainless steel shall conform to AWS D1.6.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver items to be incorporated into the work of other trades in sufficient time to be checked prior to installation.

B. Store materials on skids and not on the ground and block up so that they will not become bent or otherwise damaged. Handle materials with cranes or derricks. Do not dump material off cars or trucks nor handle in any other way that will cause damage.

C. Repair items that have become damaged or corroded to the satisfaction of the Engineer prior to incorporating them into the work.

1.7 PROJECT/SITE REQUIREMENTS

A. Field measurements shall be taken at the site, prior to fabrication of items, to verify or supplement indicated dimensions and to ensure proper fitting of all items.

PART 2 PRODUCTS

2.1 GENERAL

A. The use of manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

B. Like items of materials shall be the end products of one manufacturer in order to provide standardization for appearance, maintenance, and manufacturer's service.

2.2 MATERIALS

A. Unless otherwise noted, materials for miscellaneous metals shall conform to the following standards:

1.	Structural Steel	Wide flange shapes: ASTM A992
2.	Other shapes:	ASTM A36
3.	Structural Steel Tubing	ASTM A500, Grade B
4.	Welded and Seamless Steel Pipe	ASTM A501 or ASTM A53, Type E or S, Grade B Schedule 40. Use standard malleable iron fittings, galvanized for exterior work
5.	Plates, Rods, and Bars:	ASTM A572, Grade 50
6.	Steel Sheets	ASTM A1008
7.	Gray Iron Castings	ASTM A48, Class 35
8.	Ductile Iron Castings	ASTM A536, Grade 65-45-12
9.	Aluminum Extruded Pipe	ASTM B429, Alloy 6063 T6 and Alloy 6061 T6 as indicated.
10.	Aluminum Extruded Shapes	ASTM B221, Alloy 6061 T6
11.	Aluminum Sheet and Plate	ASTM B209, Alloy 6061 T6
12.	Stainless Steel Plates, Sheets, and Structural Shapes	
	a. Exterior, Submerged or Industrial Use	ASTM A240, Type 316 (Type 316L for welded)
	b. Interior and Architectural Use	ASTM A240, Type 304
13.	Stainless Steel Bolts, Nuts, and Washers	ASTM A276, Type 316
14.	Carbon Steel Bolts and Studs	ASTM A307, Grade A (hot dip galvanized nuts and washers where noted)
15.	High Strength Steel Bolts, Nuts and washers	ASTM A325 (mechanically galvanized per ASTM B695, Class 50, where noted)
	a. Elevated Temperature Exposure	Type I
	b. General Application	Type I or Type II
16.	Galvanizing	ASTM A123, Zn w/0.05 percent minimum Ni
17.	Galvanizing, hardware	ASTM A153, Zn w/0.05 percent minimum Ni
18.	Galvanizing, anchor bolts	ASTM F2329, Zn w/0.05 percent minimum Ni
19.	Welding electrodes, steel	AWS A5.1 E70xx
20.	Raised Pattern Steel Floor Plate	ASTM A786

2.3 ANCHORS, BOLTS AND FASTENING DEVICES

A. Unless otherwise noted, anchor Rods shall be ASTM F1554, Grade 55. Provide heavy hex nuts and Grade A washers. Where galvanized anchor rods are shown or specified, provide heavy hex nuts and Grade A washers, all galvanized in accordance with ASTM F2329.

B. Unless otherwise noted, bolts for the connection of carbon steel or iron shall be 3/4-inch diameter ASTM A325 steel bolts; bolts for the connection of galvanized steel or iron shall be galvanized 3/4-inch diameter ASTM A325 steel bolts; and bolts for the connection of aluminum or stainless steel shall be stainless steel machine bolts.

C. Unless otherwise noted, expansion anchors shall be zinc plated carbon steel wedge type anchors complete with nuts and washers. Type 316 stainless steel wedge type anchors shall be used where they will be submerged or exposed to the weather or where stainless steel wedge type anchors are shown or specified. When the length or embedment of the bolt is not noted on the Drawings, provide length sufficient to place the wedge and expansion cone portion of the bolt at least 1-inch behind the concrete reinforcing steel. Expansion anchors shall be Hilti, Kwik-Bolt III; Simpson Strong-Tie Wedge-All; Powers Power-Stud or equal.

D. Adhesive anchor system, for fastening to solid concrete substrate, shall be a system manufactured for the installation of post installed rods including anchoring hardware and chemical dispenser. Injection adhesive shall be a two-component epoxy system including a hardener and a resin, furnished in pre-measured side-by-side cartridges which keep the two components separate. Side-by-side cartridges shall be designed to accept a static mixing nozzle which thoroughly blends the two components and allows injection directly into the drilled hole. Adhesive shall be made for use in contact with potable water. Provide zinc plated carbon steel or Type 316 stainless steel rod assemblies as indicated on the Drawings consisting of an all-thread anchor rod with nut and washer. Adhesive anchor system shall be Hilti RE 500 SD; Simpson Strong Tie SET-XP; ITW Ramset Red Head Epcon G5; or equal. Unless otherwise noted, anchorage designs shown on the Drawings are based on Hilti RE 500 SD.

E. Machine bolts and nuts shall conform to FS-FF-B-575C. Bolts and nuts shall be hexagon type. Bolts, nuts, screws, washers, and related appurtenances shall be Type 316 stainless steel.

2.4 MISCELLANEOUS ALUMINUM

A. All miscellaneous metal work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Holes shall be drilled or punched. Edges shall be smooth and without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.

B. Connections and accessories shall be of sufficient strength to safely withstand the stresses and strains to which they will be subjected. Exposed joints shall be close fitting and jointed where least conspicuous. Threaded connections shall have the threads concealed where practical. Welded connections shall have continuous welds or intermittent welds as specified or shown. The face of welds shall be dressed flush and smooth. Welding shall be on the unexposed side as much as possible in order to prevent pitting or discoloration of the aluminum exposed surface. Provide holes for temporary field connections and for attachment of the work of other trades.

C. Miscellaneous aluminum items shall include: beams, angles, closure angles, grates, hatches, floor plates, stop plates, stair nosings and any other miscellaneous aluminum called for on the Drawings and not otherwise specified.

D. Angle frames for hatches, beams, grates, etc., shall be complete with welded strap anchors attached.

E. Stair treads for aluminum stairs shall have abrasive non-slip nosing as approved.

F. Aluminum nosing at concrete stairs shall be Wooster Products, Inc.; Alumogrit Treads, Type 116; similar by Barry Pattern and Foundry Co.; Andco or equal. Furnish with wing type anchors and flat head stainless steel machine screws, 12-inches on center. Nosing shall also be used at concrete ladder openings. Nosing shall be a single piece for each step extending to within 3-inches at each side of stair or full ladder width. Set nosing flush with stair tread finish at concrete stairs. Furnish treads with heavy duty protective tape cover.

2.5 MISCELLANEOUS STEEL

A. All miscellaneous metal work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Holes shall be drilled or punched. Edges shall be smooth and without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.

B. Connections and accessories shall be of sufficient strength to safely withstand the stresses and strains to which they will be subjected. Exposed joints shall be close fitting and jointed where least conspicuous. Threaded connections shall have the threads concealed where practical. Welded connections shall have continuous welds unless intermittent welds are shown on Drawings. The face of welds shall be dressed flush and smooth. Provide holes for temporary field connections and for attachment of the work of other trades.

C. Miscellaneous steel items shall include: beams, angles, lintels, metal stairs, support brackets, base plates for other than structural steel or equipment, closure angles, holddown straps and lugs, splice plates, and any other miscellaneous steel called for on the Drawings and not otherwise specified.

D. Steel pipe pieces for sleeves, lifting attachments and other functions shall be Schedule 40 pipe unless otherwise shown on the Drawings. Wall and floor sleeves, of steel pipe, shall have welded circumferential steel waterstops at mid-length.

E. All steel finish work to be painted shall be thoroughly cleaned, by effective means, of all loose mill scale, rust and foreign matter and shall be given one shop coat of primer compatible with the finish coat after fabrication but before shipment. Paint shall be omitted within 3-inches of proposed field welds. Paint shall be applied to dry surfaces and shall be thoroughly and evenly spread and well worked into joints and other open spaces.

F. Galvanizing, where required, shall be the hot-dip zinc process after fabrication. Coating shall be not less than 2 oz/square foot of surface.

2.6 MISCELLANEOUS STAINLESS STEEL

A. All miscellaneous metal work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Holes shall be drilled or punched. Edges shall be smooth and without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.

B. Connections and accessories shall be of sufficient strength to safely withstand the stresses and strains to which they will be subjected. Exposed joints shall be close fitting and jointed where least conspicuous. Threaded connections shall have the threads concealed where practical. Welded connections shall have continuous welds unless otherwise specified or shown. The face of welds shall be dressed flush and smooth. Provide holes for temporary field connections and for attachment of the work of other trades.

C. Miscellaneous stainless steel items shall include: beams, angles, bar racks and any other miscellaneous stainless steel called for on the Drawings and not otherwise specified.

2.7 CASTINGS

A. Casting shall be of good quality, strong, tough, even-grained, smooth, free from scale, lumps, blisters, sand holes and defects of any kind which render them unfit for the service for which they are intended. Castings shall be thoroughly cleaned and will be subjected to a hammer inspection in the field by the Engineer. All matching surfaces shall be machined to a true plane surface to allow contact surfaces to seat at all points without rocking. Allowances shall be made in the patterns so that the thickness specified shall not be reduced in obtaining finished surfaces. Castings will not be acceptable if the actual weight is less than 95 percent of the theoretical weight computed from dimensions. The Contractor shall provide facilities for weighing castings in the presence of the Engineer.

B. Frames, covers, cast grates and trench drains shall be gray iron castings except as otherwise specified or indicated on the Drawings. Sizes shall be as shown on the Drawings. Covers shall have letters "WATER," "SANITARY SEWER," or DRAIN," as applicable, embossed on top.

C. Frames and covers for installation in slabs shall be heavy duty, R-6013-R-6099 Series as manufactured by Neenah Foundry Co., or equal.

D. Electrical and telephone manhole and handhole frames and covers shall be ductile iron castings. The covers shall be watertight. Covers shall have the word "ELECTRIC," "HIGH VOLTAGE," "LOW VOLTAGE," "SIGNAL," "TELEPHONE," as applicable, embossed on or cast into the top in letters 2-inches high. The clear opening shall be 36-inches unless otherwise indicated on the Drawings.

E. Trench drains shall be of the length shown on the Drawings and shall be heavy duty, R-4990 Series with a "Type A" cover as manufactured by Neenah Foundry Co. or equal.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install all items except those to be embedded in concrete which shall be installed under Division 3. Items to be attached to concrete or masonry after such work is completed shall be installed in accordance with the details shown. Fastening to wood plugs in masonry will not be permitted.

B. Abrasions in the shop primer shall be touched up immediately after erection. Areas left unprimed for welding shall be painted with primer after welding.

C. Zinc coating which has been burned by welding, abraded, or otherwise damaged shall be cleaned and repaired after installation. The damage area shall be thoroughly cleaned by wire brushing and all traces of welding flux and loose or cracked zinc coating removed prior to painting. The cleaned area shall be painted with two coats of zinc oxide-zinc dust paint conforming to the requirements of MIL-P-15145. The paint shall be properly compounded with a suitable vehicle in the ratio of one part zinc oxide to four parts zinc dust by weight.

D. Specialty products shall be installed in accordance with the manufacturer's recommendations.

E. Expansion bolts shall be checked for tightness a minimum of 24 hours after initial installation.

F. Install adhesive anchor system in strict compliance with the manufacturer's recommendations, including drill bit diameter, surface preparation, temperature, moisture conditions, injection, and installation of bolts. Use oil free compressed air to blast out loose particles and dust from the drilled holes. Bolts must be clean and free of dirt, oil, grease, ice, or other material which would reduce bond.

G. Headed anchor studs shall be welded in accordance with manufacturer's recommendations.

H. All steel surfaces that come into contact with exposed concrete or masonry shall receive a protective coating of an approved heavy bitumastic troweling mastic applied in accordance with the manufacturer's instructions prior to installation.

I. Where aluminum contacts a dissimilar metal, apply a heavy brush coat of zinc-chromate primer followed by two coats of aluminum metal and masonry paint to the dissimilar metal.

J. Where aluminum contacts masonry or concrete, apply a heavy coat of approved alkali resistant paint to the masonry or concrete.

K. Where aluminum contacts wood, apply two coats of aluminum metal and masonry paint to the wood.

L. Between aluminum gratings, aluminum stair treads, or aluminum handrail brackets and steel supports, insert 1/4-inch thick neoprene isolator pads, 85 plus or minus 5 Shore A durometer, sized for full width and length of bracket or support.

END OF SECTION

SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on exterior substrates.

1. Steel.
2. Galvanized metal.

1.2 RELATED SECTIONS

A. Section 051200 – Structural Steel
B. Section 055000 – Miscellaneous Metal

1.3 DEFINITIONS

A. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

B. Samples for Initial Selection: For each type of topcoat product. Review drawings for any selections that may be preselected.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

3. VOC content.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC Content.

B. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of

the following:

1. Benjamin Moore & Co.
2. Farrell-Calhoun.
3. ICI Paints.
4. PPG Architectural Finishes, Inc.
5. Pratt & Lambert.
6. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."

B. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

D. Colors: As selected by Owner from manufacturer's full range.

2.3 METAL PRIMERS

A. Primer, Alkyd, Anti-Corrosive for Metal:

1. Benjamin Moore & Co: P06 SuperSpec HP Acrylic Metal Primer.
2. Sherwin-Williams Company (The): B50W21 KemKromik Universal Metal Primer.
3. ICI Paints: #4160 DevGuard Multipurpose Primer.

2.4 WATER-BASED PAINTS

A. Light Industrial Coating, Exterior, Water Based, Semi-Gloss (Gloss Level 5):

1. Benjamin Moore & Co: P29 DTM Acrylic Semi-Gloss.
2. Sherwin-Williams Company (The): B66W351 SherCryl Semi-Gloss.
3. ICI Paints: #4206 DevFlex Interior/Exterior Semi-Gloss.

2.5 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

C. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to

reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 2, "Hand Tool Cleaning."
2. SSPC-SP 3, "Power Tool Cleaning."

E. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
4. Paint entire exposed surface of window frames and sashes.
5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed to view:

    a. Equipment, including panelboards and switch gear.
    b. Uninsulated metal piping.
    c. Uninsulated plastic piping.
    d. Metal conduit.
    e. Plastic conduit.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. Steel Substrates:

1. Water-Based Light Industrial Coating System:

    a. Prime Coat: Primer, alkyd, anti-corrosive for metal.
    b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
    c. Topcoat: Light industrial coating, exterior, water based, semi-gloss (Gloss Level 5).

B. Galvanized-Metal Substrates:

1. Water-Based Light Industrial Coating System:

a. Prime Coat: Primer, galvanized metal, as recommended in writing by topcoat manufacturer for exterior use on galvanized-metal substrates with topcoat indicated.
b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
c. Topcoat: Light industrial coating, exterior, water based, semi-gloss (Gloss Level 5).

END OF SECTION **09 91 13**

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SECTION 33 90 13 - DUCTILE IRON PIPE AND FITTINGS

Large diameter water mains and sewer force mains shall conform to all the requirements of the General Specifications for Street Paving Department of Public Work of New Orleans (the latest revision) Sections C741 and C742, except as noted.

PART 1 GENERAL

1.1 Summary

A. Ductile iron pipe and fittings for large diameter water lines and wastewater force mains. Large diameter includes pipe sizes of 30” and larger.

B. Scope of Work:
1. Furnish all labor, materials, equipment and incidentals required, to install, disinfect, and test ductile iron pipe and fittings for piping as shown on the Drawings and as specified herein.
2. Piping shall be located substantially as shown on the Drawings. The Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference between pipes or for other reasons. Pipe fitting notation is for the Contractor's convenience and does not relieve him/her from installing and jointing different or additional items where required to achieve a complete piping system.
3. Where the word "pipe" is used it shall refer to pipe, fittings, or appurtenances unless otherwise noted.

C. Related Sections:
1. Butterfly Valves are included in Section 40 05 64
2. Line Stops are included in Section 40 05 76

1.2 REFERENCE STANDARDS

A. ASTM International:
1. ASTM A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.

B. American Water Works Association (AWWA):
1. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
2. AWWA C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
3. AWWA C110 - Ductile-Iron and Gray-Iron Fittings, 3-in through 48-in (75mm Through 1219mm) for Water.
4. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
5. AWWA C 115 - Standard for Flanged Ductile-Iron Pipe With Ductile-Iron or Gray-Iron Threaded Flanges.
6. AWWA C 116 - Protective Fusion Bonded Epoxy Coating for the Interior and Exterior Surfaces of Ductile Iron and Grey Iron Fittings.
7. AWWA C150 - Thickness Design of Ductile-Iron Pipe.
8. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast, for Water.

9. AWWA C153 - Ductile- Iron Compact Fittings, 3-in through 24-in and 54-in through 64- in, for Water.
10. AWWA C550 - Protective Interior Coatings for Valves and Hydrants.
11. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
12. AWWA C651 - Disinfecting Water Mains.

C. National Sanitation Foundation (NSF):
1. NSF 61 - Drinking Water System Components Health Effects.

D. Ductile Iron Pipe Research Association (DIPRA):
1. Thrust Restraint Design for Ductile Iron Pipe.

1.3 SUBMITTALS

A. Submit shop drawings and product data, including piping layouts, design calculations, warranty information, test reports, and the referenced standards.

B. For pipes 30 inches and greater submit shop drawings signed and sealed by Professional Engineer showing the following:
1. Manufacturer's pipe design calculations.
2. Provide lay schedule of pictorial nature indicating alignment and grade, laying dimensions, fitting, flange, and special details, with plan view of each pipe segment sketched, detailing pipe invert elevations, horizontal bends, restrained joints, and other critical features. Indicate station numbers for pipe and fittings corresponding to Drawings. Do not start production of pipe and fittings prior to review and approval by Project Manager. Provide final approved lay schedule on in Adobe portable document format (*.PDF).
3. Calculations and limits of thrust restraint shall be based on AWWA M41 or DIPRA Thrust Restraint for Ductile Iron Pipe, latest edition.
4. Class and length of joint.

C. Submit the name of the pipe and fitting suppliers and a list of materials to be furnished.

D. Prior to shipment of pipe, certified copies of mill tests confirming the type of materials used in the pipe, and shop testing of pipe to show compliance with the requirements of the applicable standards, along with a sworn affidavit of compliance that the pipe complies with the referenced standards, shall be submitted.

E. Submit copies of all shop tests, including hydrostatic tests.

F. Submit anticipated production and delivery schedule.

G. Prior to shipment of pipe, submit a certified affidavit of compliance from the manufacturer stating that the pipe, fittings, gaskets, linings and exterior coatings for this project have been manufactured and tested in accordance with AWWA and ASTM standards and requirements specified herein.

H. Submit handling procedures for all phases from finished fabrication through delivery including storage, transportation, loading, and unloading. This will include storage at the project site and required protection following installation prior to startup.

1.4 QUALITY ASSURANCE

A. It is a requirement of these Contract Documents to have all of the ductile iron pipe under this section designed and supplied by a single manufacturer rather than have selection and supply of these items by a number of different manufacturers. Similarly, it is a requirement of these Contract Documents to have all of the ductile iron fittings under this section designed and supplied by a single manufacturer rather than have selection and supply of these items by a number of different manufacturers. All connections between the pipe and fittings shall be compatible, as detailed in paragraph 1.6.

B. Each length of ductile iron pipe supplied for the project shall be hydrostatically tested at the point of manufacture to 500 psi for a duration of 10 seconds per AWWA C151. Testing may be performed prior to machining bell and spigot. Failure of ductile iron pipe shall be defined as any leak or rupture of the pipe wall. Certified test results shall be furnished in duplicate to the Engineer prior to time of shipment.

C. All ductile-iron pipe and fittings to be installed under this project shall be inspected and tested at the foundry as required by the standard specifications to which the material is manufactured. Furnish in duplicate to the Engineer sworn certificates of such tests and their results at least 5 days prior to the shipment of the goods.

D. Inspection of the pipe and fittings will also be made by the Engineer or representative of the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the specified requirements even though pipe may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery (including defects from manufacturing or delivery/transport) shall be marked for identification and shall immediately be removed from the job at the Contractor’s expense.

E. A manufacturer's representative shall be made available to the Owner and owner's representative during the manufacturing furnishing, transporting, and unloading of the pipe during installation and testing of the pipe to assist in insuring that the pipe is properly fabricated, transported, unloaded, stored in the field, joined, and tested. Manufacturer's responsibilities relate only to the proper care and treatment of the pipe during these procedures and not the techniques or procedures used during installation and testing.
   1. The designated factory representative shall be made available at any time the owner may request. The field or site representative shall be made available a minimum of 10 working days (time on site) during the project when requested by the Owner.
   2. The cost for the services of the factory representative, including expenses, shall be considered incidental to the project and will not be paid separately.

F. The manufacturer shall meet the following criteria and furnish the necessary project information, which demonstrates the required experience:
   1. Experience that includes successful fabrication (followed by installation, acceptance, and service) to AWWA C151 standards of ductile iron pipe with similar linings/coatings within the past 5 years.
   2. Experience shall include the successful fabrication of at least 50 fittings in compliance with AWWA C110 or C153 of the largest specified diameter or larger with similar lining/coatings within the past 5 years.

3. Experience that includes the successful fabrication (followed by installation, acceptance and service) of at least 10,000 linear feet of the largest specified diameter or larger push-on style, boltless restrained joint for ductile iron pipe within the last 5 years.

G. All pipe and fittings shall be marked in accordance with all applicable AWWA standards. Legibly and permanently mark all pipe, fittings, specials and appurtenances to be consistent with the laying schedule and marking drawings (if required) with the following information:
   1. Manufacturer, date.
   2. Size, type, class, or wall thickness.
   3. AWWA Standard(s) produced to.
   4. Special fittings, bends, and appurtenances requiring specific orientation will be appropriately marked with the words "TOP" in the correct position and in a consistent location.

1.5 DESCRIPTION OF SYSTEMS

A. Pipe shall be made in the United States. Pipe and fittings shall be as supplied by the American Cast Iron Pipe Co., U.S. Pipe and Foundry, all pipe divisions of the McWane Company, or an approved equal who is a member of the Ductile Iron Pipe Research Association (DIPRA). All ductile iron pipe shall be supplied by a single manufacturer and all ductile iron fittings shall be supplied by a single manufacturer. The fittings supplier shall certify in writing that their fittings are compatible with the supplied brand of pipe.

B. Pipe is to be installed in those locations shown on the Drawings, and only where specifically indicated.

C. Contractor is responsible for compatibility between joints of all items they supply.

1.6 DELIVERY, STORAGE AND HANDLING

A. Care shall be taken in loading, transporting, and unloading to prevent injury to the pipe, pipe linings and pipe coatings. See AWWA C600 and the referenced AWWA Standards for Shipping, handling and storage procedures. All pipe and fittings shall be examined as noted in Division 1. Any damage to linings or coatings discovered during the examination shall be repaired to the satisfaction of the Engineer at the cost of the Contractor, before proceeding with the work.

B. Pipe shall be transported to the job site on padded bunks or oak timbers and secured with steel banding or nylon tie down straps to adequately protect the pipe and coating. Slings, hooks, or pipe tongs or other devices acceptable to the Engineer shall be used in pipe handling. No uncushioned ropes, chairs, wedges, cables, or levers shall be used in handling finished pipe, fittings, or couplings. Under no circumstances shall the pipe or fittings be dropped or skidded against each other. Care shall be taken to preventing marring the pipe coating. Padded wooden pipe cradles, or chocks suitable for the protection of coatings shall be used between finished pipes and beneath them when pipes are placed upon rough surfaces. Pipe shall not be stored on bare ground unless soft sand berms are used to support the pipe and is approved by the Engineer.

C. Materials, if stored, shall be kept safe from damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt, excessive corrosion or foreign matter at all times.

D. Pipe shall not be stacked higher than the limits recommended by its manufacturer. The bottom tier shall be kept off the ground on timbers, rails, or concrete. Stacking shall conform to manufacturer's recommendations and/or AWWA C600.

E. Gaskets for mechanical and push-on joints to be stored shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.

F. Lined and/or coated pipe shall be suitably protected from exposure and heating of the sun at all times following procedures recommended by the coating/lining system manufacturer. Exposure will not be allowed (except for short periods such as installation, assembly, and repairs).

G. No metal tools or heavy objects shall be permitted to come in contact unnecessarily with the finished coating. Workers will be permitted to walk upon the coated pipe only when necessary, in which case they shall wear footwear with rubber or composition soles and heels that are sufficiently free of dirt and mud that coating remains undamaged.

H. It shall be the responsibility of the Contractor to prevent damage to the linings and coatings that might be caused by handling and/or onsite storage of the finished pipe at low temperatures (due to embrittlement), high temperatures, or direct sunlight.

PART 2 PRODUCTS

2.1 DUCTILE IRON PIPE

A. Ductile Iron Pipe Barrels: Shall conform to AWWA C115, C150 and C151 and bear mark of Underwriters' Laboratories approval. Provide minimum pressure Class 150 for 30" sanitary sewers. For water lines, 30-inch and larger, the following table indicates the minimum class for each diameter of pipe:

Nominal Diameter	Pressure Class
30"	200
36"	200
48"	150

B. Ductile iron pipe shall conform to AWWA C151. Pipe shall be supplied in standard lengths as much as possible.

C. Thickness design shall be per AWWA C150, except provide minimum Class 350 for piping 16-inches and smaller and provide minimum Class 250 for piping from 20 to 24-inches for pressure pipe. The pipe supplier shall perform thickness analysis as referenced in paragraph 2.2. All ductile iron pipe supplied shall meet the minimum wall thickness and pressure class indicated in this section.

2.2 DUCTILE IRON PIPE DESIGN

A. Ductile iron pipe shall have a minimum tensile strength of 60,000 psi with minimum yield strength of 42,000 psi (per AWWA M-41). Design shall be done for external and internal pressures separately using the larger of the two for the net design thickness. Additional allowances shall be made for service allowance and casting tolerance per AWWA C150. The pipe classes determined for various sizes and conditions shall provide the total calculated thickness at a minimum or conform to minimum pipe class specified in paragraph 2.1.A, or as shown on the Drawings, whichever is greater.

B. Design for the net thickness for external loading shall be taken as the greater of the following conditions:
   1. 2-1/2-feet of cover with AASHTO H-20 wheel loads, with an impact factor of 1.5.
   2. Depth from existing ground level of future proposed grade (whichever is greater) to top of pipe as shown on the Drawings, with truck load.
   3. Soil Density: 120 lbs/cubic foot.
   4. Laying Conditions; AWWA C150, Type 3.
   5. E': 400 psi

C. Design for the net thickness shall be based upon the following internal pressure conditions:
   1. Design pressure: 150 psi is minimum
   2. Surge allowance: 100 psi
   3. Safety factor: 2
   4. Total internal pressure design: 2 (150 + 100) = 500 psi

D. Copies of design calculations showing that the pipe meets all of the requirements specified herein shall be furnished to the Engineer for approval during shop drawing review in accordance with Section 01 13 40. A yield strength of 42,000 psi shall be used during design calculations.

2.3 END TREATMENTS/JOINTS

A. Ductile iron pipe/fitting joints shall be push-on rubber gasket type or rubber-gasket mechanical joint per AWWA C111 in unrestrained areas. In restrained areas, both pipe and fitting joints shall be push on rubber gasket, locking ring type restrained joints per the manufacturer' standard described in paragraph C. All gasket materials shall comply with Table 5-1 of AWWA M-41. Rubber-gasket joints shall conform to AWWA C111. Gasket shall be of styrene butadiene rubber (SBR).

B. Unless otherwise noted, all ductile iron pipe/fitting joints shall be push-on rubber gasket type per AWWA C111 in unrestrained areas.

C. Restraint for push on joint pipe shall be positive locking "Locked-type" joints manufactured by the pipe and fitting manufacturer that allow Fast Grip Gasket on pipes 30 inches and smaller. All restrained joints shall be suitable for the specified 250 psig test pressure. Joints shall be fabricated of heavy section ductile iron casting. Bolts and nuts shall be low carbon steel conforming to ASTM A193, Grade B7. Restraint for mechanical joint pipe shall use retainer glands for restraining joint. Restrained push on joints shall be by one of the following or an approved equal:
   1. "TR Flex" by US Pipe, Foundry Company, and McWane

2. "Lok-Ring, "Flex Ring (positive locking style)", and “Fast-Grip” by the American Cast Iron Pipe Company.
3. The minimum number of restrained joints required for resisting forces at fittings and changes in direction of the pipe shall be determined from the length of restrained pipe on each side of the fittings and changes in direction necessary to develop adequate resisting friction with the soil. The required lengths of restrained joints shall be as shown on the Drawings.
4. Restrained pipe joints that achieve restraint by incorporating cut out sections in the wall of the pipe shall have a minimum wall thickness at the point of the cut out that corresponds with the minimum specified wall thickness for the rest of the pipe.

D. Couplings and Adapters
1. Sleeve type couplings shall be Dresser Style 38, 138 or equal by Ford Meter Box Co., Smith Blair or Romac industries.

2.4 FITTINGS

A. Pipe fittings shall be ductile iron with pressure rating of 250 psi for 30-inch and larger piping. Fittings shall meet the requirements of AWWA C110 or AWWA C153 as applicable. Fittings shall have the same pressure rating, as a minimum, of the connecting pipe.

B. Flanged Fittings: ANSI 21.10; ductile iron ANSI A 21.11 joints, gaskets, and lubricants; pressure rated at 250 psi.

C. Mechanical Joint Fittings: ANSI A 21.11; pressure rated at 250 psi.

D. Ductile Iron Compact Fittings: Shall conform to AWWA C153 and shall be:
1. Fusion bonded epoxy lined or
2. Cement mortar lined.

E. For tangential flanged outlets shown on Drawings, substitute with a tee with an equivalent sized outlet unless otherwise approved by Project Manager.

2.5 INTERIOR LINING

A. Ductile iron pipe and fittings shall have the same type of lining as specified herein.

B. Ductile iron pipe and fittings shall have a cement mortar lining in accordance with AWWA C104 for drinking water applications.

C. At the option of the supplier, fittings may be lined in accordance with AWWA C550. Lining shall be NSF 61 certified.

D. Ductile iron pipe and fittings shall have fusion-bonded epoxy lining in accordance with AWWA 116 and AWWA C550. Epoxy lining shall be NSF 61 certified.

E. Ductile iron pipe and fittings for sewerage applications shall be lined with a ceramic-filled amine-cured epoxy, Protecto 401 by Induron. The lining thickness shall be 40 mils nominal. Application shall be performed by an applicator approved by the coating manufacturer, in accordance with manufacturer's instructions and under controlled conditions at the applicator's shop or the pipe

manufacturer's plant. Applicator shall submit a certified affidavit of compliance with manufacturer's instructions and requirements specified herein.

2.6 EXTERIOR COATING

A. Buried pipe shall be installed with a bituminous coating in accordance with AWWA C151 and C110 respectively.

B. Buried pipe shall be installed with polyethylene encasement. Polyethylene encasement shall have a minimum thickness of 8 mils and meet or exceed the minimum standards established by AWWA C105, current edition. Acceptable manufacturers include North Town Company; AA Thread and Seal Tape, Inc.; Sigma Corp.; or, approved equal.
   1. Polyethylene encasement shall meet minimum size requirements per Table 3 of Section 2.15 of DIPRA's Installation Guide for Ductile Iron Pipe.
   2. Test results from an independent testing agency certifying that the polyethylene encasement meets all criteria established by AWWA C105, current edition, shall be submitted to the Engineer prior to approval of the polyethylene encasement for use. In general, samples shall be submitted and include test results in accordance with the AWWA standard associated with tensile strength, elongation, dielectric strength, impact resistance, and propagation tear resistance.
   3. A 2-inch wide plastic adhesive tape, such as Calpico Vinyl, Polyken, U.P.C. Tape, or approved equal, shall be used for sealing seams, cuts, or tears in polyethylene encasement. Duct tape shall not be allowed.
   4. All poly wrap shall be VBIO Enhanced Poly Wrap.

PART 3 EXECUTION

3.1 GENERAL

A. Care shall be taken in loading, transporting and unloading to prevent injury to the pipe, lining, or coatings. Pipe and fittings shall not be dropped or skidded against each other. Slings, hooks, or pipe tongs shall be used for pipe handling. All pipe and fittings shall be examined before laying and no piece shall be installed which is found to be defective. Any damage to the pipe, lining, or coatings shall be repaired per manufacturer's recommendations. Handling and laying of pipe and fittings shall be in accordance with manufacturer's instruction and as specified herein.

B. If any defective pipe is discovered after it has been laid, it shall be removed and replaced with a sound pipe in a satisfactory manner. All pipe and fittings shall be thoroughly cleaned before laying, shall be kept clean until they are used in the work and when installed or laid, shall conform to the lines and grades required.

C. Materials, if stored, shall be kept safe from damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt, excessive corrosion or foreign matter at all times.

D. Pipe shall not be stacked higher than the limits recommended by its manufacturer. The bottom tier shall be kept off the ground on timbers, rails, or concrete. Stacking shall conform to manufacturer's recommendations and/or AWWA C600.

E. Gaskets for mechanical and push-on joints to be stored shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.

F. The Contractor shall protect water supplies as follows:
   1. There should be no physical connections between a public or private potable water supply system and a sewer, or appurtenances thereto which would permit the passage of any sewage or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of the sewer or manhole.
   2. Water mains and sewer mains shall be separated by 10 feet horizontally and 18 inches vertically with the water main always above the sewer main. If the separation cannot be maintained, each situation will be reviewed on a case by case basis.

3.2 INSTALLING DUCTILE IRON PIPE AND FITTINGS

A. Ductile iron pipe and fittings shall be installed in accordance with requirements of AWWA C600, except as otherwise specified herein. A firm, even bearing throughout the length of the pipe shall be provided by digging bell holes at each joint and by tamping backfill materials at the side of the pipe to the springline per details shown on the Drawings. Blocking will not be permitted. If any defective pipe or fitting is discovered after it has been laid, it shall be removed and replaced with a sound pipe or fitting in a satisfactory manner by the Contractor, at his/her own expense.
   1. All pipe and fittings shall be kept clean until they are used in the work and shall be sound and thoroughly cleaned before laying. When laid, the pipe and fittings shall perform to the lines and grades required. When laying is not in progress, including lunch breaks, open ends of the pipe shall be closed by a watertight plug or other approved means. Sufficient backfill shall be placed to prevent flotation. The deflection at joints shall not exceed that recommended by the manufacturer.
   2. All ductile iron pipe laid underground shall have a minimum of 4 feet of cover unless otherwise shown on the Drawings or as specified herein. Pipe shall be laid such that the invert elevations shown on the Drawings are not exceeded.
   3. Fittings, in addition to those shown on the Drawings shall be provided, where required, in crossing utilities which may be encountered upon opening the trench. Solid sleeve closures shall be installed at locations approved by the Engineer.
   4. The pipe interior shall be maintained dry and broom clean throughout the construction period.
   5. When field cutting the pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. The end of the cut pipe shall be beveled to conform to the manufacture's recommendations for the spigot end. Any coating removed from the cut end shall be repaired according to manufacturer's recommendation and/or paragraph 2.5 (whichever method is more stringent in the opinion of the Engineer). Cement lining shall be undamaged. Cutting of restrained joint pipe will not be allowed, unless approved at specific joints in conjunction with the use of restrainer glands by EBAA Iron or field adaptable restrained joints. Where field cuts are permitted, the pipe to be cut shall be supplied by the factory as "gauged full length". Should full length gauged pipe be unavailable, the pipe to be cut shall be field gauged at the location of the new spigot using a measuring tape, or other means approved by the manufacturer, to verify that the diameter is within the tolerances permitted in Table 1 of AWWA C151.

B. Jointing Ductile-Iron Pipe

1. Push-on joints shall be made in strict accordance with manufacturer's instructions, AWWA C600 and Appendix B of AWWA C111. If there is conflict, the manufacturer's instructions shall take precedence. Pipe shall be laid with bell ends looking ahead. A rubber gasket shall be inserted in the groove of the bell end of the pipe. The joint surfaces shall be cleaned and lubricated and the plain end of the pipe shall be aligned with the bell of the pipe to which it is to be joined and pushed home. After joining the pipe, a metal feeler shall be used to make certain that the rubber gasket is properly seated.
2. Mechanical joints shall be assembled in strict accordance with the manufacturer's instructions, AWWA C600 and Appendix A of AWWA C111. If there is conflict, the manufacturer's instructions shall take precedence. Pipe shall be laid with bell ends looking ahead. To assemble the joints in the field, thoroughly clean and lubricate the joint surfaces and rubber gasket. Bolts shall be tightened to the specified torques. Under no condition shall extension wrenches or pipe over handle of ordinary ratchet wrench be used to secure greater leverage. After installation, apply a bitumastic coating to bolts and nuts and install polyethylene encasement as specified.
3. Bolts in mechanical or restrained joints shall be tightened alternately and evenly. Restraint for mechanical joint pipe shall use retainer glands for restraining joint. All restrained mechanical joints shall be suitable for the specified test pressure.
4. Restrained joints shall be installed according to pipe manufacturer's instructions.
5. Flanged joints shall be assembled in strict accordance with the manufacturer's instructions and Appendix C of AWWA C111. If there is conflict, the manufacturer's instructions shall take precedence. Extreme care shall be taken to ensure that there is no restraint on opposite ends of pipe or fitting, which would prevent uniform gasket compression, cause unnecessary stress, bending or torsional strains, or distortion of flanges or flanged fittings. Adjoining push on joints shall not be assembled until flanged joints have been tightened. Flange bolts shall be tightened uniformly to compress the gasket uniformly and obtain a seal. Flange bolts shall be left with approximately 1/2-inch projection beyond the face of the nut after tightening. After installation apply a bitumastic coating to the bolts and nuts as specified.
6. Sleeve couplings shall only be installed for closure or as shown on the Drawings. Couplings shall not be assembled until adjoining joints have been assembled. After installation. Apply a heavy bitumastic coating to the bolts and nuts and install protective wrap recommended by the manufacturer or as required herein. Care shall be exercised to insure that the insulating properties of insulating and dielectric couplings are maintained.

C. All blowoffs, outlets, valves, fittings and other appurtenances required shall be set and jointed as indicated on the Drawings in accordance with manufacturer's instructions.

D. Water main offsets in the new main that are indicated on the drawings are considered main line fittings and payment is included in the price of the new water main. Water line offsets not indicated on the drawings are to be paid at the bid price for water line offsets.

E. Offsets in water mains shall be made by the Contractor with ductile iron bends or ductile offset fittings. All ductile iron fittings and bends shall be mechanical-joint with retainer glands and shall have stainless steel nuts and bolts. Bends shall be 22.5 degree or 45 degree and no bends greater than 45 degrees are allowed unless specifically called out in the Plans.

3.3 FILLING AND TESTING

A. Conform to Section C741.05.1 Hydrostatic Testing of the Department of Public Works Standard Specifications for Street Paving.

3.4 CLEANING

A. At the conclusion of the work, thoroughly clean all of the pipe by flushing with water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered during the construction period. All debris shall be removed from the pipeline. The lowest segment outlet shall be flushed last to assure debris removal.

B. After the pipe has been cleaned and if the groundwater level is above the pipe or water in the pipe trench is above the pipe following a heavy rain, the Engineer will examine the pipe for leaks. If defective pipes, fittings, or joints are discovered at this time, they shall be repaired or replaced by the Contractor.

3.5 DISINFECTION AND DECHLORINATION

A. Conform to Section C741.05.2 Chlorination of the Department of Public Works Standard Specifications for Street Paving.

3.6 TIE-INS

A. Conform to Section C741.05.3 Tie-Ins of the Department of Public Works Standard Specifications for Street Paving.

END OF SECTION

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SECTION 400564 - BUTTERFLY VALVES

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to install, complete and ready for operation, a 36” and 48” butterfly valve as shown on the drawings and as specified herein.

1.02 QUALIFICATIONS

All of the types of valves and appurtenances shall be products of well established, reputable firms who are fully experienced and qualified in the manufacture of the particular equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with standard practices and methods and shall comply with these specifications as applicable.

1.03 SUBMITTALS

A. Submit to the Engineer, within 30 days after execution of the contract, a list of materials to be furnished, the names of the suppliers and the date of delivery of materials to the site.

B. Complete shop drawings of all valves and appurtenances shall be submitted to the Engineer for approval in accordance with the requirements of Section 01 13 40 and the General Conditions.

1.04 TOOLS

Special tools, if required for normal operation and maintenance, shall be supplied with the equipment.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Butterfly Valves

1. All butterfly valves shall be of the rubber-seated, tight-closing type. They shall meet or exceed AWWA standard C504, latest edition, Class 150. All valves shall be KV 4500/1450 butterfly valves or approved equal.
2. Both ends shall be flanged per ASME 816.1.
3. Valve shafts shall be ASTM A276 Type 304 stainless steel for Cl 150. Each

valve shaft shall be a two- piece design for valves 14 inches and larger. Valve shafts shall have a minimum diameter extending through the valve bearings and into the valve disc as specified in AWWA C504. All valve shafts must meet or exceed the minimum connection torque requirement set forth in AWWA C504.

4. Valve body and vane shall be high-strength Ductile Iron to ASTM A536 with ASTM A276 Type 316 stainless steel body seats.
5. Rubber valve seats shall be a full-circle, 360-degree seat not penetrated by the valve shaft. Valve seat shall be EPD M.
6. The valve seat will be attached to the valve vane by Type 304 stainless steel self-locking fasteners. The valve seat must be easily field adjustable and replaceable without any special tools or lengthy curing time.
7. Valve shaft seals shall be of the 0-ring type for 30 inches and larger utilizing the same elastomer as specified for the valve seats and the intended service. All valve shaft seals must be easily field replaceable.
8. Valve actuator shall be of the traveling nut type, sealed and lubricated for underground or in-plant service. Operator shall be capable of withstanding an overload input torque of 450 ft-lbs. at full-open or full- closed position without damage to the valve operator. Operators for valves 14 inches and larger must have a 304 stainless steel external stop limiting device and travel adjustment. The travel adjustments must be able to be operated without removing the valve from the line. All valve actuators must be sized per AWWA C504. Certification of proof of design and torque requirements shall be submitted to the owner upon request.
9. Handcrank, handwheel or chainwheel -All manual operators for service other than underground shall have a position indicator and shall be totally enclosed and permanently lubricated. Actuators shall be designed to produce the required operating torque with a maximum rim pull of 80 lb. on handwheel or chainwheel and a maximum input of 150 ft. lb. on operating nuts.
10. Cylinder - Cylinder operator shall be of the base mounted configuration. Cylinder barrel shall be of molybdenum disulfide-lined glass fiber reinforced epoxy tubing, to provide a corrosion-free, self-lubricated high-strength barrel. Rod seal shall be of urethane, molybdenum disulfide filled to provide a self-lubricated, long life seal.
11. The valve interior and exterior surfaces shall be coated in accordance with the latest revisions of AWWA C504 and must be NSF 61 Certified.

PART 3 – EXECUTION

3.01 INSTALLATION

A. All valves and appurtenances shall be installed in the locations shown, true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of the Engineer before they are installed.

B. After installation, all valves and appurtenances shall be tested at least one (1) hour at the working pressure corresponding to the class of pipe, unless a different test pressure is specified. If any joint proves to be defective, it shall be repaired to the satisfaction of the Engineer.

3.02 INSPECTION AND TESTING

Completed pipe shall be subjected to hydrostatic pressure test for two (2) hours at full working pressure. All leaks shall be repaired and lines retested as approved by the Engineer. Hydrostatic pressure test shall be performed in accordance with ASTM F 2164, AWWA M55 and PPI Handbook Chapter 2 and S&WB standard Drawing 7260-W.

END OF SECTION

SECTION 400576 - LARGE DIAMETER LINE STOPS

PART 1 - GENERAL

1.1 SUMMARY

A. Large Diameter Line Stops for isolating existing water mains ranging from 24-inch to 96-inch in diameter.

B. The Contractor shall execute line stops on 36” and 48” steel water transmission mains and 30” cast iron transmission main as required by the Contract Documents.

C. The line stop procedure shall be intended as a means of temporarily plugging a pressurized pipeline without disrupting pressure or service upstream of the line stop device. The line stop shall be installed by means of a pressure tap.

D. The entire line stop procedure shall be accomplished without the reduction of pressure in the pipeline below the standard operating pressures.

E. Shutdowns accomplished by line stop procedures may not be drip tight. A satisfactory shut off will be defined as one which allows the work to be accomplished using drainage pumps to dewater excavations if necessary.

1.2 RELATED SECTIONS

A. Section 339013 – Ductile Iron Pipe and Fittings

1.3 REFERENCES

A. ASTM A 36 - Standard Specification for Carbon Structural Steel.

B. ASTM A 105 - Standard Specification for Carbon Steel Forgings for Piping Applications.

C. ASTM A 181 - Standard Specification for Carbon Steel Forgings, for General-Purpose Piping.

D. D. ASTM A 283 - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

E. AWWA C 111 - American National Standard for Rubber Gasket Joints for Ductile- Iron Pipe and Fittings for Water.

F. ASME B16.5 - Pipe Flanges and Flanged Fittings.

1.4 DEFINITIONS

A. Large Diameter Line Stop – Plugging mechanism used for isolating sections of existing water line temporarily.

1. Pivot Head – To be used on a size-on-size tap. Plug head is turned once inside existing pipe.

2. Folding Head – To be used for a reduced size tap. Plug head is unfolded within existing pipe after being inserted.

B. Plugged – Adequate flow stoppage to permit the completion of required work.

C. Completion Plug – After Line Stop is removed completion plug seals outlet and a blind flange is installed.

D. Line Stop Sleeve – Fitting that goes around existing pipe and to be used to hot tap existing pipe. Line Stop Sleeve to be left in place after removal of Line Stop.

1.5 SUBMITTALS

A. Conform to requirements of Section 013300 - Submittal Procedures.

B. Submit qualifications and certificate from manufacturer certifying operators are qualified to operate manufacturer's tapping and Line Stop equipment.

C. Submit qualifications verifying recent successful completion of line stopping operations on large diameter water lines, including diameters and pipe materials required to complete work. Include list of references.

D. Submit shop drawings for approval prior to start of fabrication. Identify procedures required during and/or after tapping procedure for the specified pipe material being tapped.

E. Submit detailed work plan including flow requirements for Line Stop installation and removal. Provide contingency plan for unsuccessful line stop operation and completion, including typical causes and proposed solutions.

F. Submit foundation design for support of Line Stop, signed and sealed by a Professional Engineer registered in State of Louisiana.

G. Submit requirements for flow and pressure in line during tapping, Line Stop installation, line stopping, reduced bypass and Line Stop removal stages of the work. Include anticipated durations of each step.

H. Provide survey coordinates of Line Stop and show on record drawings.

1.6 QUALITY ASSURANCE

A. Line stopping shall be completed by a tapping supplier with a substantial record of successful line stop installations. Supplier shall have a minimum of ten years verifiable experience in the installation of line stops. The installation shall be accomplished by personnel skilled and experienced in the required procedures.

B. Prior to ordering materials, the Contractor shall review the Owner's pipe manufacturer's records which will include the make, specification, and age of the pipeline to be stopped.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:

1. Selection of Line Stop Sleeve and Line Stop must take into consideration pipe material and existing conditions for project.

2. Conduct welding in accordance with applicable codes and standards. Stress

relieve all welds.

3. Clearly mark Line Stop Sleeve and attachments to permit proper alignment in field and to ensure ends are properly matched when installed around pipe.

B. Line Stop Sleeve:

1. Provide as a minimum sleeve and attachments fabricated in accordance with ASTM A36 or ASTM A283 standards. Provide sleeve which conforms to and adequately reinforces existing pipe to prevent distortion or failure of pipe. Line Stop Sleeve to have fusion bonded epoxy or approved equal.

2. Sleeve and attachments used in hot tapping procedure are to be in compliance with maximum working pressure of system as specified and/or shown on Drawings.

3. Provide flanges manufactured in accordance with ASTM A-181, ASTM A-105 grade steel, ASME B16.5 in sizes up to 24-inches and MSS-SP 44 in sizes 26-inches and larger.

4. Provide external bolting, studs and nuts consisting of corrosion resistant, high strength, low alloy (AWWA C 111). Denso or approved equal petroleum-based tape coating. As an option, stainless steel 18-8 type 304 bolts, studs and nuts may be used.

C. Pivot Head Line Stop:

1. Pivot Head Line Stop is allowed on steel pipe only.

2. Plugging machine provided by a size-on-size tapping fitting for 36-inch diameter and below. Tapping Sleeves for Steel Pipe shall be in accordance with AWWA Manual M9. They shall also meet AWWA C301 and C303 Standards pertaining to design, manufacturing quality tests and welders qualifications. Pivot head to include a nitrile or Buna-N O-ring for plugging.

3. Design Line Stop system to withstand a minimum of 150 psi.

D. Folding Head Line Stop:

1. Plugging machine provided by a reduced size of tapping fitting for 42-inch diameter and larger, in accordance with the ANSI/AWWA C-223 and MSS-SP 124 Standards as applicable. Folding head to include a nitrile or Buna-N O-ring for plugging. Tapping sleeves shall be ANSI/NSF Standard 61 Certified

2. Design Line Stop system to withstand a minimum of 150 psi.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Plan Line Stop procedure to minimize impact to the public. Notify Project Manager at least 72 hours in advance of line stopping procedure, including excavation.

B. Do not operate valves. Sewerage and Water Board of New Orleans will handle, at no cost to Contractor/subcontractors, operations involving opening and closing valves. Provide at a minimum 2 weeks' notice for valve operations. Indicate the required flow

needed for proper Line Stop insertion.

C. Conduct Line Stop operations in presence of Project Manager and/or Construction Manager. Continue line stopping work without interruption until Line Stop operation is complete and pipe is plugged.

D. Pipe Preparation:

1. Thoroughly clean pipe down to factory supplied outside diameter. Carefully inspect pipe, especially at point where tap will take place. Confirm roundness of existing pipe. Do not tap within 4 feet of an existing joint.
2. For a Folding Head Line Stop the diameter of tap should be no greater than 75% of pipe diameter.
3. Cement mortar coating may be carefully removed within the limits of tapping assembly prior to installing Line Stop Sleeve.

E. Line Stop Sleeve Installation:

1. Place top half of sleeve with flanged outlet at the 12 o'clock position on pipe.
2. Install sleeve and attachments in accordance with manufacturer's recommendation. Torque bolts in accordance with the manufacturer. Any misalignment in sleeve installation will require removal of sleeve from pipe.
3. Pour concrete foundation around Line Stop Sleeve. Foundation dimensions and materials to be designed by contractor.

F. If existing pipe has concrete mortar coating remove the outer concrete core within opening of Line Stop Sleeve. For PCCP, carefully cut and remove the prestressed wires within the limits of Line Stop Sleeve once concrete foundation is in place. Record type of coating and measured outside diameter of existing pipe on plan sheet of record drawings where line stop is shown. Install gland with O-ring and tighten bolts to provide compression seal between O-ring and steel cylinder.

G. Pressure Testing: After sleeve is attached and before line tapping procedure begins, pressure test sleeve.

H. Tap through cylinder and inner mortar lining and retrieve pipe coupon.

I. Remove tapping assembly and mount Line Stop assembly.

J. If reduced bypass is required per contract drawings, include bypass assembly with Line Stop assembly and connect.

K. If Line Stop is unsuccessful in adequately reducing existing water flow for purposes of successfully completing proposed work, mechanically clean interior of pipe with line stop head as approved by Project Manager. Do not damage pipe's interior lining during mechanical cleaning.

L. Anticipate water leakage from Line Stop and include cost of water removal in unit price bid for Large Diameter Line Stop work. Coordinate with Construction Manager to reduce pressure, if needed.

M. After connection to pipe or associated work requiring installation of an isolation valve

is complete, remove Line Stop equipment from pipe and seal Line Stop Sleeve with Completion Plug and blind flange.

N. Apply external coating to sleeve, flange and water main in accordance with applicable specification for the host pipe material. Unless otherwise directed by Project Manager, provide similar coating to existing pipe's coating.

END OF SECTION

APPENDIX F

TM009 Spruce Street Transmission Main

SEWERAGE & WATER BOARD OF NEW ORLEANS

CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

PROJECT ID:
TM009 PROJECT
NO.: 2157

SPRUCE ST. (EAGLE ST. - CARROLLTON AVE.)
TM009 - 30" WATER MAIN REPLACEMENT

JUNE 15,2026

PREPARED BY:

LINFIELD, HUNTER & JUNIUS, INC.
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END OF SECTION

SECTION 01 10 00

SUMMARY OF WORK

PART 1 – GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS/REQUIREMENTS INCLUDED

A. The work of this contract includes compression fit HDPE lining an existing 30" cast iron water transmission main on Spruce St., installing a new 30" duct iron transmission main on Spruce St., and constructing a new 8" PVC water mains on Monroe Street. The existing 6" water main on Monroe Street is to be filled with flowable fill, plugged, and abandoned in-place. The contract shall be constructed complete in place with all hydrants, fittings, and services and restoration of roadway, sidewalks, driveways, established lawns, and roadway drainage ditches to original conditions.

B. The Contractor shall furnish all labor, materials, equipment, tools, services, and incidentals to complete all work required by these specifications and as shown on the drawings.

C. The Contractor shall perform the work complete, in place and ready for continuous service, and shall include repairs, replacements, and restoration required as a result of damages caused during this construction.

D. The Contractor shall furnish and install all materials, equipment, and labor which is reasonably and properly inferable and necessary for the proper completion of the work, whether specifically indicated in the Contract Documents or not.

1.02 CONTRACTS

The Contract consists of a unit bid price. The Bidder shall complete the schedule of all unit prices included in the Bid Form and shall accept all fixed unit prices listed therein. The total Bid will be determined as the sum of the products of the estimated quantity of each item and the unit price bid. The final Contract Price will be subject to adjustment according to final measured, used, or delivered quantities, and the unit prices in the bid will apply to such final quantities except that unit prices will be subject to change by Change Order if quantities vary more than twenty-five percent (25%).

1.03 GOVERNING SPECIFICATIONS

The governing specifications shall be the City of New Orleans Department of Public Works General Specifications for Street Paving, included in these contract documents as Attachment 1, unless explicitly specified otherwise.

1.4 WORK SEQUENCE

A. All work for the installation of the 8" water main on Monroe Street to be done under this contract shall be done with no disruption of water service, except during water line tie-ins, and with minimum inconvenience to traffic. The Contractor shall coordinate his work with the Department of Public Works and the Sewerage and Water Board to ensure all construction in the roadway is marked properly and vehicles are able to travel safely around the construction zone.

1.5 CONSTRUCTION AREAS

A. Contractor shall limit his use of the construction areas for work and storage to allow for:

1) Commercial Use.
2) Owner use.
3) Public use.

B. Coordinate use of work site under direction of Engineer.

C. Assume full responsibility for the protection and safekeeping of products under this contract, stored on the site.

D. Move any stored products, under Contractor's control, which interfere with operations of the Owner or separate contractor.

E. Obtain and pay for the use of additional storage or work areas needed for operations.

1.6 OWNER OCCUPANCY

A. Contractor shall at all times conduct his operations as to insure the least inconvenience to the general public.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

FIELD ENGINEERING AND SURVEYING

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

Contractor shall provide and pay for field engineering and field surveying services required for the project.

1) Survey work required in execution of the project.

2) Civil, structural or other professional engineering services specified, or required to execute the Contractor's construction methods.

1.2 RELATED REQUIREMENTS

A. Conditions of the Contract.

B. Section 01 10 10: Summary of Work.

1.3 QUALIFICATIONS OF SURVEYOR OR ENGINEER

Registered professional engineer of the discipline or registered land surveyor required for the specific service on the project, licensed in the State of Louisiana, acceptable to the Owner.

1.4 SURVEY REFERENCE POINTS

A. Existing basic horizontal and vertical control points for the project are those designated on the drawings.

B. Locate and protect control points prior to starting work, and preserve all permanent reference points during construction.

1) Make no changes or relocations without prior written notice to the Engineer.

2) Report to the Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

3) Require surveyor to replace project control points which may be lost or destroyed.

a) Establish replacements based on original survey control.

1.5 PROJECT SURVEY REQUIREMENTS

A. Establish temporary bench marks as needed, referenced to data established by survey control points. Record locations with horizontal and vertical data on Project Record Documents.

B. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means.

C. From time to time, verify layouts by same methods, as directed by the Engineer.

1.6 RECORDS

Maintain a complete, accurate log of all control and survey work as it progresses.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 11 52

REQUESTS FOR PAYMENT

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

Submit applications for payment to the Engineer in accord with the schedule established by Conditions of the Contract.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Agreement between Owner and Contractor: Unit Price.

B. Conditions of the Contract: Progress Payments, Retainages and Final Payment.

C. Section 01 13 80: Construction Photographs and Video Taping.

D. Section 01 17 00: Contract Closeout.

1.3 FORMAT AND DATA REQUIRED

A. Submit payment requests in the form required by Owner with itemized data typed on 8 ½ x 11 (minimum size) white paper continuation sheets.

B. Provide itemized data on continuation sheet: format, schedules, line items and values.

1.4 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. All payment requests must include a signed affidavit regarding previous payments received, a short progress narrative describing work performed since previous payment submittal, progress photos as per Section 01 13 80, current project schedule, and invoices for any stored materials billed.

B. When the Owner or the Engineer requires additional substantiating data, the Contractor shall submit suitable information, with a cover letter.

C. Submit one copy of all data required with a cover letter for each monthly pay request. Any additional substantiating data requested shall also be submitted as required in Part B above.

1.5 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting as specified in section 01 17 00 – Contract Closeout.

1.6 SUBMITTAL PROCEDURE

A. Submit applications for payment to the Engineer at the times stipulated in the Agreement.

B. Number: Three copies of each application.

C. When the Engineer finds application properly completed and correct, he will transmit certificate for payment to the Owner, with copy to Contractor.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 11 53

CHANGE ORDER PROCEDURES

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

A. Promptly implement change order procedures.

1. Provide full written data required to evaluate changes.
2. Maintain detailed records of work done on a time-and-material/force account basis.
3. Provide full documentation to Engineer on request.

B. Designate in writing the member of Contractor's organization.

1. Who is authorized to accept changes in the Work.
2. Who is responsible for informing others in the contractor’s employ of the authorization of changes in the Work.

C. Owner will designate in writing the person who is authorized to execute Change Orders.

1.2 DEFINITIONS

A. Change order: See General Conditions.

1.3 PRELIMINARY PROCEDURES

1. Owner or Engineer may initiate changes by submitting a Proposal Request to Contractor. Request will include:

1. Detailed description of the Change, Products, and location of the change in the Project.
2. Supplementary or revised Drawings and Specifications.
3. The projected time span for making the change, and a specific statement as to whether overtime work is, or is not, authorized.
4. A specific period of time during which the requested price will be considered valid.
5. Such request is for information only, and is not an instruction to execute the changes, nor to stop work in progress.

2. Contractor may initiate changes by submitting a written notice to Engineer, containing:

1. Description of the proposed changes.
2. Statement of the reason for making the changes.
3. Statement of the effect on the Contract Sum and the Contract Time.
4. Statement of the effect on the work of separate contractors.
5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

1.4 DOCUMENTATION OF PROPOSALS AND CLAIMS

1. Support each quotation for a lump-sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow Engineer to evaluate the quotation.

2. On request, provide additional data to support time and cost computations:

a. Labor required.
b. Equipment required.
c. Products required.
d. Recommended source of purchase and unit cost.
e. Quantities required.
f. Taxes, insurance and bonds.
g. Credit for work deleted from Contract, similarly documented.
h. Overhead and profit.
i. Justification for any change in Contract Time.

3. Support each claim for additional costs, and for work done on a time-and-material/force account basis, with documentation as required for a lump-sum proposal, plus additional information.

4. Name of the Owner's authorized agent who ordered the work, and date of the order.
5. Dates and times work was performed, and by whom.
6. Time record, summary of hours worked, and hourly rates paid.
7. Receipts and invoices for:
   a. Equipment used, listing dates and times of use.
   b. Products used, listing of quantities.
   c. Subcontracts.

1.5 PREPARATION OF CHANGE ORDERS

A. Engineer will prepare each Change Order.

B. Form: Owner's Form, to be provided to the Contractor.

C. Change Order will describe changes in the Work, both additions and deletions, with

attachments of revised Contract Documents to define details of the change.

D. Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.

1.6 LUMP SUM/FIXED PRICE CHANGE ORDER

A. Content of Change Orders will be based on, either:

1. Engineer's Proposal Request and contractor's responsive Proposal as mutually agreed between Owner and Contractor.
2. Contractor's Proposal for a change, as recommended by Engineer.

B. Owner and Engineer will sign and date the Change Order as authorization for the Contractor to proceed with the changes.

C. Contractor may sign and date the Change Order to indicate agreement with the terms therein.

1.7 UNIT PRICE CHANGE ORDER

A. Content of Change Orders will be based on, either:

1. Engineer's definition of the scope of the required changes.
2. Contractor's Proposal for a change, as recommended by Engineers.
3. Survey of completed work.

B. The amounts of the unit prices to be:

1. Those stated in the Agreement.
2. Those mutually agreed upon between Owner and Contractor.

C. When quantities of each of the items affected by the Change Order can be determined prior to start of the work:

1. Owner and Engineer will sign and date the Change Order as authorization for Contractor to proceed with the changes.
2. Contractor may sign and date the Change Order to indicate agreement with the terms therein.

D. When quantities of the items cannot be determined prior to start of the work:

1. Engineer or Owner will issue a construction change authorization directing Contractor to proceed with the change on the basis of unit prices, and

will cite the applicable unit prices.

2. At completion of the change, Engineer will determine the cost of such work based on the unit prices and quantities used.
    a. Contractor shall submit documentation to establish the number of units of each item and any claims for a change in Contract Time.
3. Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time.
4. Owner and contractor will sign and date the change Order to indicate their agreement with the terms therein.

1.8 CORRELATION WITH CONTRACTOR'S SUBMITTALS

A. Periodically revise Schedule of Values and Application for Payment forms to record each change as a separate item of work, and to record the adjusted Contract Sum.

    1. Periodically revise the Construction Schedule to reflect each change in Contract Time.

B. Revise subschedules to show changes for other items of work affected by the changes.

C. Upon completion of work under a Change Order, enter pertinent changes in Record Documents.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 12 00

PROJECT MEETINGS

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

A. Engineer shall schedule and administer pre-construction meeting, periodic progress meetings, and specially called meetings throughout progress of the work. At a minimum, he shall perform the following duties:

1) Prepare agenda for meetings.

2) Distribute written notice of each meeting four days in advance of meeting date.

3) Make physical arrangements for meetings.

4) Preside at meetings.

5) Record the minutes; include significant proceedings and decisions.

6) Reproduce and distribute copies of minutes within three days after each meeting.

(a) To participants in the meeting
(b) To parties affected by decisions made at the meeting

B. Representative of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.2 RELATED REQUIREMENTS

A. Instructions to Bidders: Pre-bid Conferences.

B. Section 01 13 40: Shop Drawings, Product Data and Samples.

1.3 PRE-CONSTRUCTION MEETING

A. Schedule prior to issuance of Notice to Proceed.

B. Location: A central site, convenient for all parties, designated by the Engineer.

C. Attendance:
1) Owner's Representative.

2) Engineer and his professional consultants.

3) Resident Project Representative.

4) Contractor's Superintendent.

5) Major Subcontractors.

6) Major suppliers.

7) Others as appropriate.

D. Suggested Agenda:

1) Distribution and discussion of:

(a) List of major subcontractors and suppliers.
(b) Projected Construction Schedules.
(c) Values for progress payment purposes.

2) Critical work sequencing.

3) Major equipment deliveries and priorities.

4) Project Coordination:

(a) Designation of responsible personnel.

5) Procedures and processing of:

(a) Field decisions.
(b) Proposal requests.
(c) Submittals.
(d) Change Orders.
(e) Applications for Payment.

6) Adequacy of distribution of Contract Documents.

7) Procedures for maintaining Record Documents.

8) Use of premises:

(a) Work and storage areas.
(b) Owner’s requirements.

9) Construction facilities, controls and construction aids.

10) Temporary utilities.

11) Safety and first-aid procedures.

12) Security procedures.

13) Housekeeping procedures.

1.4 PROGRESS MEETINGS

A. Schedule regular bi-weekly meetings.

B. Hold called meetings to review progress of the work.

C. Location of the meetings: As designated by the Engineer.

D. Attendance:

1) Engineer, and his professional consultants, as needed.
2) Contractor.
3) Subcontractors, as appropriate to the agenda.
4) Suppliers, as appropriate to the agenda.
5) Others.

E. Suggested Agenda:

1) Review, approval of minutes of previous meeting.

2) Review of work progress since previous meeting.

3) Field observations, problems, conflicts.

4) Problems which impede Construction Schedule.

5) Review of off-site fabrication, delivery schedules.

6) Corrective measures and procedures to regain projected schedule.

7) Revisions to Construction Schedule.

8) Progress, schedule, during succeeding work period.

9) Coordination of schedules.

10) Review submittal schedules; expedite as required.

11) Maintenance of quality standards.

12) Pending changes and substitutions.

13) Review proposed changes for:

(a) Effect on Construction Schedule and on completion date.
(b) Effect on other contracts of the project.

14) Other business.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 13 40

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

Submit shop drawings, product data and samples required by Contract Documents.

1.2 RELATED REQUIREMENTS

A. Conditions of the Contract: Definitions and Additional responsibilities of parties.

B. Designate in a separate schedule, the dates for submission and the dates that reviewed shop drawings, product data and samples will be needed.

1.3 SHOP DRAWINGS

A. Drawings shall be presented in a clear and thorough manner.

1) Details shall be identified by reference to sheet and detail as shown on contract drawings.

B. Minimum sheet size: 8 1/2 inches by 11 inches.

1.4 PRODUCT DATA

A. Preparation

1) Clearly mark each copy to identify pertinent products or models.

2) Show performance characteristics and capacities.

3) Show dimensions.

B. Manufacturer's standard schematic drawings and diagrams.

1) Modify drawings and diagrams to delete information which is not applicable to the work.

2) Supplement standard information to provide information specifically applicable to the work.

1.5 SAMPLES

A. Office samples shall be of sufficient size and quantity to clearly illustrate:

1) Functional characteristics of the product, with integrally related parts and attachment devices.

2) Full range of color, texture and pattern.

1.6 CONTRACTOR RESPONSIBILITIES

A. Review shop drawings, product data and samples prior to submission.

B. Determine and verify:

1) Field measurements
2) Field construction criteria
3) Catalog numbers and similar data
4) Conformance with specifications
5) Confirm compatibility of equipment to be supplied within location to be erected.

C. Coordinate each submittal with requirements of the work and of the contract documents.

D. Notify the Engineer in writing, at time of submission, of any deviations in the submittals from requirements of the contract documents.

E. Begin no fabrication or work which requires submittals until return of submittals with Engineer approval.

1.7 SUBMISSION REQUIREMENTS

A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the work or in the work of any other contractor.

B. Number of Submittals required:

1) Shop Drawings and Product Data: Submit one (1) set of reproducibles and two (2) sets of prints of each shop drawing submittal for review. After final review in which there are no exceptions noted or referenced the contractor shall furnish the Engineer six (6) complete sets for use by the Engineer and Owner.

2) Samples: Submit the number stated in each specification section.

C. Submittals shall contain:

1) The date of submission and the dates of any previous submissions.

2) The project title and number.

3) Contract identification.

4) The names of:

(a) Contractor
(b) Supplier
(c) Manufacturer

5) Identification of the product, with the specification section number.

6) Field dimensions, clearly identified as such.

7) Relation to adjacent or critical features of the work or materials.

8) Applicable standards, such as ASTM or Federal specification numbers.

9) Identification of deviations from Contract Documents.

10) Identification of revisions on resubmittals.

11) A blank space for Contractor and Engineer stamps.

12) Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of Contract Documents.

D. Submittals should be made using the Letter of Transmittal form attached to this section as page 01 13 40-6. Submittals received without this submittal form will be returned to the Contractor without action. Transmittals shall be numbered in sequence for each Section of the Specifications. The number after the dash indicates the Section of the Specifications, and the number before the dash is the sequence number of the transmittal (1-15100 would be the first transmittal applicable to Section 15100 of the Specifications. 2-15100 would be the second transmittal for Section 15100, etc.)

1.8 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in the submittals required by the Engineer and resubmit until no exceptions are taken by the Engineer.

B. Shop Drawings and Product Data:

1) Revise initial drawings or data, and resubmit as specified for the initial submittal.

2) Indicate any changes which have been made other than those requested by the Engineer.

C. Samples: Submit new samples as required for initial submittal.

1.9 DISTRIBUTION

A. Distribute reproductions of Shop Drawings and copies of Product Data which carry the Engineer review stamp to:

1) Job site file
2) Record Documents file
3) Other affected contractors
4) Subcontractors
5) Supplier or Fabricator

B. Distribute samples which carry the Engineer review stamp as directed by the Engineer.

1.10 ENGINEER DUTIES

A. Review submittals within 15 calendar days.

B. Affix review stamp and initials or signature, and indicate requirements, if any, for resubmittal.

C. Return submittals to Contractor.

1.11 ENGINEER'S ACTION

A. Final unrestricted release. Work may proceed, provided it complies with contract documents, when submittal is returned with the following:

Marking: Approved

B. Final-But-Restricted Release. Work may proceed, provided it complies with notations and corrections on submittal and with contract documents, when submittal is returned with the following:

Marking: Furnish As Corrected.

C. Returned for Resubmittal. Do not proceed with work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking. Do not allow submittals with the following marking (or unmarked submittals where a marking is required) to be used in connection with performance of the work:

Marking: Revise and Resubmit or
Rejected
Submit Specified Item

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

LETTER OF TRANSMITTAL

Transmittal of Shop Drawings, Monolith Drawings, Equipment Data, Material Sample or Manufacturer's Certificates of Compliance for Approval.	New Transmittal Re-Submittal
Project: **SPRUCE ST. (EAGLE ST. - CARROLLTON AVE.)** TM009 - 30" WATER MAIN REPLACEMENT	
TO: LINFIELD, HUNTER & JUNIUS, INC. 3608 18TH ST. Metairie, LA 70002 From:	Transmittal No. (If Any) Previous Transmittal No.

Item No.	Description of Item Submitted, i.e., Type, Size, Model No., Etc.'	Mfg. or Supplier	Mfg. or Contr. Cat., Curve, Drawing or Brochure No.	No. of Copies	Project Specification Section Number	Engineer's Use Only Action Code

Signature of Contractor:_____ Date:_____

(THIS SECTION TO BE USED ONLY BY THE ENGINEER TO DESIGNATE ACTION)

Action Codes. The following codes are given to the items submitted: A - No exceptions taken; B - Revise as noted; C - Amend and resubmit; D - Rejected. See remarks. Corrections and comments made on the shop drawings during this review do not relieve the contractor from compliance with requirements of the drawings and specifications.

Enclosure Returned
(List by Item No.)

By:_____ Date:
LINFIELD, HUNTER & JUNIUS, INC.

Distribution Requested: Contractor_____ Engineer_____ Owner_____

SECTION 01 13 80

CONSTRUCTION PHOTOGRAPHS AND VIDEOS

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

Contractor shall employ a competent photographer to take construction record photographs and video DVDs prior to and periodically during course of the work.

1.2 PHOTOGRAPHY REQUIRED

A. Video Survey as specified herein (pre-construction).
B. Provide five (5) photographs each month of each major portion of the work taken at each major stage of construction.
C. Provide digital files of each photograph identified with contract number, description of view and date.

1.3 COSTS OF PHOTOGRAPHY

Contractor shall pay costs for specified video and photography, and prints. Parties requiring additional photography or prints will pay photographer directly.

PART 2 – PRODUCTS

2.1 PRINTS

A. Color:

1. Paper: Single weight, white base.
2. Finish: Smooth surface, glossy.
3. Size: 4 in. x 5 in.

B. Identify each print on back, listing:

1. Name of project.
2. Facility location.
3. Orientation of view.
4. Date and time of exposure.
5. Name of Contractor.

2.2 VIDEOS

A. Specifications for Audio-Video Survey

Prior to the start of construction of the contract, the Contractor shall furnish to the Engineer the video DVDs of the construction areas. The DVDs shall be reviewed by the Engineer and either approved or additional coverage will be required to fully show the physical conditions of the work areas. The Contractor shall have the additional coverage videoed and shall not begin work, including moving equipment and/or material on the project site, until the audio-video survey has been approved by the Engineer. After approval, the Contractor shall supply two copies of the audio-video survey to the Engineer. One copy of the DVDs will remain available for viewing by the Contractor and may be reviewed by him for any assistance that the DVDs may provide in resolving disputes which arise with the property owners claiming improper restoration of their properties. That copy of the DVDs will also be used as a guide by the Engineer, prior to issuance of final payments, in determining the adequacy of restoration and the extent of damages attributable to the Contractor's work. The remaining copy of the DVD will be delivered to the Owner.

B. Technical Requirements

The total audio-video recording system and the procedures employed in its use shall be such as to produce a finished product that will fulfill the technical requirements of the project, as well as those more subjective requirements of high-quality audio and video production. The video portion of the recording shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion or any other form of picture imperfection. The audio portion of the recording shall reproduce precise and concise explanatory notes by the camera operator with proper volume, clarity and freedom from distortion.

C. Recorder

The recorder shall be DVD format.

D. Camera

The color video camera shall have a horizontal resolution of at least 550 lines at center.

PART 3 – EXECUTION

3.1 TECHNIQUE FOR STILL PHOTOGRAPHS

A. Factual presentation.

B. Correct exposure and focus.

1. High resolution and sharpness.
2. Maximum depth-of-field.
3. Minimum distortion.

3.2 VIEWS REQUIRED FOR STILL PHOTOGRAPHS

A. Contractor shall photograph from locations to adequately illustrate condition of construction and state of progress. Consult with Engineer at each period of photography for instructions concerning views required.

B. Prior to construction of the water line, five photographs of pertinent features shall be taken at various locations at the site as selected by the Engineer and promptly submitted to the Engineer. The same views shall be re-photographed during construction of the water line showing the installation of all material and pipe. Photographs shall also be taken upon completion of the project. Additional progress photographs shall be made monthly throughout the progress of the work at the same locations as above when work has taken place at that location during the month and submitted with each of the Contractor's applications for progress payment.

3.3 TECHNIQUE AND VIEWS REQUIRED FOR VIDEO TAPING

A. At the start of production, an identification summary shall be read into the record while, at the same time, a wide-angle view with numeric displays shall be provided for a visual record. This summary will include (1) DVD number, (2) job title, (3) job location, (4) positional location at job start, (5) date and time, (6) weather and (7) any other notable conditions.

B. Coverage

The recording shall include coverage of all surface features located within the construction zone-of-influence. This zone shall be defined as (1) the area within 500 feet of the water line and (2) areas directed by the Owner. The coverage shall be continuous (i.e., the camera shall not be turned off once photography has begun) to the greatest extent practically possible. If the camera must be turned off then a verbal message shall be inserted stating that the camera will be turned off and the reason for discontinuing coverage.

C. Visibility

No recording shall be done during periods of significant precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording.

D. Experience

The operator in charge must have had previous experience video documenting a minimum of fifty miles of pre-construction work. Any apprentice operators must be continuously supervised by an above-described experienced operator.

3.4 DELIVERY OF PRINTS

A. Preconstruction photographs shall be delivered to the Engineer prior to the mobilization of any equipment or materials or the beginning of construction on each pump station site.

B. Deliver progress prints to Engineer to accompany each Application for Payment.

3.5 DELIVERY OF DVDs

A. Recording Schedule

The recording shall be performed prior to the placement of any construction materials or equipment on the proposed construction site, but not more than seven weeks prior to the placement of materials or equipment.

B. DVD Indexing

All DVDs and their storage cases shall be properly identified by DVD index number, project title and general project location. Displayed on the storage case of each DVD shall be a log of that DVD's contents. That log shall describe (1) the various segments contained on that DVD, (2) coverage start, direction and endpoints, with corresponding DVD player counter numbers. A cumulative index correlating the various segments of coverage to their corresponding DVDs shall be typed and supplied to the Owner.

C. After approval of videos, deliver two record copies to Engineer.

D. Unacceptable Documentation

The Owner shall have the authority to reject all or any portion of the DVD documentation not conforming to the specifications. Those rejected portions shall be retaped at no additional cost to the Owner.

E. Specification Deviations

Any deviation from these specifications must have the written approval of the Owner/Engineer.

F. Payment

There will be no separate payment for construction photographs and videos. Payment for the work covered under this section shall be included within the pay item for mobilization. Video documentation will be made in accordance with the project specifications.

END OF SECTION

SECTION 01 14 10

TESTING LABORATORY SERVICES

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

Owner will employ and pay for the services of an independent testing laboratory to perform specified testing upon recommendation of the Engineer.

1) The Contractor shall cooperate with the laboratory to facilitate the execution of its required services.

2) Employment of the laboratory shall in no way relieve the Contractor's obligations to perform the work of the contract.

1.2 RELATED REQUIREMENTS

A. Conditions of the contract: Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities.

B. Respective sections of Specifications: Certification of products.

1.3 LABORATORY DUTIES

A. Cooperate with the Engineer and Contractor to provide certified personnel after due notice.

B. Perform specified inspections, sampling and testing of materials and methods of construction:

1) Comply with specified standards.

2) Ascertain compliance of materials with requirements of Contract Documents.

C. Promptly notify the Engineer and Contractor of observed irregularities or deficiencies of work or products.

D. Promptly submit two (2) copies of written report of each test and inspection to the Engineer, four (4) copies to the owner and two (2) copies to the Contractor. Each report shall include:

1) Date issued.
2) Project title and number.
3) Testing laboratory name, address and telephone number.

4) Name and signature of laboratory inspector.
5) Date and time of sampling or inspection.
6) Record of temperature and weather conditions.
7) Date of test.
6) Identification of product and specification section.
9) Location of sample or test in the project.
10) Type of inspection or test.
11) Results of test and compliance with Contract Documents.
12) Interpretation of test results, when requested by the Engineer.

E. Perform additional tests as required by the Engineer or Owner.

1.4 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

Laboratory is not authorized to:

1) Release, revoke, alter or enlarge on requirements of Contract Documents.

2) Approve or accept any portion of the work.

3) Perform any duties of the Contractor.

1.5 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel; provide access to work, and to manufacturer's operations.

B. Secure and deliver to the laboratory, when requested by the Engineer, adequate quantities of representational samples of materials proposed to be used and which require testing.

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete and other materials mixes which require control by the testing laboratory.

D. Furnish copies of products test reports as required.

E. Furnish incidental labor and facilities:

1) To provide access to work to be tested.

2) To obtain and handle samples at the project site or at the source of the product to be tested.

3) To facilitate inspections and tests.

4) For storage and curing of test samples.

F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests. When tests or inspections cannot be performed after such notice, reimburse the Owner for laboratory personnel time and travel expenses incurred due to Contractor's negligence.

G. Make arrangements with the laboratory and pay for additional samples and tests required for Contractor’s convenience.

H. Contractor to pay for all retesting as a result of test failure.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 16 00

MATERIAL AND EQUIPMENT

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

A. Material and equipment incorporated into the work:

1) Conform to applicable specifications and standards.

2) Comply with size, make, type and quality specified, or as specifically approved, in writing, by the Engineer.

3) Manufactured and Fabricated Products:

(a) Design, fabricate and assemble in accord with the best engineering and shop practices.

(b) Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.

(c) Two or more items of the same kind shall be identical, by the same manufacturer.

(d) Products shall be suitable for service conditions.

4) Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.2 RELATED REQUIREMENTS

A. Conditions of the Contract
B. Section 01 10 10: Summary of Work
C. Section 01 13 40: Shop Drawings, Product Data and Samples

1.3 MANUFACTURER'S INSTRUCTIONS

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to the Engineer.

1) Maintain one set of complete instructions at the job site during installation and until completion.

B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.

1) Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.

2) Do not proceed with work without clear instructions.

C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.4 TRANSPORTATION AND HANDLING

A. Arrange deliveries of products in accord with construction schedules; coordinate to avoid conflict with work and conditions at the site.

1) Deliver products in undamaged condition, in manufacturer’s original containers or packaging, with identifying labels intact and legible.

2) Immediately upon delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.

B. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

1.5 STORAGE AND PROTECTION

A. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.

1) Store products subject to damage by the elements in weathertight enclosure.

2) Maintain temperature and humidity within the ranges required by manufacturer's instructions.

B. Exterior Storage

1) Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter and entrance to drainage systems.

C. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.

D. Protection after Installation

1) Provide substantial coverings as necessary to protect installed products from damage from marine traffic and subsequent construction operations. Remove when no longer needed.

E. Private Property

1) Contractor must provide to the parish documentation of agreements for all use of private property for storage of material and equipment.

1.6 SUBSTITUTIONS AND PRODUCT OPTIONS

A. Products List

1) Within 30 days after contract date, submit to the Engineer a complete list of major products proposed to be used, with the name of the manufacturer, supplier, and the installing subcontractor.

B. Contractor's Options

1) For products specified only by reference standard, select any product meeting that standard.

2) For products specified by naming several products or manufacturers, select any one of the products or manufacturers named, which complies with the specifications.

3) For products specified by naming one or more products or manufacturers and "or equal", Contractor must submit a request as for substitutions for any product or manufacturer not specifically named.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 17 00

CONTRACT CLOSEOUT

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

Comply with requirements stated in Conditions of the Contract and in specifications for administrative procedures in closing out the work.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Conditions of the Contract: Fiscal provisions, legal submittals and additional administrative requirements.

B. Section 01 17 20: Project Record Documents.

1.3 SUBSTANTIAL COMPLETION

A. When the Contractor considers the work is substantially complete, he shall submit to the Engineer:

1) A written notice that the work, or designated portion thereof, is substantially complete.

2) A list of items to be completed or corrected.

B. Within a reasonable time after receipt of such notice, the Engineer will make an inspection to determine the status of completion.

C. Should the Engineer determine that the work is not substantially complete:

1) The Engineer will promptly notify the Contractor, in writing, giving the reasons therefore.

2) The Contractor shall remedy the deficiencies in the work, and send a second written notice of substantial completion to the Engineer.

3) The Engineer will re-inspect the work.

D. When the Engineer finds that the work is substantially complete, he will:

1) Prepare and deliver to the Owner a tentative Certificate of Substantial Completion on the appropriate parish form with a tentative list of items to be completed or corrected before final payment.

2) After consideration of any objections made by the Owner as provided in Conditions of the Contract, and when the Engineer considers the work substantially complete, he will execute and deliver to the Owner and the contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.4 FINAL INSPECTION

A. When Contractor considers the work is complete, he shall submit written certification that:

1) Contract Documents have been reviewed.

2) Work has been inspected for compliance with Contract Documents.

3) Work has been completed in accordance with Contract Documents.

4) Work is completed and ready for final inspection.

B. Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should Engineer consider that the work is incomplete or defective:

1) Engineer will promptly notify the contractor, in writing, listing the incomplete or defective work.

2) Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to Engineer that the work is complete.

3) Engineer will re-inspect the work.

D. When the Engineer finds that the work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.5 REINSPECTION FEES

A. Should the Engineer perform re-inspections due to failure of the work to comply with the claims of status of completion made by the Contractor:

1) Owner will compensate Engineer for such additional services.

2) Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.6 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to the Engineer.

B. Statement shall reflect all adjustments to the Contract Sum:

1) The original Contract Sum.

2) Additions and deductions resulting from:
(a) Previous Change Orders
(b) Unit Prices
(c) Penalties and Bonuses
(d) Deductions for liquidated damages
(e) Deductions for re-inspection payments
(f) Other adjustments

3) Total Contract Sum, as adjusted.

4) Previous payments.

5) Sum remaining due.

C Engineer will prepare a final Change order, reflecting approved adjustments to the contract sum which are not previously made by change orders.

1.7 FINAL APPLICATION FOR PAYMENT

Contractor shall submit the final application for payment in accordance with procedures and requirements stated in the Conditions of the Contract.

1.8 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

A. Project Record Documents.

B. Warranties and Bonds.

C. Evidence of Payment and Release of Liens: To requirements of General and Supplementary conditions.

D. Certificates of Insurance for Products and Completed operations.

E. As-Built Drawings and Point Files as per Section 01 17 20.

F. Maintenance Manuals.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01 17 20

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.1 DESCRIPTION

The Contractor shall maintain at the site for the Owner's permanent records one copy of:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other Modifications to the Contract.
5. Engineer Field Orders or Written Instructions.
6. Approved Shop Drawings, Product Data.
7. Field Test Records.
8. Construction Photographs.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01 13 40: Shop Drawings, Product Data and Samples.

B. Section 01 17 00: Contract Closeout.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

3.1 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. The Contractor shall store documents and samples in his office apart from documents used for construction.

B. The Contractor shall maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

C. The Contractor shall make documents and samples available at all times for inspection by the Engineer and Owner.

3.2 MARKING-UP RECORD DRAWINGS

The Contractor shall mark with red erasable pencil and, where necessary, use other pencil colors, as required.

3.3 RECORDING

A. Label each document (including record prints and shop drawings) "PROJECT RECORD" in neat large printed letters.

B. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

C. Drawings. Legibly mark field drawings to record actual construction:

1. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.

2. Field changes of dimensions and details.

3. Changes made by change order.

4. Details not on original Contract Drawings.

D. Specifications and Addenda. The Contractor shall legibly mark each Section to record:

1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.

2. Changes made by Field Order or by Change Order.

3.4 SUBMITTALS

A. At Contract close-out deliver record documents to the Engineer including marked-up drawings, as-built survey, specifications, addenda, change orders and other modifications to contract; Engineers field orders and written instructions, approved shop drawings, product data, field test records and any other documents which serve as a record of actual field installation and construction different from the original contract documents. Engineer will submit them to Owner.

B. The contractor shall provide an electronic point file containing the location of all installed features and fittings including fittings, valves, hydrants, offsets, etc. (referenced to state plane coordinates system 1983, zone 1702, Louisiana State Plane South with X, Y, and Z coordinates in feet). Points shall be collected by GPS by a surveyor licensed in the state of Louisiana, and shall include a description identifying the feature. The Contractor shall provide a point file that can be utilized in Auto-Cad or GIS mapping software to show the locations of installed features. The format shall be a text file (.txt) that can be opened in commonly available office software (i.e. Microsoft Excel).

C. Accompany submittals with transmittal letters in duplicates containing:

1. Date
2. Project title and number
3. Contractor's name and address
4. Title and number of each Record Document
5. Signature of Contractor or his authorized representative

END OF SECTION

SECTION 01 20 00

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

A. Refer to Proposal Form

B. Payment shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labors, operations, and incidentals appurtenant to complete the work being described, as necessary to complete the various items of the work all in accordance with the requirement of the Contract Documents, including all costs of compliance with the regulations of public agencies having jurisdiction. The Contractor is hereby on notice that no separate payment will be made for any item not specifically called out, but that is required to properly complete the project.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

PART 4 – MEASUREMENT AND PAYMENT

4.1 SCOPE

The Total Bid Price shall cover all work required by the Contract Documents. All costs in connection with the proper and successful completion of the work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in the unit and lump sum prices bid. All work not specifically set forth as a pay item on the Bid Form shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid for the bid item for which the work is incidental."

4.2 ESTIMATED QUANTITIES

All estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used only (a) as a basis for estimating the probable cost of the work, and (b) for the purpose of comparing the bids submitted for the work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished. No compensation will be given for any quantities not used.

4.3 DPW GENERAL SPECIFICATION PAY ITEMS

Measurement and Payment: All items assigned a DPW General Specification pay item number shall be measured and payed as per the DPW General Specifications for Street Paving included as Attachment 1 of these specifications. The following items are to be measured and paid per the DPW General Specifications for Street Paving:

A. C202(52)(C) – REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT
B. C202(52)(D) – REMOVAL AND DISPOSAL OF EXISTING SIDEWALK, DRIVEWAY, FOOTLAP
C. C202(52)(F) – REMOVAL OF EXISTING CURB AND GUTTERBOTTOM
D. C202(52)(I) – REMOVAL AND DISPOSAL OF EXISTING ASPHALT CONCRETE PAVEMENT
E. C203(58) – UNSUITABLE SUBGRADE EXCAVATION AND SAND FILL
F. C203(60) – GEOGRID
G. C402(51) – TRAFFIC MAINTENANCE AGGREGATE
H. C501(54) – GEOTEXTILE FABRIC FOR PAVING
I. C506(53)(A) – SUPERPAVE ASPHALTIC CONCRETE (2.5” THICK)
J. C506(53)(B) – SUPERPAVE ASPHALTIC CONCRETE (4.5” THICK)
K. C509(51) – COLD PLANING ASPHALTIC CONCRETE (2.5” AVERAGE THICK)
L. C601(54) – REINFORCED CONCRETE PAVEMENT (8” THICK)
M. C702(53)(L) – TYPE C CATCH BASIN ADJUSTMENT
N. C702(54)(I) – REHABILITATE EXISTING MANHOLE
O. C706(51) – CONCRETE SIDEWALK (4” THICK)
P. C706(52) – CONCRETE DRIVEWAY (6” THICK)
Q. C706(54) – SIDEWALK AT INTERSECTIONS INCLUDING HANDICAPPED RAMPS (6” THICK)
R. C707(60) – 6” BARRIER CURB AND GUTTERBOTTOM OR ROLLING STRIP C713(51) – TEMPORARY SIGNS, BARRICADES, PAVEMENT MARKINGS
S. C727(51) – MOBILIZATION
T. C741(52)(B) – NEW 6” VALVE
U. C741(52)(C) – NEW 8” VALVE
V. C741(54) – NEW FIRE HYDRANT
W. C741(55)(A) – REPLACE 5/8” TO 1” WATER HOUSE CONNECTION WITH 1” WATER HOUSE CONNECTION (FROM MAIN TO METER)
X. C741(71)(C-01) – 8” WATER MAIN OFFSET UP TO 24”
AA. C741(71)(C-02) – 8” WATER MAIN OFFSET OVER 24”
BB. C741(74)(A) – NEW WATER VALVE MANHOLE (4” THROUGH 12” VALVES)
CC. C741(75) – REMOVE MUD AND DEBRIS FROM INSIDE OF METER BOX
DD. C741(76) – ADJUST COMPLETE WATER METER BOX TO GRADE
EE. C741(77) – REPLACE BROKEN WATER MENTER BOX 5/8” TO 1”

4.4 EXPLORATORY EXCAVATION (0.0'-6.0') (ITEM NO. SP-1)

A. Measurement: Measurement for payment for exploratory excavation will be made per each exploratory excavation performed. Payment will be made at the contract unit price for each excavated area up to ten (10) feet long, no more than the width of the water line trench wide, and up to six (6) feet deep.

B. Payment: Payment for this item will be made per each exploratory excavation approved by the Engineer and will be paid at the unit price bid. The work will include excavation, backfill, labor, equipment, tools, materials, disposal of debris, and submitted documentation in accordance with the plans and specifications.

4.5 EXPLORATORY EXCAVATION (6.1'-10.0') (ITEM NO. SP-2)

A. Measurement: Measurement for payment for exploratory excavation will be made per each exploratory excavation performed. Payment will be made at the contract unit price for each excavated area up to ten (10) feet long, no more than the width of the water line trench wide, and up to ten (10) feet deep.

B. Payment: Payment for this item will be made per vertical foot height (vfh) of exploratory excavation 6.1′ to 10.0′ deep as approved by the Engineer and will be paid at the unit price bid. The work will include excavation, backfill, labor, equipment, tools, materials, disposal of debris, and submitted documentation in accordance with the plans and specifications.

4.6 COMPRESSION FIT HDPE LINE 30" CAST IRON WATER TRANSMISSION MAIN (ITEM NO. SP-4)

A. Measurement: Compression fit HDPE Line 30" cast iron water transmission main shall be measured for payment by field measurement of the linear feet installed, measured along the centerline of the pipe for the size and type of water main indicated.

B. Payment: The actual total linear feet of water main swagelined and accepted, measured as stated above, will be paid at the unit price bid and shall include all labor, materials, tools and equipment necessary to swageline the water main of the size and type indicated. All material and construction methods required for swagelining the water main shall be considered incidental to the unit price, including transitional couplings, ductile iron fittings, ductile iron spool pieces, joint restraints, flanges, tie-ins to valves and existing water mains, excavation, shoring and backfilling.

END OF SECTION

SECTION 02 32 19

EXPLORATORY

EXCAVATION

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

This work consists of excavating along the alignment of the new and existing water lines at points of potential conflict to determine the exact location of existing utilities. Approval to proceed shall be obtained from the Engineer before any exploratory excavation is to begin. An exploratory excavation plan showing proposed locations shall be submitted to the Engineer for approval before any excavation can begin. Any deviation from the approved plan must be approved in writing by the Engineer before excavation can begin.

Test pits shall be backfilled immediately after the desired information has been obtained. The backfilled surface shall be restored and maintained in a manner satisfactory to the Engineer. Upon completion of exploratory excavations, contractor shall submit documentation to Engineer illustrating the location of utilities and discovery of obstructions identified to the nearest permanent structure upon the plans.

END OF SECTION

SECTION 33 05 33

HIGH DENSITY POLYETHYLENE PIPE AND FITTINGS

PART 1 – GENERAL

1.1 SCOPE OF WORK

Furnish all labor, materials, equipment, and incidentals required and install high density polyethylene (HDPE) pipe and fittings complete as shown on the Drawings and as specified herein.

1.2 RELATED WORK – NOT USED

1.3 SUBMITTALS

A. Submit to the Engineer, in accordance with contract documents, the following information:

1. List of materials to be furnished, the names of the suppliers and the date of delivery of materials to the site.

2. The origin of the resin to be used in the manufacturing of the pipe including the supplier's name and production plant, as well as brand name and number.

3. Documentation from the resin's manufacturer showing results of the following tests for resin identification:

a. Melt Flow Index – ASTM D1238

b. Density – ASTM D1505

4. Manufacturer quality control manual describing implementation of quality control procedures during pipe manufacturing process.

5. Pipe manufacturer's certification of compliance with this Section.

6. One complete, detailed shop drawing of all polyethylene pipe, including the location of all fittings, joints and connections to structures.

7. Manufacturer's recommendations for handling, storing, and installing pipe and fittings.

8. For each shipment of pipe of manufacturer's certification that the pipe was manufactured from the same resins identified in Paragraph 1.03A2 above.

9. Name, address and telephone number for manufacturer and distributor.

1.4 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM D1238 – Standard Method for Flow Rates Thermoplastics by Extrusion Plastometer.

2. ASTM D1248 – Standard Specification for Polyethylene Plastic Molding and Extrusion Materials.

3. ASTM D1505 – Standard Test Method for Density of Plastics by the Density-Gradient Technique.

4. ASTM D1603 – Standard Test Method for Carbon Black in Olefin Plastics.

5. ASTM D2657 – Standard Practice for Heat-Joining Polyethylene Pipe and Fittings.

6. ASTM D2837 – Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.

7. ASTM D3350 – Standard Specifications for Polyethylene Plastic Pipe and Fittings Materials.

8. ASTM F593 – Standard Specifications for Stainless Steel Bolts, Hex Cap Screws, and Studs.

9. ASTM F714 – Standard Specifications for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.

B. American National Standards Institute (ANSI)

1. ANSI B16.1 – Grey Iron Fittings and Flanged Fittings.

2. ANSI B16.21 – Non-Metallic Flat Gaskets for Pipe Flanges.

C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.5 QUALITY ASSURANCE

A. The Contractor shall use a swaging die or roller reduction box to radially compress the HDPE pipe.

B. All HDPE pipe shall be manufactured by a single manufacturer who is fully experienced, reputable and qualified in the manufacture of the polyethylene pipe to be furnished. All HDPE fittings shall be supplied by a single distributor who is fully experienced, reputable, and qualified with the distribution of the pipe to be furnished. The pipe shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with these specifications.

C. All HDPE pipe to be installed under this Contract may be inspected at the factory for compliance with this Section by an independent testing laboratory provided by the Owner. The manufacturer's cooperation shall be required in these inspections. The cost of these plant inspections of all pipe approved for this Contract, plus the cost of inspection of a reasonable amount of disapproved pipe, will be borne by the Owner.

D. Inspection of the pipe may also be made by the Engineer or other representatives of the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the specified requirements. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job.

E. Resin Evaluation

All incoming resin shall be sampled for conformance testing against test results supplied by the resin manufacturer. Samples shall be taken from the top and bottom of each compartment from every hopper car received. The following conformance tests shall be performed on the sample:

a. Melt Flow Index – ASTM D1238

b. Density – ASTM D1505

c. The results of these tests shall become part of the manufacturer's permanent quality control records.

F. Finished Product Evaluation

Each length of pipe produced shall be checked by production staff for the items listed below. The results of all measurements shall be recorded on production sheets that become part of the manufacturer's permanent records.

a. Pipe in process shall be checked visually, inside and out for cosmetic defects, (grooves, pits, hollows, etc.).

b. Pipe outside diameter shall be measured using a suitable periphery tape to ensure conformation with ASTM F714.

c. Pipe wall thickness shall be measured at 12 equally spaced locations around the circumference at both ends of the pipe to ensure

conformance with ASTM F714.

d. Pipe length shall be measured.

e. Pipe marking shall be examined and checked for accuracy.

f. Pipe ends shall be checked to ensure they are out square and clean.

g. Subject inside surface to a "reverse and test" to ensure the pipe is free of oxidation (brittleness).

G. Stress Regression Testing

The polyethylene pipe manufacturer shall provide certification that stress regression testing has been performed on the specific polyethylene resin being utilized in the manufacture of this product. This stress regression testing shall have been done in accordance with ASTM D2837 and the manufacturer shall provide a product supplying a minimum Hydrostatic Design Basis (HDB) of 1600 psi as determined in accordance with ASTM D2837.

1.6 WARRANTY

The pipe manufacturer shall provide a warranty against manufacturing defects of material and workmanship for a period of ten years after the final acceptance of the project by the Owner. The manufacturer shall replace, at no additional cost to the Owner, any defective pipe material within the warranty period.

PART 2 – PRODUCT

2.1 MATERIALS

HDPE Pipe:

1. HDPE pipe is a flexible conduit and shall be designed to transfer imposed loads to the surrounding embedment medium. The pipe and fittings shall be free from all defects including indentations, delaminations, cracks, bubbles, pinholes, inclusions or occlusions which, due to their nature, degree, or extent, detrimentally affect the strength and serviceability of the pipe. Any pipe or fittings with such defects that, in the judgment of the Engineer, will affect the strength and serviceability shall be repaired or rejected.

2. HDPE pipe resins shall be PE4710 characterized by ASTM 03035.

3. Polyethylene pipe shall be as manufactured by Chevron Phillips Chemical Company LP Performance Pipe; CSR Polypipe; US Fusion LLC; WL Plastic; or equal.

4. The polyethylene compound shall be suitably protected against degradation by ultraviolet light as required by ASTM D1603.

5. The pipe shall have the nominal dimensions shown on the Drawings and shall conform to the dimension requirements of the ductile iron pipe sizing system. The pipe shall meet the dimension requirements of Standard Dimension Ratio (SDR). Contractor shall determine the pipe thickness (SDR) based on run length with a maximum SDR of 17.

6. All polyethylene pipe shall meet the requirements of ASTM F714 and NSF 61.

7. The pipe shall be joined with burr, heat fusion joints. All joints shall be made in strict compliance with the manufacturer's recommendations. De-beading is required to remove the outside fusion roll back bead prior to compression fit lining.

8. All high-density polyethylene pipe and fittings shall be made from the same resin.

9. Fittings shall be fully pressure rated to match the pipe SDR pressure rating. All fittings shall be molded or fabricated by the manufacturer.

2.2 PIPE IDENTIFICATION

The following shall be continuously indent printed on the pipe or spaced at intervals not exceeding 5-ft:

1. Name and/or trademark of the pipe manufacturer.

2. Nominal pipe size.

3. Dimension ratio.

4. The letters PE followed by the polyethylene grade in accordance with ASTM D1248, followed by the hydrostatic design basis in 100's of psi, e.g., PE 3408.

5. Manufacturing standard reference, e.g., ASTM F714.

6. A production code from which the date and place of manufacture can be determined.

PART 3 – EXECUTION

3.1 HANDLING

A. Handling and laying of pipe and fittings shall be in accordance with the manufacturer's instruction and as specified herein.

B. Pipes shall be stored on clean level ground, preferably turf or sand, free of sharp objects that could damage the pipe. Stacking of the polyethylene pipe shall be limited to a height that will not cause excessive deformation of the bottom layers of pipes under anticipated temperature conditions. Where necessary, due to ground conditions, the pipe shall be stored on wooden sleepers, spaced suitably and of such width as not to allow deformation of the pipe at the point of contact with the sleeper or between supports.

C. Care shall be taken in loading, transporting, and unloading to prevent injury to the pipe. The handling of the pipe shall be in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects. Ropes, fabric or rubber protected slings and straps shall be used when handling pipes. Chains, cables or hooks inserted into the pipe ends shall not be used. Two slings spread apart shall be used for lifting each length of pipe. Slings shall not be positioned at butt-fused joints. Pipe or fittings shall not be dropped.

D. All pipe or fittings shall be examined before laying and no piece shall be installed which is found to be defective. The maximum allowable depths of cuts, scratches or gouges on the exterior of the pipe are 10 percent of wall thickness. The interior pipe surface shall be free of cuts, gouges or scratches. Any damage to the pipe shall be repaired as directed by the Engineer. If any defective pipe section is discovered after it has been laid, it shall be removed completely and the ends of the pipeline rejoined, at the Contractor's expense.

3.2 TESTING

Contractor shall supply all labor, equipment, material, gauges, pumps, meters and incidentals required for testing. Pressure test each water line upon completion of installing the pipe. Testing procedures shall be as specified in the DPW General Specifications for Street Paving included as Attachment A.

3.3 CLEANING

At the conclusion of the work, the Contractor shall thoroughly clean all new pipelines by flushing with wat
er to remove any foreign material, which may have entered during the construction period. Debris cleaned from the lines shall be removed from the job site.

END OF SECTION

SECTION 33 05 34

COMPRESSION FIT HDPE PIPE LINING

PART 1 – GENERAL

1.1 SECTION INCLUDES

Renewal of existing pipelines by compression fit HDPE pipe lining process.

1.2 UNIT PRICES

A. Measurement for compression fit lining is on a linear foot basis for the length of pipe being lined.

B. Refer to Measurement and Payment, for unit price procedures.

1.3 REFERENCES

A. ASTM F714 – Polyethylene (PE).

B. Cuts or gouges per ASTM F585

C. HDPE Resin PE4710 as characterized by ASTM 03035

D. Ductile iron fittings comply with AWWA C110

E. Stiffener inserts for Mechanical Joint Adapters per ASTM

1.4 DEFINITIONS

Compression fit lining: Replacement of pressurized pipeline systems by insertion of compression fit HDPE pipe into an existing host main pipeline.

1.5 SYSTEM DESCRIPTION

Compression fit lining allows a new compression fit high density polyethylene (HDPE) pipe to be placed inside a new or existing pressurized pipeline. The system uses HDPE pipe which has an outside diameter slightly larger than the inside diameter of the pipe to be renewed. After sections of PE are butt fused together to form a continuous pipe, the PE pipe is pulled through a reduction die, roller box, or similar device which temporarily reduces its diameter within the elastic limits of HDPE. This allows the HDPE pipe to be pulled through the existing pipeline. After the HDPE pipe has been pulled completely through the host pipe, the external force is removed and the HDPE pipe returns toward its original diameter until it presses tightly

against the inside wall of the host pipe. Relaxation of the HDPE pipe will be a natural process. No forced reversion will be allowed using either water, steam, heat or other means. The tight fitting HDPE pipe results in a flow capacity close to or greater than the original pipeline design.

1.6 QUALITY ASSURANCE

A. In order to assure quality execution of the compression fit HDPE pipe lining method, the contractor must show proof of at least 3 projects in the last 36 months using Compression fit HDPE pipe lining technology.

B. For a process to be considered as acceptable and an "or equal", a minimum of 500,000 linear feet of successful pressurized piping system installation in the US must be documented to assure commercial viability.

C. The contractor and/or his subcontractor shall not have less than five years of active experience in the installation of compression fit HDPE pipe lining and shall have experience of a minimum of 30,000 linear feet of 30-inch diameter or larger pressure pipes as required for this project. One project reference must be of 42-inches or larger.

1.7 CONTRACTOR CERTIFICATION

In order to assure quality execution of the method, the contractor shall submit the following certifications:

1. Certificate of training endorsed by the manufacturer of the constant tension pull equipment.

2. Certificate of training endorsed by the manufacturer of thermal fusion equipment in butt fusing of HDPE pipe and evidence of training with electro-fusion couplings.

3. Certificate of training endorsed by the supplier or manufacturer of HDPE electro-fusion fusion couplers to be used in the method. In lieu of certificate, evidence of training may be substituted.

PART 2 – PRODUCTS

2.1 PIPE SPECIFICATIONS

A. High Density Polyethylene Pipe must conform to ASTM F714 and NSF 61.

B. HDPE resin shall be PE4710 characterized by ASTM 03035.

C. All pipe shall be made of virgin material, no rework except that obtained from manufacturers own production.

D. Cuts or gouges, per ASTM F585 are acceptable up to 10% of wall thickness. Beyond 10% of wall, damage must be removed by cutting the damaged section from the pipe string and butt fusing the ends.

2.2 OTHER PRODUCT SPECIFICATIONS

Pipe Connection Fittings shall meet AWWA C906 and meet or exceed the pressure requirements of the HDPE Pipe.

2.3 PRODUCT COMPLIANCE

A. Certificate of compliance shall be supplied to the City that the Product Pipe is per specification.

B. All materials used with the coupling or connecting HDPE pipe must be submitted and approved by the Engineer.

2.4 PRODUCT HANDLING

A. Pipe transport and handling shall be per manufacturer's recommendation.

B. Product other than pipe must be stored and handled per manufacturer's recommendations.

2.5 DESIGN PARAMETERS

The design of the HDPE pipe shall be based on hydrostatic design pressure of the segment to be lined and the contractor’s pulling operations. The pipe shall be designed for a hydrostatic pressure of 125 psi with a factor of safety of 2. Factor of safety for pulling operations shall be a minimum of 2.

2.6 PERFORMANCE REQUIREMENTS

A. Chemical Resistance: The Polyethylene pipe shall meet the chemical resistance requirements for all pressurized potable water pipe systems.

B. Hydraulic Capacity: Overall, the hydraulic cross section shall be maintained as large as possible.

PART 3 – EXECUTION

3.1 DOCUMENTATION AND PLANNING

A. Contractor shall submit a plan to the City on a marked up copy of the Project Drawings showing the Contractor's construction phasing and plans at the Pre-Construction Meeting. Plan details should include:

1. Pit locations for pipe insertion and receive locations.

2. Schedule of when various sections are to be rehabilitated.

3. Distances of each pull.

B. The Project Construction drawings provided by the Owner shall be marked by the contractor to show actual locations of services, fittings, and other reconnects. These markups shall be done the day of the actual placement. A set of marked up plans shall be returned to the Owner.

3.2 JOINING OF PIPE

A. Fusing: per Butt fusion methods in strict conformance to the pipe and/or fusing equipment manufacturer’s recommendations shall be used to join sections of High Density Polyethylene Pipe.

B. Fusing of 'sticks' of pipe shall be performed in the general vicinity of the pipe insertion pit or lay down yard (staging area).

C. De-beading is required to remove the outside fusion roll back bead prior to compression fit HDPE pipe lining operations.

3.3 COMPRESSION FIT HDPE PIPE LINING OPERATION

The compression fit lining operation described within provides guidance on the basic process of compression fit HDPE pipe lining. The followings outline the requirements necessary to implement successful operations.

A. Maximum use should be made of all available records. Details of material types together with the position of existing valves, plugs, bends, tees, collars, service connections or any other internal obstructions in the pipeline should be obtained.

B. Details of all other buried utilities must be obtained. Sewer lines, water lines, gas lines, electricity cables and telecom ducts should be physically marked out on site, at the entry and exit excavation positions.

C. Wherever possible, excavations that are required for the removal of bends, tees or other internal obstructions should be utilized as launch/reception pits or access points for the CCTV survey and pipeline cleaning operations.

D. Internal inspection with the use of CCTV or man entry is required so that unknown internal obstructions can readily be identified and removed prior to the proving pig.

E. All internal obstructions will require removal prior to the compression fit HDPE pipe lining process operation.

F. The pipeline should be thoroughly cleaned using scrapers, wire brushes etc. to ensure all scale and sediment has been removed before pipe insertion.

G. A proving pig (i.e. Bullet/plunger/gauging pig) slightly larger in diameter than the Outside Diameter of HDPE pipe (i.e. pipe diameter after exiting the reducing device) should be winched through the pipeline to ensure an unobstructed bore is available for pipe insertion.

H. A second PE pig may be used to determine the extent of any scoring which could be caused by protrusions within a host pipeline. If the depth of scoring exceeds 10% of the wall thickness, the pipe insertion operation must not be started and an investigation must be carried out to determine the cause of scoring which must then be removed.

3.4 PIT LOCATION AND EXCAVATION

A. Receive pit and insertion pit locations shall be placed such that excavations are minimized. This may be accomplished by placing either or both of these pits at the point of a service connection or fitting.

B. All pits shall be shored to ensure worker safety per OSHA or other regulations.

C. All pits shall be roped off and or covered when not active per OSHA or local regulations to ensure public safety.

D. Traffic control shall be accommodated for by Contractor as per the Contract specifications. Safe traffic passage around pit excavations that are located in or adjacent to streets or highways shall meet Permit requirements of governing Right-of-Way Department. Parking of related employee vehicles, trucks and auxiliary and equipment shall be such that congestion and traffic delays are minimized. Traffic control plan shall be in accordance to the traffic control plan details of the contract document.

3.5 ROD PAYOUT OPERATION

A. Rod payout is the process of assembling a string of rods and pushing them in a step wise manner from Receive Pit, through the interior of the host pipe to

Insertion Pit. Alternatively, a winch with wire rope situated at the receiving pit shall be pulled through the interior of the host pipe to the insertion pit. The winch shall be capable of measuring pull force and cable payout length.

B. Host pipe in the Insertion Pit shall be cut or broken prior to arrival of the rod string or wire rope. Sufficient length shall be removed so as to allow the pull head to enter the host pipe and bend the product within the allowable radius specified by the pipe manufacturer. The second end of the host pipe in the Insertion Pit shall be positioned or worked so as not to damage the product pipe as it travels through the Insertion Pit.

C. Workmen shall not enter the Insertion Pit when the rod string or wire rope is nearing the Pit. A workman shall be in visual or radio contact with the machine operator so as to have the payout halted in a position that allows attachment of the pull head.

3.6 TOOLING AND ATTACHMENT

A. The Product Pipe shall be moved into position for attachment to the rod string. Appropriate traffic or pedestrian control will be exercised along the path of the Product Pipe.

3.7 BEGIN OF PULL

A. During the start of the pull, the pull speed must be reduced to allow the pull head to travel through the reduction device and into the host pipe.

B. After the first 10 feet of HDPE enters the host pipe, the speed may be increased.

3.8 REDUCTION

A. The pipe diameter of the HDPE will be temporarily reduced between 5% and 12% as the new pipe is pulled through the reduction device immediately before entering the host pipe.

B. The reduction system will be uniform around the entire circumference to ensure no distortion occurs on the HDPE during pull in.

3.9 PULL-IN LOAD

The actual pull-in load shall be continuously monitored during pull-in. It shall not be allowed to exceed the maximum allowable pull-in load or tensile force per the HDPE manufacturer.

3.10 CONSTANT TENSION

Constant tension must be applied on the HDPE pipe string until the pull head reaches the receive pit. The equipment used during the compression fit operations must be of the constant tension type.

3.11 COMMENCEMENT OF PULL

A. After the pull head reaches the receive pit, the pulling force is removed. The contractor must use caution to pull the new HDPE a sufficient distance into the receive pit so the pipe does not retract back into the host pipe.

B. The HDPE pipe must then be allowed to relax to allow full reversion for a period of 24 to 48 hours before commissioning activities begin. The reversion period may lengthen or shorten depending on the characteristics of each pull, temperatures and other site specific conditions. The reversion process will be natural and no forced reversion will be allowed using either water, steam, heat or other methods.

3.12 ACCEPTANCE TESTING

A. HDPE resin shall be PE4710 as characterized by ASTM D 3035

B. If a Potable Water Line, disinfection of water line shall be carried out in accordance to AWWA C651 and S&WB standard Drawing 7260-W.

C. Hydrostatic pressure test shall be performed in accordance with ASTM F 2164, AWWA M55 and PPI Handbook Chapter 2 and S&WB standard Drawing 7260-W.

3.13 ACCEPTANCE

A. The compression fit HDPE pipe lining shall be deemed acceptable when the installation is completed according to specifications and the applicable tests are satisfied and;

B. When As-Built Drawings are submitted.

END OF SECTION

SECTION 33 05 64

BUTTERFLY VALVES

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required to install, complete and ready for operation, a 30" butterfly valve as shown on the drawings and as specified herein.

1.03 QUALIFICATIONS

All of the types of valves and appurtenances shall be products of well established, reputable firms who are fully experienced and qualified in the manufacture of the particular equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with standard practices and methods and shall comply with these specifications as applicable.

1.5 SUBMITTALS

A. Submit to the Engineer, within 30 days after execution of the contract, a list of materials to be furnished, the names of the suppliers and the date of delivery of materials to the site.

B. Complete shop drawings of all valves and appurtenances shall be submitted to the Engineer for approval in accordance with the requirements of Section 01 13 40 and the General Conditions.

1.6 TOOLS

Special tools, if required for normal operation and maintenance, shall be supplied with the equipment.

PART 2 – PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Butterfly Valves

1. All butterfly valves shall be of the rubber-seated, tight-closing type. They shall meet or exceed AWWA standard C504, latest edition, Class 150. All valves shall be KV 4500/1450 butterfly valves or approved equal.
2. Both ends shall be flanged per ASME 816.1.

3. Valve shafts shall be ASTM A276 Type 304 stainless steel for Cl 150. Each valve shaft shall be of a one-piece design for valves 12 inches and smaller and a two- piece design for valves 14 inches and larger. Valve shafts shall have a minimum diameter extending through the valve bearings and into the valve disc as specified in AWWA C504. All valve shafts must meet or exceed the minimum connection torque requirement set forth in AWWA C504.

4. Valve body and vane shall be high-strength Ductile Iron to ASTM A536 with ASTM A276 Type 316 stainless steel body seats.

5. Rubber valve seats shall be a full-circle, 360-degree seat not penetrated by the valve shaft. Valve seat shall be EPDM.

6. The valve seat will be attached to the valve vane by Type 304 stainless steel self- locking fasteners. The valve seat must be easily field adjustable and replaceable without any special tools or lengthy curing time.

7. Valve shaft seals shall be of the chevron-type for 3"-24" and 0-ring type for 30 inches and larger utilizing the same elastomer as specified for the valve seats and the intended service. All valve shaft seals must be easily field replaceable.

8. Valve actuator shall be of the traveling nut type, sealed and lubricated for underground or in-plant service. Operator shall be capable of withstanding an overload input torque of 450 ft-lbs. at full-open or full- closed position without damage to the valve operator. Operators for valves 14 inches and larger must have a 304 stainless steel external stop limiting device and travel adjustment. The travel adjustments must be able to be operated without removing the valve from the line. All valve actuators must be sized per AWWA C504. Certification of proof of design and torque requirements shall be submitted to the owner upon request.

9. Handcrank, handwheel or chainwheel -All manual operators for service other than underground shall have a position indicator and shall be totally enclosed and permanently lubricated. Actuators shall be designed to produce the required operating torque with a maximum rim pull of 80 lb. on handwheel or chainwheel and a maximum input of 150 ft. lb. on operating nuts.

10. Cylinder - Cylinder operator shall be of the base mounted configuration . Cylinder barrel shall be of molybdenum disulfide-lined glass fiber reinforced epoxy tubing, to provide a corrosion-free, self-lubricated high-strength barrel. Rod seal shall be of urethane, molybdenum disulfide filled to provide a self-lubricated, long life seal.

11. The valve interior and exterior surfaces shall be coated in accordance with the latest revisions of AWWA C504 and must be NSF 61 Certified.

PART 3 – EXECUTION

3.1 INSTALLATION

A. All valves and appurtenances shall be installed in the locations shown, true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of the Engineer before they are installed.

B. After installation, all valves and appurtenances shall be tested at least one (1) hour at the working pressure corresponding to the class of pipe, unless a different test pressure is specified. If any joint proves to be defective, it shall be repaired to the satisfaction of the Engineer.

3.2 INSPECTION AND TESTING

Completed pipe shall be subjected to hydrostatic pressure test for two (2) hours at full working pressure. All leaks shall be repaired and lines retested as approved by the Engineer. Hydrostatic pressure test shall be performed in accordance with ASTM F 2164, AWWA M55 and PPI Handbook Chapter 2 and S&WB standard Drawing 7260-W.

END OF SECTION

SECTION 01 200

SPECIAL PROVISIONS

PART I **SPECIAL PROVISIONS**

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SECTION 3.19 Type-A Dead End Installation
SECTION 3.20 Concrete Barrier or Mountable Curb with Laying Strip
SECTION 3.21 Project Sign
SECTION 3.22 Non-Standard Sewer Rehabilitation Items
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PART I - SPECIAL PROVISIONS

SECTION 1.01 - GENERAL SPECIFICATIONS AND INTENT OF CONTRACT

A. The General Specifications entitled, "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, 2015 Edition (adopted 11/5/2015), shall be the General Specifications for this Contract and shall govern except as otherwise revised or supplemented by the provisions contained in these Special Specifications. The City Standard Drawings shall apply except as revised or supplemented by the project specific Construction Plans. In the event of discrepancy or conflict in provisions of the various contract documents, precedence shall be given to the provisions as contained in the document which appears first in the following list: Proposal, Construction Specifications, Construction Plans, General Specifications and Standard Plans for Street Paving, Sewerage and Water Board General Specifications and Standard Drawings, 2006 Edition LaDOTD Standard Specifications for Roads and Bridges. In the event of discrepancy or conflict in provisions of these Construction Specifications then precedence shall be given to the requirements of the Proposal, then to the Special Items.

B. The Sewerage and Water Board of New Orleans General Specifications, General Notes (DWG. NO. 7260-S, 7260-W, and 7260-D) and Standard Drawings, shall govern for the construction of all sewer, water, and drainage systems except as otherwise approved by the properly authorized officer of the Sewerage and Water Board. All sewer, water, and drainage work when complete, must be inspected and accepted by the Sewerage and Water Board of New Orleans before final payment can be approved.

C. The intent of the contract is to provide performance of the work described. The Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, project specifications and terms of the contract.

D. When an item in the proposal and contract contains a choice to be made by the Contractor and of the type material to be furnished, the Contractor, before the work is initiated, shall indicate his choice in accordance with the specifications for that item. Such notification shall be submitted to the Director in writing.

E. Payment for all bid items shall include all incidental materials, labor, supervision, and equipment required for installation in place according to the plans and specifications or as directed by the Director.

F. There shall be no direct pay for any work that is not listed in the bid proposal but is required to complete the construction of this project in accordance with the project plans and specifications. All costs thereof shall be included in the bid price of other items.

G. Prior to bidding, the Contractor is to examine the contract documents and visit the site to determine the extent of the work. Should the Contractor have any doubts or questions regarding Pay Items, he should, before submitting his bid, contact the Department of Finance, Purchasing Bureau.

H. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used and interpretation of these Specifications shall be made upon that basis.

I. The Director reserves the right to accept or reject any and all bids. The Director reserves the

right to reduce, delete or increase the quantity of any item in the proposal.

J. Section C121.01 of the General Specifications for Street Paving, 2015 Edition shall be amended to include the following language:
"The contractor shall not sublet any portion of the contract, excluding material, without the prior written consent and approval of the Director, including work sublet to an authorized Disadvantaged Business Enterprise. If such consent is given, the contractor will be permitted to sublet a portion of the work but shall perform with the contractor's own organization work amounting to at least 50 percent of the total contract cost.
A subcontractor shall not further subcontract to a third party any portion of this authorized work, excluding material, without written consent, including work sublet to an authorized Disadvantaged Business Enterprise."

K. Section C135 Changes in the Work of the DPW 2015 General Specifications For Street Paving (2015 edition) is hereby deleted in its entirety and replaced with the following:

The Director shall have the right to make alterations in the line, grade, plan, form, or dimensions of the work herein contemplated, either before or after the commencement of the work and without notice to the sureties. If such alterations diminish the quantity of work to be done, they shall not constitute a claim for damages for anticipated profits for the work deleted.

L. Louisiana Contractor's License(s) is a requirement for this contract. The bidder shall include in the bid the applied current license(s) number(s) for the following project classification(s): Highways, street, and bridges, and Municipal and Public Works Construction. Note: When the bidder submits its bid package via SEALED ENVELOPE, said envelope must bear the Project Description AND the bidder's Louisiana Contractor's License Number(s) for the project classification(s).

SECTION 1.02 - SCOPE OF WORK

A. It is the intent of this project to install waterlines and remove and reconstruct the streets specified in the contract documents.
B. Removal and reconstruction work shall be accomplished in accordance with the construction documents and shall include but is not limited to the following:
   1. Installing drainage, sewer and water main systems as shown on the plans.
   2. Removing existing pavement and excavating to as shown on the plans. Hauling and legally disposing of existing pavement and surplus materials from the project site.
   3. Constructing new concrete curbs or curbs and gutters.
   4. Constructing asphalt pavement or Portland cement concrete pavement.
   5. Replacing concrete sidewalks and driveway aprons.
   6. Constructing concrete handicap ramps at locations shown on the plans.
   7. Other work incidental to the project as shown on the plans.
C. The Director reserves the right to reduce, delete or increase the quantity of any item in the contract.

.SECTION 1.03 - SPECIAL PROJECT REQUIREMENTS

A. All utility frames, covers, and boxes shall be tilted to generally conform to the slope of the ramp or walk. Where frames, etc. fall at the edge of a ramp or slope, adjust the tilt halfway between ramp

slope and original elevation and warp the surface of ramp to blend into the edge of utility frames. Covers and boxes are to be adjusted by the Contractor. Private utility frames, covers and boxes are to be adjusted by the respective private utility company.

B. Temporary Barricades and Sidewalks: The Contractor shall provide and maintain construction fences, barricades, tree protection fencing, warning lights and temporary sidewalks as required by the Director or other authorities in approved locations affording complete protection to the public and providing security to the premises during the construction period. The Contractor shall provide all necessary items to insure pedestrian access to properties during construction. When required, flashing lights shall be installed at required locations.

C. Compliances: The Contractor shall comply with safety standards and governing regulations for cleaning operations. Waste materials shall not be burned at the site. Debris or excess materials shall not be buried on the Owner's property. Volatile or other harmful or dangerous materials shall not be discharged into drainage systems. The Contractor shall remove waste materials from the site and dispose of such waste in a lawful manner.

D. Salvageable Materials: Before the Contractor shall remove any items from the site, the Owner reserves the right to retain in his possession any demolished items that the Owner deems salvageable. All other items, after review by Owner, may be salvaged by the Contractor. All salvage materials as determined by the Director shall be delivered at the Contractor's expense to the related locations listed below and must provide forty-eight (48) hour notice to these locations before delivering the salvaged material.

1. Materials such as stone curbs, cobble stone, etc. to the Public Works/Maintenance yard at 838 South Genois Street.
2. Materials such as Traffic Control devices (signs and signals) to the DPW sign shop at 2700 Lafitte St.
3. Materials such as CB, MH frames, covers, hydrants, valves, etc. to the S&WB Central Yard at 2900 Peoples Ave.
4. Materials such as tree grates to the Department of Parks &Parkway Nursery at 2829 Gentilly Blvd.
5. Recycled asphalt product

E. The Contractor shall remove existing sidewalks, driveways, and pavement to full depth in areas shown on drawings, or as directed by project engineer, and shall take care not to damage existing pavement and existing curbing that is to remain. The use of "STOMPERS" and similar gravity equipment is prohibited in order to preserve the structural integrity of the adjacent buildings and adjoining property. All excavation is to be done from the street.

F. The Contractor shall be required to protect all adjacent properties, buildings, walls, fences, steps, etc., from damage due to demolition, removal, and construction of items required by the Contract Documents. Removal of material adjacent to adjoining structures should be done in such a manner so as not to cause damage by direct blows, vibrations, or other methods of demolition or construction. The Contractor shall promptly repair damages caused to adjacent facilities by demolition and construction operations at no cost to the property Owner or City.

G. The Contractor shall clean adjacent structures and improvements of dust, dirt and debris caused by demolition and construction operations, as directed by the Director or governing authorities. The Contractor shall return adjacent areas to condition existing prior to the start of the work.

H. The Contractor shall, before removing any signpost, etc., coordinate such removal with all of the appropriate City agencies and companies involved. Existing signposts, light standards, and all other items penetrating the sidewalk shall be straightened and reset in accordance with the Director's requirements, at no direct payment. All traffic control devices and their associated hardware (sign, signal, conduit, and marking) removed or damaged during execution of this contract, other than as provided for in this contract, shall be replaced by the Contractor at no cost to the City.

I. No sign, or signal shall be removed without the approval of the Director. The Contractor accepts all liabilities during the time of removal. Contractor will notify the DPW Traffic Engineer in writing when controls are removed and reinstalled. All signs, signals and markings removed during construction, shall be restored and in place prior to the final inspection.

J. It shall be the responsibility of the Contractor to maintain all public roadways, sidewalks, driveways, etc. in a clean condition during the construction project. All mud, trash, debris, etc. deposited on said areas by the Contractor shall be removed daily, before the end of work or more frequently, as necessary to maintain a clean condition. The Contractor shall return adjacent areas to condition existing prior to the start of the work.

K. The Contractor shall ensure that mail and trash pickup services can be provided on a continuous basis during construction of the project. If necessary, the Contractor shall relocate or provide curb side mailboxes for use during the construction period. No direct payment will be made for this work. Any costs incurred by this work will be included in project bid items.

L. For daily work on projects the City and/or RoadworkNOLA shall provide the Contractor with a project specific "We Are Working" notification template that shall include the start and end date, not exceeding a thirty (30) day duration, and detailed scope of work to be performed. New notifications shall be distributed if the end date exceeds thirty (30) days from the time of distribution.

M. The Contractor may be allowed to work on the weekend but shall first request permission from the City no later than seventy-two (72) hours prior to beginning that work. Notification flyers, provided by the City and/or RoadworkNOLA, must be distributed at least forty-eight (48) hours before any weekend work begins in an area.

N. The Contractor shall notify the RoadworkNOLA office at least seventy-two (72) hours for all water valve closures. Water valve closures for businesses, schools/colleges/universities, and medical facilities that require specialized advanced coordination must be provided one week prior. Notification flyers, provided by the City and/or RoadworkNOLA, must be distributed at least forty-eight (48) hours before the valve closures.

O. The Louisiana Department of Health and Hospitals requires at least twenty-four (24) notification of all test valve closures. Notification flyers, provided by the City and/or RoadworkNOLA, must be distributed at least twenty-four (24) hours before the valve closures. Test valve closures for businesses, schools/colleges/universities, and medical facilities that require specialized advanced coordination must be provided 72 hours in advance.

P. The Contractor must obtain approval from the City and/or RoadworkNOLA prior to distribution of notifications and is responsible for distributing all notifications, as required above. Failure to properly notify, based on these requirements, will result in a stop work order issued.

Q. It shall be the responsibility of the Contractor to distribute and obtain all Construction Authorization forms during the construction project. If necessary, a Construction Authorization form will be provided to the Contractor by the City. The Construction Authorization form is to be signed by the homeowner and a witness. All signed Construction Authorization forms are to be furnished to the Director prior to any work on the property listed on the Construction Authorization form. The Contractor shall return all disturbed areas to the condition existing prior to the start of the work.

R. The Contractor shall contact all utility companies prior to starting work to verify utility locations, depths of lines, etc., prior to starting demolition. Care should be taken in excavation around all utility lines. Utility service shall be maintained at all times for adjacent property owners, etc.

S. UTILITY SERVICES: Maintain existing utilities, keep in service, and protect against damage.

1. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to the governing authorities with no direct payment.

2. Note: Locations of existing utilities shown on the drawings are approximate. The Contractor shall verify their locations in the field with the appropriate agency in order to avoid conflicts and damage to utilities. Should damage occur to any existing utility lines or equipment, the Contractor shall be responsible for all cost repairs or replacements.

SECTION 1.04 - INTERPRETATION OF DOCUMENTS

No oral interpretation will be made to any bidder as to the meaning of any of the Contract Documents which in effect would modify any of the provisions of the same. Every request for an interpretation of the Documents shall be made in writing and delivered to the Director, at least seven (7) days (excluding weekends and holidays) before the time fixed for opening of bids. Any addenda shall be issued by the Director a minimum of 72 hours (excluding weekends and holidays) in advance of the time fixed for opening of bids. All bidders are requested to direct all questions about the contract documents promptly to the Director.

SECTION 1.05 - SPECIAL SAFETY PRECAUTIONS

In addition to the requirements of the General Specifications, it shall be the Contractor's responsibility to verify with the utility owners (electric, gas, telephone, communications, cable, etc., and New Orleans Sewerage and Water Board) having facilities within the project area, that the use of the Contractor's equipment (weights, configurations, characteristics, etc. provided by the Contractor) within the project area will not adversely affect their facilities.

SECTION 1.06 - SAFETY AND HEALTH REGULATIONS

The Code of Federal Regulations, Title 29, Occupational Safety and Health Administration (OSHA) shall apply. Safety and Health Provisions of the State of Louisiana shall apply where more stringent and where not covered by OSHA. The Contractor shall notify the Director within 24 hours of any reportable injury.

SECTION 1.07 - SAFETY PROTECTION & SECURITY

The Contractor shall be responsible for initiating, providing, maintaining, and supervising all safety precautions and programs in connection with the work. He shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

a. All Employees on the work and other persons who may be affected thereby,

b. All the work and all materials or equipment to be incorporated herein, whether in storage on or off the site, and

c. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, drives, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

The Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss. He shall erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for its safety and protection. He shall notify owners of adjacent utilities when prosecution of the work may affect them.

The Contractor shall develop and provide an effective safety and health plan for inspection and training required and communicates the work practices to be applied to the work site(s). The Contractor must develop and implement a comprehensive health and safety plan for his or her employees, which covers all aspects of onsite construction operations and activities associated with the contract. This plan must comply with all applicable health and safety regulations and any project-specific requirements.

The Contractor must provide a copy of this plan to the Department of Public Works prior to issue of the NTP. Acceptance of the Contractor's health and safety plan only signifies that the plan generally conforms to the requirements of the contract; it does not relieve the Contractor of the responsibility for providing employees with a safe and healthful work environment.

The Control measures outlined in the site-specific safety plan, provides each worker assigned to the job the opportunity to complete his/her task safely. Summary of this document should include but not limited to the following:

Description	Summary	Reference
Contractor Name	Self-Explanatory	29 CFR 1910-OSHA General Industry Safety and Health
Contract No.	Self-Explanatory	
Project Name	Self-Explanatory	
Responsibility and lines of Authority	Include the identification and job responsibilities of personnel responsible for safety and the lines of authority for each level of responsibilities.	

Responsible Member (Competent Person)	Designated by employer to identify hazards that are dangerous to employees	29 CFR 1926.32 (f) Section 01 200 Special Provisions, Section 1.07
General safety and health provisions	List the steps to be taken to control the hazards	29 CFR 1926.20
Safety training and education	All employees shall be trained in the recognition and avoidance or unsafe conditions, standards, to control or eliminate any hazards or other exposure	29 CFR 1926.21(B)(2)
Housekeeping	Work areas, walkway clear of debris; garbage and flammable /hazardous waste disposed, frequently and regularly	29 CFR 1926.25
Illumination	Construction areas, roadways, trenches, ditches, and storage areas where work is in progress shall be lighted with either natural or artificial illumination	29 CFR 1926.26
Personal protective equipment	Employers are to ensure all personnel wear of protective equipment in all operations where there is an exposure to hazardous conditions	29 CFR 1926.28
Site Inspection	Designated person to make frequent and regular documented inspections of the job site/sites, materials, and equipment. Provide proof of inspector's qualifications and or training certificates	29 CFR 1926.20(b)(3)
Lockout/tagout	Procedures established for unsafe equipment identified or made inoperable by tagging, locking, or removing	29 CFR 1926.20(b)(1)&(b)(2)

Representatives of the Contractor shall meet with the DPW and Engineers representative prior to the start of construction for the purpose of reviewing safety requirements and discussing implementation of all health and safety provisions pertinent to the work under the assigned contract.

The representative will review the Contractor's site-specific safety and health plan with the Contractor as well as review all required safety data sheets (SDS) submitted for proposed products to be used by the Contractor. Due to the nature of the project/contract, the Contractor may be required to provide additional written comprehensive safety and health plans for the specific contract to include but not limited to the following:

Confined Space	Entry into any Manholes, Sewer, and Storm drains must be cleared for entry.	29 CFR 1910.146
Excavation and Shoring	Safe access and egress to all excavations, including ladders, steps, ramps, or other safe means of exit for employees working in trench excavations 4 feet (1.22 meters) or deeper.	29 CFR 1926 Subpart P
Lift Plan	Jobsite lifting with hydraulic excavators and backhoes is routine and lift capacity with rigging of each lift must be established.	29 CFR 1926.252 29 CFR 1926.601 29 CFR 1926.1400

Review and Acceptance of the Contractor's health and safety plan only signifies that the plan generally conforms to the requirements of the contract; it does not relieve the contractor of the responsibility for providing employees with a safe and healthful work environment.

The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Director for approval.

It shall be the Contractor's responsibility to maintain safety in the construction and maintenance zones within the project's vicinity. If the Contractor hires law enforcement during the project's duration, it shall be funded as an element in the Contractors Indirect Cost buildup presented at time of bid.

All damage, injury or loss to any property referred to in paragraphs b and c caused, directly or indirectly, in whole or in part, by the Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by the Contractor at no direct payment. The Contractor's duties and responsibilities for the safety and protection of the work shall continue until such time as all the work is completed and the Director has issued the Notice of Project Acceptance.

In emergencies affecting the safety of persons or the work or property at the site or adjacent thereto, the Contractor without special instructions or authorization from the Director, is obligated to act, at his discretion, to prevent threatened damage, injury, or loss.

The Contractor must protect and support all water, sewer, drain, and gas pipes or other conduits and buildings, walls, fences, or other properties which are liable to be damaged during the execution of his work. He shall take all reasonable and proper precautions to protect persons, animals, and vehicles of the public from injury, and shall erect and maintain a fence or railing around all excavation and place a sufficient number of warning lights about the work and keep them burning from twilight until sunrise and shall employ one or more watchmen as an additional security. He must, as far as practicable and consistent with good construction, permit access to private and public property and leave fire hydrants and catch basins free from encumbrances. He must restore, at his own expense, all injured property caused by any act of omission on his part, or on the part of his agent, including but not limited to

sidewalks, curbing, pipes, conduits, sewers and other public or private property, to a condition as good as it was when he entered upon the work.

In case of failure on the part of the Contractor to restore such property or make good such damage, the City may upon forty-eight (48) hours' notice proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary, and the cost thereof, will be deducted from any monies due, or which may become due, under this contract.

Safety is the responsibility of the Contractor. There will be no direct payment for erecting and maintaining a fence or railing around excavations, placing warning lights and providing watchmen and supporting and protecting utilities as prescribed herein and the cost thereof shall be included in the prices bid for pay items in the Contract. There will be no direct payment for providing and supervising all safety precautions and programs in connection with the work and the cost thereof shall be included in the prices bid for pay items in the contract.

SECTION 1.08 - COORDINATION WITH UTILITY COMPANIES

A. All utility companies, including the Sewerage and Water Board, shall be contacted three working days prior to starting work to verify utility locations, depth of lines, etc., prior to starting demolition.

B. Contractor is responsible for contacting all utility companies so the utility companies can coordinate their efforts to move into the area to make whatever revisions they have to make to their utility installation.

C. Care shall be taken in excavation around all utility lines. Utility service shall be maintained at all times for adjacent property owners.

D. The Contractor shall notify the electric, gas, telephone, communications, and cable utility companies, utility owners, etc., three working days in advance of digging near or across their conduits or buried cables.

E. The Sewerage and Water Board must be notified three working days in advance of laying sewer and water lines called for in this contract.

F. Damage that may occur to any utility shall be repaired and paid for by the Contractor, except as noted to be paid for as a Bid Item.

G. The Contractor shall notify Entergy, S&WB and all other utility companies before any demolition takes place. The utility companies and the Contractor's representative should open all covers in the area and inspect and note any damage to frames, lines, manhole walls, etc. Any additional damage that occurs during demolition shall be repaired at the Contractor's expense. The utility companies have the option of repairing items and back charge the Contractor for such repairs.

H. UTILITY SERVICE: Maintain existing utilities, keep in service, and protect against damage during demolition operations.

Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing

utilities, as acceptable to the governing authorities.

The Contractor is hereby cautioned that many of the underground utility pipes, lines, conduits, cables, etc., are located immediately below the existing grade. Location and elevation of all utility lines have been established based on information furnished to the Engineers by the respective utility companies. However, location and depth of utility lines may vary from those shown on the Plans and Profiles.

The Contractor shall be required to provide property owners a minimum forty-eight (48) hours advanced notice for any foreseen or planned interruption of utility service(s).

SECTION 1.09 - COOPERATION WITH UTILITIES

A. The Contractor shall cooperate with officials of utility companies to avoid delays in completion of work due to non-removal or non-adjustment of utilities.

B. Some utility facilities will be removed, relocated, or adjusted in accordance with agreements between the City and utility companies. Such work may be underway concurrently with the Contractor's work and within construction limits covered by this contract.

C. Contractor shall consider in his bid all permanent and temporary utilities lines and appurtenances in their present or relocated positions and that no additional compensation will be allowed for delays, inconvenience or damage sustained by him due to interference from the said utility lines and appurtenances or the operation of moving them.

SECTION 1.10 - ABOVE GROUND UTILITIES

A. The Contractor shall exercise due care and caution to prevent damage to Fire Hydrants, Traffic Lights, Street Light Standards, Parking Meters, Utility Poles, Guy Poles, etc., whenever it is necessary to remove any type of pavement around such items. The Contractor shall repair and/or replace any such item damaged by his operations to the satisfaction of the utility's owner.

B. It shall be the responsibility of the Contractor to notify the appropriate owners of such facilities in the way of construction so that they can have representatives present, if they so desire, when the Contractor is performing such work around their facilities.

SECTION 1.11 - EXISTING UNDERGROUND AND OTHER INSTALLATIONS

Existing underground installations are indicated on the drawings only to the extent such information was made available to or discovered by Engineer in preparing the drawings. There is no guarantee as to the accuracy or completeness of such information, and all responsibility for the accuracy and completeness thereof if expressly disclaimed.

The Contractor shall be responsible for the preservation of all public and private property, monuments, highway signs, telephone lines, other utilities, etc., along and adjacent to the Work; shall use every precaution necessary to prevent damage to pipes, conduits, and other underground structures; and shall protect carefully from disturbance or damage all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their locations and shall not remove them until directed by the property owners. The street and highway signs and markers, that are to be affected

by the Work, shall be carefully removed when the work begins and stored in a manner to keep them clean and dry. The Contractor must obtain all necessary information in regard to existing utilities, and shall give notice in writing to the owners of the property or the authorities in charge of streets, gas, water, pipes, electric, sewers and other underground structures, including conduits, railways, poles and pole lines, manholes, catch basins, fixtures, appurtenances, and all other property that may be affected by the Contractor's operations, at least three (3) working days before his operations will affect such property or as specified elsewhere. The Contractor shall not hinder or interfere with any person in the protection of such work or with the operation of utilities, at any time. When property or the operation of railways, telephone lines, telegraph lines or other public utilities are endangered, the Contractor shall at his own expense, maintain flagmen or watchmen and any other necessary precautions to avoid interruption of service or damage to life or property, and shall promptly repair, restore, or make good injury or damage caused by his operations in an acceptable manner.

SECTION 1.12 - UTILITIES EXPLORATION

Utilities exploration shall include all labor, materials, and equipment necessary for the Contractor to conduct a field investigation including exploratory excavations in advance of construction for the purpose of determining the existing location, size, and depth of all underground utilities shown or identified on the Drawings, any and all meetings with representatives of each utility, and furnishing the information to the Engineer. In addition to those utilities indicated on the Drawings, the Contractor shall also make exploratory excavations of all utilities which could impact the construction. This work shall include all test pit excavations including backfilling with sand, compaction, dewatering, pavement removal and replacement, and other related items. No direct payment shall be made for utility exploration.

SECTION 1.13 - SECURITY

Contractor shall be responsible for protection of the site, and all work, materials, equipment, and existing facilities thereon, against vandals and other unauthorized persons.

No claim shall be made against the City by reason of any act of an employee or trespasser, and Contractor shall make good all damage to the City's property resulting from his failure to provide security measures as specified.

Security measures shall be at least equal to those usually provided by the City to protect his existing facilities during normal operation, but shall also include such additional, security fencing, barricades, lighting, watchman services, and other measures as required to protect the site.

SECTION 1.14 – TEMPORARY UTILITIES

A. Temporary Lighting: Contractor shall provide, at his expense, temporary lighting facilities for prosecution and inspection of the work. These facilities shall be installed and maintained by the Contractor. Locate in such a manner as to result in the least interference with work upon the Project site and existing facilities. Contractor shall also provide temporary street lighting where the existing street lighting is disrupted due to construction activities.

B. Temporary Power: Contractor shall provide, at his expense, temporary power facilities required for prosecution and inspection of the Work. These facilities shall be installed and maintained by the Contractor. Locate in such a manner as to result in the least interference with work upon the Project

site and existing facilities.

C. Temporary Water: The Contractor shall make the necessary arrangements, at his expense, for securing and transporting all water required in the construction, including water required for the mixing of concrete, sprinkling, flushing, flooding, or jetting, and including any temporary pipeline or equipment which may be necessary to make use of such water.

D. Temporary Sanitary Facilities: The Contractor shall provide, at his expense, adequate portable sanitary facilities on the site and shall be obscured from public view to the greatest extent possible. They shall be cleaned, deodorized, and disinfected each day construction is in progress, all at the Contractor's expense. If toilets of the chemically tested type are used, at least one toilet will be furnished for each 20 workers, in addition to the above requirement. Contractor shall enforce the use of such sanitary facilities by all personnel at the site.

SECTION 1.15 – INCLEMENT WEATHER DAYS

For this Contract, an Inclement Weather Day shall be defined as any day on which construction operations were unable to proceed for at least five (5) continuous hours of the day or 65% of the regular working hours, whichever is greater. Should the Contractor prepare to begin work on any given day in which inclement weather, or the conditions resulting from inclement weather, prevent work from beginning at the usual starting time, and the crew is dismissed as a result thereof, the day will be declared an Inclement Weather Day, whether or not conditions change during the day, resulting in the rest of the day becoming suitable for work. The Contractor shall notify DPW within 48 hours of an Inclement Weather Delay listing the critical path tasks affected by the delay.

SECTION 1.16 - AS-BUILT DRAWINGS

Contractor shall provide manually marked-up “red line” drawings to the project engineer for use in creating “as-built” AutoCAD® record drawings of the project. The original contract drawings shall be modified to show all additions, deletions, and other changes made during construction. Drawing modifications shall include both a markup of the graphics and a brief written explanation describing any changes. Wherever applicable, revisions shall include updates to details, sections, index, notes, drawing callouts, plan, and plan & profile views.

Each Sheet of the red line drawings shall include a stamp showing: RED-LINE DRAWINGS, name of Contractor, Superintendent’s signature, and Date. Drawings shall also include: All field changes, any change in line or grade from the original drawings, location of mains and house service connections, and the limits of pavement removal and replacement.

To promote accuracy; red line drawings shall be updated on a bi-weekly basis with copies provided to the Director as work is completed for each block. Redlines shall be jointly reviewed/developed by the Contractor and Resident Inspector and discussed at each construction progress meeting. The Contractor shall furnish a final set of redline drawings prior to final inspection. The Contractor shall furnish redline drawings at no direct payment.

SECTION 1.17 - PROGRESS MEETINGS & SCHEDULE REQUIREMENTS

A. Progress meetings shall be scheduled biweekly or as requested by the Director.

B. Location of Meetings: The project field office of the Contractor or as approved by the Director.

C. Attendance: Director's Representative, Contractor, subcontractors, and suppliers as appropriate to the agenda, others as required.

D. Requirement: In addition to an updated approved schedule, the Contractor shall also provide a detailed two week look ahead schedule demonstrating the block locations along with the scope to be performed and present it to the Project Team as shown on the agenda. The Project Team shall review the requested schedule at the progress meeting and agree on an approved list of locations and scope of work. Contractor to provide CPM schedule, two-week look ahead schedule, RFI log, Plan Change Log, Submittal Log, and invoice status at each progress meeting.

E. Format: The Department will provide a two week look ahead schedule template at the Pre-Construction meeting, which shall be completed prior to all progress meetings. The Contractor's CPM schedule shall include the following criteria:

1. Schedule shall have a title that includes the DPW Project ID and name.
2. The project schedule shall depict all field activities necessary to complete the work.
3. Activities shall be sufficiently detailed to include the block number, and a start/end date.
4. All schedule activities should be fully integrated, having predecessors and or successors.
5. Gantt chart shall show the predecessors and successors of each activity.
6. Critical Path Activities should be uniquely identified in the Gantt chart legend.
7. Schedules shall have a progress line in the Gantt chart that represents contractors progress to the date of the request.

F. Obligation: The Contractor shall abide by the schedule shown on the approved two week look ahead schedule. The Contractor shall not deviate from the approved schedule at any time, without obtaining prior approval. Shall deviations of the approved schedule be required, the Contractor shall submit deviations, in writing, requesting approval of the new locations and scope of work.

G. Repercussion: Failure to adhere to the approved two week look ahead will put the contractor in default and may result in a stop work order or termination of the contract for cause. This includes all work deviated from the approved schedule, including subcontractor work.

SECTION 1.18 – PRE-CONSTRUCTION VIDEO SURVEYS

Section C126.05 of the "General Specifications for Street Paving" is amended to include the following requirements:

Pre-Construction Video Surveys are optional and be performed at the Contractor's discretion. There shall be no direct payment for the Pre-Construction Video Surveys.

SECTION 1.19 – CONTRACTOR PROGRESS PAYMENT INVOICING AND DOCUMENTATION

Contractor shall be required to provide a detailed breakdown of each payment request that includes a summary of the work completed for each bid item by each municipal block. Additionally, a summary

of the work completed for each bid item for each intersection, identified as "Intersection of (insert street name) Street and (insert cross street name) Street" shall be provided for quantification purposed blocks begin/end at the apparent right-of-way line of intersecting streets as shown on the plans. Contractor shall be required to provide separate invoices for the following categories when applicable:

- A.1.1 City of New Orleans Department of Public Works FEMA Eligible work items,
- A.1.3 City of New Orleans Department of Public Works FEMA ADA Eligible work items,
- A.2 City of New Orleans Department of Public Works non-FEMA Eligible work items,
- B.1.1 Sewerage and Water Board of New Orleans FEMA Eligible work items,
- B.1.2 Sewerage and Water Board of New Orleans FEMA ESSA Eligible work items,
- B.1.3 Sewerage and Water Board of New Orleans ADA Eligible work items,
- B.1.4 Sewerage and Water Board of New Orleans additional FEMA Eligible waterline work items,
- B.2.1 Sewerage and Water Board of New Orleans Water non-FEMA Eligible waterline work items,
- B.2.2 Sewerage and Water Board of New Orleans Water non-FEMA Eligible SSERP work items,
- B.2.3 Sewerage and Water Board of New Orleans non-FEMA Eligible sewer work items,
- B.2.4 Sewerage and Water Board of New Orleans non-FEMA Eligible drainage work items

The Director will provide invoice and form templates, and direction to the Contractor on which work is non-FEMA Eligible.

Each contractor payment request shall include:

1. Two (2) original invoices certified by the Engineer and SWB (if applicable) signed in blue ink. All invoices shall include the FEMA PW number and the DPW reference number. Invoices shall be submitted monthly and shall include the billing period.
2. Two (2) original DPW STS-651 and PWC-15 forms certified by the Engineer and SWB (if applicable) signed in blue ink.
3. Two (2) Compact discs with all invoice forms and backup including but not limited to:
    a. Cover letter containing: Date, project ID, project name, invoice No., pay Period, Invoice amount, company logo, Purchase Order No., Service Contract No., FEMA PW No. 21032 and SWB PW No. 21031 (if appliable).
    b. Pre and post construction photographs for all completed work
    c. ADA ramp breakdown by location per funding source
    d. DPW cost estimate STS-651 and PWC-15 Excel workbook.
    e. Certified payroll (if required)
    f. Updated approved CPM Schedule
    g. Approved Weather and Working Days report
    h. BMP/SCM Inspection Report with weather conditions noted and if rain occurred, appropriate photographs documenting Stormwater Pollution Prevention Plan Stormwater Control Measures in place.

SECTION 1.20 - SEQUENCE OF CONSTRUCTION

A. Section 1.05 of these Construction Specifications and Section C126 of the General Specifications are hereby supplemented as follows:

B. The Contractor shall submit construction sequence and schedule to the Director for approval prior to the start of construction in accordance with Section C126. Contractor shall be required to follow the approved sequence and schedule unless he has first obtained written approval from the Department for a deviation.

C. Contractor shall, within three (3) days of initiating any work on a street, prepare and submit to the Department for review, a practical critical path schedule and phasing plan showing the order in which the Contractor proposes to carry on the work, the dates on which he will start the phases of the work, and the anticipated dates for completion of the same. The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion at any time. The Contractor shall enter on the chart the actual progress and present the updated information at each bi-weekly contractor/owner construction meeting or at such intervals as validated by the Director and shall provide electronically to the Director.

D. To facilitate Director testing and inspection requirements once Contractor starts utility work the utility installations shall be executed on a continuous basis until substantial completion of all of the utility work. Contractor shall substantially complete all work, including pavement restoration, for any continuous roadway segment with water and/or sewer work prior to initiating operations on roadway segments consisting of only roadway pavement restoration work, unless approved in writing by the Director. Once Contractor mobilizes to start work on a roadway segment Contractor must complete all approved work, including any necessary utility repairs or relocations in a continuous fashion within the approved scheduled time and shall maintain adequate personnel and equipment on site until such time all work is substantially complete. Work to be substantially completed includes, but is not limited to, utility replacement or rehabilitation, including all services, connections, and tie-ins; roadway repairs; curbs and gutters; drive aprons; sidewalks; ramps; proper backfilling of all cavities; and other incidental work in accordance with the project plans and specifications. Any work restricting access to any street, drive, or sidewalk shall be completed prior to substantial completion being granted. If to meet the approved schedule the contractor elects to work on multiple sites simultaneously the contractor must ensure the proper resources are available in order to adequately handle all the work in progress as specified. Contractor is responsible for performing all tasks to substantially complete all work in a concentrated area prior to moving onto another work area.

E. When scheduling work Contractor shall phase limits of construction to allow completion of all pavement work within ten (10) working days unless otherwise approved by the Director. The Contractor shall use traffic aggregate or steel plates for pavement activities exceeding ten (10) working days to minimize impacts to traffic flow in accordance with Section C402 in the General Specifications. Pavement repair shall commence immediately following the acceptance of the waterline installation on each block. In addition, Contractor shall only perform utility trenching operations ahead a distance sufficient for the length of pipe installation planned for the current workday, plus a reasonable additional distance ahead to reveal any obstructions that may necessitate changing the line or grade of the pipe. All other associated work within the scheduled work limits shall be completed in accordance with the approved critical path schedule and phasing plan.

F. Contractor shall phase all roadway construction including intersections to allow for the maintenance of traffic and emergency vehicle access.

G. Contractor shall notify the Sewerage & Water Board and the Director in writing at least two (2) working days prior to mobilizing and starting any utility work, including trenching, and at least two (2) working days prior to the day utility tie-ins to the existing system will be made and service will be transferred to the new main. These notifications shall be in addition to any other notification in

accordance with Sewerage & Water Board requirements and per the project plans and specifications. Contractor shall notify the Director in writing at least two (2) working days prior performing any roadway restoration work detailed on the plans or include in approved plan changes, including removal operations.

H. Contractor shall receive no additional compensation for any work related to the means, methods, techniques, scheduling, sequences, or procedures that are required to complete the project in accordance with the project plans and specifications.

I. [DELETE THIS PARAGRAPH IF THIS CONTRACT DOES NOT INCLUDE CONSENT DECREE WORK] Contractor is advised that this contract may include EPA consent decree work under the Sewer System Evaluation and Rehabilitation Program and should refer to Section 1.21 and related sections for specific program requirements, including consent decree obligations and fines. All consent decree required sanitary sewer rehabilitation noted in the plans, or amended by addendum and/or contract changes, as either SSERP, FEMA or otherwise, shall be completed within 180 calendar days [**NOTE THIS TIME SHOULD BE 270 WHEN THE TOTAL VALUE OF CONSENT DECREE WORK EXCEEDS $5 MILLION**] as of the Notice to Proceed date to this contract. All contract days after this time will be accessed liquidated damages for incomplete sewer work.

J. [DELETE THIS PARAGRAPH IF THIS CONTRACT DOES NOT INCLUDE CONSENT DECREE WORK] [DELETE THIS PARAGRAPH IF THE CONSENT DECREE WORK DOES NOT INCLUDE FIND AND FIX WORK] This contract may have "Find and Fix" work identified in the sewer plan sheets as part of the consent decree program. All "Find and Fix" work shall be completed with line cleaning, CCTV inspection and submittal of the inspection to the engineer within 60 calendar days of notice to proceed.

K. [DELETE THIS PARAGRAPH IF THIS CONTRACT DOES NOT INCLUDE CONSENT DECREE WORK] [DELETE THIS PARAGRAPH IF THE CONSENT DECREE WORK IS NOT WITHIN 1,500 FEET OF THE MRL CENTERLINE] This contract may have excavated sewer rehabilitation within the USACE Mississippi River Levee jurisdictional area. This area is considered to include all sewer rehabilitation work requiring an excavation deeper than 3-ft and within 1,500-ft of the Mississippi River. Applicable work will be identified on Sheet S-1 and S-2. Work noted on sheet S-1 as USACE MRL Permitted shall be performed in accordance with all applicable USACE permit requirements. Work on these items may not begin until a Southeast Louisiana Flood Protection Authority (SLFPA) Levee Safety Permit has been issued. The 180 calendar day period for USACE MRL applicable consent decree work will begin on the day permit is received. The Contractor will be required to sign and have notarized a SLFPA Hold Harmless agreement, which will be issued as part of the permit documentation upon availability. The USACE permit requirements will include Mississippi River Water Surface Elevation triggers to stop work based on water levels measured at the Carrollton Gage. The consent decree period in paragraph I will be suspended only for USACE MRL applicable consent decree work during the period the river water surface elevation is at or above the trigger levels outlined in the permit documentation.

SECTION 1.21 – SEWER SYSTEM EVALUATION AND REHABILITATION PROGRAM REQUIREMENTS

[DELETE THIS ENTIRE SECTION IF THERE IS NO CONSENT DECREE WORK IN THE

PROJECT AND REPLACE WITH THE FOLLOWING HIGHLIGHTED IN RED PARAGRAPH INSTEAD]

A. [ONLY INCLUDE THIS PARAGRAPH IS THERE IS NO CONSENT DECREE WORK (CLOSED BASINS)]. This contract does not include work commissioned by the Sewerage & Water Board of New Orleans under their Sewer System Evaluation and Rehabilitation Program in response to an EPA Consent Decree. However, any sewer rehabilitation work fulfilled under this contract shall meet the sewer rehabilitation requirements included herein this section. Contractor shall refer to sections 2.07 through 2.12 and Section 3.22 for additional sewer rehabilitation requirements for consent decree and non-consent decree sewer rehabilitation work.

A. This contract includes work commissioned by the Sewerage & Water Board of New Orleans under their Sewer System Evaluation and Rehabilitation Program in response to an EPA Consent Decree. Bidders and the contractor are required to become familiar with the consent decree requirements and the documents can be viewed on the S&WB internet website (https://www.swbno.org/docs_consentdecree.asp). Contractor shall direct the full force of his efforts toward completion of the work within the time stipulated. The S&WB must adhere to strict milestone requirements and the fines for the failure to meet these milestone requirements are significant. Contractors may be held liable if they are found to be part cause for the S&WB to not meet the obligatory milestone requirements.

1. The parties agree that the work and duties required to be performed in accord with the Contract Documents shall meet and comply with all environmental requirements to include the laws and regulations of the United States and the State of Louisiana, and shall satisfy and be in accord with the provisions of the Consent Decree with attachments entered into by and between the BOARD and CITY with the EPA and the UNITED STATES in the matter entitled "UNITED STATES OF AMERICA V. SEWERAGE AND WATER BOARD OF NEW ORLEANS, ET AL," No. 93-3212, United States District Court, Eastern District of Louisiana and all modifications thereof, which provisions the CONTRACTOR must acquaint itself and become familiar with prior to bidding on said Contract.

2. The Contractor specifically acknowledges the Board has made said Decree with attachments available for review and CONTRACTOR has read said decree with attachments or the pertinent parts thereof and is familiar with the terms and conditions thereof, and will pay any fines or penalties that will be assessed against the BOARD or CITY (or reimburse them therefore) which are imposed by the terms of said decree with attachments resulting from the actions of CONTRACTOR in performance of or its failure to perform its duties under this Contract.

3. Should the Board be penalized under the Consent Decree for not meeting these milestones, the Contractor shall be responsible for reimbursement to the Board of those penalties as identified in Paragraph 79 of the Consent Decree.

B. This contract also includes work commissioned by the Sewerage & Water Board of New Orleans that is authorized and deemed reimbursable by FEMA and this work is also subject to the same milestone deadlines as the work described in Paragraph 1.21A.

C. Contractors shall prepare a separate itemized invoice for work performed under paragraph 1.21A and a separate itemized invoice for work performed under paragraph 1.21B; these invoices shall be submitted as attachments to the regular partial payment applications.

D. Upon receipt of the "Notice to Proceed" and prior to commencement of any sewer rehabilitation work on this contract, the Contractor shall be required to furnish a combined cost breakdown and progress schedule. The progress schedule shall list all sewer line segments and sewer manholes by the S&WB asset ID shown on the plans with anticipated start dates, completion dates, responsible contractor (or sub-contractor) and value of work. This document shall be updated monthly and will be used to document the Contractor's compliance with the consent decree milestone dates.

1. Contractor shall sequence all sewer rehabilitation work to precede other utility work and shall progress in an uninterrupted manner.

2. Contractor shall prioritize any and all "Find and Fix" work at the beginning of the contract and submit the coded CCTV DVDs to the S&WB Networks Engineering for review and concurrence on any rehabilitation recommendations.

3. All sewer line segments requiring any excavated repairs and CIPP lining shall have all pipe and service repairs completed prior to the installation of the CIPP liner.

4. All sewer manholes requiring rehabilitation to the frame and cover shall have this work completed prior to the installation of the manhole liner (if required).

E. Contractor is responsible to obtain all S&WB "Wye Cards" and other available records in order to locate sewer service connections prior to any pavement removal or selective site demolition corresponding the sewer rehabilitation program. Contractors may obtain Wye Cards from the S&WB House Connections Department located at 625 St. Joseph Street in New Orleans.

F. Contractors shall layout all pavement and site restoration work prior to saw cutting, pavement demolition or saw cutting. Where pavement and/or site restoration for the DPW program and the SSERP program overlap and the pavement or other site restoration is FEMA eligible under DPW, the restoration shall be invoiced to DPW as per this contract's requirements for FEMA eligible work. Pavement and site restoration eligible under the DPW FEMA program will not be paid for under the S&WB SSERP or S&WB FEMA program.

G. The Contractor shall develop a plan to report, contain/by-pass and clean up all sewage spills or unanticipated hazards that would adversely affect the health of the community.

1. A report shall be given immediately to the S&WB Emergency Desk (942-2920). The information communicated in the report must include location, nature of problem, name of project, name of company performing work, name of the individual making the call, time of incident and other pertinent data as necessary. It should be communicated as a Priority I incident.

2. The plan must consider all available options for immediately eliminating the discharge or diverting to a containment area, as well as options for containing the contents of, for example, a damaged main which will be evacuated during repair work.

3. The Contractor will by-pass, direct, and temporarily store sewage as the situation dictates to avoid contamination of soil, street, etc. that would place the citizens in contact with waste products. If these sewer wastes reach a canal it will be the Contractor's first effort to

remove the contamination. Drainage pumping from the contaminated canal will be stopped.

4. In those circumstances when sewage cannot be removed from the canal system because of location or weather, where possible the procedures will be dilute and flush the canals.

5. For public areas that have come in contact with overflowed sewage, the Contractor will take action that is acceptable to the Engineer to implement disinfection procedures. Generally, these procedures will involve an application of an oxidizing agent such as a dilute chlorine solution on constructed surfaces (streets, driveways, walls, etc.) and a lime application on organic surfaces (lawns, soil areas, etc.). The level and extent of disinfection will be determined in the field. It is not the intent of this disinfection procedure to infer that total pathogen destruction has been achieved, nor that any other level of disinfection has been achieved.

6. The Contractor is responsible for all costs, fines or penalties associated sewerage spills or other unacceptable community health hazards or for the Contractor's failure to meet the provisions of this section, paragraph 1.21F, including but not limited to fines levied by the Louisiana Department of Environmental Quality or the EPA.

H. Contractors shall refer to sections 2.01 through 2.12 and section 3.23 for technical specifications and special pay items specific to the work in this section.

I. Submittal Requirements & Procedures for consent decree work:

1. Transmittal Document (letter or form) must include the following information in each submittal.

a. Project name.
b. Date.
c. Name of Engineer.
d. Name of Construction Manager.
e. Name of Contractor.
f. Name of firm or entity that prepared submittal.
g. Names of subcontractor, manufacturer, and supplier.
h. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier, and alphanumeric suffix for resubmittals.
i. Category and type of submittal.
j. Submittal purpose and description.
k. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
l. Drawing number and detail references, as appropriate.
m. Indication of full or partial submittal.
n. Location(s) where product is to be installed, as appropriate.
o. Other necessary identification.
p. Remarks.
q. Signature of transmitter

3. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Engineer or Construction Manager on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
4. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

5. Engineer and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

6. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineer's and Owners.

7. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

8. Certificates:

    a. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.

    b. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

    c. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

    e. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

    f. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

9. Typical Submittals List for Sewer Construction:

Submittal #	Submittal Description
1	Contractor's Emergency Contact Numbers
2	List of Subcontractors

3 Notice of Construction to Parks & Pkwys Dept.
4 Construction Notice (Notification to Residents)
5 Site Permits for Staging/Storage Areas
6 Approved Traffic Plan with Site Reference List
7 Water Meter Serial Numbers w/ current readings
8 40-hour Work Week Schedule
9 Construction Debris Disposal Location
10 Sewage Debris Disposal Plan
11 Sewer Flow Control Plan
12 Photo of Typical Pipe Plug with ID Tag
13 Safety Plan & MSDS
14 Pre-Construction Videos with Video Logs
15 Post-Construction Videos with Video Logs
16 Site Specific Flow Diversion (Bypass Pumping) Plan
17 MH - Liner Material
18 MH Frame & Cover Castings
19 MH - Casting Sealant
20 MH Grout
21 MH SS Inflow Dish w/ "Load Test Verification"
22 PVC Pipe & PVC Fittings, (6" through 15")
23 PVC Pipe & PVC Fittings, (18" through 36")
24 Repair Couplings
25 Saddle Fittings
26 Hydrostatic Testing Plan
27 Start-Work Notice - 48-hours prior to mobilization
28 Pipe Bursting-Method
29 HDPE Pipe
30 HDPE Fittings
31 Pipe Bedding Gradation Report
32 Geotextile Fabric - Non-Woven
33 Sand Backfill Gradation & Proctor
34 CIPP - Wet-Out Facility
35 CIPP - Felt Liner Material
36 CIPP - Resin
37 CIPP - Hydrophilic Rubber Seal
38 CIPP - Chemical Grout
39 CIPP - Installation Method
40 Post-Construction CCTV: VHS Video Tapes & CDs with Access Database & Hardcopy Reports

NOTES:

- This list of submittals is typical for SSERP gravity sewer projects. However, the contract may require submittals that are not on this list, and not every item listed may be in this contract.
- Each submittal must comply with Section 1.21.

Each *Request for Clarification* must be submitted separately and in writing to the Engineer and include all relevant details.

SECTION 1.22 – WATER POINT REPAIRS

A. The Contractor shall furnish all labor, supervision, materials, and equipment required to complete items in this section.

B. All workmanship and materials shall conform to Section C741 of the Department of Public Works General Specifications for Street Paving, S&WB Dwg. No. 7260-W, and S&WB Standard Drawings, except as noted herein.

C. The Contractor shall examine the locations of every plan sheet, well in advance of any planned construction within that block, and report all leaks to the S&WB by calling in 52-WATER (529-2837).

D. Damages to the water distribution system caused by the Contractor, shall be repaired by the Contractor at no direct pay, or repaired by the S&WB at the Contractor's expense. If in the opinion of the Engineer that damages to the water distribution system were not a result of the Contractors normal construction activities, the contractor will be paid at the unit prices of the appropriate bid item.

E. All lead service lines (LSL) exposed within the project limits, regardless of status of utility replacement at the location of the LSL, shall be reported to the S&WB project representative immediately. Resident must receive S&WB-approved written notification at the time any LSL is located and/or replaced." The LSL shall be replaced once written approval is provided by S&WB representative.

F. If directed to replace the LSL, the service connection must be replaced from the water main to the meter box. Temporary splices or repairs of leaking or damaged LSLs are not allowed. If directed by S&WB project representative to relocate water meter location, the pipe material must be identified between the meter box and property line. If the service line between the meter and the property line is of lead material, the Contractor and S&WB shall coordinate with the property owner to ensure the entire LSL is replaced between the water main and the property.

J. Contractor shall refer to section 2.12 and section 3.23 for technical specifications and special pay items specific to the work in this section.

SECTION 1.23 – CONTRACT TASK ORDERS

The successful bidder shall be awarded the work for a period of | Contract Duration | working days starting from the day after the Overall Notice to Proceed, which shall constitute the overall duration or contract period. The contract prices are firm during the entirety of the project.

The quantities given in the proposal form are approximate for the comparison of bids only. The City of New Orleans Department of Public Works (DPW) reserves the right to purchase only such items and in such quantities as needed for the duration of this contract after acceptance of the lowest responsible bid. Additional unit price quantities will be in accordance with Section C136. The City also reserves the right to perform part of the work with its in-house forces or hire other contractors for similar work in the project area during the contract period.

The overall project scope shall be broken down and delineated as individual Task Orders in contract documents. Each Task Order may consist of one or multiple plan sheets, which will serve as

the scope for that specific Task Order to include all utilities, roadway, and associated infrastructure work per the associated plan sheets.

Contract Task Orders shall be issued to the Contractor individually or grouped with multiple Task Orders at once, at the discretion of the Engineer and DPW. Prior to issuance of a Task Order, Contractor, Engineer and DPW will hold a Pre-Task Order Meeting to discuss scope, schedule, and delivery strategy. Task Order durations shall be determined by the Contractor during the Pre-Construction Meeting. Exhibit 1, attached at the end of this section, is a sample Task Order to be utilized for this process.

All work within the limits of each Task Order shall be shown to the Contractor by a representative of the Department of Public Works and/or Engineer prior to commencing work. Appropriate drawings and details will be furnished to the Contractor with each Task Order. Work sites may be non-continuous blocks for an individual task order; however, every effort will be made to consolidate the work to minimize scattered work sites.

Each Task Order will be issued with appropriate drawings or other attachments and will designate a specific Task Order number. All correspondence, billing, etc., pertaining to the work should reference the Task Order number and the current job number designation.

The Contractor shall begin the work within Ten (10) days after issuance of an executed task order and a corresponding Task Order Notice to Proceed. If the Contractor fails to start a task order within Ten (10) days of the Notice to Proceed date or leaves the work incomplete for over a 30-day period, the City shall proceed in accordance with Sections C123 and C126 or shall approach the next lowest bidder to start and/or complete the Task Order(s) or utilize other contractors to perform the work. However, if the Contractor has a valid reason for the lack of progress or delayed start of an issued Task Order that is beyond the Contractor's control, he must obtain written permission from the Engineer or DPW for the stipulated delay.

DPW reserves the right to put a Task Order on hold at any time as needed, without reason. If the scope of work is discontinued, the Contractor will be compensated only for the completed and accepted items of work. DPW reserves the right to modify, add, or remove scope within an issued Task Order as needed to best serve the Project. Temporary waterline tie-ins shall be abandoned, removed, and tied into the adjacent mainline in accordance with Section C741 in the General Specifications at no direct pay.

Beyond the initial Task Order issued for said Project, additional Task Orders shall be issued only when the previously issued Task Order is deemed Substantially Complete by the Engineer and DPW. The Contractor can request additional task orders to be issued and approved by DPW Director. Substantial Completion, as defined for this purpose, shall be determined by one or more of the following criteria:

- Issued work within a given Task Order is 95% complete by the planned scope and cost or agreed upon scope and cost;

- All Utilities, Roadways & Driveways within the Task Order are complete and open to traffic;

- Any minor incomplete work or Punch List items which typically consist of addressing areas in need of minor backfilling, completion of pavement striping, necessary yard restorations, patching, site cleanup, etc.

Additional Task Orders on the project shall only be issued when the preceding task orders are either complete or substantially complete, as defined above. The Contractor can request additional task orders to be issued and approved by DPW Director. If the Contractor fails to complete a task order within the agreed time frame or leaves the work incomplete or inactive for a period of Thirty (30) days, absent any previously agreed upon stipulated delay claim, DPW shall proceed in accordance with Sections C123 and C126 and reserves the right to complete the remainder of that task order, as well as all additional remaining work included in the overall project scope by either the use of City work forces or other contractors. The Contractor shall notify DPW within 48 hours of a critical path task delay listing the critical path tasks affected by the delay.

It is understood by the Contractor that the quantities provided in the schedule of bid prices are a fair approximation of the amount of work to be done, and that the sum of the products of the approximate quantities multiplied by the unit price bid constitutes the base bid price, which sum shall be used in the comparison of bids and the awarding of the respective contracts. The unit cost quantities represent a complete cost total, representing all work required to provide a completed project scope. The actual constructed quantities may vary from the quantities listed in the proposal form.

EXHIBIT 1
JIRR FEMA
Department of Public Works Project No. RRXXX
New Orleans, LOUISIANA
TASK ORDER 01

City of New Orleans
Department of Public Works

1300 Perdido St. – Suite 6W03
New Orleans, LA 70112

Estimated Cost: $ 3,874,648.57

Date Issued: February 25, 2021

Plan Sheets: 1-10, W01-W10, S-1 – S-10

Contractor: XX Construction, L.L.C.

Project No. FEMA RRXXX

You are hereby directed to commence work within 10 days of the date of this work order and complete all work, including restoration, within XX days, in accordance with project specifications. If this task order is not substantially completed within XX days, no further task orders will be issued.

See attached Plan Sheets for details of **Task Order 01**.

Description:

Task Order 01 contains XX sheets located within XX Neighborhood in Orleans Parish. **Special attention shall be given to the roadway elevations to ensure positive drainage to the adjacent catch basins.** All work described in the attached plan sheets is subject to field verification. Variations shall be approved by the Engineer. The following is a list of the plan sheets associated with Task Order 01.

Site Location	DPW Sheet(S)	SWB Sheet(s)
XXX	XX	XX
XXX	XX	XX
XXX	XX	XX

SIGNED:

Contractor.:_____DATE: _____

Engineer.:_____DATE:_____

CNO DPW.: _____DATE:_____

Attachments

SECTION 1.24 – PROCORE COLLABORATION SOFTWARE

COLLABORATION SOFTWARE

1. SUMMARY
    a. Utilize City-provided Procore construction management software (www.procore.com) to submit, track, distribute and collaborate on project documentation and action items.
    b. The intent of utilizing Procore construction management application is to reduce cost and schedule risk, improve quality and safety, and maintain a healthy team dynamic by improving information flow, reducing non-productive activities, reducing rework and decreasing turnaround times.
2. SOFTWARE USES
    a. Daily Log
        i. Daily log entry from web and mobile with automatic capture of daily weather conditions.
        ii. Attach photographs to entries directly from mobile.
        iii. Reporting capabilities to easily report on man-hours and activities for a certain time frame and contractor.
    b. Dashboards
        i. Dashboards that show the status of all currently assigned items with drill down capability to see the subject, assignee and due date of each item.
    c. Deficiency Tracking
        i. A means for recording, assigning and confirming completion of any deficiency or observation noted during the course of construction. Is accessible from web and mobile.
    d. Directory
        i. All team member's contact information that is accessible from web and mobile.
    e. Documents
        i. Storage location for miscellaneous project documents with the ability to have a folder hierarchy and privacy settings on folders.
        ii. No storage limit.
        iii. Download tracking.
        iv. Ability to revise and check out files, with access to all previous revisions.
    f. Drawings
        i. A system maintained current set of drawings on web and mobile, with access to all previous revisions as well.
        ii. Automatic hyperlinking capability for detail callouts.
        iii. Drawing markup capabilities on web and mobile.

iv. Ability to link RFIs, Submittals, Punchlist Items, Photos and Project Documents to the drawings.

v. Drawing Markups should be carried forward when new revisions are uploaded.

vi. Markups and linked documentation should be able to be public or private based on desired level of user accessibility.

g. Financial Management

i. Manage contracts, payment applications and change orders through the software.

ii. View contracts and change orders from web and mobile.

h. Inspections

i. Create inspections from web and mobile.

ii. Create a deficiency item from an inspection that can be assigned and tracked to completion.

i. Meetings

i. Create, edit and view meeting minutes from web and mobile.

ii. Create action items with assignees and due dates from a meeting item.

j. Mobile Accessibility

i. Native mobile applications for iOS and Android phones at a minimum that provide access to relevant project documentation, including as-built versions of Drawings and Specifications, even when there is no internet access.

k. Photos

i. Upload and view photos from web and mobile.

ii. Markup photos from mobile to clarify anything important in the photo.

iii. Link photos to specific locations on drawings.

l. Punchlist

i. Create punch-list items from web and mobile and link them to specific locations on the drawings.

ii. Distribute punch-list items to all contractors, for contractors to mark them as resolved with photographic proof of resolution via mobile, and for the items to be marked as complete via mobile or web.

m. Requests for Information (RFIs)

i. Create RFIs with assignees, due dates and attachments.

ii. Assignees can respond to RFIs both via the software and by responding to the system generated email.

iii. Auto-generated log of all RFIs.

n. Schedule

i. Display schedules from typical scheduling software such as Microsoft Project, Primavera P3, Primavera P6 or Asta Powerproject.

o. Specifications

i. Upload project specifications and manage them at the individual specification level.

ii. View and search specifications on web and mobile.

iii. Upload revisions to individual specifications and maintain all revision history.

iv. Auto-generated current specification log that provides access to the current version of each specification.

v. Link specifications to submittals and view the specification from the submittal.

p. Submittals

i. Upload a submittal register of all expected submittals.

ii. Create multi-step approval workflows for submittals, with reminder notifications for the current assignee.

iii. Upload any file type without size restrictions.

iv. Auto-generated submittal log.

3. TECHNOLOGY

a. Fully web based with mobile apps for Windows, iOS and Android phones.

b. Accessible without logging in through a virtual private network (VPN).

c. Works on the current version of Internet Explorer, Google Chrome, Mozilla Firefox and Apple Safari browsers.

d. Can generate emails automatically, and all attachments are included in the emails via download links to avoid emails not being delivered due to size.

e. PDF output of forms such as RFIs, Submittals, Meetings, Change Orders, etc. should be available and customizable.

4. TRAINING AND SUPPORT

a. Support to all parties via email, phone and live chat at no additional charge.

b. Training in the form of self-paced learning videos as well as interactive webinars.

c. The contractor shall hold a kickoff meeting with the Owner and applicable consultants at the beginning of the project to discuss how the software will be used, routing & naming protocols, etc.

5. PROCEDURES

a. RFIs and Submittals

i. The Contractor will be responsible for submitting all RFIs and Submittals through the software and assigning them to the appropriate parties.

ii. The City's Architects, Engineers, Consultants, etc. are responsible for reviewing, approving, and posting all responses to RFIs and submittals via the software, including all relevant attachments.

iii. Responses to all RFIs shall be reviewed, accepted, or rejected by the Director of Public Works and or the Sewerage and Water Boards appointed representative.

iv. The Contractor will distribute approved and accepted responses to all affected subcontractors and confirm agreement with the response by closing the item.

b. Construction Documentation

i. The Engineer will manage Drawings, Specifications and Documents in the software to ensure that the current version of all applicable construction documentation is available to the entire team via web and mobile.

ii. The Engineer will ensure that all RFIs which modify the current drawings are posted to the drawings and available via web and mobile within 24 hours of the RFI being responded to.

c. The Engineer will record and distribute meeting minutes and action items via the software.

d. The Engineer's Resident Inspector will create daily reports, take daily site photos, and make them publicly available. Daily reports shall include but not limited to: Report number, days used on the contract, quantities per pay item, personnel and equipment on site, Construction start and end time, and construction activities per block.

e. Punchlist

i. All punch-list items will be managed through the software.

ii. Punchlist items will be created by the Engineer during the substantially complete project site walk-through with the Owner, Contractor and Owner's Representatives.

iii. It will be at the Owner's discretion whether Punchlist Items can be closed while a representative from the Owner or applicable consultant is not present.

f. General

i. It is intended that the contractor will utilize the software for at least all functions identified in "Section 2 – Software Uses."

6. PRICING

a. The cost of Procore Technologies services has been paid in full by the Owner

b. The software allows for unlimited users to ensure that all parties have access to the system.

7. HARDWARE

a. The Contractor will ensure all necessary users have access to devices compatible with Procore

b. The Contractor will maintain at least one Procore compatible device on site with a screen of 7" or larger for ease of viewing, sharing, and discussing plans in the field.

SECTION 1.25 – ENVIRONMENTAL PROTECTION AND STORM WATER POLLUTION PREVENTION

Environmental Protection and Storm Water Pollution Prevention Plan shall be in accordance with Section C204 Environmental Protection and Stormwater Pollution Prevention Plan from the General Specifications except as modified here-in.

The Contractor certifies under penalty of law that he understands and will abide by the terms and conditions of the following:

1. Permit LAR10M21: Orleans Parish-wide coverage for Storm Water Discharges Associated with Construction Activities five (5) acres or more for the JIRR Program
2. Sewerage & Water Board of New Orleans Plumbing Code
3. The Joint Infrastructure Recovery Request (JIRR) Program is authorized under LPDES Permit LAR10M215 that encompasses all of Orleans Parish for Storm Water Discharges Associated with Construction Activities five (5) acres or more. The permit had an effective date of June 8, 2020 and expiration date is March 28, 2024. This permit coverage alone automatically mandates that all JIRR projects regardless of the project size will be part of a "larger common plan of development" Since the entire program is covered, the contractor does not have to obtain a state-issued permit from LDEQ; regardless, an adequate Stormwater Pollution Prevention Plan shall be developed and maintained regardless of the size of the project.
4. Compliance with JIRR Permit LAR10M21.

SECTION 1.25.1

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 SCOPE

This Section covers prevention of environmental damage as the result of construction operations under this contract and for those measures set forth in other Technical Requirements of these specifications. For the purpose of this specification, environmental damage is defined as the presence of hazardous, physical, chemical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances; affect other species, biological communities, or ecosystems; or degrade the quality of the environment for aesthetic, cultural, and/or historical purposes. The control of environmental damage requires consideration of land, water, and air, and includes management of visual aesthetics, noise, solid waste, radiant energy, and radioactive materials, as well as other pollutants.

1.2 ENVIRONMENTAL LAWS, REGULATIONS, AND DOCUMENTS

1.2.1 Miscellaneous Environmental Laws and Regulations

There are numerous environmental laws and regulations. At the federal level, the applicable laws and regulations include compliance with the Clean Water Act; Clean Air Act; Comprehensive Environmental Response, Compensation, and Liability Act; National Environmental Policy Act (NEPA); National Pollutant Discharge Elimination System; Research and Sanctuaries Act (RSA); Resource Conservation and Recovery Act; Safe Drinking Water Act; Toxic Substance Control Act; Federal Insecticide, Fungicide, and Rodenticide Act; Code of Federal Regulations (CFRs); Executive Orders; and, Environmental Protection Agency (EPA) requirements.

1.2.2 NEPA Reference

Commitments made in the NEPA document have been incorporated into these specifications. The NEPA document can be found at the following website: https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll7/id/174 94

1.3 SUBMITTALS

New Orleans Department of Public Works approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the New Orleans Department of Public Works. Submit the following in accordance with Section 01 200 SPECIAL PROVISIONS:

SD-01 Preconstruction Submittals

Environmental Protection Plan; G, DO

SD-11 Closeout Submittals

Logs/Final Summary Report

Project Environmental Summary Sheet; G, DO

1.4 QUALITY CONTROL

Establish and maintain quality control (QC) for environmental protection of all items set forth herein. Record on daily QC reports or attachments thereto any problems in complying with laws, regulations, and ordinances and corrective action taken.

DPW Construction Manager

1.5 ENVIRONMENTAL PROTECTION PLAN

Submit a draft Environmental Protection Plan (EPP) no later than 5 calendar days after NTP for review and acceptance by the DPW Construction Manager. The New Orleans Department of Public Works will consider an interim plan for the first 30 days of operations. However, furnish an acceptable final plan no later than 30 calendar days after receipt of NTP. Acceptance of the plan will not relieve the Contractor of their responsibility for adequate and continuing control of pollutants and other environmental protection measures. Acceptance of the plan is conditional and predicated on satisfactory performance during construction. The New Orleans Department of Public Works reserves the right to require the Contractor to make changes to the EPP or operations if the DPW Construction Manager determines that environmental protection requirements are not being met. No physical work at the site is to begin prior to acceptance of the plan or an interim plan covering the work to be performed. The EPP shall meet the requirements of the Soil Management Plan and include, but not be limited to, the following:

a. A list of federal and local laws, regulations, and permits concerning environmental protection, pollution control, and abatement that are applicable to the proposed operations and the requirements imposed by those laws, regulations, and permits.

b. Methods for protection of features to be preserved within authorized work areas. Prepare a listing of methods to protect resources needing protection, i.e., trees, shrubs, vines, grasses, and ground cover, landscape features, air, and water quality, soil, historical, archeological, and cultural resources.

c. Procedures to be implemented to provide the required environmental protection and to comply with the applicable laws and regulations. Provide written assurance that immediate corrective action will be taken to correct pollution of the environment due to accident, natural causes, or failure to follow the procedures set out in accordance with the EPP.

d. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan must include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment

control plan, Federal and local laws and regulations. A Storm Water Pollution Prevention Plan may be substituted for this plan.

e. A permit or license for and the location of the solid waste disposal area.

f. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, stream crossing, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials.

g. Environmental monitoring plans for the job site, including land, water, air, and noise monitoring.

h. Traffic control plan.

i. Methods of protecting surface and groundwater during construction activities.

j. Spill prevention. Specify all potentially hazardous substances to be used on the job site and intended actions to prevent accidental or intentional introduction of such materials into the air, ground, water, wetlands, or drainage areas. Specify the provisions to be taken to meet Federal and local laws and regulations regarding labeling, storage, removal, transport, and disposal of potentially hazardous substances.

k. Spill contingency plan for hazardous, toxic, or petroleum material.

l. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Include measures for marking the limits of use areas.

m. Include a statement as to the person who will be responsible for implementation of the EPP. The Contractor personnel responsible is to report directly to the Contractor's top management and is to have the authority to act for the Contractor in all environmental protection matters.

n. Recycling and Waste Management Plan. Executive Order 12873 of 20 October 1993 requires a number of considerations in planning a project. Fallen trees should not be burned or buried to the maximum extent practical. Mulching, composting, and other uses for trees should be considered. Also, recovery of metals at the job site, including aluminum cans, should be considered with proceeds to be retained by the Contractor. Non-federal recycling and waste minimization efforts are to also be incorporated into this plan.

1.6 PERMITS AND AUTHORIZATIONS

The Contractor is responsible for obtaining NPDES Stormwater Construction Generic Permit to provide coverage under the National Pollutant Discharge Elimination System (NPDES) Generic Permit for Stormwater Discharges from Construction Activities.

Offsite Dewatering. The issuance of this permit does not constitute coverage under the NPDES General Permit for the Discharge of Produced Ground Water from any Non-Contaminated Site Activity (if applicable).

The Contractor shall obtain all needed permits or licenses. The New Orleans Department of Public Works will not obtain any permits for this project. The Contractor shall be responsible for implementing the terms and requirements of the appropriate permits as needed and for payment of all fees.

In addition to the above, the Contractor shall comply with all requirements under the terms and conditions set out in the following permit(s) and authorization(s) obtained by the DPW listed below.

Excavated material shall be disposed of off-site in accordance with the Soil Management Plan.

The Contractor shall obtain and comply with the requirements of all permits or licenses required for construction of this project in accordance with the Soil Management Plan and Section 00 730.A SPECIAL CONDITIONS FOR FEMA CONTRACTS.

1.7 SUBCONTRACTORS

Assurance of compliance with this section by subcontractors will be the responsibility of the Contractor.

1.8 NOTIFICATION

The DPW Construction Manager will notify the Contractor in writing of any observed noncompliance with the aforementioned federal or local laws or regulations, permits and other elements of the environmental protection specifications. After receipt of such notice, inform the DPW Construction Manager of proposed corrective action and take such action as may be approved. If the Contractor fails to comply promptly, the DPW Construction Manager may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions are to be granted or costs or damages allowed to the Contractor for any such suspension.

Additionally, the Contractor shall notify the DPW Construction Manager, in writing, of the absence or occurrence of environmental incidents, as required in the Soil Management Plan.

1.9 CONTRACTOR PERSONNEL QUALIFICATIONS IN POLLUTION CONTROL

Provide qualified personnel to perform all phases of environmental protection, including methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and careful installation and monitoring of the project to ensure adequate and continuous environmental pollution control. QC and supervisory personnel are to be thoroughly knowledgeable of federal and local laws, regulations, and permits as listed in the EPP submitted by the Contractor.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PROTECTION OF ENVIRONMENTAL RESOURCES

For contract work, comply with all applicable federal or local laws and regulations. The environmental resources within the project boundaries and those affected outside the limits of permanent work under this Contract will be protected at least during the entire period of this Contract. Confine activities to areas defined by the drawings and specifications. Environmental protection is to be as stated in the following subparagraphs.

3.1.1 General Project Environmental Design and Installation Criteria

Some project sites have features that must not be impacted in any way, including cultural, historic, or archeological features. At all sites, minimize disturbance to existing features at the site to the extent possible, including vegetative, topographic, and drainage pattern features. Expansion of previously permitted project footprints may likewise require separate permitting action.

In all cases, the installation of temporary systems to aid construction will provide for protection of the environment during handling, installing, storing, utilizing, transporting, servicing, testing, refilling, transferring, pumping, processing, removing waste products, repairing, and maintaining systems and their components. Necessary protection is to also be considered that would prevent contamination of the environment from impacts to the systems caused by storm water runoff and flooding. Retrofit of temporary systems on project sites to modern environmental protection design standards will also be considered.

In the event environmental protection measures fail, implement procedures to control and correct environmental damage. Coordinate with the DPW Construction Manager if environmental protection measures fail.

3.1.1.1 Sewage-Based Systems Environmental Design and Installation Criteria

In general, there will be no waste or debris discharges of any kind for a project unless authorized by the DPW Construction Manager. This is to include the Contractor's providing sufficient temporary sanitary equipment and facilities for the project. The design and/or installation of temporary or permanent sewage systems are to ensure that waters will be free of effects of sewage discharges. Adhere to federal or local codes and requirements regarding sewage in the design, such as those of the EPA. Adhere to Best Management Practices from the applicable agencies in the design.

3.1.2 Protection of Land Resources

Prior to the beginning of any construction, identify all land resources to be preserved or avoided within the work area. Remove materials displaced into not cleared areas. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without special permission from the DPW Construction Manager. Engage a

qualified tree surgeon to perform all tree surgery. Repair injuries to bark, trunk, branches, and roots of protected trees by dressing, cutting, and painting as specified for Class I Fine Pruning, of the National Arborist Association Pruning Standards for Shade Tree or as per State's Agricultural Extension Agency Guidelines, immediately as occurrences arise. Do not attach ropes, cables, or guys to any trees for anchorage unless specifically authorized. Where such special emergency use is permitted, provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs.

Maintain all construction equipment and tools free of fluid leaks (coolant, refrigerant, oil and lubricants). In the event of equipment breakage, remove the equipment from the construction area and away from wetlands or sensitive areas. Where the equipment is park/store, install metallic pans to collect any leakage of fluid and tag with the date of breakage, reason of why is park/store, and if waiting for parts, indicate so. Repair the equipment within 30 days or completely remove from the project area.

3.1.2.1 Work Area Limits

Prior to any construction, mark the areas that are not required to accomplish all work to be performed under this Contract. Mark or fence isolated areas within the general work area to be saved and protected. Protect existing trees designated to remain. Provide protection of tree roots against noxious materials in solution caused by run-off or spillage. Fires are to be located outside the canopy of protected trees. Do not store materials, trailers, or equipment within the drip line of any protected tree. Protect monuments and markers before construction operations commence. Where construction operations are to be conducted during darkness, the markers will be visible. Convey to personnel the purpose of marking and/or protection of all necessary objects.

Thoroughly clean all construction equipment and tools at the prior job site in a manner that ensures all residual soil is removed and that egg deposits from plant pests are not present. The Contractor shall consult with the U.S. Department of Agriculture regarding additional cleaning requirements that may be necessary. In addition, if this contract involves the identification, shipping, storage, testing, or disposal of soils from such a quarantined area, the Contractor agrees to comply with the provisions of ER 1110-1-5 and attachments. The Contractor agrees to assure compliance with this obligation by all subcontractors.

3.1.2.2 Protection of Landscape

Trees and their roots, shrubs, vines, grasses, land forms, and other landscape features [indicated and defined on the drawings to be preserved] are to be clearly identified and protected by fencing or any other approved techniques. Protection of trees will be as illustrated in the Tree Protection Plan Detail on the first web site indicated in the paragraph CONSTRUCTION FORMS AND DETAILS below. Tree protection fencing is to be placed before excavation or grading is begun and maintained in place until construction is complete. Branches of protected trees, if required, are to be removed to clear for construction and pruning are to subsequently be performed to restore the natural shape of the entire tree. Branches or roots, if required, will be cut with sharp pruning instruments and not broken or chopped. Protected trees will be fertilized to compensate for root

loss with 6-6-6 as per manufacturer's application direction. Any damage to tree crowns or roots will be repaired promptly after damage occurs.

a. Trench or Bore Under Trees: Where trenching for utilities is required within tree driplines, hand dig under and around roots or bore under them. Protect roots from drying and cover exposed roots within an hour as specified in subparagraph EXCAVATION FOR STRUCTURES below. No lateral roots which interfere with new construction are to be cut. Boring is permitted.

b. Excavation for Structures: Where excavating for new construction is required within tree drip lines, hand excavate to minimize damage to root systems. Use narrow tine pitchforks and comb soil to expose roots. Relocate roots in backfill areas. If large, main lateral roots are encountered that are exposed beyond the excavation limits, bend and relocate these roots without breaking or girdling. If roots are encountered immediately adjacent to new construction such that relocation is not practical, saw roots approximately 3 inches back from the new construction, seal with tree wound dressing, and protect any exposed embankment of roots from drying by covering with straw and black plastic. Irrigate affected areas daily until final grade conditions are established and the exposed roots are backfilled properly for continued plant growth.

c. Replacement: Remove dead or damaged protected trees determined, by the New Orleans Department of Public Works, to be incapable of restoration to normal health growth. Replace each removed tree up to a 4 inch caliper with tree of equal specie and size. For each tree removed larger than a 4 inch caliper, the replace the tree with one 4 inch caliper tree per 4 inch caliper increment or fraction thereof.

3.1.2.3 Unprotected Erodible Soils

Finish earthwork brought to final grade as indicated in the contract drawings. Protect side slopes and back slopes as soon as practicable upon completion of rough grading. All earthwork is to be planned and conducted to minimize the duration of exposure of unprotected soils. Except in instances where the constructed feature obscures borrow areas, quarries, and waste material areas, these areas are to not initially be totally cleared. Clearing of such areas will progress in reasonably sized increments as needed to use the areas developed as approved by the DPW Construction Manager.

3.1.2.4 Disturbed Areas

Prevent erosion and control sedimentation through approved methods including, but not limited to, the following:

a. Retardation and Control of Runoff: Runoff from the construction site or from storms are to be controlled, retarded, and diverted to protected drainage courses by means of diversion ditches, benches, and by any measures required by area wide plans approved under paragraph 208 of the Clean Water Act.

b. Erosion and Sedimentation Control Devices: Construct or install temporary and permanent erosion and sedimentation control features as

directed by the DPW Construction Manager. Place temporary velocity dissipation devices along drainage courses so as to provide for non-erosive flows. Maintain temporary erosion and sediment control measures such as berms, dikes, drains, sediment traps, sedimentation basins, grassing, mulching, baled hay or straw, and silt fences until permanent drainage and erosion control facilities are completed and operative. For silt fences, the filter fabric is to be of nylon, polyester, propylene, or ethylene yarn of at least 50 lb/in strength and able to withstand a flow rate of at least 0.3 gal/ft sq/minute. The fabric is to contain ultraviolet ray inhibitors and stabilizers and be a minimum of 36 inches in width. Bury the toe of the fence at least 8 inches deep to prevent undercutting and secure to posts by suitable staples, tie wire, or hog rings. Posts are to have a minimum of 4 feet in length. If work is performed in area with karst/limestone soils, metal stakes or rebar may be used. Overlap fence to the next post if fabric joints are necessary.

c. Sediment Basins: Trap sediment from construction areas in temporary or permanent sediment basins. The basins are to accommodate the runoff of a local 24-hour storm. After each storm, pump the basins dry and accumulated sediment and remove as necessary to maintain basin effectiveness. Control overflow by paved weir or by vertical overflow pipe, draining from the surface. Reuse the collected topsoil sediment for fill on the construction site, and/or conserved (stockpiled) for use at another site(s). Institute effluent quality monitoring programs as required by local environmental agencies.

3.1.2.5 Solid Wastes

Place solid wastes (excluding clearing debris) in containers which are emptied on a regular schedule. Conduct handling and disposal to prevent contamination. Haul solid waste materials to a solid waste disposal site approved by the DPW Construction Manager. Comply with Federal and local regulations pertaining to the use of the solid waste disposal site.

3.1.2.6 Fuel, Oil, and Lubricants

Manage fuel, oil, and lubricants in order to prevent spills and evaporation. Provide a 4-foot square, 16-gauge metal pan with borders banded up and welded at corners right below the bibb for fuel dispensers to prevent spills. Edges of the pans are to be 8-inch minimum in depth to ascertain that no contamination of the ground takes place. Clean pans by an approved method immediately after every dispensing of fuel and wastes disposed of offsite in an approved area. Should any spilling of fuel occur, immediately recover the contaminated ground and dispose of it offsite in an approved area. Store petroleum waste generated in marked corrosion-resistant containers and recycled or disposed of in accordance with 40 CFR 279and local regulations.

3.1.2.7 Hazardous Waste

Hazardous wastes are defined in 40 CFR 261. Ensure that hazardous wastes are stored and disposed of in accordance with 40 CFR 261 and local regulations. Ensure that hazardous wastes are packed, labeled, and transported in accordance with 49 CFR 173 and local regulations.

3.1.2.8 Hazardous Materials

Ensure that hazardous materials are labeled, stored, and transported in accordance with 49 CFR 173 and local regulations.

3.1.2.9 Disposal of Other Materials

Handle other materials than previously discussed (construction and demolition, vegetative waste, etc.) as directed by the DPW Construction Manager.

3.1.3 Preservation and Recovery of Historic, Archeological, and Cultural Resources

3.1.3.1 Applicable Law

A number of federal laws require protection of cultural resources. One law, in particular, can be potentially involved with construction activities: (1) the National Historic Preservation Act, as amended.

3.1.3.2 Known Resources

If known historic, archeological, and cultural resources within the Contractor's work area(s) are present, it will be designated as an "environmentally sensitive area" on the contract drawings or other documents. If so designated, install protection for these resources and preserve during the Contract's duration. Do not distribute maps or other information on these resource locations except for distribution among the Contractor's staff with a need to know technical responsibility for protecting the resources.

3.1.3.3 Inadvertent Discoveries

If, during construction activities, the Contractor observes items that may have historic or archeological origin, such observations are to be reported immediately to the DPW Construction Manager so the appropriate DPW staff may be notified and a determination for what, if any, additional action is needed. Examples of historic, archeological, and cultural resources are bones, human remains, brick, pottery, metal, artifacts, shell, midden, modified rocks or coral, constructed features, and charcoal or other deposits. Cease all activities that may result in the destruction of these resources and prevent employees from further removing, or otherwise damaging, such resources.

Once reported, the DPW Construction Manager will initiate coordination with the appropriate federal, tribal and state agencies to determine if archaeological investigation is required. Additional work in the area of the discovery will be suspended at the site until all federal and state regulations have been successfully completed and the DPW Construction Manager will provide further directive. Project activities in the vicinity of the discovery may not resume until the DPW Construction Manager approves work to proceed. No interview or other contact with the media or federal, tribal, or state agencies are to occur without clear authorization from the DPW Construction Manager.

3.1.3.4 Claims for Downtime due to Inadvertent Discoveries

Upon discovery and subsequent reporting of a possible inadvertent discovery of cultural resources, continue work well away from, or otherwise protectively avoiding, the area of interest, or in some other manner that strives to continue productive activities in keeping with the Contract. Should an inadvertent discovery be of the nature that substantial impact(s) to the work schedule are evident, such delays are to be coordinated with the DPW Construction Manager.

3.1.4 Protection of Water Resources

Keep construction activities under surveillance, management, and control to avoid pollution of surface, ground waters, and wetlands. Plan operations and perform all work necessary to minimize adverse impact or violation of water quality standards. Implement special management techniques as set out below to control water pollution by the listed construction activities which are included in this Contract. Use construction methods that protect wetland and surface water areas from damage due to mechanical grading, erosion, sedimentation and turbid discharges. Storing or stockpiling equipment, tools, or materials within wetlands or along the shoreline within the littoral zone is not allowed unless specifically authorized.

3.1.4.1 Washing and Curing Water

Waste waters directly derived from construction activities is not allowed to enter water areas. These waste waters are to be collected and placed in retention ponds where suspended materials can be settled out or the water evaporates so that pollutants are separated from the water. Analysis is to be performed and results reviewed and approved by DPW staff before water in retention ponds is discharged.

3.1.4.2 Monitoring of Water Areas

Monitor all water areas affected by construction activities.

3.1.4.3 Oil, Fuel, and Hazardous Substance Spill Prevention and Mitigation

Prevent oil, fuel, or other hazardous substances from entering the air, ground, drainage, local bodies of water, or wetlands. This is to be accomplished by design and procedural controls. In the event that a spill occurs, despite the design and procedural controls, the following is to occur:

(1) Take immediate action to contain and cleanup any spill of oil, fuel or other hazardous substance.

(2) Immediately report spills to the DPW Construction Manager.

(3) Spill contingency planning is to be strictly in accordance with the criteria of 40 CFR, Part 109.

(4) To control the spread of any potential spill, absorbent materials are to be readily available and capable of absorbing the contents of the single largest tank.

(5) To control the spread of any potential spill, provide a written certification of commitment of manpower, equipment, and materials required to expeditiously cleanup and dispose of spill materials.

a. Spill Preventive Systems: System design and installation requirements have been discussed at the beginning of this Section. Temporary or portable tanks will conform to applicable federal and local codes and requirements and is not to be placed where they may be affected by storm, flooding, or washout. Diversionary structures for spills are to be put in place in advance where practical. Both spill preventive systems and any deviations from associated requirements will be approved by the DPW Construction Manager prior to implementation.

b. Liabilities: Liable in the amounts established in 40 CFR, Part 113 when it can be shown that oil was discharged as a result of willful negligence or willful misconduct. The penalty for failure to report the discharge of oil will be in accordance with the provision of 33 CFR, Part 153.

3.1.4.4 Wetlands Protection

a. Determine the location of wetlands within the project area and adjacent to the project area from the information provided in the contract documents. Instruct all personnel associated with the project of the presence of wetlands if the wetlands are located within 1,000 feet of staging areas, access roads or any other areas used during construction activities.

b. Advise construction personnel that there are civil and criminal penalties for harming or destroying wetlands beyond actions specifically identified, anticipated, and authorized in these specifications and associated plans and environmental documents. Erect a silt fence at least 30 feet upland and along the entire length of all wetland delineation lines adjacent the work site and staging areas, prohibit all access into the wetland, and ensure compliance with the paragraph PROTECTION OF WATER RESOURCES above.

c. Do not anchor, place pipelines, or stage equipment in a manner that will cause any damage to wetlands beyond those specifically identified, anticipated, and authorized in these specifications and associated drawings and environmental documents. Avoid anchoring, placing pipeline, or staging equipment in these sensitive wetland areas. If such activities cannot be done without affecting sensitive areas outside the construction area identified in the Contract, cease the activities notify the DPW Construction Manager and Chief, Environmental Branch (904-232-2336) immediately (no later than the morning following the working day if the incident occurs after normal working hours). Report any actual incident involving damage to, or disturbance of wetlands.

3.1.5 Protection of Air Resources

Keep construction activities under surveillance, management, and control to minimize pollution of air resources. All activities, equipment, processes and work operated or performed by the Contractor in accomplishing the specified construction is to be in strict accordance with the applicable air

pollution standards of all Federal emission and performance laws and standards, including the U.S. Environmental Protection Agency's Ambient Air Quality Standards.

3.1.5.1 Particulates

Particulates, such as dust, is to be controlled at all times, including weekends, holidays, and hours when work is not in progress. Maintain excavations, stockpiles, plant sites, spoil areas, borrow areas, and work areas within or outside the project boundaries free from particulates that would cause air pollution standards to be exceeded or that would cause a hazard or nuisance. Provide equipment and approved methods to control particulates as the work proceeds and before a problem develops. When the City of New Orleans mandates air monitoring during construction activities, it is required that the contractor engages the services of a third-party air monitoring firm to carry out the monitoring services and is in accordance with Section 3.2 of the Soil Management Plan.

3.1.5.2 Burning

Burning is not allowed.

3.1.5.3 Odors

Control odors at all times for all construction activities.

3.1.6 Protection of Sound Intrusions

Keep construction activities under surveillance and control to minimize damage to the environment by noise.

3.2 POSTCONSTRUCTION

3.2.1 Cleanup

Clean up any area(s) used for construction.

3.2.2 Logs/Final Summary Report

Submit, as specified, logs and final summary report of sightings and incidents with listed species.

3.2.3 Project Environmental Summary Sheet

Submit within 30 calendar days following completion of the project, a written report of the absence or occurrence of environmental incidents. In addition, for construction activities whose anticipated duration is more than one calendar year, the Contractor shall complete a sheet each 31 May (plus/minus 14 days).

3.3 PRESERVATION AND RESTORATION OF LANDSCAPE

Restore all landscape features and aquatic vegetation damaged or destroyed during construction operations outside the limits of the approved work areas. Such restoration is to be a part of the EPP as defined in subparagraph ENVIRONMENTAL PROTECTION PLAN of paragraph SUBMITTALS above. This work is to be accomplished at the Contractor's expense.

3.4 MAINTENANCE OF POLLUTION CONTROL FACILITIES

Maintain all constructed facilities and pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

-- End of Section

SECTION 1.25.2

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL OF EXCAVATED SOILS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 273	Standards for Universal Waste Management
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
49 CFR 178	Specifications for Packagings

1.2 DEFINITIONS

1.2.1 Co-mingle

The practice of placing unrelated materials together in a single container, usually for benefits of convenience and speed.

1.2.2 Construction Waste

Waste generated by construction activities, such as scrap materials, damaged or spoiled materials, temporary and expendable construction materials, and other waste generated by the workforce during construction activities.

1.2.3 Demolition Debris/Waste

Waste generated from demolition activities, including minor incidental demolition waste materials generated as a result of Intentional dismantling of all or portions of a building, to include clearing of building contents that have been destroyed or damaged.

1.2.4 Disposal

Depositing waste in a solid waste disposal facility, usually a managed landfill or incinerator, regulated in the U.S. under the Resource Conservation and Recovery Act.

1.2.5 Diversion

The practice of diverting waste from disposal in a landfill or incinerator, by means of eliminating or minimizing waste, or reuse of materials.

1.2.6 Final Construction Waste Diversion Report

A written assertion by a material recovery facility operator identifying constituent materials diverted from disposal, usually including summary tabulations of materials, weight in short-ton.

1.2.7 Recycling

The series of activities, including collection, separation, and processing, by which products or other materials are diverted from the solid waste stream for use in the form of raw materials in the manufacture of new products sold or distributed in commerce, or the reuse of such materials as substitutes for goods made of virgin materials, other than fuel.

1.2.8 Reuse

The use of a product or materials again for the same purpose in its original form or with little enhancement or change.

1.2.9 Salvage

Usable, salable items derived from buildings undergoing demolition or deconstruction, parts from vehicles, machinery, other equipment, or other components.

1.2.10 Source Separation

The practice of administering and implementing a management strategy to identify and segregate unrelated waste at the first opportunity.

1.3 CONSTRUCTION WASTE (INCLUDES DEMOLITION DEBRIS/WASTE)

Divert a minimum of 60 percent by weight of the project construction waste and demolition debris/waste from the landfill or incinerator. Follow applicable industry standards in the management of waste. Apply sound environmental principles in the management of waste. Practice efficient waste management when sizing, cutting, and installing products and materials and use all reasonable means to divert construction waste and demolition debris/waste from landfills and incinerators and to facilitate the recycling or reuse of excess construction materials. Follow requirements of the Soil Management Plan.

1.4 CONSTRUCTION WASTE MANAGEMENT

Implement a Construction Waste Management Program for the project in accordance with Sections 3 and 4 of the Soil Management Plan. Take a pro-active, responsible role in the management of construction waste, contaminated soils, recycling process, disposal of demolition debris/waste, and require all subcontractors, vendors, and suppliers to participate in the Construction Waste Management Program. Establish a process for clear tracking, and

documentation of construction waste and demolition debris/waste.

1.4.1 Implementation of Construction Waste Management Program

Develop and document how the Construction Waste Management Program will be implemented in accordance with Section 3 and 4 of the Soil Management Plan. Submit a Construction Waste Management Plan to the DPW Construction Manager for approval.

Construction waste, contaminated soils, and demolition debris/waste materials include unused construction materials not incorporated in the

final work, as well as demolition debris/waste materials from demolition activities or deconstruction activities. In the management of waste, consider the availability of viable markets, the condition of materials, the ability to provide material in suitable condition and in a quantity acceptable to available markets, and time constraints imposed by internal project completion mandates.

1.4.2 Special Programs

Implement special programs involving rebates or similar incentives related to recycling of construction waste and demolition debris/waste materials. Retain revenue or savings from salvaged or recycling, unless otherwise directed. Ensure firms and facilities used for recycling, reuse, and disposal are permitted for the intended use to the extent required by federal and local regulations.

1.4.3 Special Instructions

Provide on-site instruction of appropriate separation, handling, recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the projects in accordance with Section 3 of the Soil Management Plan. Designation of single source separating or commingling will be clearly marked on the containers.

1.4.4 Waste Streams

Delineate waste streams and characterization, including estimated material types and quantities of waste, in the Construction Waste Management Plan. Manage all waste streams associated with the project. Typical waste streams are listed below. Include additional waste streams not listed:

a. Land Clearing Debris

b. Asphalt

c. Masonry and CMU

d. Concrete

e. Metals (Includes, but is not limited to, banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized, stainless steel, aluminum, copper, zinc, bronze.)

f. Wood (nails and staples allowed)

g. Vegetative Waste (trees, grass)

h. Excavated Soil

1.5 SUBMITTALS

New Orleans Department of Public Works approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the New Orleans Department of Public Works. Submit the following in accordance with Section 01 200 SPECIAL PROVISIONS:

SD-01 Preconstruction Submittals

Construction Waste Management Plan; G, DO

SD-06 Test Reports

Quarterly Reports

Annual Report

SD-11 Closeout Submittals

Final Construction Waste Diversion Report; G, DO

1.6 MEETINGS

Conduct Construction Waste Management meetings. After award of the Contract and prior to commencement of work, schedule and conduct a meeting with the DPW Construction Manager to discuss the proposed Construction Waste Management Plan and to develop a mutual understanding relative to the management of the Construction Waste Management Program and how waste diversion requirements will be met.

The requirements of this meeting may be fulfilled during other progress meetings. At a minimum, discuss and document waste management goals at following meetings:

a. Preconstruction meeting.

b. Regular site meetings.

c. Work safety meeting (if applicable).

1.7 CONSTRUCTION WASTE MANAGEMENT PLAN

Submit Construction Waste Management Plan that is in accordance with the Soil Management Plan within 15 days after notice to proceed. Revise and resubmit Construction Waste Management Plan until it receives final approval from the DPW Construction Manager, in order for construction to begin. Manage demolition debris/waste or deconstruction materials in accordance with the approved construction waste management plan.

An approved Construction Waste Management Plan will not relieve the Contractor of responsibility for compliance with applicable environmental regulations or meeting project cumulative waste diversion requirement. Ensure all subcontractors receive a copy of the approved Construction Waste Management Plan. The plan demonstrates how to meet the project waste diversion requirement. Also, include the following in the plan:

a. Identify the names of individuals responsible for waste management and waste management tracking, along with roles and responsibilities on the project.

b. Actions that will be taken to reduce solid waste generation, including coordination with subcontractors to ensure awareness and participation.

c. Description of the regular meetings to be held to address waste management.

d. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas on site and equipment to be used for processing, sorting, and temporary storage of materials.

e. Name of facility to be used.

f. Identification of local and regional re-use programs, including non-profit organizations such as schools, local housing agencies, and organization that accept used materials such as material exchange networks and resale stores. Include the name, location, phone number for each re-use facility identified, and provide a copy of the permit or license for each facility.

g. List of specific materials, by type and quantity, that will be salvaged for resale, salvaged and reused on the current project, salvaged and stored for reuse on a future project, or recycled. Identify the recycling facilities by name, address, and phone number.

h. Identification of materials that cannot be recycled or reused with an explanation or justification, to be approved by the DPW Construction Manager.

i. Description of the means by which materials identified in item (g) above will be protected from contamination.

j. Description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site).

k. Copy of training plan for subcontractors and other services to prevent contamination by comingling materials identified for diversion and waste materials.

l. Facilities or subcontractors offering construction waste transport on-site or off-site must ensure that proper shipping orders, bill of lading, manifests, or other shipping documents containing waste diversion information meet requirements of 40 CFR 273 Universal Waste Management, 49 CFR 173 Shippers - General Requirements for Shipments and Packagings, and 49 CFR 178 Specifications for Packaging. Individuals signing manifests or other shipping documents should meet the minimum training requirements.

m. Identify local jurisdiction requirements for waste management. Include local requirements and points of contact.

Distribute copies of the waste management plan to each subcontractor, Quality Control Manager, and the DPW Construction Manager.

1.8 RECORDS (DOCUMENTATION)

1.8.1 General

Maintain records to document the types and quantities of waste generated and diverted through disposal to an approved facility. Provide explanations for materials not brought to the facility. Collect and retain manifests, weight tickets, sales receipts, and invoices specifically identifying diverted project waste materials or disposed materials.

1.8.2 Accumulated

Maintain a running record of materials generated and diverted from landfill disposal, including accumulated diversion rates for the project. Make records available to the DPW Construction Manager during construction or incidental demolition activities. Provide a copy of the diversion records to the DPW Construction Manager upon completion of the construction, incidental demolitions or minor deconstruction activities.

1.9 REPORTS

1.9.1 General

Maintain current construction waste diversion information on site for periodic inspection by the DPW Construction Manager. Include in the quarterly reports, annual reports and final reports: the project name, contract information, information for waste generated, diverted and disposed of for the current reporting period and show cumulative totals for the project. Reports must identify quantifies of waste by type and disposal method. Also include in each report, supporting documentation to include manifests, weigh tickets, receipts, and invoices specifically identifying the project and waste material type and weighted sum.

1.9.2 Quarterly Reporting

Provide cumulative reports at the end of each quarter (December, March, June, and September, corresponding with the federal fiscal year for reporting purposes). Submit quarterly reports not later than 15 calendar days after the preceding quarter has ended.

1.10 FINAL CONSTRUCTION WASTE DIVERSION REPORT

A Final Construction Waste Diversion Report is required at the end of the project. Provide Final Construction Waste Diversion Report 60 days prior to the anticipated Final Inspection.

1.11 COLLECTION

Collect, store, protect, and handle reusable and recyclable materials at the site in accordance with the Soil Management Plan and in a manner which prevents contamination, and provides protection from the elements to preserve their usefulness and monetary value. Provide receptacles and storage areas designated specifically for recyclable and reusable materials and label them clearly and appropriately to prevent contamination from other waste materials. Keep receptacles or storage areas neat and clean.

Handle hazardous waste and hazardous materials in accordance with applicable regulations and coordinate with the Soil Management Plan. Separate materials by one of the following methods described herein:

1.11.1 Source Separation Method

Separate waste products and materials that are recyclable from trash and sort as described below into appropriately marked separate containers and then transport to the respective recycling facility for further processing. Deliver materials in accordance with recycling or reuse facility requirements (e.g., free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process). Separate materials into the category types as defined in the Construction Waste Management Plan.

1.11.2 Co-Mingled Method

Place waste products and recyclable materials into a single container and then transport to an authorized recycling facility, which meets all applicable requirements to accept and dispose of recyclable materials in accordance with all applicable local and federal regulations. The co-mingled materials must be sorted and processed in accordance with the approved Construction Waste Management Plan.

1.11.3 Other Methods

Other methods proposed by the Contractor may be used when approved by the DPW Construction Manager.

1.12 DISPOSAL

Control accumulation of waste materials and trash. Recycle or dispose of collected materials off-site at intervals approved by the DPW Construction Manager and in compliance with waste management procedures as described in the waste management plan. Except as otherwise specified in other sections of the specifications, dispose of in accordance with the Soil Management Plan.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.
-- End of Section --

PART II – SUPPLEMENT TECHNICAL SPECIFICATIONS

SECTION 2.01 - REMOVAL OF EXISTING PAVEMENT

A. All existing pavement designated to be removed shall be removed and disposed of beyond the limits of project by the Contractor.

B. Payment for concrete and asphaltic concrete pavement removal shall include removal, hauling and disposing of pavement off of the project site.

C. Pavement consisting of asphaltic concrete over Portland cement concrete shall be considered Composite Pavement. Composite Pavement shall be removed, without regard to thickness, at the price bid per square yard for REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT. There will be no additional payment if the Contractor elects to cold mill or remove the existing asphalt surface prior to removal of the concrete pavement.

D. Payment for the pay item C202(52)(C) REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT shall be made at the contract unit price, including removal and disposal of existing curb at no direct pay.

SECTION 2.02 - CURBS OR CURB AND GUTTER BOTTOMS

The Contractor shall remove and dispose of all existing curb or curb and gutter bottoms in accordance with the plans. Existing stone curb to be removed shall be delivered to the Department of Public Works Maintenance Yard located at 838 South Genois Street unless directed by the Owner (No additional pay for disposal).

Price for new dowel curbs in new concrete pavement shall include horizontal dowels and longitudinal reinforcement as detailed on the standard plan by the City of New Orleans Department of Public Works (DPW).

Price for new curb shall include transitions, depression or hand forming curbs at obstructions as may be directed by the Director or required by the Department of Parks and Parkways.

The Contractor shall backfill and compact behind curb with select material obtained from roadway excavation or other approved sources and install the top 4 inches with batture sand behind the curb for dressing and beneath sidewalks and driveways at no direct pay. Payment shall be included in the unit price bid for curbs, sidewalks, or driveways as applicable.

Price for new curb and gutters associated with new asphalt pavement shall include all transverse and longitudinal reinforcement in conformance with the details on standard plan by DPW included with these specifications.

Price for new curb or curb and gutters associated with Handicapped Ramp construction shall be measured and paid for as subsidiary to unit price bid for ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS.

SECTION 2.03 - REMOVAL OF EXISTING SIDEWALKS, DRIVEWAYS, AND FOOTLAPS

Existing concrete sidewalk, driveway, and footlaps shown to be removed shall be removed and properly disposed of by the Contractor. At locations where sidewalk, driveway, or footlaps are to be removed but are not to be replaced, the contractor shall backfill the area with selected excavated or other suitable approved material at no direct payment.

SECTION 2.04 - EXCAVATION

A. Limits of roadway excavation are shown on the plans and are measured from the bottom of the existing pavement to the bottom of the base course, and/or sub-base (where applicable). All excavated material shall be hauled and disposed of off the project site.

B. The quantity shown in the proposal form is approximate and is included for information purposes only. Partial payments for excavation will be made on a percentage basis computed from the ratio of linear foot of roadway excavation completed to the total length of roadway in the project.

SECTION 2.05 - CONSTRUCTION ROUTING AND MAINTENANCE

The Contractor must minimize damage to streets used for access to the project for the delivery of materials and equipment by observing weight and speed limits as defined in the City Code in Section 38-169 and 38-73 (h) respectively. Access routes to the work site from designated "truck routes" will be established at the preconstruction meeting. The Contractor and his subcontractor(s) will be required to adhere to these routes to and from the project site. The routes may be revised by the Director to accommodate the work as it progresses. The Contractor is required to keep the work site clean, particularly the roadways adjacent to the work site. The Contractor shall clear such roadways of dirt, silt sand or other such material as often as necessary, or as specified by condition at the close of each workday.

SECTION 2.06 - SHEETING AND BRACING

A. Sheeting and bracing shall meet the design, material, installation, and maintenance requirements of all SAFETY AND HEALTH REGULATIONS.

B. The cost of sheeting and bracing shall be included in the unit price bid per linear foot for drain, sewer, or water lines.

C. The Contractor shall provide design services, materials, and labor necessary for sheeting, shoring, and bracing of excavations as required for trenches in a safe working condition. The Contractor shall provide for protections and supports of utilities, roadways, buildings, and structures, etc. when performing project work. The Contractor shall provide an adequate system to withstand lateral pressure in trenches, in accordance with local, state, and federal regulations. Where required to be designed by a licensed engineer, the sheeting and shoring plan must be submitted to the Engineer for his records.

SECTION 2.07 - SANITARY SEWER SYSTEM REHABILITATION

A. The supplemental specifications within this section are applicable to all sewer rehabilitation work within the scope of the SSERP or FEMA sewer rehabilitation program as per paragraphs 1.21A and 1.21B. Any general conditions, materials or methods not discussed within this section shall be governed by the SPW standard specifications section C742 and the S&WB standard details and specifications.

B. Sewer Flow Control

1. Contractor is responsible for all sewer flow control. There will be no direct pay for flow isolation, flow diversion (bypass) pumping or any other outreach and coordination required as part of flow isolation.

2. Contractor is responsible to determine the method of sewer flow control for any pipe size and flow quantity. S&WB cannot provide any guarantees to draw the system down to reduce surcharging.

3. Contractor shall ensure that sewer does not back-up into private property and shall have a plan to prevent sewer back-ups prior to start of work in case of unforeseen delays. A sewer flow control plan is required to be submitted prior to start.

4. Where it becomes necessary to shut down a private sewer service line while work in progress, and before the service lines are reconnected, the residents are to be notified by the Contractor at least one week prior to work and again 24 hours prior to shut down. Sewer service shutdowns shall be limited to 8 hours in duration and between the hours of 8:00 am and 6:00 pm, otherwise an alternate means of sewer flow shall be provided, including but not limited to by-pass pumping.

5. Under no circumstances shall sewer be removed from the system or discharged onto the ground or into the drainage system or other waterway. Refer to section 1.21G in cases of accidental spills or discharges.

6. Only pneumatic (inflatable) pipe plugs, specifically designed for municipal sewer applications, shall be installed in the gravity sewer system for flow control or diversion. Each plug shall bear a permanent identification tag with the installer's emergency contact information. A photo of a typical plug, showing the attached identification tag, must be submitted to the Engineer for approval. Plugs without ID tags will not be permitted on the jobsite or inside vehicles on the jobsite. The Engineer may direct the immediate suspension of work and removal from the worksite of unapproved flow control devices.

a. Under no circumstances shall any plug be left inside a pipe or manhole overnight. Pipe plugs are to be removed from the jobsite at the end of each workday.

7. Flow diversion pumping shall be performed to the satisfaction of the S&WB networks engineering representative, shall be complete with all pumps, piping and other appurtenances required to pump the required sewer flow around the work site continuously with capacity for unforeseen wet weather flows and shall not adversely impact upstream or downstream sewer flow conditions or levels. Flow diversion pumping setups shall be always manned by an experienced operator the pump is required to operate or sit in standby. Flow diversion pumping

equipment and piping shall be drained back into the sanitary sewer system prior to disassembly. Contractors are required to submit a flow diversion plan to the engineer 5 business days prior to setting up a flow diversion pumping setup.

8. Any sewerage removed from the gravity system, such as dewatering of surcharged manholes or line segments shall be disposed into the sanitary sewer system.

9. When sewer flow control is used to perform CCTV inspection, the following depths of flow shall be maintained at a maximum:

a. For 10" and smaller diameter pipe, flow depth shall be maintained at or less than 10% of the pipe diameter.

b. For 12" through 24" diameter pipe, flow depth shall be maintained at or less than 15% of the pipe diameter.

c. For pipes larger than 24" diameter pipe, flow depth shall be maintained at or less than 20% of the pipe diameter.

10. For every location where flow diversion is required, the Contractor shall submit a site-specific flow diversion plan to the Engineer at least five (5) business days prior to mobilizing flow diversion equipment. The plan shall include pipe sizes and lengths, pump make/manufacturer, pump capacities, pump curves, a scaled drawing or diagram showing limits of the work, location of suction and discharge hoses, adjoining sewer segments and manholes, flow direction and plug locations, and any additional information requested by the Engineer.

11. The Contractor must conduct sewer flow control, isolation, and diversion in accordance with the approved plan and must have a Competent Person at the site throughout the flow control operation. Flow diversion pumps shall be always manned by and experienced operator.

C. Gravity Sewer and Service Lateral Rehabilitation

1. Contractor is responsible to obtain sewer service location records from the S&WB and to verify the location sewer service connections prior to excavation.

2. Contractor shall perform gravity sewer and service lateral rehabilitation in accordance with the sewer rehabilitation sheets.

3. Any service connections located within the limits of an excavated point repairs, or mainline replacement (excavated or otherwise) shall be fully replaced, including the wye and the 6" service lateral from the main line sewer to the property line. Abandoned service connections shall not be replaced unless directed by the S&WB.

4. All service line replacements shall include replacement of the tee or wye fitting at the main line sewer at no additional cost. The contractor shall perform a standard mainline point repair to replace the service tie-in, which will be paid for separately under the respective bid item price.

5. Sewer service laterals and main line sewers shall be installed at the same grades and elevations of the pipe being replaced. However, in cases where the sewer service lateral

provides less than 2% slope, the contractor shall re-grade the service lateral from the property line to the main line sewer to provide a 2% slope where possible.

6. Contractor shall provide rigid non-shear couplings or flexible elastomer couplings with stainless steel shear bands where a mainline point repair or a service later replacement results in the connection between dissimilar pipe materials. These couplers shall conform to ASTM C425 for connections to vitrified clay pipe and otherwise ASTM C1173. The bands shall be stainless steel 316 and on conformance to ASTM A240. The shear rings shall be in conformance to ASTM A240. There will be no direct pay for these provisions; contractor shall include this cost in their respective bid items of work.

7. All tees, wyes, cleanouts, plugs and other fittings shall be of the same material as the mainline pipe and/or service repair piping used in the rehabilitation.

8. Trenching for gravity sewer and service lateral rehabilitation shall be in accordance with the S&WB standard drawings, unless additional requirements are necessary for compliance with local, state, or federal regulations pertaining to health and safety. Any existing foundation or trenching lumber shall remain in place.

9. Contractor shall completely close the sewer system prior to the end of his workday. The Contractor may not leave any open main line repairs or service laterals with the site unattended. The Contractor is responsible to complete all opened work or to provide temporary piping prior to leaving the site at no additional cost.

10. The Contractor shall not begin backfilling operations over excavated sewer rehabilitation until the work has been inspected by a representative of the S&WB.

11. The S&WB reserves the right to request a mandrel test of any mainline sewer replacements at no additional cost in accordance with DPW standard specifications section C742.03(b).

12. All mainline sewer point repairs and replacements shall be recorded via CCTV immediately after completion of the rehabilitation, backfilling, compaction but prior to final pavement restoration of the site. The site is defined as the full work zone contained to a mainline sewer line segment bound by two manholes inclusive of the full length of main line sewer and all connecting service laterals.

D. Backfill Requirements for Work Near Mississippi River Levee. All sewer rehabilitation excavations within 1,500-ft Mississippi River Levee (MRL) centerline shall be limited within the following US Army Corps of Engineers (USACE) restrictions itemized below:

1. All excavation work within 400-feet of the Mississippi River levee is performed, completed, and backfilled while the stage of the Mississippi River is below +11.0 feet on the Carrollton Gage, at New Orleans, Louisiana.

2. All excavation work more than 400-feet but less than 1,500-feet from the Mississippi River levee is performed, completed, and backfilled while the stage of the Mississippi River is below +15.0 feet on the Carrollton Gage, at New Orleans, Louisiana.

3. Information concerning current river stages may be obtained on our website at www.mvn.usace.army.mil.

4. Sewer pipe bedding must be grouted after compaction. The grout shall meet the following criteria: The slurry shall consist of one part cement, two parts bentonite, and six parts sand mixed with enough water to produce a slurry viscous enough to thoroughly fill the voids. The resulting slurry shall have no less than 12 pounds of solids per gallon.

5. All non-bedding backfill must be impermeable clay – no sand at no direct pay.

6. All work must be coordinated with the Orleans Levee District (OLD) in advance and will be subject to OLD inspection and approval prior to S&WB acceptance.

7. Any damage to the levee or floodwalls resulting from the applicant's activities is repaired at the applicant's expense.

8. The contractor shall provide a detailed schedule for all sewer rehabilitation excavations for coordination with the OLD and USACE. This schedule shall be updated and resubmitted at any time the work dates for these sites has changed.

SECTION 2.08 – GRAVITY SEWER PIPEBURSTING

A. General requirements

1. This Specification covers the work necessary to furnish and install, complete and in-place, high–density polyethylene pipe (HDPE) by the pipe bursting method specified herein. The CONTRACTOR shall provide all materials, labor, equipment, and services necessary for bypass pumping diversion of sewage flows, installation of HDPE pipe, reconnection of all service connections, and closed-circuit television (CCTV) pre- and post-inspection and air testing of the completed pipe system.

2. The CONTRACTOR shall locate receiving/insertion pits to suit the pipe bursting operation. Pits located in areas where new manholes are not being installed shall be excavated, backfilled, and compacted at no additional cost to the owner. This includes providing a new manhole at no additional cost to the owner if an existing manhole is removed or damaged.

B. Qualifications

1. The pipe bursting contractor shall be certified and satisfactorily trained by the pipe bursting system manufacturer that such company is fully trained and is a licensed installer of their pipe bursting system.

2. Polyethylene pipe joining shall be performed by personnel trained in the use of butt-fusion equipment by the specific manufacturer of said equipment and recommended methods for new pipe connections. Personnel directly involved with installing the new pipe shall receive training in the proper methods for handling and installing the polyethylene pipe. Training shall be performed by a qualified and certified representative of the equipment and pipe manufacturer.

3. The CONTRACTOR shall hold the BOARD and ENGINEER whole harmless in any legal action resulting from patent infringements.

C. Reference specifications, codes, and standards

1. The following references are part of this Specification. In case of conflict between the requirements of this Specification and those of the listed documents, the requirements of this Specification shall prevail.

2. The latest edition of the following references shall be used:

a. ASTM D1248 - Polyethylene Plastics Molding and Extrusion Materials

b. ASTM D2657 - Heat Joining of Thermoplastic Pipe and Fittings
ASTM D3035 - Polyethylene Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter

c. ASTM D3261 - Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

d. ASTM D3350 - Polyethylene Plastic Pipe and Fittings Materials
e. ASTM F714 - Standard Specification for Polyethylene Plastic Pipe Based on Outside Diameter

D. Contractor submittals

1. Shop Drawings:

a. The CONTRACTOR shall submit catalog cuts, specifications, dimensioned drawings, installation details and sketches, and other pertinent information for the HDPE pipe installation work. All materials provided shall be fully in accordance with the requirements of the reference specifications specified above.

b. The CONTRACTOR shall verify with the pipe manufacturer all connection details.

c. The CONTRACTOR shall submit detail drawings and a written description of the construction procedure and sequence including its locations to bypass insertion and receiving bypass sewage flow of the host sewer and service laterals, install new hose sewer and service laterals, and disconnection and reconnection of the sewer service lateral connections.

2. Certification: The CONTRACTOR shall furnish a certified affidavit of compliance for all HDPE pipe and fittings furnished confirming that the materials supplied fully conform to the requirements specified herein.

3. Warranty as specified in Paragraph 1.06 Warranty of this Specification

4. The CONTRACTOR shall submit a complete plan for a sewage bypass pumping system in accordance with Section 2.07.

5. The CONTRACTOR shall perform trial fusion welds in the field for both main line and lateral connections and submit samples to the ENGINEER for review prior to installation of the pipe. Full penetration welds shall provide a homogeneous material across the cross section of the weld. The fusion machine employed for the trial welds shall be the same machine to be utilized for the complete project installation work.

6. Fusion equipment shall be operated only by technicians who have been certified by the pipe manufacturer or supplier and who have a minimum of 2 years' experience of fusion welding 8 inches or larger diameter pipelines. The technician's experience and verifiable references shall be documented in the HDPE pipe submittal.

E. Quality assurance

1. Quality assurance procedures shall be performed by the pipe manufacturer fully in accordance with the requirements of this Specification. The certification shall include certified laboratory data confirming that said tests have been performed on a sample of the pipe to be provided under this contract, or pipe from that production run, and that satisfactory results were obtained prior to any installation of said pipe.

2. Fusion joining and other procedures necessary for correct assembly of the polyethylene pipe shall be done only by personnel trained in those skills to the satisfaction of the ENGINEER and the pipe supplier.

3. Only those tools designed for the aforementioned procedures and approved by the pipe manufacturer or supplier and the ENGINEER, shall be used for assembly of pipe fittings to ensure proper installation. The heater plate shall be equipped with suitable means to measure the temperature of plate surfaces and to assure uniform heating such as thermometers or pyrometers.

4. Pipe (bursting) insertion equipment shall be operated only by technicians who have a minimum of 2 years' experience in the installation of the polyethylene pipe, using pipe bursting lining technology as specified herein. The technician's experience and references shall be documented in the HDPE pipe submittal.

5. The CONTRACTOR shall televise the installed pipe after existing services have been reconnected and manhole reconnection and sealing procedure work has been completed. The original post-television inspection video tape shall be provided to the ENGINEER for final approval.

F. The CONTRACTOR shall provide to the OWNER a warranty to be in force and effect for a period of 1 year from the date of final acceptance by the OWNER. The warranty shall require the CONTRACTOR to repair or replace the pipe should leakage, separation, collapse, or other failure result from faulty materials or installation as determined by the ENGINEER.

G. Materials

1. The CONTRACTOR shall provide polyethylene pipe as specified. The pipe shall be made to diameter and tolerances in accordance with ASTM D3035. The minimum ratio of orthogonal diameters prior to installation shall be 0.95. All pipes shall be made from virgin grade material. The pipe shall be of the diameter and class shown or specified and shall be furnished complete with all fabricated fittings, and other appurtenances as necessary for a complete and functional system.

2. Markings: Pipe materials shall be legibly marked by the pipe manufacturer. The following shall be printed on the pipe:

a. Name and trademark of manufacturer.

b. Nominal pipe size.

c. Dimension ratio.

d. The letters PE followed by the polyethylene grade per ASTM D1248, followed by the Hydrostatic Design Basis in hundreds of psi.

e. Manufacturing Standard Reference.

f. A production code from which the date and place of manufacture can be determined.

H. Pipe Material

1. Pipe: Pipe shall be high molecular weight, high-density polyethylene pipe. The material shall be listed by the Plastic Pipe Institute (PPI) with a designation of PE 3408 and have a minimum cell classification of 345434C, D, or E (inner wall shall be light in color) as described in ASTM D3350. The pipe material shall meet the requirements for Type III, Class B or C, Category 5, Grade P34 material as described in ASTM D1248. The pipe shall contain no recycled compound except that generated in the manufacturer's own plant from resin of the same specification from the same raw material pipe. Pipe (excluding black colored pipe) stored outside shall not be recycled. Pipe and fittings shall be made in conformance with ASTM F714 and ASTM D3261 as modified for the specified material. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, or other injurious defects. It shall be uniform in density and other physical properties. Any pipe not meeting these criteria shall be rejected.

2. Pipe Color, Pipe shall conform to the following color scheme:

a. Inside: The inner wall shall be soft white only (Opticore or equal),

b. Outside: The outer wall shall be black only.

3. Standard Dimension Ratio (SDR): Pipe shall conform to the following:

a. Nominal Size: 8 to 12 inches.

b. Outside Diameter: 8 to 12 inches.

c. SDR: Minimum 17.

I. Polyethylene pipe shall be joined by butt fusion welding, as specified in Paragraph O, Pipe Joing, herein.

J. Connection of new service lateral to the sewer main shall be accomplished by use of electrofusion saddle type fittings. The service connection shall be specifically designed for connection to the HDPE sewer main being installed, and shall be Central Electrofusion System, as manufactured by Central Plastics Company, Shawnee, Oklahoma.

K. The CONTRACTOR shall protect existing and new facilities including utilities, road pavement, and private property from damage by forces generated by the pipe bursting equipment. Any damage to any existing facilities as a result of the pipe bursting operation shall be the responsibility of the CONTRACTOR. If it is found that the damage is a result of the pipe bursting operation, the cost to repair or replace the damage facility shall be the responsibility of the CONTRACTOR.

L. Preparation

1. All work shall be performed as specified herein and supervised by personnel experienced in the installation of the pipe.

2. All sewer service connections shall be identified and located by CCTV prior to the start of any pipe bursting operation and pipe insertion. Upon commencement, pipe insertion shall be continuous and without interruption from one manhole to another, except as approved by the ENGINEER. Upon completion of the insertion and installation of the new pipe, the CONTRACTOR shall expedite the reconnection of lateral service connections so as to minimize any inconvenience to the customers.

3. The project foreman assigned to the project by the CONTRACTOR shall be onsite at all times from the time of inception to the time of completion.

M. Handling and storage

1. The CONTRACTOR shall exercise special care during the unloading, handling, and storage of all polyethylene pipe to ensure that the pipe is not cut, gouged, scored, or otherwise damaged. Any pipe segment, which has cuts in the pipe wall exceeding 10 percent of the wall thickness, shall be cut out and removed from the site at the CONTRACTOR's cost. The pipe shall be stored so that it is not deformed axially or circumferentially, which may hinder pipe installation. After the unloading of any pipe material ordered to the project site and before installation of the pipe, the CONTRACTOR shall inspect all pipe to verify its condition prior to installation with the ENGINEER and/or the project inspector. A pipe condition inspection report provided by the CONTRACTOR shall be filed with and approved by the ENGINEER prior to installation.

2. All polyethylene pipe, without an ultraviolet inhibitor, shall not be stored unprotected against the outside elements.

N. Repairs to the existing line

1. If the pre-installation video inspection reveals a sag in the existing sewer greater than one-half the diameter of the existing pipe, the CONTRACTOR shall take necessary measures to eliminate these sags by the system of pipe replacement, digging a sag elimination pit and bringing the bottom of the pipe trench to a uniform grade in line with the existing pipe invert or by other measures that shall be approved by the ENGINEER. There is no additional pay for this work.

2. The CONTRACTOR shall repair the pipe where point repairs are identified on the Drawings. If not shown, it will constitute extra work when approved by the ENGINEER. Any required point repairs shall be performed as per these specifications and will be paid for separately under the respective bid items for the work.

O. Pipe joining

1. Sections of polyethylene pipe shall be joined into continuous lengths on the jobsite above ground. The joining method shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. Fusion equipment used in the joining procedure shall be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, fusion temperature, alignment, and fusion pressure. Electrofusion may be used for field closures as necessary when appropriate fusion equipment can be utilized in a trench type environment. For end sections or "tail" pipe, the use of electrofusion couplings as manufactured by Central Plastics Company can be utilized.

2. A fire-retardant bag or suitable enclosure shall be used with the heater plate to facilitate control of heating process and to protect the heater plate surfaces from dirt and other debris when not in use. The heater plate surfaces shall be cleaned regularly as needed to prevent accumulation of fusion welding residues or other substances that may result in faulty pipe joining.

3. Butt fusion shall conform to ASTM D2657 and pipe manufacturer's criteria for the type of joining. Joint strength shall be equal to that of the adjacent pipe.

4. The inside and outside of pipe ends shall be cleaned with a cotton or non-synthetic cloth to remove dirt, water, grease, and other foreign materials. The pipe ends shall be cut square and carefully aligned just prior to heating.

5. After achieving the proper melt pattern, the pipe ends shall be brought together in a firm, rapid motion applying sufficient pressure to form a pipe bead (1/8 inch to 3/16 inch in height) around and inside the entire circumference of the pipe.

P. Pipe installation

1. The CONTRACTOR shall excavate, expose, and isolate all sewer service connections prior to replacing the existing sewer. The existing service connections may be encased in mortar, concrete, or reinforced concrete. There will be no additional compensation for demolition of this concrete.

2. The CONTRACTOR shall install the pipe by utilizing a constant tension system with a hydraulic or pneumatic bursting device that breaks away the existing pipe. A static "cone cracking" method may be used, but only by advancing the mole bursting head with a "solid steel tow rod" pulled by a constant tension hydraulic pulling wrenching system. The advancement of the bursting mole head with a "chain" shall be prohibited. The void created by the bursting device shall be sufficient in size to accommodate the HDPE pipe, which shall be installed immediately after the void has been formed. The CONTRACTOR shall be responsible to provide adequately designed pipe bursting equipment to accomplish the replacement of the existing pipe under all adverse conditions.

3. The CONTRACTOR may utilize existing manholes where practical. Location of pits outside of existing manholes should be considered as replacement of existing manholes that are not designated to be replaced shall be at the sole cost of the CONTRACTOR. Manhole inverts and benches and channels shall be removed to permit access for installation equipment as appropriate. When installing through an existing manhole, the input and output pipe openings shall be enlarged as appropriate to accommodate to the maximum OD size of the bursting device. At no time shall the bursting device and/or the installation process put any undue stress on the existing surface. Benches and channels shall be reconstructed to proper elevations after the new pipe is in–place.

4. The CONTRACTOR shall secure the pipe to concrete structures or manholes after the pipe has been installed along the length of sewer replaced. The CONTRACTOR shall use a water stop or flange adapter, as supplied by the pipe manufacturer, that is fused and seated perpendicular to the pipe axis, around the pipe exterior, and grouted into the structure wall to create a watertight seal. The new pipe shall be installed 12 inches inside of the manhole opening. The structure or manhole connections shall be made a minimum of 12 hours after pipe insertion.

Q. Low pressure air testing

1. After a manhole-to-manhole section of sanitary sewer has been pipe bursted and prior to any service lines being connected to the replacement pipe, the pipe shall be plugged at each manhole with pneumatic plugs. The design of the plugs shall be such that they will hold against the test pressure without requiring external blocking or bracing. One of the plugs shall have three air hose connections; one for inflating of the plug; one for reading the air pressure in the sealed line; and one for introducing air into the sealed line.

2. Low pressure air shall then be introduced into the sealed line until the interlay air pressure reaches 4.0 psig greater than the average back pressure resulting from any groundwater that may be over the pipe. At least 2 minutes shall elapse to allow the pressure to stabilize.

3. The time required for the internal pressure to decrease from 3.5 to 2.5 psig greater than the average backpressure resulting from any groundwater that may be over the pipe, shall not be less than the time shown for a given diameter in the following table:

Carrier Pipe Diameter (inches)	Minimum Elapsed time (minutes)
8	4
10	5
12	6
15	7

R. Reconnection of sewer service connections

1. The CONTRACTOR shall successfully test the installed pipe prior to reconnecting sewer services.

2. All sewer service laterals shall be replaced from the new main line to the respective property line and will be paid for separately under the respective unit bid items.

3. Service connections shall be connected to the new pipe and installed in a hole that shall be drilled the full inside diameter of the outlet or as recommended by the connection manufacturer. Service connections shall only be connected to the mainline with the use of fused service fittings as per the requirements in this section.

S. Final cleaning and television inspection

1. Prior to final acceptance and final inspection of the pipe by the ENGINEER, the CONTRACTOR shall flush and clean all parts of the system by removing all accumulated construction debris, rocks, gravel, sand, silt, and other foreign material from the pipe.

2. After completion of the pipe installation, service reconnections, finish work at the manholes and final cleaning, the sewer shall be televised with a color CCTV tilt-head camera recorded in VHS format. The original tape shall be provided to the ENGINEER.

SECTION 2.09- PRE- AND POST-REHABILITATION CCTV INSPECTION AND CLEANING

A. Scope of work

1. Cleaning: The Contractor shall furnish all labor, materials, equipment, and incidentals required to clean sanitary sewer line segments and manholes to remove all debris, solids, sand, grease, grit, etc. as specified herein.

2. Sewer Flow Control: The Contractor shall provide all the labor, materials, equipment, and incidentals necessary to divert wastewater flow in accordance with Subsection 2.07.B of this specification.

3. Contractors shall perform line cleaning and CCTV inspection of sewer lines for the following conditions. There is no direct pay for CCTV inspections unless noted otherwise.

a. Pre-rehabilitation of Find and Fix lines, at direct pay.

b. Pre-rehabilitation of sewer line segments requiring full length CIPP lining.

c. Pre-rehabilitation of sewer line segments requiring full length replacement via pipe bursting or other trenchless methods.

d. Post-rehabilitation of any sewer line segments inclusive of all rehabilitation methods (replacement, point repair, lining, etc.).

e. Upon written request by the engineer to perform additional CCTV inspections, at direct pay.

f. In the case of a CCTV performed as a Pre-rehabilitation inspection for a full length CIPP and then the CIPP is canceled as a result of the CCTV findings, the Contractor will be reimbursed for the line cleaning and CCTV at direct pay.

g. For pre-rehabilitation of sewer service laterals requiring CIPP lining see Paragraph G.

h. For post-rehabilitation of sewer service laterals requiring CIPP lining see Paragraph G.

B. Submittals

1. The Contractor shall maintain a master copy of all DVD's and CCTV inspection reports submitted, until final acceptance of contract. All DVDs, and CCTV inspection reports submitted by the Contractor will become the property of the Board.

2. The Contractor shall submit two (2) DVD's, one (1) hard copy, and one (1) electronic copy of corresponding CCTV inspection reports on a weekly basis for all work accomplished the previous week.

3. For pre-rehabilitation and post-rehabilitation CCTV inspection, the Contractor shall submit to the Engineer for review two (2) DVD's, one (1) hard copy, and one (1) electronic copy of the CCTV inspection reports on-line segments identified herein as requiring pre-rehabilitation CCTV inspection.

4. Where defect coding is required, the Contractor shall provide the defect coding in the Microsoft Access database provided by the Board. Defect coding shall be performed in accordance with the Sewerage & Water Board of New Orleans' Sewer Condition Classification Manual.

5. The Contractor shall submit documentation that the CCTV inspection equipment to be utilized meets the requirements in these specifications.

6. Forms and reports the Contractor proposes using to document cleaning work.

C. Camera distortions, inadequate lighting, dirty lens, blurred/hazy or unsteady video will be grounds to reject pre- and post-rehabilitation CCTV inspections. If quality of the pre- and post-rehabilitation CCTV inspections and inspection reports is not adequate as determined by the Engineer,

the Contractor shall provide a new pre- or post-rehabilitation CCTV inspection or inspection report. No additional payment shall be made for pre- and post-rehabilitation re-inspections.

D. When water from the public water supply is needed to meet the cleaning requirements of the equipment and the sewer, the Contractor shall obtain transient water meters from the Board with payment of a deposit. The Contractor shall be billed monthly by the Board for water usage. As a general rule, prior written approval from the Board is not needed to use fire hydrants located within this project area under this contract. However, fire hydrant keys are required and are available from the Sewerage and Water Board's Networks Department with payment of a deposit. The Contractor will be responsible for payment of deposit and payment of a monetary fine should the hydrant key(s) not be returned.

E. All high velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a variety of high velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 degrees to 45 degrees in all size lines to be cleaned. In addition to conventional nozzles, use a nozzle or series of nozzles which direct the cleaning force to the bottom of the pipe for sewers 18 inches and larger. The equipment shall include a water tank, auxiliary engines, pumps, and hydraulically driven hose reel all contained within one single unit. All controls shall be located so the equipment can be operated above ground. A gauge shall be installed to indicate working pressure on the discharge of high-pressure water pumps.

F. CCTV inspection

1. The Contractor shall supply camera skids and floating skids or rafts as required to complete pre- and post- rehabilitation CCTV inspection as required in the Contract. The Contractor shall inspect sewer lines with pan and tilt conventional television equipment. The operation of the television equipment shall be controlled by a skilled technician or supervisor who shall be located at the control panel in the mobile television studio. The CCTV equipment including reels and the television studio are to be contained within a single vehicle.

2. The camera system shall be able to navigate around minor objects, roots, and debris. The camera cable shall be retracted to remove slack and to ensure an accurate footage reading.

3. The distance between manholes shall be verified by measuring tape. If the counter distance and the taping distance differ by more than 2 feet per 100 feet, the run shall be re-televised by CCTV Contractor.

G. Pre-rehabilitation CCTV

The Contractor shall perform pre-rehabilitation CCTV inspection as required herein.

1. The Contractor shall perform cleaning activities prior to pre-rehabilitation CCTV inspection.

2. The purpose of the pre-rehabilitation CCTV inspection is to provide defect coding data to the Engineer to determine the extent of rehabilitation for line segments identified as find and fix line segments. In addition, pre-rehabilitation CCTV inspection is intended to verify the location of service connections and to verify that additional repairs are not required for line segments and service laterals identified to receive full length CIPP liners.

3. Defect coding for line segments identified as find and fix line segments is required. The Contractor shall submit defect coding of find and fix line segments in the Microsoft Access database provided by the Board

4. The Engineer will make the final determination of rehabilitation for line segments identified as find and fix line segments.

5. The Contractor shall determine if a change or addition in the rehabilitation method(s) is necessary for line segments identified to receive a full length CIPP liner. If the Contractor determines that a change or addition in the rehabilitation method(s) is necessary, the Contractor shall provide the pre-rehabilitation CCTV inspection, DVD, and inspection report to the Engineer for review and approval.

H. Post-rehabilitation CCTV

1. The Contractor shall perform post-rehabilitation CCTV inspection as required herein.

2. Sewer line segments repaired by full-length replacement or by full-length lining will require cleaning prior to CCTV inspection and will require defect coding in accordance with the Board's Sewer Condition Classification Manual, latest edition.

3. Sewer line segments repaired by excavated point repair will require cleaning prior to CCTV inspection. The Contractor shall inspect the main from manhole to manhole, but defect coding of the line segments is not required.

4. Service laterals repaired by CIPP lining shall receive post-rehabilitation CCTV inspection. Defect coding of the service lateral is not required.

I. Cleaning

1. All interior surfaces of sewer lines shall be cleaned adequately to provide for a camera used in internal inspection to discern structural defects, misalignment, and infiltration and inflow sources. Cleaning shall be performed prior to internal inspection to preclude the buildup of debris from infiltration and inflow sources and discharges from upstream sewer line segments sections.

2. Cleaning: Cleaning shall be defined as the use of high velocity jet nozzle cleaning equipment to clean the line to the satisfaction of the Engineer.

3. Specialty cleaning: Specialty cleaning is defined as removal of obstructions such as roots and intruding connections. Obstruction removals may require the use of special equipment such as rodding or bucket machines, and/or expanding cutters. The Contractor will obtain authorization from the Engineer prior to conducting any specialty cleaning. Authorization shall be required for each individual sewer reach. No payment shall be made for specialty cleaning without prior approval by the Engineer.

4. No fire hydrant shall be obstructed so as to prevent its use in case of a fire in the area served by the hydrant.

5. The Contractor shall provide the Board with monthly readings of water consumption for billing purposes. All cleaning equipment must be equipped with a backflow preventer to prevent any contamination to the public water supply. When utilizing water from the public water supply, the Contractor shall remove water meters, fitting, and piping from fire hydrants at the end of each working day. The Contractor shall not waste water from public water supplies due to poor connections to hydrants.

6. If cleaning of an entire line segment cannot be successfully performed from one manhole, the equipment shall be re-setup at the manhole on the opposite end of the pipe segment being cleaned and cleaning shall be re-attempted.

7. The Contractor shall use a nozzle that directs the cleaning force to the full circumference of the pipe.

8. When using hydraulically propelled devices, the Contractor shall take necessary precautions to ensure that the water pressure created does not cause damage or flooding to public or private property.

9. The Contractor is responsible for the disposal of waste from cleaning operations at a permitted disposal site. The Board's East Bank Sewage Treatment Plant is available for disposal of waste from cleaning operation under this Contract. The Contractor shall abide by the operational policies and normal administrative working hours for the East Bank Sewage Treatment Plant when used for disposal.

10. Acceptance of sewer cleaning work is contingent upon the successful completion of the television inspection. If television inspection shows debris, solids, sand, grease, or grit remaining in the line, the cleaning is considered unsatisfactory. The Contractor, at no additional cost to the Board, shall repeat the cleaning, inspection, and televising of the sewer line until cleaning is acceptable by the Engineer.

J. Television equipment

1. Closed Circuit TV Equipment: The Contractor shall select and use closed-circuit television equipment that will produce color video recordings. The Contractor shall supply camera skids and floating skids or rafts as required to complete the CCTV portion of the Contract.

2. Pipe Inspection Camera

a. The television camera used for the sewer line inspection shall be one specifically designed and constructed for sewer pipeline inspection. The camera shall be waterproof and shall be operative in any conditions that may be encountered in the inspection environment. The camera shall be operative in 100% humidity conditions. The Contractor shall produce video recordings using a pan-and-tilt, radial viewing pipe inspection camera that pans ±275 degrees and rotates 360 degrees.

b. Television inspection of an entire line segment cannot be successfully completed from one manhole; a reverse set-up must be performed to obtain a complete television inspection. If successful televising of the entire line segment cannot then be accomplished, the inspection effort shall be abandoned. The Contractor will be paid for the inspection of the actual length of line segment televised. There will be no additional payment for reverse set-ups.

c. The camera shall be moved through the line segment in either direction at a rate not to exceed 30 feet per minute. Any means of propelling the camera through the sewer line which would produce non-uniform or jerky movement of the camera, will not be acceptable, Stop the camera at all defects so that a clear picture of the defect remains on the video screen for the operator to verbally describe the defect on the tape. Record a full 360^{O} pan view at all service lateral lines.

3. Wherever prevailing conditions allow, the CCTV camera head shall be positioned to reduce the risk of picture distortion. In circular sewers, position the television camera lens centrally (in prime position) within the sewer. In non-circular sewers, camera location shall be at mid-height of the sewer, unless otherwise agreed, and centered horizontally. In all instances, orient the camera along the longitudinal axis of the sewer when in prime position. A positioning tolerance of plus or minus 10% of the vertical sewer dimension shall be allowed when the camera is in prime position.

4. The adjustment of focus and iris shall provide a minimum focal range from 2 inches in front of the camera's lens to infinity. The distance along the sewer in focus from the initial point of observation shall be a minimum of twice the vertical height of the sewer. The illumination must be such as to allow an even distribution of the light around the sewer perimeter without the loss of contrast, flare out of picture, or shadowing.

5. The Contractor shall use a camera with camera height adjustment so that the camera lens is always centered at one-half the inside diameter or higher in the pipe being televised. The Contractor shall provide remote and/or automatic focus and aperture control.

6. The television inspection equipment shall be of such high quality as to enable the following to be achieved:

a. Color: With the monitor adjusted for correct saturation, the six colors plus black and white shall be clearly resolved with the primary and complementary colors in order of decreasing luminance.

b. Resolution: The live picture must be displayed on a monitor capable of providing a clear, stable image free of electrical interference with a minimum horizontal resolution not less than 450 lines.

7. The Closed-Circuit Television monitor display shall incorporate an automatically updated record in feet and tenths of a foot of the distance along the line from the cable calibration point to the center point of the camera. The Contractor shall use a suitable metering device that enables the cable length to be accurately measured; this shall be accurate to ±2%. The Contractor shall demonstrate that the tolerance is being complied with, by tape measurement between manholes on the surface. This taped measurement must be included on each television inspection log both written and electronic. If the Contractor fails to meet the

required standard of accuracy, the Engineer shall instruct the Contractor to re-survey those lengths of sewer at no additional cost to the Board.

8. Video recordings shall be high quality. The video recording shall reproduce clearly discernable sound and video information on the television monitor. The recording shall be free of interference and shall produce a clear, stable image.

9. The audio portion of the recording shall be clear and complete, and easily discernible. The audio portion shall record the location or identification of the line segment, the manhole-to-manhole direction of travel, and the distance traveled on the specific inspection. The audio portion shall record and identify all visible defects and include the information required by the Sewerage and Water Board of New Orleans' Sewer Condition Classification Manual, latest edition.

10. The video recording equipment shall be continuously connected to the television inspection and monitoring equipment. The video recording and monitoring equipment shall have the built-in capability to allow the Engineer and the Contractor to instantly evaluate both the audio and video quality of the video recording at all times during the television survey. Video recordings shall be enclosed in plastic containers which shall clearly indicate the date the tape was recorded, the designated section(s) of sewer lines contained on the tape, and the referenced sewer inspection report covering the sections of the sewer lines so included.

11. Lateral Inspection Camera

a. The television camera used for the lateral inspection shall be one specifically designed and constructed for lateral inspection. The Contractor shall provide a portable "mini-cam" CCTV inspection system. This system shall provide a color video satisfactory to the Engineer and contain footage readings displayed on the monitor and videotape at all times. The accuracy of the distance meter shall be checked by the use of tape measurement and the accuracy shall be within 2%.

b. When the cleanout for a service line is inaccessible, the Contractor shall perform CCTV inspection of the service lateral from the mainline utilizing a lateral camera launcher system. A sewer main line television camera shall be used to position the lateral camera launcher.

12. DVD

a. The Contractor shall provide video recordings with audio comments in the DVD format, recorded at Standard Play (SP).

b. Complete sewer line segments shall be included on the same video recordings (i.e., CCTV inspections for sewer line segments shall not be divided among videotapes).

c. The video format shall be an MPEG-1 compressed video, and resolution video format shall be QSIF (Quarter-size Standard Image Format) of 176 x 112 pixels for NTSC video format.

d. Two labels are required on each DVD. One label shall be placed on the DVD Case and the other on the face of the DVD. The Contractor shall permanently label each as follows:

DVD Case

PRECONSTRUCTION AUDIO-VIDEO SURVEY
Contract No. Tape No.

Face of DVD

Project Title: Contractor:

Date Televised (MM/YY): Date Submitted

Manhole No. From	Manhole No. To	Pipe Diameter	Pipe Length	Street	Starting Counter No.

K. Television Inspection Report

1. The Contractor shall complete a Television Inspection Report covering the television inspection work and the information acquired, as described in the Sewerage and Water Board of New Orleans' Sewer Condition Classification Manual, latest edition.

2. The same television inspection code sheet shall be used throughout the Contract. The code sheet shall include abbreviations for specific defects as detailed in the Sewer Condition Classification Manual. Submit all electronic data files for the previous week's work to the Engineer weekly CD-ROM. Include hard copy printouts of the correlating inspection reports with each submittal. Submit electronic files on CD-ROM and DVDs for corresponding lines concurrently. Submit all electronic data files in a Microsoft Access database format provided by the Board. The manual and data entry database are available for review at the office of the SSERP Program Manager.

3. At the start of each line segment video recording, record and report the measured length of the sewer line being inspected. Begin with zero at the inside face of the start manhole, and end at the inside face of the end manhole.

4. At the start of each line segment video recording, electronically generate and clearly display, on the viewing monitor and video recording, a record of data in alphanumeric form containing the following information:

a. Size and Length of Line;

b. Automatic update of the camera's position, in feet and tenths, in the sewer line from adjusted zero;

c. Type of pipe material;

d. Upstream manhole name and downstream manhole name;

e. Date of inspection;

f. Road name or line segment location description;

g. Direction of inspection (upstream or downstream);

h. Starting time of the inspection.

5. Once the survey of the sewer line is under way, continuously display specific data on the viewing monitor and video recording. The size and position of the data display shall not interfere with the main subject of the picture yet shall be easily readable when the recording is replayed. At a minimum, the following data should be displayed:

a. Automatic update of the camera's position, in feet and tenths, in the sewer line from adjusted zero.

b. Upstream manhole name and downstream manhole name.

6. Each sewer length, i.e., the length of sewer between two consecutive manholes, shall be entered on a separate coding sheet. Thus, where a Contractor elects to "pull through" a manhole during a CCTV Survey, he shall start a new coding sheet at the manhole "pulled through" and shall re-set the distance to zero on the coding sheet.

7. The Contractor shall make submittals as required herein, on a weekly basis for all work accomplished the previous week.

L. Camera operation

1. All efforts should be made to prevent damage to the sewer conduit during the television inspection. In the case where damage is caused by the Contractor, for any reason, such as would be caused by incorrect deployment of bonds or retrieval of lodged equipment, the cost of repair or remedy shall be absorbed by the Contractor and shall be considered an incidental part of the Work. No separate measurement or payment will be made.

2. The CCTV operator shall accomplish simultaneous video and audio recording of defects, services, on site.

3. The camera shall be moved through the line in either direction at a uniform rate, stopping when necessary to insure proper documentation of the sewer's condition. Manual winches, power winches, TV cable, powered rewinds, and crawler devices or other devices that do not obstruct the camera view and do not interfere with proper documentation of the sewer conditions shall be used to move the camera through the entire sewer line section. The

Contractor shall reposition his equipment as necessary so that the inspection can be performed from manhole on the opposite end of the pipe segment being viewed.

4. The lateral inspection camera video shall contain the forward and backward movement of the camera up to the mainline and back to the cleanout. If an attempt to video the service lateral line cannot be completed to the sewer main line, the blockage will be reported to the Engineer in writing and the service lateral line CCTV inspection will be abandoned.

5. When utilizing a lateral camera launcher system from the mainline, a maximum of 100 linear feet of the lateral or to the property cleanout, whichever is closer to the sewer main line, shall be inspected. Actual footage inspected may vary depending on lateral condition, bends, roots, launcher limitations, etc.

SECTION 2.10 - SANITARY SEWER MANHOLE REHABILITATION

A. Scope of work

1. The Contractor shall furnish all labor, materials, equipment, and incidentals required for the purpose of restoring structural integrity, eliminating water infiltration, repair of voids, and providing corrosion protection of the sanitary sewer manholes as shown on the Drawings and specified herein and assumed to be approximately 48” in diameter.

2. Sanitary sewer manhole rehabilitation shall include the following:

a. Leak-proofing of deteriorated, leaking, or structurally unsound manholes by lining with lightweight structurally reinforced concrete systems.

b. Repair and sealing of the manhole base, benches, channel, walls, corbel/cone, and chimney of brick, block, or precast manholes, including the removal of any unsound material.

c. Injection of chemical grout.

d. Cleaning and preparatory patching of manholes receiving liners.

e. Removal of flush valves and water service lines.

3. Sanitary sewer manhole rehabilitation for frames and covers replacement or adjustments shall be performed in accordance with section 3.16 of these special provisions (Items CF-371 through CF-378).

B. Submittals

1. The Contractor must submit for approval the manufacturers’ specifications for all products that will be used for manhole rehabilitation. Only materials approved by the Engineer shall be on the job site.

2. The Contractor must, upon request by the Engineer, submit all other product information deemed necessary by the Board.

3. The Contractor must submit a written Vacuum Test Report for each test location of the concrete lining system indicating pressures, duration, actual leakage amounts, and other data to the Engineer for approval as a condition of acceptance. Testing is to be performed only when the Board inspector is present.

4. For the installation of the lightweight spray applied structural concrete lining system the Contractor shall submit a Warranty Certificate showing that the Contractor, the Applicator, and the Manufacturer will warrant the installed cementitious lining system against infiltration and corrosion for a minimum of 1 year from Final Acceptance of the Contract by the Board.

5. The Contractor shall provide certification from each product manufacturer utilized that the applicator is certified to apply the product and the manufacturer has witnessed and approved the application in the first manhole to be rehabilitated with the product.

C. Manhole rehabilitation materials

1. General

a. All materials shall be designed, manufactured, and intended for sewer manhole rehabilitation and the specific application in which they are used.

b. Each material shall be designed for application over damp surfaces (not wet surfaces or surfaces with actively running water) without degradation of the final product or the bond between the product and the manhole surface.

2. Infiltration Control: Stopping active leaks in concrete and masonry manholes shall be achieved by using the following:

a. Hydraulic Cement:

i. The hydraulic cement shall be a fast-setting, volume-stable, waterproofing, cementitious plugging material. The material shall consist of hydraulic cement, graded silica aggregates, and special plasticizing/accelerating agents. It shall not contain chlorides, gypsum, plasters, iron particles, aluminum powder or gas-forming agents, nor shall it promote the corrosion of steel.

ii. The material shall meet the following physical property requirements:

Set time (max)	ASTM C403	60 to 90 sec
Compressive strength (1hr)	ASTM C109	1000 psi
Bond strength (1hr)	ASTM C321	50 psi.

iii. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

b. Chemical Grout:

i. The chemical grout shall be a hydrophilic liquid that is water reactive

and will change from a free-flowing liquid to a water impermeable elastomeric gel upon injection to stop excessive infiltration to a manhole. The reaction (curing) shall produce a chemically stable and non-biodegradable, tough, flexible gel. The chemical grout shall be a urethane liquid in uncured form with a moderate viscosity suitable for pumping and variable curing times. ii. The polyurethane chemical grout shall be Scotch-Seal 5610 by 3M, Avanti AV-254, or approved equal.
The material shall meet or exceed the following requirements:

- The liquid shall have a solids content of 80% and a specific gravity of 1.04 to .11.
- The liquid shall have a viscosity of 300 to 1000 centipoise at 70-degree Fahrenheit.
- Gel times shall be in accordance with the manufacturer's recommendations.
- The grout shall have the ability to increase viscosity, density, gel strength and resistance to shrinkage by the use of additives in the reaction water.

iii. A reinforcing agent shall be added to the reaction water at the manufacturer's suggested rate. This agent is intended to increase the polyurethane gel's resistance to wet/dry cycles, freeze/thaw cycles, and solid movement stresses. The reinforcing agent shall be appropriate for the specific grout product that is to be used.

iv. Additional chemical grout additives, such as catalysts or accelerators, needed to make the grout function properly shall be as manufactured by 3M, Avanti, or approved equal and shall be used in a manner approved by the manufacturer.

3. Patching

a. Material - Patching, repointing, filling, and repairing nonleaking holes, cracks, and spalls in concrete and masonry manholes, including trough repair shall be achieved by using the following material:

b. A premixed non-shrink, cement-based, patching material. The material shall consist of hydraulic cement, graded silica aggregates, special plasticizing/accelerating agents, which has been formulated for vertical or overhead use. It shall not contain chlorides, gypsums, plasters, iron particles, aluminum powder, or gas-forming agents, nor shall it promote the corrosion of steel.

i. The material shall meet the following physical property requirements:

Set time (max)	ASTM C403	30 min
Compressive strength (1 hr.)	ASTM C109	800 psi
Compressive strength (28 day)	ASTM C109	3000 psi.

ii. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

D. Spray applied and centrifugally cast lining materials

1. The material applied to the surface of the manhole shall be a lightweight structurally reinforced cementitious blend of siliceous aggregates, non-metallic fibers, and other additives. The material shall produce a monolithic liner that is impervious to the flow of water, resistant to sulfide attack, and restores structural integrity to the existing manhole walls. The material shall be Permacast MS-10,000, Quadex QM-1s, SCM Reliner MSP, Strong Seal MS-2A, or approved equal.

2. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

3. The cementitious lining system shall result in a monolithic structure conforming to the interior shape and contour of the existing manhole and covering all interior surfaces. The lining system shall be completely watertight and free of any joints or openings other than pipe inlets, pipe outlets, and the rim opening. The junction of the lining material with the pipe material at the inlets and outlets shall be watertight.

4. The cementitious lining system shall allow rehabilitation of a concentric, eccentric, or flat top manhole without removing the manhole frame casting and top section or corbel.

5. For manholes greater than 12 feet in depth, the lining shall withstand the pressures associated with a groundwater depth equal to the manhole depth. Linings for all other manholes shall withstand the pressures associated with a minimum depth of 12 feet. The manufacturer's recommended lining thickness dimensions to withstand groundwater pressure shall be submitted to the engineer for review.

6. The material shall have the following minimum requirements:

Compressive Strength (28 days), psi	ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars	3,000
Tensile Strength, psi	ASTM C496 - Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens	300
Flexural Strength, psi	ASTM C293 - Standard Test Method for Flexural Strength of Concrete	600
Bond Strength, psi	ASTM C321 - Standard Test Method for Bond Strength of Chemical-Resistant Mortars	130
Shrinkage, %	ASTM C596 - Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement	0

Density, lb/cf	(when applied)	105

7. The material shall be designed for the selected method of application.

E. Wall cleaning material

1. Pressure Washing Equipment shall have the following minimum requirements:

a. Operating Pressure – 3,000 psi with the capability to produce a continuous flow of water at a minimum temperature of 210-degree Fahrenheit at a minimum force of 3,000 psi.

2. Cleaners: Detergent or muriatic acid capable of removing dirt, grease, oil, and other matter which would prevent bonding of the sealing material to the manhole wall. The Contractor shall refer to the lining material manufacturer's recommendations for preparatory surface cleaning.

F. New manhole frames and covers shall be East Jordan Iron Works (Vulcan) V-1501, or approved equal, as detailed on S&WB STD Drawings 3143-E-1. Work shall be performed and will be paid for as per section 3.16.

G. Manhole casting embedment sealant

1. The sealant shall be a premium, extruded, bituminous, tacky rubber sealant in rope form for use on manholes as an embedment material for the frame to adjusting brick/mortar corbel. Work shall be performed and will be paid for as per section 3.16.

2. Sealant shall conform to the latest version of ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants and Federal Specification SS-S-210A – Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints, Type I.

3. The sealant shall have the following properties:

Physical Properties	REQUIRED
Initial Elongation, %, min.	300
Elongation, %, min., at two weeks in total water immersion	300
Storage Life	Indefinite
Service Temperature Range, ^{0}F	-20 to 200

H. The Contractor shall perform all work needed to structurally repair manholes, improve sewer flow, prevent entrance of inflow or groundwater, and prevent entrance of soil or debris.

I. Delivery, storage, and handling

1. The materials shall be delivered to the job site in original unopened packaging and clearly labeled with the manufacturer's identification and printed instructions. The Contractor shall handle and store all material in accordance with manufacturer instructions and shall dispose of all wastes in accordance with applicable regulations.

2. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods.

J. Project conditions

1. Manholes Containing Flow Monitoring Equipment:

a. Drawings may not show locations of flow monitoring equipment. If a manhole contains any mechanical hardware or electrical flow monitoring equipment, the Contractor shall immediately notify the Engineer.

b. Work in such manholes shall be rescheduled at no additional cost to the Board until the Board has removed the equipment and the Contractor has been given further instructions.

c. Manholes with mechanical hardware or electrical equipment shall not be subjected to diversion pumping.

d. Any damage to installed equipment, resulting from the Contractor's failure to adhere to the above, shall be repaired by the Board at the Contractor's expense.

2. Field Location of Manholes:

a. The Contractor shall be responsible for locating and uncovering all manholes. If the Contractor is unable to locate a manhole after due diligence with measuring tapes, metal detectors, and probing, the Contractor shall notify the Engineer in writing for Board assistance.

b. The Contractor is cautioned that manholes that are not part of the subsystem being rehabilitated may be located within the project limits. No payment will be made to the Contractor for work in manholes not indicated on the Drawings or as directed in writing by the Engineer.

K. Manhole covers, frames, and adjusting rings from abandoned, broken, or adjusted castings shall remain the property of the Board. The Contractor shall deliver salvaged items at a time and to a property location designated by the Board.

L. Rehabilitation of manhole structure

1. Disposal Sites: The Contractor may dispose of sludge, sand, debris, grit, and liquid wastes resulting from performance of operations in this contract at the East Bank Sewage Treatment Plant (6501 Florida Avenue). There will be no charge for disposal at this location. The Contractor may utilize and coordinate other licensed disposal sites at no additional cost to the Board, upon approval by the Engineer.

2. Cleaning: All concrete and masonry surfaces to be rehabilitated shall be cleaned prior to the application of rehabilitation products. All grease, oil, laitance, coatings, loose bricks,

mortar, unsound brick, or concrete and other foreign materials shall be completely removed. Water blasting utilizing 210-degree Fahrenheit steam unit and proper nozzles shall be the primary method of cleaning; however, other methods such as wet or dry sandblasting, acid wash, concrete cleaners, degreasers and/or mechanical means may be required to properly clean the surface. All surfaces on which these methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products. Debris resulting from cleaning shall not be washed downstream but shall be removed from the manhole.

3. Infiltration Control: After surface reparation and prior to the application of mortars and coatings, infiltration shall be stopped by use of an approved water stop compound or chemical grout. All large holes or voids around steps, joints or pipes, all spalled areas and all holes caused by missing or cracked brick shall be patched and all missing mortar shall be removed from the area to be patched or repointed, exposing a sound subbase. All cracks not subject to movement and greater than 1/16 inch in width shall be grouted with approved non-shrink-patching mortar.

4. Channel Repair: The Contractor shall remove all loose grout and rubble from existing channel. The Contractor shall rebuild channel if required by reshaping, repairing slope of shelves or benches. Work shall include aligning inflow and outflow ports in such a manner as to prevent the deposition of solids at the transition point. All inverts shall follow the grades of the pipe entering the manhole. Changes in direction of the sewer and entering branch or branches shall have a true curve of as large a radius as the size of the manhole will permit, but will be shaped to allow easy entrance of maintenance equipment including buckets, CCTV, etc.

5. Manhole Steps: All existing non-stainless-steel manhole steps shall be cut smooth with the wall or be removed completely prior to lining.

6. Full Depth Wall Liner: The lining system shall be installed in accordance with the manufacturer's recommendation to withstand groundwater pressures. Cementitious lining shall be applied to manhole wall, bench, and channel surfaces. All cementitious linings shall have a minimum thickness of 5/8 inch. All multi-component polymeric lining shall have a minimum thickness of 1/2 inch.

a. Application of all products shall be by manufacturer certified applicators.

b. Manholes requiring lining shall be cleaned no more than 2 hours before lining. The surface prior to lining shall be damp without noticeable free water droplets or running water. Materials shall be applied to a minimum uniform thickness ensuring that all cracks, crevices, and voids are filled, and a smooth surface remains after light troweling.

c. For spray applied lining, the first application shall take an initial set (disappearance of surface sheen which could be 15 minutes to 1 hour depending on ambient conditions) before the second application, if necessary, to assure a minimum total finished thickness of 5/8 inch. For centrifugally cast lining, the rotating casting applicator shall be positioned to evenly apply the material and shall be withdrawn at a rate to ensure a final minimum thickness of 5/8 inch. A depth gauge shall be used during application, at various locations, to verify the required thickness.

d. The Contractor shall apply light troweling to compact the material into voids and set the bond. The surface shall be troweled to a smooth finish with care taken not to over

trowel and bring additional water to the surface.

e. The bench covers used to catch debris shall be removed and the bench and channel lined to produce a gradual slope from the walls to the channel with the thickness at the edge of the channel being no less than 5/8 inch. The wall and channel intersection shall be rounded to a uniform radius along the circumference of the intersection.

f. No application shall be made to a frozen surface or if freezing is expected to occur within the manhole for 24 hours after application. If ambient temperatures are in excess of 90-degree Fahrenheit, precautions shall be taken to keep the mix temperature at the time of application below 90-degree Fahrenheit.

g. The application shall have a minimum cure time as recommended by the manufacturer before being subjected to active sewer flow.

h. Liner samples shall be taken by the Board assigned testing laboratory on a weekly basis or as directed by the Engineer.

M. Testing and acceptance of full depth liners

1. Cementitious Liners

a. All rehabilitated manholes utilizing a full depth comprehensive lining system shall be tested by using a vacuum method. This testing shall follow the manufacturer's recommendations for proper and safe procedures. Vacuum testing of manholes and structures shall be performed following proper curing of the lining. Any visible leakage in the manhole or structure, before, during, or after the test shall be repaired regardless of the test result at no additional cost to the Board.

b. All pipes for vacuum testing shall be installed at the top access point of the manhole. A vacuum of 10 inches of mercury (5.0 psi) shall be drawn on the manhole and the time for the pressure vacuum to drop 9 inches of mercury (4.5 psi) shall be measured. Manholes will be considered to have failed the air test if the time to drop 1 inch of mercury is less than the value shown in the following table.

Vacuum Test Timetable

Depth - feet	48" Diameter	60" Diameter	72" Diameter	96" Diameter
4	10 sec.	13 sec.	16 sec.	19 sec.
8	20 sec.	26 sec.	32 sec.	38 sec.
12	30 sec.	39 sec.	48 sec.	57 sec.
16	40 sec.	52 sec.	64 sec.	76 sec.
20	50 sec.	65 sec.	80 sec.	95 sec.
24	60 sec.	78 sec.	96 sec.	114 sec.
+ Each 2'	+ 5 sec.	+ 6.5 sec.	+ 8.0 sec.	+ 9.5 sec.

c. When testing, manhole depths shall be rounded to the nearest foot. Testing times for intermediate values of manhole depth shall be interpolated. For manhole depths greater than 24 feet, the values shown in the last line of the table shall be added to the 24-foot value for each additional 2 feet of depth.

d. If the manhole or structure fails the vacuum test the Contractor shall perform additional repairs and repeat the test procedures until satisfactory results are obtained at no additional cost to the Board.

e. After the manhole rehabilitation work has been completed, the Contractor shall allow the manhole to be visually inspected by the Engineer. The finished surface shall be free of blisters, "runs", "sags", or other indications of uneven lining thickness. There shall be no evidence of visible leaks.

N. Manhole benches and channels

1. The Contractor shall remove obstructions and all loose materials from benches, troughs, and pipe inverts prior to shaping the channel. The Contractor shall form a smooth, U-shaped channel having a minimum depth of one-half exiting pipe diameter and connecting the inlet and exiting pipes of the manhole using an approved manhole rehabilitation material. The Contractor shall control flow to allow sufficient setting time for material used.

2. The Contractor shall form a smooth transition between the reshaped channel and a raised manhole bench to eliminate sharp edges of pipe, concrete bench, and channel. The Contractor shall make finished benches and channels smooth and without defects which would allow for accumulation of debris.

O. Removal of Flush Valve Apparatus and Water Service Lines

1. For each sewer manhole with a flush valve present, the Contractor is required to remove the flush valve apparatus from the manhole (ITEM NO. CSS742(X10) below). Prior to starting this work, Contractor must send written notification, including manhole ID numbers, to the Engineer. The Engineer's inspector must witness all work performed.

2. Remove the service line from the manhole to a distance of two (2) feet beyond the exterior face of the manhole wall as directed by the Engineer's inspector. [See SSERP Detail for Flush Valve Removal]. The water line penetration hole shall be filled from both inside and outside of the manhole with non-shrink grout, (ITEM NO. CSS742(X11) below). The Engineer's inspector must witness all work performed.

3. For each sewer manhole with a water service line present, locate and disconnect the service line at the water main (ITEM NO. CSS742(X12) below). [See SSERP Detail for Flush Valve Removal]. Prior to starting this work, Contractor must send written notification, including manhole ID numbers, to the Engineer. The Engineer's inspector must witness all work performed.

4. The Contractor shall refer to the S&WB unit sheets to find the closest water main. To locate the point of connection at the water main, identify the shortest distance between the water main and the point where the service line penetrates the manhole. [See SSERP Detail for Flush

Valve Removal]. Typically, the actual connection is within six feet in either direction of the theoretical connection point. On the manhole side of the water main, and at approximately twelve (12) inches clear from the outside of the water main, carefully sawcut any pavement and excavate parallel to the main until the water service line is located. Once located, trace the service line to the main. Limits of pavement saw cutting and removal shall be limited to within panels and not extend beyond panel joints without engineer's approval.

5. At the water main, the service line may or may not be connected to the water main with a corporation cock. If a corporation cock is present, the corporation cock should be turned off and the service line disconnected. The cock should be inspected to determine if it is leaking. If there is no corporation cock, or if the corporation cock is leaking, it will be necessary for the S&WB to shut down the water main. The Contractor shall then remove the direct connection or leaking corporation cock and seal the tap hole using a full circle stainless steel repair clamp approved by the Engineer (ITEM NOS. CSW741-01 or CSW741-02).

6. The remainder of the water service line shall be abandoned in place.

7. Restore the site to pre-construction condition in accordance with the restoration specifications and pay items in this contract.

P. Final Acceptance of the Contract will be granted via Sewerage and Water Board Resolution. All Contract work is not considered final accepted until the Resolution has been passed by the Board of Directors.

SECTION 2.11 – CURED-IN-PLACE PIPE LINING

A. The Contractor shall provide all labor, materials, equipment, and incidentals to accomplish the Cured-In-Place Pipe (CIPP) Lining of all existing sewer pipe and service laterals as shown on the Drawings and specified herein.

B. The Contractor shall furnish an extended warranty for liner materials from the liner manufacturer for a total of 5 years from the date of Final Acceptance.

C. The Contractor shall have a minimum of two (2) years' experience in sewer line repairs by CIPP liner installation. The CIPP liner product manufacturer shall have a minimum installation history of two (2) years and 100,000 linear feet of furnished product including the sizes applicable for this project. Verifiable experience shall be submitted to the Board upon request.

D. Liner

1. All CIPP lining products shall comply with the latest versions of ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube, or ASTM F1743 - Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP). The Contractor shall furnish a general purpose unsaturated, polyester, or thermosetting vinyl ester resin and catalyst system that provides cured physical strengths specified herein.

2. The flexible tube shall consist of one or more layers of needled felt or equivalent woven or non-woven material manufactured under quality-controlled conditions set by the manufacturer and be capable of carry resin and withstanding installation pressures and curing

temperatures. The tube shall be compatible with the resin system used and shall contain no intermediate layers that delaminate after resin curing. It shall not be possible to separate any layers with a probe or knife blade such that the layers separate cleanly or the probe or knife blade moves freely between the layers.

3. The flexible tube material shall be able to stretch to fit irregular pipe sections and negotiate bends. The tube shall be fabricated to a size that when installed will neatly fit the internal circumference and length of the existing sanitary sewer main lines and service lateral lines when installed. Allowance shall be made for circumferential stretching during insertion so that the final cured product is snug against the wall of the host pipe and free of fins and buckles.

4. The resin used shall be a thermoset resin system that is compatible with the CIPP installation. The resin shall be able to cure in the presence of water and the initiation temperature for cure shall not be more than 180o F.

5. The liner thickness shall be sized for a minimum hydrostatic and earth load of 8 feet. The earth load and hydrostatic load shall be increased to the manhole depth for bury depths in excess of 8 feet unless otherwise noted.

6. The wall color of the interior pipe surface of the CIPP after installation shall not be of a dark or nonreflective nature that could inhibit proper CCTV inspection.

7. The liner shall be structurally designed for a fully deteriorated host pipe/direct bury condition, prism loading, and AASHTO Standard Specification for Highway Bridges HS-20-44 live loading due to traffic. The liner shall be designed for the following conditions:

DESIGN PARAMETER	VALUE
Minimum Service Life	50 years
Soil Density	120 pounds per cubic foot (lb/cf)
Soil Modulus	1000 pounds per square inch (psi)
Minimum Safety Factor	2.0
Ovality Factor	2%
Maximum Deflection	5% in vertical axis
Long Term Modulus Reduction Factor	50%

8. The final CIPP liners shall conform to the minimum structural standards as listed below in accordance with the latest versions of ASTM D790 - Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials and ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube:

FINAL CIPP	MINIMUM REQUIRED
Flexural Stress	4,500 psi
Short Term Flexural Modules	250,000 psi
Long Term Flexural Modules	125,000 psi

9. The liner shall be fabricated from materials which when complete are chemically resistant to and will withstand internal exposure to domestic sewage having a pH range of 5 to 11 and temperatures up to 125o F. CIPP liners shall meet the minimum chemical resistance requirements in accordance with the latest version of ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.

10. The liner shall be furnished to the following minimum thickness, or the thickness based upon design criteria as specified herein, whichever is greater:

Pipe Diameter (inch)	Depth of Sewer Invert (feet)	CIP Nominal Thickness (millimeter)_	(inches)
6	to 20	4.5	0.177
8	to 20	6.0	0.236
10	0 to 15	6.0	0.236
10	15.1 to 20	7.5	0.295
12	0 to 10	6.0	0.236
12	10.1 to 20	7.5	0.295
15	0 to 10	7.5	0.295
15	10.1 to 15	9.0	0.354
15	15.1 to 20	10.5	0.413
18	0 to 10	9.0	0.354
18	10.1 to 15	10.5	0.413
18	15.1 to 20	12.0	0.472
Pipe Diameter (inch)	Depth of Sewer Invert (feet)	CIP Nominal Thickness (millimeter)_	(inches)
21	0 to 10	10.0	0.374
21	10.1 to 20	15.0	0.555
24	0 to 10	12.0	0.472
24	10 to 22	15.0	0.590
27	0 to 10	12.0	0.465
27	10.1 to 20	18.0	0.705
30	0 to 10	15.0	0.590

30	10 to 22	21.0	0.817
36	0 to 20	24.0	0.921

E. Expanding hydrophilic rubber joint seal

1. The rubber joint seal shall be an extended hydrophilic rubber compounded from chloroprene (Neoprene) rubber and hydrophilic resin, which expands on contact with water.

2. The rubber joint seal shall be bonded with adhesive on one face to hold it in place during assembly.

3. On contact with water, the rubber shall swell a minimum of 8 times its original volume, if necessary, and mold itself to completely fill any gaps and exert pressure evenly to ensure the seal. High compression or bolt up forces shall not be necessary to affect a complete and watertight seal.

F. Chemical grout - Chemical Grout in accordance with SECTION 2.10 - SANITARY SEWER MANHOLE REHABILITATION, Subsection C, Paragraph 2, Subparagraph b.

G. Delivery, storage, and handling

1. The Contractor shall comply with the pipe manufacturer's printed recommendations for delivery, storage, and handling of all products.

2. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods at no additional cost to the Board.

H. All required flow isolation of private services shall be in accordance with section 2.07.B of these special provisions.

I. Preparation

1. The Contractor shall carry out his operations in accordance with all OSHA and manufacturer’s safety requirements. Particular attention is drawn to those safety requirements involving the entering of confined spaces.

2. The Contractor shall take field measurements to verify the existing pipe diameter, ovality and length prior to manufacturing liners. The manufacturer shall incorporate these measurements into the manufacturing process of the liner. The outside of the flexible tube shall be marked along its full length at regular intervals not to exceed five (5) feet. It shall be the responsibility of the Contractor to remove all internal debris such as solids and roots and clean the existing sewer line prior to installation of the liner in accordance with Section 2.09 Pre-and Post-Rehabilitation CCTV Inspection and Cleaning.

3. Inspection of existing sewer lines shall be performed by experienced personnel trained in locating breaks, obstacles, and service connections by CCTV. The interior of the line shall be carefully inspected to determine the location of any conditions which may prevent proper

installation of the CIPP liner into the main lines or service lateral lines, and such conditions shall be noted so they can be corrected. A videotape and log shall be kept as specified in Section 2.09 Pre-and Post-Rehabilitation CCTV Inspection and Cleaning.

4. The Contractor shall provide for the flow of sewage around the section or sections of pipe designated for lining as specified in Section 2.07B, Sewer Flow Control. The Contractor shall be completely responsible for preventing service line back-ups during the CIPP liner installation and curing periods.

5. The Contractor shall clear the line of obstructions such as solids, protruding gaskets, dropped joints, protruding service connections, or collapsed pipe that will prevent the insertion of the liner, as noted during pre-rehabilitation CCTV inspection. If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment, the Contractor, upon approval from the Engineer, shall make a point repair to uncover and remove or repair the obstruction prior to lining.

6. Location and distance from the upstream and downstream manholes of all internal and external point repairs shall be determined before rehabilitation commences.

7. Only those sewer services that are live and active shall be repaired or reinstated after the sewer main has been lined or replaced. The Contractor shall note that not all sewer lines segments have been televised in their entirety due to obstructions blocking further entry, etc. These obstructions shall be cleared to allow CCTV viewing of the entire segment length before lining is commenced. The number of service connections on some sewer segments may exceed the number of buildings actually served. It is the Contractor's responsibility to determine through dye testing, CCTV inspection or other acceptable methods, the services that are live and require reinstatement prior to commencing lining of the sewer main. Services that are confirmed to be inactive shall not be reinstated. Services that are inactive, but reinstated, shall be plugged at no additional expense to the Board.

J. Installation

1. Installation shall be accomplished by inversion or winched-in-place methods and cured in place by ambient temperature or circulating hot water or steam to produce a hard, jointless, impermeable pipe repair. Installation procedures shall be in accordance with the latest versions of ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube or ASTM F1743 - Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP), and the manufacturer's recommendations.

2. The Contractor shall designate a location where the reconstruction tube will be vacuum impregnated prior to installation. The Contractor shall allow the Engineer to inspect the materials and "wet out" procedure. Sufficient excess resin shall be used in accordance with the latest version ASTM F1216. A roller system shall be used to uniformly distribute the resin throughout the tube.

3. Before installation begins, the tube manufacturer shall provide the minimum pressure required to hold the tube tight against the existing conduit, and the maximum allowable pressure so as not to damage the tube. Once the installation has started the pressure shall be maintained between the minimum and maximum pressures until the installation has been completed.

4. The curing of the CIPP must take into account the existing pipe material, the resin system, and ground conditions (temperature, moisture level, and thermal conductivity of soil). The post-cure temperature should be held for a period as recommended by the resin manufacturer, during which time the recirculation of the water and cycling of the head source to maintain the temperature continues.

5. The bond between all CIPP layers shall be strong and uniform. All layers, after cure, shall be completely saturated with resin.

6. The CIPP shall be cooled to a temperature below 100oF before relieving the hydrostatic head. Care should be taken in release of the static head so that a vacuum will not be developed that could damage the newly installed liner.

7. Where practicable, liners can be installed in continuous runs through manholes where there are two of more continuous sewer segments requiring lining, especially to connect several short segments with continuous lining.

8. The temperature of water discharged to the sewer system from processing liners shall not exceed 125o F maximum, or the level allowed by State or local standards if less than 125o F.

9. The Contractor shall furnish on-site on a continuous basis one (1) additional operational robotic cutter assembly train and key spare components as a "stand-by" unit in the event of primary equipment breakdowns.

K. Post installation

1. After installation of the liner in a full segment pipe, a minimum of one (1) inch of the liner material shall be left to protrude from the wall of the entrance and the exit manhole.

2. The Contractor shall install a joint seal at all manhole inlet and outlet connections to seal the area where the line enters or leaves each manhole. The Contractor shall use grout to dress up around the end of the liner. This space may be sealed with a mechanical seal, chemical seal, or combination of both. The method used shall be as approved by the Engineer.

3. The upstream and downstream manholes shall be inspected and any holes or voids in the manhole wall immediately surrounding the new liner shall be sealed with a hydrophilic rubber joint seal and chemical grout as specified herein. The Engineer shall approve the seal.

4. Where liners of any type are installed in two or more continuous manhole segments, the liner invert through the trough of intermediate manholes shall be left intact. Final finishing of the installation in those intermediate manholes shall require removal of the top of the exposed liner with a horizontal cut and neat trimming of the liner edge along the top edge of the bench and any cut portions removed from the system.

5. Portions of any piece of liner material removed during installation shall be available for inspection and retention by the Engineer. Any unrestrained samples shall not be used for testing purposes.

6. The Contractor shall reinstate openings for all drop assemblies after relining the mainline sewer.

7. Service connections shall be reinstated without excavation, utilizing a remotely controlled cutting device monitored by a CCTV camera. The coupons from this action shall be collected downstream and submitted to the Engineer. The Contractor shall provide certification that he has the required equipment to reinstate the service connections as specified herein.

8. After the liner has been installed, in the event that the Contractor chooses to temporarily reinstate service lines, all active existing services may be temporarily reinstated by punching through the liner from the interior of the pipeline. Temporary reinstatements shall allow normal flow from the service line into the mainline. Final reinstatement of all active services within a rehabilitated line segment shall be performed internally using a robotic cutter within 48 hours of curing and buffed to a minimum of 95% of the original service opening size. The finished opening shall contain no jagged edges.

L. Testing

1. During the cool down process, after installation and curing of the liner, the Contractor shall perform tests on the sewer line to determine if it is watertight. No separate payment will be made for testing.

2. The Contractor shall furnish all necessary equipment to conduct the test.

3. The sewer shall be tested using either exfiltration test methods in accordance with the latest version of ASTM F1216 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated tube or air test methods as specified herein.

4. After completing lining and service reinstatement, every liner shall be CCTV inspected in accordance with Section 2.09 of the Special Provisions. Segments not fully conforming to these Specifications must be immediately brought to the Engineer's attention. The Contractor shall furnish a written proposed method of correction within 24 hours for approval by the Engineer.

5. The Board will have a certified independent testing lab analyze finished liner samples taken from the restrained sample located at the manhole invert. The Contractor shall furnish samples directly to the Engineer within 2 days after installation.

a. A minimum of one (1) sample shall be taken from every four (4) segments installed. The restrained samples shall be a minimum of one (1) foot in length. The Contractor shall place a sample mold aligned with and the same size as the existing sewer in such a manner as to allow the installation of the liner material through the restraining sample mold. This sample mold shall be made of SDR 35 PVC, or an Engineer approved equal.

b. The resin-impregnated tube shall be installed and cured through this restraining mold in order to obtain a liner sample representative of the actual liner physical characteristics. The sample shall be removed from the mold and shall be labeled with the project number, date of installation, pertinent manhole numbers, nominal thickness,

flow direction, and location of installation. The Contractor and Engineer shall acknowledge receipt and transfer of all samples.

c. Tests in accordance with the latest versions of the ASTM standards for flexural strength, flexural modulus and wall thickness will be conducted by the independent testing lab.

d. A sample will be provided by the Contractor to the Engineer for all CIPP installation over 18" inches in diameter to be tested in accordance with ASTM standards.

M. Acceptance

1. The finished CIPP liner shall be fully rounded and free from visible defects, including but not limited to damage, deflection, holes, delamination, ridges, cracks, uncured resin, foreign inclusions, or other objectionable defects as determined by the Engineer.

2. There shall be no visible infiltration through the liner, or around the liner at manhole or service line connections. The Contractor shall be required to repair any visible leaks in a manner approved by the Engineer.

N. Non-conforming work

1. If either the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP liner are less than 80% of the approved design values, the product is considered unacceptable. A method of repair or replacement shall be submitted for review and approval by the Engineer. All work required to remedy non-conforming work shall be at no additional expense to the Board.

2. For all instances, as described in this Subsection, other than thickness, flexural strength, and flexural modulus of elasticity, where the CIPP liner is deemed unacceptable, the Contractor shall submit a method of repair or replacement for review and approval by the Engineer. All work required to remedy non-conforming work shall be at no additional expense to the Board.

3. Where post-installation thickness measurements and/or physical property testing is performed, payment for installed cured-in-place pipe shall be made in accordance with the following:

a. If the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP are 90% or greater than the approved design values, full payment shall be made accordingly.

b. If the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP are between 90% and 80% of the approved design values, with all at least 80% of the approved design values, payment shall be based on:

Adjusted Unit Price = Unit Price Bid X Value Factor, where:

Value Factor = [__*__ thickness + __*__ flexural strength + __*__ flexural modulus of elasticity] / 3.

* Insert actual measured or tested result expressed as a percentage of specified value. Maximum allowable percentage is 100%.

4. If a defect repair is required after the liner has cured, a short segment tube shall be used to splice across the defect repair. The overlap on each defect shall be twice the diameter, or 12 inches, whichever is greater.

O. Measurement and payment for Cured In Place Liners shall be in accordance with the DPW Standard Specifications Section C742.05(k).

SECTION 2.12 – WATER POINT REPAIRS

A. The supplemental specifications within this section are applicable to water related work not listed as a standard bid item in Section C741. Any general conditions, materials or methods not discussed within this section shall be governed by the DPW Standard Specifications Section C742 and the S&WB standard details and specifications.

B. Water point repairs shall be completed in accordance with this section as well as DPW General Specifications Section C741.02.2 and Special Provisions Section 1.22.

C. Point repairs of an existing water main shall consist of recaulking an existing lead bell joint and installing a bell joint clamp, repairing a leak on the water main by installing a full circular stainless steel repair clamp, or replacing a section of existing water main.

D. Point repairs of an existing water house connections 5/8" to 2" shall consist of replacing the entire service connection from the water main to the meter. Existing 5/8" and ¾" services shall be replaced with 1" Polyethylene (PE) tubing. There shall be no splices allowed in repair of the existing water house connection, unless directed by the Engineer.

E. Point repairs of an existing water house connection greater than 2" shall consist of replacement of existing pipe with polyvinyl chloride (PVC) of equal diameter from the main to the shut-off valve where practical. Couplings used to make connections between existing and new pipe shall be AWWA approved and pressure rated as required by S&WB.

F. New water mains sized 2-inch shall be Polyethylene plastic tubing (PE4710, DR 9) conforming to ASTM D2737 and AWWA C901-17, latest edition, and shall be compliant with NSF/ANSI 61. All bronze and brass fittings, connectors, corporation stops, and any other appurtenance used to complete the installation of the water main shall be of domestic manufacture and be lead free. Polyethylene pipe shall be jointed by thermal butt-fusion , flange assemblies, or polyethylene mechanical joint adapters. Installation shall be in accordance with manufacturer's recommendation.

G. All new water mains shall be polyethylene plastic tubing (PE4710, DR 9) conforming to ASTM D2737 and AWWA C901-17, latest edition, and shall be compliant with NSF/ANSI 61. All bronze and brass fittings, connectors, corporation stops, and any other appurtenance used to complete the installation of the water main shall be of domestic manufacture and be lead free. Polyethylene pipe shall be jointed by thermal butt-fusion, flange assemblies, or polyethylene mechanical joint adapters. Installation shall be in accordance with manufacturer's recommendation.

H. All pipe joints shall be installed watertight under all service conditions. Any leaks from improperly installed or defective joints discovered at any time prior to the one-year maintenance period following substantial completion will be repaired by and at the expense of the Contractor.

I. Before the water service is interrupted, the Contractor shall:

a) Expose the existing water main at the repair point location and verify the type, size, and elevation of the existing service.
b) Have sufficient materials, equipment, and manpower available at the job site.
c) Verify materials on hand will meet the job needs after uncovering the existing mains.
d) Request a water test closure through the S&WB Networks Department (942-3891) a minimum of thirty (30) working days in advance of the scheduled repair.
e) Have notified all residents and the New Orleans Fire Department a minimum of seventy-two (72) hours in advance of interruption of service.
f) Any damage caused by the Contractor, will be at the Contractor's own expense.

SECTION 2.13 – GEOTEXTILE FOR STABILIZATION

A. General: This work consists of furnishing and placing geotextile fabric in accordance with these specifications and in conformance with the details shown on the plans.

B. Materials: The geotextile fabric shall conform to Section 1019, Class D.

C. Construction Requirements: Rolls of geotextile fabric shall be kept covered at all times until used. Geotextile fabric that has been installed shall be covered with embankment within 7 calendar days. When ultraviolet damage occurs, the geotextile fabric shall be removed and replaced. The geotextile fabric shall be placed at the locations shown on the plans or as directed. Adjacent rolls of geotextile fabric will be overlapped or sewn. When rolls are overlapped, the overlap shall be a minimum of three (3') feet, including the ends of the rolls. The top layer of the geotextile fabric shall be parallel with adjacent rolls and in the direction of construction.

1. Geotextile fabric shall be placed as smooth as possible with no wrinkles or folds, except curved road sections. For curved road sections, the geotextile fabric shall be folded to accommodate the curve. The fold shall be in the direction of construction and pinned or stapled. Ruts that occur during construction shall be filled and compacted prior to placement of geotextile fabric.

2. Damaged geotextile fabric shall be either removed and replaced with new geotextile fabric or covered with a second layer of geotextile fabric extending three (3') feet in each direction from the damaged area.

SECTION 2.14 – GEOGRID

These items shall be governed by the requirements of the "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, latest edition, Section C203 Geogrid, shall be the General Conditions for this Contract and shall govern except as modified here-in. Acceptable geogrid, when approved by the Engineer, shall meet the required material properties, geometry, and characteristics listed below.

PROPERTY	TEST METHOD	UNITS	GEOGRID OPTION VALUES	
Geometry				
Aperture Shape			Square	Equilateral Triangular
Aperture size	I.D. Calipered or Observed	in (mm)		1.6 (40) (nom)
MD		in (mm)	1.3 (33) (nom)	
CMD		in (mm)	1.3 (33) (nom)	
Thickness				
Ribs	Calipered	in (mm)		0.05 (1.2) (nom)
MD	Calipered	in (mm)	0.09 (2.4) (nom)	
CMD	Calipered	in (mm)	0.06 (1.5) (nom)	
Junctions	Calipered	in (mm)	0.125 (3.2) (nom)	0.13 (3.3) (nom)
Physical Characteristics				
Tensile Strength @ 2% Strain				
MD	ASTM D6637	lb/ft (kn/m)	650 (9.5)	
CMD	ASTM D6637	lb/ft (kn/m)	685 (10)	
Tensile Strength @ 5% Strain				
MD	ASTM D6637	lb/ft (kn/m)	1164 (17)	
CMD	ASTM D6637	lb/ft (kn/m)	1300 (19)	
Ultimate Tensile Strength				
MD	ASTM D6637	lb/ft (kn/m)	1713 (25)	
CMD	ASTM D6637	lb/ft (kn/m)	1775 (26)	
Overall Flexural Stiffness	ASTM D7748	mg-cm	2,150,000 (min)	
Radial Stiffness at 0.5% strain	ASTM D6637	lb/ft	38,500 (min)	18,495 (min)
Aperture Stability	ASTM D7864	m-N/deg	0.80 (min)	
Junction Efficiency	ASTM D6637 & D7737	%	93 (min)	93 (min)
Material				
Polypropylene	ASTM D-4101 Group 1/Class 1/Grade 2	%	98 (min)	98 (min)
Carbon Black	ASTM 4218	%	0.5 (min)	0.5 (min)

SECTION 2.15 – VIBRATIONS DUE TO CONSTRUCTION ACTIVITIES

Section C126 of the "General Specifications for Street Paving" is amended to include the following requirements:

The vibration monitoring is optional and be performed at the Contractor's discretion. There shall be no direct payment for vibration monitoring services.

SECTION 2.16 – SUPERPAVE ASPHALTIC CONCRETE REQUIREMENTS

All Superpave asphaltic concrete placement shall conform to Section C502 except where modified here within.

Roadway quality control, roadway acceptance, and surface tolerance shall apply to this project and shall conform to Section C501.

Superpave asphaltic concrete binder course placement shall consist of ¾ inch (0.75") maximum nominal aggregate size. Superpave asphaltic concrete wearing course mixture shall consist of ½ inch (.5") maximum nominal aggregate size. Grade of Asphalt Cement shall be at minimum a PG 67-22. The Engineer shall verify the correct material is used and ensure that roadway density requirements are met in accordance with the contract documents.

The thickness of Superpave binder course shall be placed with a 5" section. Two (2) lifts shall be used: one at 3" and then one at 2". The thickness of Superpave wearing course shall be placed with a 2" section using one single lift.

NTSS-1HM (trackless tack) shall be considered as an acceptable prime coat when requested by the Contractor, approved by the Engineer, and follows the requirements of Section 505 from the latest version of LaDOTD Louisiana Standard Specifications for Roads and Bridges.

When the Owner determines that a core sample shall be obtained, the samples will be drilled by the Contractor at the locations determined by the Director at no direct pay and those samples shall be provided to the Department.

SECTION 2.17 – INTERIM ASPHALT PAVEMENT

Temporary asphalt pavement shall be same mix as asphaltic concrete wearing course; shall be a minimum of two (2) inches thick; shall be placed over a minimum of six (6) inches of compacted crushed stone or crushed concrete and encapsulated in a layer of geotextile fabric.

Measurement and payment for interim asphalt pavement shall be made at the unit price bid per square yard for Special Bid Item No. CF-501 INSTALL TEMPORARY PAVEMENT, 2" THICK when listed on the Unit Price Form.

SECTION 2.18 – BASE COURSE

All Base Course materials shall conform to section C302 except where modified here within.

Gray Limestone stone conforming to section C302.03 part C is the acceptable material for base course.

Recycled Portland Cement Concrete is not acceptable as a base course material. This is acceptable as a Traffic Maintenance Aggregate.

SECTION 2.19 – WATERLINE PIPE BURSTING

(a) Where called for in the Plans, the new water main shall be installed by replacing an existing water line with a new high-density polyethylene (HDPE) water line by means of pipe bursting and includes the excavation and restoration of water service house connections. The contractor is responsible for the excavation and restoration of receiving and insertion pits, including the removal and replacement of existing manholes. The contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water, and incidentals required to perform all pipe bursting activities.

(b) When not called for in the Plans pipe bursting utilizing HDPE at the same location as the original water main will be allowed as an alternative installation method on a case-by-case basis. The Contractor shall obtain approval by the Project Engineer prior to mobilization. In the event Pipe Bursting installation method is approved by the Project Engineer and SWBNO, the Director reserves the right to deduct scope and quantities for items deemed no longer necessary on the corresponding project block. Work is deemed no longer necessary at the Director's discretion.

(c) Prior to starting the Work, the Contractor shall submit construction sequence and staging plan, proposed insertion and receiving pits, traffic control plan, temporary water supply layout, installation details and sketches, shop drawings, equipment catalog data, product specifications, and other pertinent information for the HDPE pipe installation work to be signed and stamped by a Professional Engineering licensed in the state of Louisiana at no direct pay.

(d) The new water main shall be installed by replacing an existing water line with a new high-density polyethylene (HDPE) water line by means of pipe bursting and includes the excavation and restoration of water service house connections. The Contractor is responsible for the excavation and restoration of receiving and insertion pits, including the removal and replacement of existing manholes. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all pipe bursting activities.

(e) The Contractor shall install, test, and connect the temporary water supply line and the service connection lines prior to the start of pipe bursting. All testing requirements shall be in accordance with Section C741.04.1 "Hydrostatic Testing" and C741.04.2 "Chlorination, Bacteria Sampling, and Flushing". New service connections shall be paid at the contract bid item price. The temporary water line shall be completed at no direct pay.

(f) All new water mains 8 inch and greater installed via Pipe Bursting shall be high-density polyethylene pipe (HDPE) meeting the requirements of AWWA C906. The pipe shall be a minimum of SDR 11 wall thickness (pressure pipe) unless noted otherwise. The pipe shall contain no recycled compound except that generated in the manufacturer's own plant from resin of the same specification from the same raw material pipe. Butt fittings shall conform to ASTM D 3261 and ASTM F 714. Ductile Iron fittings shall conform to standards within this Section. Pipe material delivered to the job site must clearly display the manufacturer information, nominal pip size, dimension ratio, the letters "PE" followed by the grade per ASTM D1248, and the hydrostatic design basis in pounds per square inch. There shall be a colored stripe along the length of the pipe indicating the pipe service type. Stiffener inserts used for all fittings and connections to HDPE pipe shall be of 304 stainless steel and be of wedge type design.

(g) Pipe material delivered to the job site must be properly stored to protect from damage and deformation, axially or circumferentially. All pipe is to be checked to verify its condition prior to installation. Any pipe segment, which has cuts in the pipe wall exceeding 10 percent of the wall

thickness, shall be cut out and removed from the site at the Contractor's cost.

(h) Sections of polyethylene pipe shall be joined into continuous lengths on the jobsite above ground, or in a trench when required by worksite conditions. The joining method shall be the butt fusion method conforming to ASTM D2657 and be performed in strict accordance with the pipe manufacturer's recommendations. The inside and outside of pipe ends shall be cleaned with a cotton or non-synthetic cloth to remove dirt, water, grease, and other foreign materials. The pipe ends shall be cut square and carefully aligned just prior to heating. The heater plate surfaces shall be cleaned regularly as needed to prevent accumulation of fusion welding residues or other substances that may result in faulty pipe joining. After achieving the proper melt pattern, the pipe ends shall be pressed together in a firm, rapid motion applying sufficient pressure to form a pipe bead (1/8 inch to 3/16 inch in height) around and inside the entire circumference of the pipe. Fusion equipment used in the joining procedure shall be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, fusion temperature, alignment, and fusion pressure. Electrofusion may be used for field closures when appropriate fusion equipment cannot be utilized in a trench type environment.

(i) When requested, the Contractor shall perform trial fusion welds in the field for both main line and lateral connections and submit samples to the Engineer for review prior to installation of the pipe. The fusion machine employed for the trial welds shall be the same machine to be utilized for the complete project installation work.

(j) The Contractor shall install the pipe by utilizing a constant tension system with a hydraulic or pneumatic bursting device that breaks away the existing pipe. A static "cone cracking" method may be used, but only by advancing the mole bursting head with a "solid steel tow rod" pulled by a constant tension hydraulic pulling wrenching system. The advancement of the bursting mole head with a chain shall be prohibited. At no time shall the bursting device and/or the installation process put any undue stress on the existing surface.

(k) Stiffener inserts used for all fittings and connections to HDPE pipe shall be of 304 stainless steel and be of wedge type design.

(l) After the completion of pipe bursting and installation of all fittings, offsets hydrant leads, valves, and service saddles but prior to switching service connections, the Contractor shall complete testing on the new main in accordance with Section C741.05. Following successful testing, the Contractor shall change over service connections from the temporary watermain to the new watermain.

The Contractor shall reference ASTM Standards:

ASTM F 2620 - Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings
ASTM D 3035 - Polyethylene Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter
ASTM D 3261 - Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
ASTM D 3350 - Polyethylene Plastic Pipe and Fittings Materials
ASTM F 714 - Standard Specification for Polyethylene Plastic Pipe Based on Outside Diameter
ASTM F 1055 – Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe and Tubing

PART III – SPECIAL ITEMS

SECTION 3.01 – TEMPORARY SIGNS, BARRICADES, PAVEMENT MARKINGS, CONSTRUCTION SIGNING, TRAFFIC MAINTENANCE AND PUBLIC SAFETY

This item shall be governed by the provisions of General Specifications Section C129 Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety except as follows:

There shall be no direct payment for Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety. All costs associated with Temporary Signs, Barricades, Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety shall be included in other major items of the proposal.

SECTION 3.02 – MOBILIZATION

For this project mobilization will be considered as a subsidiary obligation of the contractor under other bid proposal items. There shall be no direct payment for mobilization, or for any items that may be referenced as subsidiary to or included in mobilization. All costs associated with mobilization shall be included in other major items of the proposal.

SECTION 3.03 – CLEARING AND GRUBBING AND DISPOSAL OF MATERIALS

There shall be no direct payment for any required Clearing and Grubbing and removal and disposal of material not listed for removal in the proposal. There shall be no direct payment for removal and disposal of culverts, metal curb protection at intersections, metal plates at driveways, existing drain lines or drainage structures and other materials other than Portland Cement Concrete Pavement and Asphaltic Cement Concrete Pavement. All costs associated with Clearing and Grubbing, and removal and disposal of other material shall be considered subsidiary to and included in Roadway Excavation or other major bid items of the proposal.

SECTION 3.04 – CONSTRUCTION LAYOUT

A. This item shall be governed by the requirements of Standard Specification Item C740(51) except as modified here-in. The Contractor will be responsible for laying out the work prior to beginning of construction and establishing grades for all roads to maintain positive drainage when the profile of the road is altered. The Contractor shall initiate a Request for Information to the Engineer for review if any changes to the existing road profile are to be made. The Contractor shall provide elevations to the Engineer in order to evaluate the effect of grade changes to the adjacent driveways, sidewalks, and residential lots. The Contractor shall submit a detailed sketch to the Engineer that shows existing roadway elevations and the proposed gutter line. This effort shall consist of adjusting catch basins or drop inlets as the low points of this profile. Any change to the existing road profile shall be approved by the engineer and DPW prior to making any changes. The Engineer shall review and approve the proposed gutter line to assert that the road is laid out adhering to City Standards. Any changes made to the existing road profile without the City's approval may be rejected and replaced at the Contractor's expense.

B. Prior to starting construction in each block, the Contractor shall be required to mark using survey marking paint the limits of the pavement, driveway, sidewalk, and handicapped ramp removal as shown on the plans, and mark using a contrasting color any areas the contractor recommends as additional removal/replacement due to constructability concerns.

C. There shall be no direct payment for Construction Layout. All costs associated with the requirements included in Section C740 of the General Specifications shall be included in other major items of the proposal.

SECTION 3.05 – TRAFFIC CONTROL PLAN

The requirements of General Specifications Section C128 PERMITS AND REGULATIONS shall apply except a detailed traffic control plan shall be required for this project.

A. The Contractor shall maintain fifty (50%) percent of the roadway accessible to vehicular traffic at all times, and for major streets shall maintain 100% of roadway accessible to vehicular traffic between the hours of 7-9 A.M. and 4-6 P.M. A traffic control plan indicating, in detail, the location of all signs, lights, and barricades must be prepared by the Contractor for the written approval of the Director, no less than two, nor more than ten working days in advance of implementation. It shall be the Contractor's responsibility to obtain these approvals in writing. There is no direct pay for this requirement.

B. The Police Department, Fire Department, all affected utilities as well as any and all residents and/or businesses affected must be informed a minimum of twenty-four (24) hours in advance of anticipated closures and the duration thereof.

C. Construction traffic control signs, barricades, warning lights, devices, and methods, shall comply with Part VI of Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) unless otherwise directed by the Director. There is no direct pay for this.

D. All traffic control devices (roadway markings, signs, signals, signal controls, etc.) destroyed as a result of construction shall be replaced at the Contractor’s expense.

E. The Contractor shall notify the Director immediately if the project requires changes or modifications to existing traffic control signs, parking meters, etc.

The Contractor performing work under this contract shall be required to coordinate and cooperate in scheduling his operations with the Director and S&WB prior to finalizing pavement repairs to accommodate other contractor’s activities. There shall be at no direct payment for traffic control plans.

SECTION 3.06 – SAW CUTTING (SIDEWALK, DRIVEWAY AND CURBS)

A. This item shall be governed by the requirements of General Specification Item C202 (55) except as modified here-in. To ensure against ragged connections between old and new work, saw cutting will be required at sidewalks, driveways, curbs, and/or at other paved construction areas as may be designated by the Engineer.

B. The saw cuts in sidewalks shall be full depth with an appropriate saw to ensure the straight vertical edge for the upper portion on the patch. After the edges have been cut, the areas to be removed are broken in small pieces with pneumatic chisels or drills and the pieces removed. The resulting broken edge of the concrete below the saw cut is left fairly rough and irregular but in approximately vertical plane so that it will provide aggregate interlocks between the patch and existing concrete. Joints and typical joint spacing within the repair area shall be established or reestablished in accordance with the details shown on City of New Orleans Department of Public Works Standard Drawings.

The saw cuts in driveways and curbs shall be full depth with an appropriate saw to ensure the straight vertical edge for the upper portion on the patch. After the edges have been cut, the areas to be removed are broken in small pieces with pneumatic chisels or drills and the pieces removed. The resulting broken edge of the concrete below the saw cut is left fairly rough and irregular but in approximately vertical plane so that it will provide aggregate interlocks between the patch and existing concrete. When breaking the concrete driveway pavement an attempt shall be made to save a minimum twelve (12) inches of the existing welded wire fabric on each side.

Joints and typical joint spacing within the repair area shall be established or reestablished in accordance with the details shown on City of New Orleans Department of Public Works Standard Drawings.

C. Measurement and payment for saw cutting required to establish joints interior to the work area as required by the DPW Standard Details and General Specifications shall not be allowed.

D. Measurement and payment for saw cutting of sidewalks, driveways, or curbs along the ends or perimeter of removal areas as required to protect existing concrete that is to remain in-place shall be made at the unit price bid per linear foot for Special Bid Item No. CF-3 SIDEWALK, DRIVEWAY AND CURB SAW CUTTING when listed on the Unit Price Form.

E. There shall be no Measurement and payment for the depth of saw cutting of sidewalks, driveways, or curbs along the ends or perimeter of removal areas. The depth of saw cutting shall follow the plan drawings regarding the pavement section thickness.

SECTION 3.07 – PAVEMENT SAW CUTTING ADJACENT TO EXISTING PAVEMENT AND AT PATCHES AND UTILITY TRENCHES

A. This item shall be governed by the requirements of Standard Specification Item C202 (56) except as modified here-in. The cut in roadway pavement adjacent to existing pavement that is to remain in place, and for patching, and for utility trenches shall be made prior to demolition of the paved area to be removed and shall be sawcut full pavement depth to ensure the adjacent paved areas that are to remain in place are protected from damage during the demolition process. If the contractor damages the edge of sawcut pavement the contractor shall be required to re-sawcut the entire concrete panel, or as approved by the engineer, to remove the damaged area. Any saw cutting, pavement, and related items that are required due to Contractor damage of existing pavement shall be at no direct cost.

B. This item shall include saw cutting for both Portland cement concrete and asphaltic concrete pavement along the ends or perimeter of removal areas as required to protect existing pavement that is to remain in-place. The pavement saw cut, assuming a full pavement-depth saw cut up to a 10" maximum depth, shall be made with an appropriate saw to ensure the straight vertical edge for the upper portion on the patch. After the edges have been cut, the areas to be removed shall be broken in small pieces with pneumatic chisels or drills and the pieces removed.

C. Measurement and payment for saw cutting required to establish or reestablish contraction and expansion joints interior to the work area as required by the DPW Standard Details and General Specifications shall not be allowed.

D. Measurement and payment for saw cutting existing pavement along the ends or perimeter of removal areas adjacent to patches and utility trenches shall be made at the unit price bid per linear foot for Special Bid Item No. CF-4 PAVEMENT SAW CUTTING ADJACENT TO EXISTING PAVEMENT AND AT PATCHES AND UTILITY TRENCHES when listed on the Unit Price Form.

SECTION 3.08 - REMOVAL OF ADA-ACCESSIBLE RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS INCLUDING SAW CUTTING

A. This item shall be governed by the requirements of Standard Specification Item C202 except as modified here-in. The unit price bid per Square Yard for this item shall include all saw cutting of curb, curb and gutter bottom, sidewalk, and pavement, removal and proper disposal of existing pavement, curb, curb and gutter bottom, sidewalk, ramps, and curb transitions, including all excavation, associated with handicapped ramp removal and at the locations shown on the plans.

B. Measurement and payment for Handicap Ramps and Concrete sidewalks at intersection shall be made at the unit price bid per square yard for Special Bid Item No. CF-5 REMOVAL OF HANDICAPPED RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS INCLUDING SAW CUTTING when listed on the Unit Price Form.

SECTION 3.09 - ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS

A. This item shall be governed by the requirements of General Specification Item C706 (54) except as modified here-in. Concrete sidewalks at intersection shall include the handicap ramp Type B as detailed on the Construction Documents, and the latest ADA standards, unless otherwise approved by the Director in writing on a case-by-case basis. Concrete shall be 3000 psi compressive strength at 28 days reinforced with 6x6 - W2.9xW2.9 reinforcing mesh weighing forty-two (42) lbs. per 100 sq. ft. placed at 2” from the top of slab.

B. Breaking out and removing existing pavement, curb, and sidewalk will be paid for under another item. Transitional sidewalk, where required, will be paid for under for under other items of the proposal.

C. Measurement and payment for Handicap Ramps and Concrete sidewalks at intersection shall be made at the unit price bid per square yard for Special Bid Item No. CF-6 ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS, when listed on the Unit Price Form, and shall include: detectable warning surfaces, all necessary sand, backfill, concrete, transitional flares, transitional curbs, the curb with thickened section and gutter bottom, and all additional curb transitions required for ramp construction in accordance construction requirements of the Standard New Orleans DPW details.

All non-compliant ADA Handicap Ramps within the limits of construction shall be replaced with ADA compliant ramps unless otherwise approved by the Director.

Price shall include all backfill and compaction behind curb and along the edges of walk with select material obtained from roadway excavation or other approved sources and installation of the top 4 inches with batture sand for dressing and beneath sidewalks and curbs as required.

Price shall include removal and replacement of adjacent roadway pavement as required to form curb, gutter, and ramp transition areas, where adjacent pavement is not included on the drawings and quantified in other items of the proposal.

Price shall include all dowelling and transverse and longitudinal reinforcement in conformance with the Standard New Orleans DPW details.

Price for new curb or curb and gutters associated with Handicapped Ramp construction shall be measured and paid for as subsidiary to Square Yard unit price bid for ADA-ACCESSIBLE CURB RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS.

SECTION 3.10 - DRIVEWAYS AND SIDEWALKS (SPECIAL FINISH)

This work consists of furnishing and constructing specially finished concrete driveways, sidewalks, and incidental paving slabs. Special finish sidewalks and driveways in this section shall be in conformance with the requirements of C706 of the DPW General Specifications.

A. SUBMITTALS

1. Product Data: Submit manufacturer's complete technical data sheet for the following:

   a. Colored admixture.
   b. Powder antiquing release agent.
   c. Imprinting/Texturing tools.

2. Samples for initial selection: Manufacturer's color charts showing full range of colors available.

3. Pea Gravel concrete mix shall be submitted in addition to standard concrete mixes for sidewalks and driveways. Pea Gravel Mix shall be in conformance with the requirements of Section C706 of the DPW General Specifications.

B. QUALITY ASSURANCE

1. Manufacturer Qualifications: Manufacturer with 5-years experience in production of specified products.

2. Installer Qualifications: An installer with 5-years experience with work of similar scope and quality.

3. Comply with the requirements of ACI 301.

4. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout the Project.

5. Notification of manufacturer's authorized representative shall be given at least 1-week

before start of Work.

6. Integrally Colored Concrete Mockups:

7. Provide under provisions of Section “Submittals”.

8. At location on Project selected by Owner and Engineer, place and finish 10 feet by 10 feet area.

9. For accurate color, the quantity of concrete mixed to produce the sample should not be less than 3 cubic yards or not less than 1/3 the capacity of the mixing drum on the ready-mix truck and should always be in full cubic yard increments. Excess material shall be discarded according to local regulations.

10. Construct mockup using processes and techniques intended for use on permanent work, including curing procedures. Include samples of control, construction and expansion joints in sample panels. Mockup shall be produced by the individual workers who will perform the work for the Project.

11. Retain samples of cements, sands, aggregates and color additives used in mockup for comparison with materials used in remaining work.

12. Accepted mockup provides visual standards for work of Section.

13. Mockup shall remain through completion of the work for use as a quality standard for furnished work. Remove mockup when directed.

C. DELIVERY, STORAGE, AND HANDLING

Colored Admixture: Comply with manufacturer’s instructions. Deliver colored admixtures in original, unopened packaging. Store in dry conditions.

D. PROJECT CONDITIONS

Integrally Colored Concrete Environmental Requirements:

1. Schedule placement to minimize exposure to wind and hot sun before curing materials are applied.

2. Avoid placing concrete if rain, snow, or frost is forecast within 24-hours. Protect fresh concrete from moisture and freezing.

3. Comply with professional practices described in ACI 305R and ACI306R.

E. PRODUCTS

1. MATERIALS

a. Colored Admixture for Integrally Colored Concrete:

Admixture shall be a colored, water-reducing, admixture containing no calcium chloride with coloring agents that are lime proof and UV resistant.

b. Stamping/Imprinting Tools and Materials:

Stamping/Imprinting Tools and Materials shall be furnished by the Color Admixture manufacturer.

c. Powder antiquing release agent shall be recommended by pattern tool manufacturer and compatible with integral color additives.

2. COLORS AND PATTERNS

a. Concrete Color:

Provide cement, sand, aggregate and colored admixture as required to match existing stamped/colored concrete.

b. Curing Compound: Color to match colored concrete.

c. Surface Texture: Stamped concrete finish.

d. Stamp/Imprinting Pattern:

As required to match existing stamped driveway. The Contractor shall submit imprinting pattern to Engineer for review and approval before construction.

F. MEASUREMENT

The area of driveways will be determined by surface measurements and no extra allowance will be made for shoulders. Sidewalk pavements will be paid for by surface measurements and no deduction will be made for subsurface structures occupying less than five (5) square feet of area. Areas under structures encroaching on Public Property not paved will not be included in the surface measurement.

G. PAYMENT

Payment for special finish concrete driveways and sidewalks shall be made at the contract price per square yard, which includes excavation, installation of expansion joint and welded wire fabric. Granular material for adjustment and removal of existing driveways, sidewalk or banquette pavement shall be paid for in other items.

ITEM NO.	PAY ITEM	PAY UNIT
CF-7	4” Concrete Sidewalk (Special Finish)	Square Yard
CF-8	6” Concrete Driveway (Special Finish)	Square Yard
CF-9	6” Concrete Driveway (Special Finish) (Pea Gravel)	Square Yard

SECTION 3.11 - SIDEWALK TRANSITION ADJACENT TO ADA-ACCESSIBLE CURB

RAMP AREAS

A. This item shall be governed by the requirements of Standard Specification Item C706 (51) Concrete Sidewalk, C706 (57) Brick Sidewalk, and C706 (59) Stone Sidewalk except as modified herein. This item shall include all necessary work associated with transitioning line and grade of existing sidewalk and non-roadway paved transition areas adjacent to proposed handicapped ramp locations.

B. The unit price bid per Square Yard for SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS shall include all saw cutting, removal and proper disposal of existing sidewalk and non-roadway paved transition areas, all excavation, subgrade preparation, setting bed, concrete foundation, grading, compaction, tamping, and furnishing and placing all necessary fill material, backfill, dressing, sand for adjustment, joints, reinforcement, grout, finishing, curing, and sidewalk or non-roadway paved transition area constructed of a material to match the existing type and surface course unless otherwise directed by the Director. Where existing sidewalk or non-roadway paved transition areas to be removed is Portland Cement Concrete the new surface course shall be 4 inches thick 3,000 psi concrete at 28 days reinforced with 6x6 - W2.9xW2.9 reinforcing mesh. Where existing sidewalk or non-roadway paved transition areas to be removed is Brick or Stone the new surface course shall be replaced in-kind and compliant with the construction requirements of the General Specifications for the type material removed. Where feasible and accepted by the Director existing salvaged material, if reusable, can be removed, properly cleaned, and re-installed. Price shall include all backfill and compaction behind curb and along the edges of walk with select material obtained from roadway excavation or other approved sources and the installation of the top four inches with Batture sand for dressing as required. The Contractor is solely responsible for coordinating with the respective utility for any required adjustments or relocations as required. If approved by the respective utility any necessary utility box adjustments shall be performed by the contractor in accordance with the appropriate standards and requirements at no direct payment.

C. When SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS has been shown on the unit price proposal the extent of transition area allowable for measurement and payment shall be a maximum of 8’-0” in length in each direction from proposed handicapped ramps where existing sidewalk requires replacement to meet line and grade dictated by compliance with the latest ADA standards. The width of the sidewalk transition shall match the width of the material to be removed to meet line and grade dictated by compliance with the latest ADA standards. Locations eligible for use of this pay item shall be recommended by the contractor to the project engineer’s Resident Inspector (RI) for submission to the Director of an approved amount per each location proposed. The Contractor shall consult directly with the RI and provide field measurements, recommendations, and existing and proposed grades as needed to install ADA compliant sidewalk transitions to proposed handicapped ramp locations. Only locations and extents specifically pre-approved by the Director during construction will be eligible for payment. SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS shall not be considered a material part of the work contemplated, and only amounts specifically approved in writing from the Director shall be measured and paid for at the contract unit price bid with no adjustment to the unit price for an increase or decrease in the final quantity approved.

D. Measurement and payment:

1. SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS, not shown on the Construction Drawings but included in the unit price proposal, shall only be measured and paid for each location and specific quantity approved in writing by the Director for Special Bid Item No. CF-13 SIDEWALK TRANSITION ADJACENT TO HANDICAPPED

RAMPS.

2. All sidewalk areas that are shown on the Construction Drawings are measured and paid for in other applicable pay items of the proposal.

SECTION 3.12 - ADA-ACCESSIBLE CURB RAMP RETROFIT

A. DESCRIPTION

1. This item shall include all necessary work associated with adding ADA compliant tactile / detectable warning surface tiles to existing curb ramps. This Section includes Specifications for furnishing and installing Surface Applied Tactile / Detectable Warning Surface Tiles (SA) in an inline truncated dome pattern on all curb ramps and walking surfaces at the locations and to the dimensions shown on the Drawings, in accordance with the Contract Documents and as directed by the Director. (Surface Applied Tactile is also known as Surface Mount Tactile Warning Tiles or Retrofit Tactile Warning Tiles).

B. RELATED DOCUMENTS

1. Drawings and general provisions of the Contract Documents.

2. Americans with Disabilities Act (ADA) Title 49 CFR Transportation, Part 37.9 Standards for Accessible Transportation Facilities, Appendix A, Section 4.29.2 Detectable Warnings on Walking Surfaces. FHA Memo (5-06-02) titled Truncated Domes. Federal Register Volume 71, No. 209, 49 CFR Part 37 (10-30-06), ADA Standards for Transportation Facilities (11-29-06, DOT): Sections 406, 705, and 810. ADA Standards for Accessible Design – 2010 (9/05/11, DOJ), ADAAG: Sections 705 and 810. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board), PROWAG: Sections R208, R304, R305, R308, and R309.

3. American Society for Testing and Materials (ASTM) Test Methods B117, C501, C1028, D543, D570, D638, D695, D790, G151, G155, and E84.

4. American Association of State Highway and Transportation Officials (AASHTO): Test Method AASHTO-H20

C. SUBMITTALS

1. Product Data: Submit manufacturer’s literature describing products, installation procedures and maintenance instructions.

2. Samples for Verification Purposes: Submit two (2) Tactile Warning Surface samples minimum 8” x 8” of the kind proposed for use. Samples shall be properly labeled and shall contain the following information: Name of Project, Submitted by, Date of Submittal, Manufacturer’s Name, and Catalog Number.

3. Shop Drawings: Submit Standard Manufacturer Shop Drawings showing all pertinent characteristics of the Surface Applied Tactile Warning Tile (SA) including profile, sound on cane contact amplification feature, fastener locations and installation

methods.

4. Material Test Reports: Submit current test reports from qualified, accredited independent testing laboratory in accordance with ASTM guidelines and indicating that materials proposed for use are in compliance with specification requirements and meet the properties indicated. All test reports submitted shall be representative of the Surface Applied Tactile Warning Tile (SA) delivered to the Project.

5. Maintenance Instructions: Submit copies of manufacturer's specified maintenance practices for each type of Tactile Warning Surface Tile and accessory.

D. GUARANTEE

1. SA Tiles shall be guaranteed in writing for a period of five (5) years from date of Contract's final completion. The guarantee includes manufacturing defects, breakage, and deformation.

E. MATERIALS

1. Composition: SA Tiles shall be manufactured using a matte finish exterior grade homogeneous (uniform color throughout thickness of product) glass and carbon reinforced polyester based Sheet Molding Compound (SMC) composite material. Truncated domes must contain fiberglass reinforcement within the truncated dome for superior structural integrity and impact resistance. A matte finish will be required on the Tactile Warning Surface for superior slip resistance performance superior to that offered by a gloss finish. Use of Tactile Warning Surface Products employing coatings or featuring layers of material with differing composition, performance, or color properties is expressly prohibited under this Section.

2. Color: Color shall be homogeneous throughout SA Tile, Dark Gray (G) per Federal Standard 595B Table IV, Color No. 36118.

3. Domes: Square grid pattern of raised truncated domes of 0.2" nominal height, base diameter of 0.9" and top diameter of 0.45". The Federal Code of Regulations permits a truncated dome spacing range of 1.6"-2.4." For superior wheelchair, walker and shopping cart mobility, the preferred truncated dome spacing shall have a center-to-center (horizontally and vertically) spacing of 2.35", measured between the most adjacent domes on square grid.

4. Configuration: SA Tile sizes shall be as indicated on the Contract Drawings. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry. At a minimum, the thickness of the body of SA Tile shall measure 3/16" (nominal). The SA Tile thickness shall not exceed ½" maximum when measured from the curb ramp surface to the top of the truncated dome. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry.

5. In compliance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board, "PROWAG") Section R302.7.2 and California Code of Regulations (CCR 2007) Section 1127B.5.5 and Section

1133B.8.5, the Composite Tactile Warning Surface Tiles shall have a perimeter beveled edge with a maximum slope of 1:2 in order to minimize the potential for a pedestrian tripping.

6. Radius SA Tile:

   a. Radius SA Tile measures 24”x 33.25” and features reverse score lines on each 24” dimension for a 10’, 15’, and 20’ radius condition. The Radius SA Tile out of the box measures 11’ - 6” radius.

   b. Truncated domes feature proper dome alignment for a radius application. Radius SA Tile shall be cut to the appropriate configuration using the reverse score lines as a guide.

7. Follow Tactile Warning Surface Manufacturer’s installation procedures.

8. Dimensions: SA Tiles shall be held within the following dimensions and tolerances:

   a. Length and Width:

      i. Rectangular SA Tile: 2.35” Dome Spacing

      ii. Radius SA Tile: 1.6” - 2.4” Dome Spacing

9. Fasteners: The Tactile Warning Surface Tile shall have minimum twelve (2’x3’ Tactile Warning Surface Tile) to twenty-four (3’x5’ Tactile Warning Surface Tile) countersunk fastening holes. Color matched, stainless steel 304, flat head drive anchor: ¼” diameter x 1 1/2” long.

10. Adhesive:

   a. Polyether Structural Adhesive/Sealant by Chem Link (M-1)

   b. Urethane Elastomeric Adhesive by Bostik (Hydroment Ultra-Set Advanced or Durabond D-818)

   c. Approved equal.

11. Sealants:

   a. Single Component Urethane Sealant:

      i. Sources: BASF NP1 by BASF Building Systems or Sikaflex 1A by Sika Corp.

      ii. Colors: Black, Limestone, Redwood Tan

   b. Polyether Structural Adhesive/Sealant by Chem Link (M-1)

      i. Colors: Black, Gray, Limestone, White

c. Approved Equal

12. Available manufacturers, subject to compliance with these Specifications include, but are not limited to, the following:

a. ADA Solutions Inc. of Chelmsford, MA (Phone: 800-372-0519, Fax: 978-262-9125, Web Site: www.adatile.com, Email: info@adatile.com, or owner approved equal.

F. EXECUTION

1. Preparation

a. Transmit submittals and deliverables required by this Section.

b. Furnish products as indicated.

c. Substrate Condition: Ensure substrate is in suitable condition, and in compliance with the Tactile Warning Surface manufacturer recommendations, to receive work of this Section. Prior to construction, refer any and all discrepancies to the Engineer for further action.

2. Installation

a. Contractor will not be allowed to install Tactile Warning Surface Tiles until all submittals have been reviewed and approved by the Engineer.

b. SA Tile shall be installed per manufacturer's instructions.

c. To the maximum extent possible, the SA Tiles shall be oriented such that the rows of in-line truncated domes are parallel with the direction of the ramp. When multiple SA Tiles regardless of size are used, the truncated domes shall be aligned between the tactile warning surface tiles and throughout the entire tactile warning surface installation.

d. In accordance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board): Sections 304 + 305), Tactile Warning Surface Tile shall be located relative to the curb line as shown within Sections 304+305 of the Guidelines.

e. Cutting of SA Tiles may be required to accommodate specific site conditions. All possible attempts shall be made to minimize cutting of the SA Tiles. Minimum acceptable width of the cut SA Tile shall be 9".

f. Environmental Conditions: Air and substrate temperatures must exceed 40 degrees for at least 8 daytime hours for a sound and proper installation. A "weed torch" may be used to boost the substrate temperature to expedite cure of adhesives and sealants.

g. Immediately prior to installing the SA Tiles, the concrete surfaces must be

inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound with a minimum four (4) day concrete cure period (unless otherwise directed by the SA Tile manufacturer) and that the surface is flat. As necessary, substrate may be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material although a broom or leaf blower is usually adequate for cleaning of the substrate.

h. Apply adhesive on the backside of the SA Tiles following the perimeter border and internal cross pattern established by the SA Tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the 2-inch width of the adhesive locator.

i. Set the SA Tile(s) true and square to the curb ramp areas as detailed in the Drawings. Allow 1/8" separation between successive SA Tiles for expansion/contraction.

j. Drill holes true and straight to a depth of 2" by 1/4" using the recommended bit. As necessary, additional countersunk holes may be added to the SA Tile by using a 5-point ½" (82 degree) countersink to create the necessary holes.

k. Mechanically fasten SA Tile to the concrete substrate using a 32oz. to 48oz. hammer to set the composite sleeve anchors. Ensure that the fastener has been set to full depth, straight and true. Care should be taken when setting the fastener to avoid any advertent blows with the hammer to the SA Tile.

l. Following the installation of the SA Tile, the sealant system should be applied to the perimeter edge. Follow the Tactile Warning Surface manufacturer's recommendations when applying the sealant in a cove type profile to blend and seal the SA Tile edge to the adjoining surfaces.

m. Do not allow foot traffic on installed SA Tile until the perimeter edge sealant has cured sufficiently to avoid tracking. If the SA Tile must be placed into immediate pedestrian service, apply baby powder to the sealant to minimize the possibility of tracking while the sealant cures. Foot imprints may appear in the fully cured sealant application

n. A Urethane Sealant such as Sikaflex 1a or BASF NP1 shall be applied to the edge treatment for a watertight Tactile Warning Surface Tile installation.

3. Cleaning and Protecting

a. Protect SA Tiles against damage during construction period to comply with SA Tiles manufacturer's Specifications.

b. As necessary, while the Project remains under construction, protect SA Tiles against damage from rolling loads following installation by covering with plywood or hardwood.

c. If requested by the Director, clean SA Tiles not more than four (4) days prior

to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean SA Tile by method specified by Tactile Warning Surface Products manufacturer.

G. MEASURMENT AND PAYMENT

1. When the Surface Applied Tactile / Detectable Warning Surface Tiles pay item has been shown on the unit price proposal the final approved quantity for installation, measurement, and payment shall be determined by and subject to written approval of the Director and shall not be considered a material part of the work contemplated. Only locations specifically approved in writing by the Director during construction shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the final amount approved.

2. The unit price bid per square foot for Surface Applied Tactile / Detectable Warning Surface Tiles shall include all cost to prepare, furnish, install, clean, protect and warrant the tiles in accordance with the specifications and the manufacturer's recommendations.

3. Surface Applied Tactile / Detectable Warning Surface Tiles shall be measured based on approved actual square footage of installed final product in-place.

4. Surface Applied Tactile / Detectable Warning Surface Tiles, not shown on the Construction Drawings but included in the unit price proposal, shall only be measured and paid for at location approved in writing by the Director for Special Bid Item No. CF-14 SURFACE APPLIED TACTILE / DETECTABLE WARNING SURFACE TILES.

SECTION 3.13 - CONCRETE PAVEMENT (8" THICK)

A. This item shall be governed by the requirements General Specification Item C601 except as modified here-in.

B. The final finish and texture shall be obtained using a broom, or other acceptable methods approved by the Director, in accordance with the latest edition of LaDOTD Louisiana Standard Specifications for Roads and Bridges Section 601.

C. At all locations proposed concrete pavement abuts existing concrete pavement that is to remain in place:

All concrete pavement within the designated area is to be removed and the subgrade area prepared to receive an eight (8") inch compacted crushed stone base course as shown on the typical roadway cross sections contained in the Construction Drawings. Compacted pumped sand covered by a geotextile fabric as required shall be used to bring subgrade to the required elevation. It shall also be used to replace unsuitable subgrade or to fill voids as directed.

No. 5 (#5) dowels 24" long at 12" on center shall be drilled and epoxy grouted into the existing concrete to allow for a proper tie-in.

Just prior to placing the new concrete, the vertical faces of the old concrete pavement are to be coated with an approved concrete epoxy per ASTM C 881 Type II. The new roadway pavement shall

consist of four thousand (4,000) psi P.C.C.P. reinforced with 6 X 12 - W 7.5 X W 6.5 welded wire fabric, seventy-seven (77) pounds per one hundred (100) square feet. The new mesh shall be tied to the existing mesh where possible. Full width sheets are to be used and overlapped a minimum of 12", no partial or scrap pieces are to be used.

Wherever a joint (any type) or a part thereof falls within the affected area, the same shall be reestablished in kind and shall be incidental to the work included as concrete pavement.

After all roadway pavement repairs have been completed at a location, Bituminous Wearing Course material, if required, shall be placed in a continuous operation.

D. Unit Price bid shall include all preparation work and drilling and dowelling between existing and proposed pavement in accordance with the CONCRETE PAVEMENT REPAIR detail shown on City of New Orleans Department of Public Works Standard Drawing STD5, except epoxy grout shall also be required.

E. Measurement and payment for concrete pavement shall be made at the unit price bid per square yard for Bid Item No. C601 (54) REINFORCED CONCRETE PAVEMENT (8" THICK) when listed on the Unit Price Form.

SECTION 3.14 - ROOT PRUNING, TREE PROTECTION, LANDSCAPING, AND SIDEWALK GRAVEL BED

Landscaping shall be in accordance with Section C719 of the General Specifications for Street Paving Department of Public Works 2015 Edition (Revised 11/05/2015), Department of Parks and Parkways Specifications Section 02480 *Landscape Protection During Construction,* 02481 *Installation of Plant Materials* and Section 02485 *Seeding and Sodding,* and amended as follows:

A. Root Pruning – All tree roots, of City owned trees, damaged during removal of curbs, sidewalks and driveways shall be root pruned. All tree roots damaged during any excavation operations; yard drains, collector lines, etc. shall be root pruned. Tunneling and boring shall be required when working within the critical root zone. Trenching is prohibited from this area. Air spading may be required in order to reveal the roots under circumstances where construction occurs within the critical root zone as directed by the Parks & Parkways Department (PPD) arborist.

1. Air spading requirement - When working within the critical root zone, air spading is required to expose the top seven to ten inches of the critical root zone to reveal root conflicts.
2. Aerial pruning requirement – When root pruning occurs, aerial pruning is required as per the direction of the Chief Urban Forester to mitigate damage by reducing the canopy in proportion to the root reduction.
3. Lac Balsam is prohibited from use to dress severed roots as a tree wound treatment.
4. A living root that will be buried below grade following pruning shall be treated with a rooting hormone approved by the Chief Urban Forester.
5. A root flare that must be cut and remain exposed shall be treated with a copper paste approved by the Chief Urban Forester.
6. All root pruning shall occur prior to excavation.
7. When circumstance require that roots be exposed for more than 48 hours, the roots shall be re-cut to living tissue, re-treated, buried and irrigated promptly.
8. Approved root cutting tools – Sharp instruments that make clean cuts, including hand saw, loppers, snips or hand pruners, chain saw or reciprocating saw with unpainted blades. Dull blades are prohibited. Trenchers and excavators are prohibited.

B. Fertilization – All trees' roots pruned due to construction shall be fertilized using a water-soluble fertilizer injected into the soil. The fertilization plan shall be based upon soil lab test reports furnished by the Contractor. The minimum acceptable N-P-K ratio shall be 30-5-5. The nutrient complex and ratio (gal. /sq. ft.) must be approved by the Urban Forester overseeing the project.

C. Mycorrhizal Fungal Inoculate – Treatment equal to or better than Mycor Tree Saver, Cambistat, and mulching shall be applied to all construction damaged tree root zones per manufacturer's directions. Cost shall be included in the bid price for root pruning.

D. Termite Treatment – All tree roots pruned due to construction shall be treated for termites. A termiticide equal to or better than Premise manufactured by Bayer Corporation shall be used per manufacturer's directions. Cost shall be included in the bid price for root pruning.

E. Tree Permit Requirements – When necessary, the Contractor will be required to obtain a Tree Permit from the Department of Parks and Parkways.

1. Pre-Permit: In order to obtain a tree permit, the Contractor must satisfy the following conditions:

- The Contractor will ensure that the tree permit application will be made by a Louisiana Licensed Arborist certified by the International Society of Arboriculture
- A signed contract and a written detailed plan are required for issuance of the permit. The plan shall include the location of the proposed excavation, measurements of depth, length, and proximity to the main trunk of the tree, tools and methodology and exact time when work will be performed.

2. Post-Permit: Once PPD approves the tree permit, the Contractor must ensure the following on-going requirements are met:

- The Contractor will ensure that the Arborist is present on the construction site for all excavation and/or root pruning within protected areas of the tree.
- The Contractor will ensure that the Arborist visits the construction site for a minimum of one hour per day during active construction that is near to or involves trees.
- The Contractor will ensure that the Arborist will submit a weekly log of hours to the Chief Urban Forester with each invoice.

F. Canopy Pruning – When aerial pruning occurs, the resulting canopy shall be symmetrical and balanced as per the direction of the Chief Urban Forester.

G. Tree Replacement – Trees determined by the Chief Urban Forester to no longer be viable due to damage inflicted by the Contractor shall be replaced as directed by the Department of Parks and Parkways. At a minimum, trees shall be replaced on the basis of inch caliper per inch diameter lost. In the event that there is not sufficient space for planting, an alternative location may be designated off site, or the Contractor my donate a sum equal to the cost of replacement to the Department of Parks and Parkways Plant-A-Tree Trust Fund.

H. Tunneling and Boring Requirement – When work cannot be redirected away from the Critical Root Zone, tunneling and boring is required for the installation of lines. Trenching is prohibited within the critical root zone. Air spading may be required in order to reveal the roots under circumstances where construction occurs within the critical root zone as directed by the Chief Urban Forester.

I. Root Barrier – When work includes installation of root barrier, the barrier may not be constructed from wood.

J. Restricted Use Instruments – Permission must be obtained from the Chief Urban Forester in advance for use of any machines intended for trenching or mechanical digging. When stump grinders are employed, it must be followed by the use of an approved cutting instrument that will remove any torn or shredded tissue back to a clean, living cut.

F. These items shall be governed by the requirements of General Specification Item C719 except as modified here-in.

G. When Root Pruning has been shown on the unit price proposal the extent of root pruning allowable shall be determined by the Parks & Parkways Department (PPD) and require written approval by the Director. The Contractor shall consult directly with the PPD and provide a licensed arborist as needed to perform root pruning. Only root pruning locations specifically approved by the Director during construction will be eligible for payment. Root Pruning shall not be considered a material part of the work contemplated, and only Root Pruning locations specifically approved in writing from the Director shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the number of items approved. Measurement and payment for Root Pruning shall be made for each approved location at the unit price bid per each tree for Special Bid Item No. CF-10 ROOT PRUNING. When Root Pruning has not been shown on the unit price proposal then any required Root Pruning shall be at no direct payment.

H. There shall be no direct payment for Root Trenching. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the engineer. All costs associated with Root Trenching shall be included in other major items of the proposal.

I. There shall be no direct payment for tree protection. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the Director. All costs associated with tree protection shall be included in other major items of the proposal. Tree protection shall be in place and approved by the PPD arborist prior to commencement of any work on site, including clearing and grubbing.

J. There shall be no direct payment for Sidewalk Gravel Bed as required for ramping over tree roots that interfere with placement of sidewalk. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the engineer. All costs associated with Gravel Bed and Filter Cloth over Tree Roots shall be included in other major items of the proposal.

K. There shall be no direct payment for Tree Trimming required to obtain needed clearance to perform the work. The Contractor is responsible for protecting existing trees in and adjacent to the work area and installing tree protection measures as required by Parks and Parkways and as directed by the engineer. All costs associated with Tree Trimming shall be included in other major items of the proposal. There shall be no direct payment for air spading and tunnel and boring required to work within the critical root zone as directed by the PPD arborist.

SECTION 3.15 - GRANULAR MATERIAL AND FILL MATERIAL

A. Granular material shall be governed by the requirements of Standard Specification Item C723 except as modified here-in. The Contractor shall be responsible for importation and placement of granular fill material as required for placement of timber or concrete curb and structures. There shall be no direct payment for Granular Material or Batture Sand. Payment for Item C723 Granular Material item no. C723 (52) Batture Sand for Dressing, Granular Material for other Adjustments shall not be allowed. All costs for Batture Sand for Dressing, Granular Material for other Adjustments shall be included in the unit price bid for curbs, sidewalks, or driveways, roadways, or other major items of the proposal as applicable.

B. Fill material shall be required as fill, backfill or dressing material to ensure positive drainage within the limits of the area disturbed by construction, areas adjacent to sidewalk or driveway repairs, and between sidewalk repairs and the roadway to comply with the typical roadway cross sections shown on the plans or as directed. The fill material shall be suitable on-site excavated earth material, subject to approval of the Director, or borrow material compliant with the requirements Standard Specification Item C723 Granular Material with subsection 1003.07 referencing 2006 Edition LaDOTD Standard Specifications for Roads and Bridges. Fill and borrow materials shall be free from waste, rubbish, large rocks, or other unsuitable or foreign material.

Suitable excavated material is to be used if available as fill or dressing to comply with the typical roadway cross sections shown on the plans. In the absence of a sufficient amount of suitable on-site material the Contractor shall provide and import borrow material. There shall be no direct payment for Fill Material. All costs associated with furnishing, hauling, storing, placement and compaction of material used as fill, backfill, or dressing in accordance with the typical sections or as required to ensure positive drainage shall be included in the unit price bid for curbs, sidewalks, or driveways, roadways, or other major items of the proposal as applicable.

SECTION 3.16 - CATCH BASIN AND MANHOLE REPAIRS AND VERTICAL ADJUSTMENTS

A. This work consists of the replacement of components and repair or vertical adjustment of vertical catch basins, mountable catch basins, drop inlet catch basins, and drain manholes as described and in accordance with the details, dimensions, and grades shown on plans or as directed by the Director. These items shall be governed by the requirements of the latest addition of standard Sewerage and Water Board New Orleans (SWBNO) drawings for the type of structure described and Standard Specification Item C702 except as modified herein. When Catch Basin and Manhole Repairs and Adjustments pay items have been shown on the unit price proposal the final approved quantity for installation, measurement, and payment shall be determined by and subject to written approval of the Director and shall not be considered a material part of the work contemplated. Only locations specifically approved in writing by the Director during construction shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the number of items approved.

B. Measurement and payment for Catch Basin and Manhole Repairs and Vertical Adjustments items shall be made at the unit prices bid under Special Bid Item Numbers CF-301 through CF-378 for

Vertical Catch Basin, Drop Inlet Catch Basin, Mountable Catch Basin, and Drain Manhole in conjunction with Cover or Grate; Frame; Front Grate; and Repair or Vertical Adjustment of Single or Double Basins or Manhole Reusing Existing Metal Castings or Repair or Vertical Adjustment of Single or Double Basins or Manhole Brick Work Only, for each type of Special Bid Item. Measurement shall be per each or per foot height, as specified for each type of repair or vertical adjustment item.

C. Unit prices bid for Catch Basin and Manhole Repairs and Vertical Adjustments items shall include any related preparation and finishing work, all excavation, soil and debris removal and proper disposal, sheeting, shoring, bracing, bedding material, granular backfill, backfill and compaction, cement, mortar, sealants, fabric, shagging, materials, castings, transitions to match adjacent improvements, protection and restoration of adjacent areas, labor and workmanship required to provide each individual repair or adjustment as described. All required removal and replacement of adjacent improvements and any damage caused by the contractor to the bordering roadway, adjacent non-paved area, sidewalk, driveway, ramp, curb, existing structure or components, or other existing assets shall be considered incidental to the unit price paid for the Catch Basin and Manhole Repairs and Adjustments items and the contractor shall be required to replace improvements or repair the damages to comply with SWBNO and DPW approved standards at no direct pay. Each Catch Basin and Manhole Repairs and Adjustments pay item may be required individually, or in combination with other Catch Basin and Manhole Repairs and Adjustments pay items, but the unit price bid shall prevail for each item individually.

D. Vertical Catch Basin items - At no time is a vertical catch basin is to be installed in a driveway, in the event that an existing vertical catch basin is located in the face of a drive apron within project limits and the scope of adjacent work includes full depth restoration, the catch basin will need to be converted to a mountable catch basin conforming SWBNO Std. Drawing No. D-3431-A. Curb inlet type vertical catch basins shall conform to the requirements shown on SWBNO Standard Drawings D-873 and D-873A for single or double vertical catch basins, except:

CF-301 Vertical Catch Basin Cover

Work to provide and install Catch Basin Cover shall include furnishing and installing a cover on the catch basin existing frame. Catch Basins shall receive new covers made of fiberglass material sized to properly to fit flush in the existing metal frame. Fiberglass covers for Catch Basins shall be Grate Glass "M" Solid Composite Plate by Road Masters International or approved equal and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing cover as identified by the Director, cleaning the existing frame, and to fit/retrofit a new cover in the existing frame, measured per each Vertical Catch Basin Cover.

CF-302 Vertical Catch Basin Frame

Catch Basin frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of catch basin repaired. This work will include removing the damaged/missing cover and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged cover or in conjunction with a new cover pay item(s) as directed by the Director. Work and materials for Catch Basin Frame includes the removal of the existing cover and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the basin for the new frame installation, measured per each Vertical Catch Basin Frame.

If no structural repair or vertical adjustment work is required, then Vertical Catch Basin Frame placement shall include any incidental brick and mortar work required for the installation of the frame. If structural repairs or vertical adjustment are required, then the Vertical Catch Basin Frame pay item may be used in conjunction with other pay item(s) for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-303 Lockable Vertical Catch Basin Frame and Cover

Work to provide and install Lockable Catch Basin Frame and Cover shall include furnishing and installing the frame and cover on an existing Catch Basin. Lockable Catch Basin Frame and Cover shall conform to East Jordan Iron Works, INC. V-4300-7 or approved equal. Item installation requirements shall follow CF-302 description. CF-303 Lockable Vertical Catch Basin Frame and Cover will be measured per each.

CF-311 Vertical Catch Basin Front Grate No. 1,

CF-312 Vertical Catch Basin Front Grate No. 2, and

CF-313 Vertical Catch Basin Front Grate No. 3

No. 1, 2, or 3 Catch Basin Front Grate shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing grate and to fit/retrofit a new grate to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged frame and cover, or in conjunction with a new frame and/or cover pay item(s) as directed by the Director. Work and materials for Catch Basin Front Grate includes the removal and reinstallation of the existing cover and frame if necessary, and removal of the existing front grate and furnishing and installing a new front grate including and all components and any related preparation or finishing work to the basin for the new grate installation, measured per each Vertical Catch Basin Front Grate No. 1, 2, or 3. If no structural repair or vertical adjustment work is required then Catch Basin Front Grate placement shall include any incidental brick and mortar work required for the installation of the grate. If structural repairs or vertical adjustments are required, then the Catch Basin Front Grate pay item may be used in conjunction with other pay item for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-315 Single Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, and

CF-316D Double Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of catch basin reusing existing metal castings shall consist of: remove and salvage the existing frame and cover, or frame, cover and grate, remove all of the existing brick and mortar structure to the lowest elevation of brick area requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, and clean and reinstall the salvaged frame and cover, or frame, cover and grate, measured per each.

CF-317 Single Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only, and

CF-318D Double Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only

Work to repair or provide brick work only for vertical adjustment of Vertical Catch Basins shall consist of removing all or a portion of the existing brick and mortar structure down to the lowest brick course elevation requiring repair and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure, measured per each. Vertical Catch Basin Repair or vertical Adjustment Brick Work only shall be used in conjunction with a pay item for installing a new frame and/or a pay item for installing a new front grate.

E. Drop Inlet Catch Basin items - Drop inlet type Catch basins shall conform to the requirements shown on SWBNO Standard Drawings D-3264 for Standard 24”x30” Clear Opening Drop Inlet Catch Basins, except:

CF-331 Drop Inlet Catch Basin Grate

Work to provide and install Drop Inlet Catch Basin Grate shall include furnishing and installing a grate on the drop inlet catch basin existing frame. Drop Inlet Catch Basins shall receive new grates made of fiberglass material sized to properly to fit flush in the existing metal frame. Fiberglass grate for Catch Basins shall be Grate Glass “M” Mesh Composite Drain by Road Masters International or approved

equal and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing grate as identified by the Director, cleaning the existing frame, and to fit/retrofit a new grate in the existing frame, measured per each Drop Inlet Catch Basin Grate.

CF-332 Drop Inlet Catch Basin Frame

Drop Inlet Catch Basin frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of catch basin repaired. This work will include removing the damaged/missing grate and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged grate, or in conjunction with a grate pay item(s) as directed by the Director. Work and materials for Drop Inlet Catch Basin Frame includes the removal of the existing grate and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the basin for the new frame installation, measured per each Drop Inlet Catch Basin Frame. If no structural repair or vertical adjustment work is required, then Drop Inlet Catch Basin Frame placement shall include any incidental brick and mortar work required for the installation of the frame. If structural repairs or vertical adjustments are required, then the Drop Inlet Catch Basin Frame pay item may be used in conjunction with other pay item(s) for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-335 Drop Inlet Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of drop inlet catch basin reusing existing metal castings shall consist of: remove and salvage the existing frame or frame and grate, remove all of the existing brick and mortar structure to the lowest elevation of brick area requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, and clean and reinstall the salvaged frame or frame and grate, measured per each.

CF-336 Drop Inlet Catch Basin Repair or Vertical Adjustment Brick Work Only

Work to repair or provide brick work only for vertical adjustment of Drop Inlet Catch Basins shall consist of removing all or a portion of the existing brick and mortar structure down to the lowest brick course elevation requiring repair and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure. Drop Inlet Catch Basin Repair or vertical Adjustment Brick Work Only, measured per each, shall be used in conjunction with a pay item for installing a new drop inlet frame.

F. Mountable Catch Basin items - Mountable catch basin shall conform to the requirements shown on SWBNO Standard Drawings D-3431-A Standard Single Mountable Catch Basin and D-3431-B Standard Double Mountable Catch Basin, except:

CF-351 Mountable Catch Basin Grate

Work to provide and install Mountable Catch Basin Grate shall include furnishing and installing a grate in the mountable catch basin existing frame. Mountable Catch Basins shall receive new grates made of fiberglass material sized to properly to fit flush in the existing metal frame. Fiberglass grates for Catch Basins shall be Grate Glass “M” Mesh Composite Plate by Road Masters International or approved equal and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing grate as identified by the Director, cleaning the existing frame, and to fit/retrofit a new grate in the existing frame, measured per each Mountable Catch Basin Grate.

CF-352 Single or Double Mountable Catch Basin Frame

Mountable Catch Basin frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of catch basin repaired. This work will include removing the damaged/missing grate and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and curb, transition to match the adjacent roadway and curb, and cleaning and reinstallation of the existing salvaged grate, or in conjunction with a grate pay item(s) as directed by the Director. On rigid pavement

streets, after installation of mountable catch basin frame an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item. Work and materials for Single or Double Mountable Catch Basin Frame includes the removal of the existing grate and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the basin for the new frame installation, measured per each Single or Double Mountable Catch Basin Frame. If no structural repair or vertical adjustment work is required, then Mountable Catch Basin Frame placement shall include any incidental brick and mortar work required for the installation of the frame. If structural repairs or vertical adjustments are required, then the Single Mountable Catch Basin Frame or Double Mountable Catch Basin Frame pay item may be used in conjunction with other pay item(s) for repair or vertical adjustments. The Director will have sole authority in determining whether structural repairs or vertical adjustments are required.

CF-353 Lockable Mountable Catch Basin Grate

Work to provide and install Lockable Mountable Catch Basin Grate shall include furnishing and installing a grate in the mountable catch basin existing frame. Mountable Catch Basins shall receive new grates which shall conform to the requirements of East Jordan Iron Works, INC. V4510-1L or approved equal and shall be installed to properly fit flush in the existing metal frame. This work will include removing the damaged/missing grate as identified by the Director, cleaning the existing frame, and to fit/retrofit a new grate in the existing frame, measured per each Lockable Mountable Catch Basin Grate.

CF-355 Single Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, and

CF-356D Double Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of single or double mountable catch basin reusing existing metal castings shall consist of: remove and salvage the existing frame(s) or frame(s) and grate(s), remove all of the existing brick and mortar structure to the lowest elevation of brick area requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, and clean and reinstall the salvaged frame or frame and grate, measured per each. On rigid pavement streets, after adjustment of the mountable catch basin an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings STD9 and included in the unit price bid for this item.

CF-357 Single Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only, and

CF-358 Double Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only

Work to repair or provide brick work only for vertical adjustment of Single or Double Mountable Catch Basins shall consist of removing all or a portion of the existing brick and mortar structure down to the lowest brick course elevation requiring repair and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure. Single or Double Mountable Catch Basin Repair or vertical Adjustment Brick Work Only, measured per each, shall be used in conjunction with a pay item for installing a new mountable catch basin frame.

G. Manhole items - Manhole items shall conform to the requirements shown on SWBNO Standard Drawings D-870 Standard Drain Brick Manhole and D-871 Drain Manhole Frame & Cover or 3143-E-1 Sewer and Water Manhole Castings to match the type utility repaired. Manholes that are approved as described here-in, shall be adjusted to match with the level of the new surface using brick and mortar. Only City of New Orleans Department of Public Works and Sewerage and Water Board manholes and structures shall be adjusted to grade under this contract. Other manholes and structures shall be adjusted to grade by the respective utility company.

CF-371 Manhole Cover

Work to provide and install Manhole Covers shall include furnishing and installing a cover on the manhole existing frame. The new manhole cover shall be sized and installed properly to fit flush in the existing metal frame and shall meet AASHTO M 306 or HS-20 loading requirements. This work will include removing the damaged/missing cover as identified by the Director, cleaning the existing frame, and to fit/retrofit a new cover to the existing frame, measured per each Manhole Cover.

CF-372 Manhole Frame

Manhole frames shall meet AASHTO M 306 loading requirements and shall be of the proper size and installed to meet the requirements of the SWBNO drawings for the type of manhole repaired. This work will include removing the damaged/missing cover and frame and to fit/retrofit a new frame to the structure including incidental removal and replacement of the bordering roadway and cleaning and reinstallation of the existing salvaged grate, or in conjunction with a grate pay item(s) as directed by the Director. Work and materials for Manhole Frame includes the removal of the existing cover and frame as necessary and furnishing and installing a new frame including all components and any related preparation or finishing work to the manhole for the new frame installation, measured per each Manhole Frame. On rigid pavement streets, after installation of the frame an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

Manhole Frame placement shall include any brick-and-mortar work required for the adjustment of the frame to the existing or new road pavement grade, inclusive of the requirements of item CF-377 at no additional compensation. The Director and the S&WB will have authority in determining whether structural repairs or vertical adjustments are required.

CF-375, Manhole Repair or Vertical Adjustment up to 6" Reusing Existing Metal Castings

Work to repair or provide a vertical adjustment of manholes up to 6" reusing existing metal castings shall consist of: remove and salvage the existing frame or frame and cover, excavation, remove all of the existing brick and mortar structure requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, backfill, and clean and reinstall the salvaged frame or frame and cover, to repair or provide a vertical increase or decrease elevation adjustment to grade up to six inches (6"), measured per each (location). On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

CF-376, Manhole Repair or Vertical Adjustment over 6" Reusing Existing Metal Castings

Work to repair or provide vertical adjustment of manholes over 6" reusing existing metal castings shall consist of: remove and salvage the existing frame or frame and cover, excavation, remove all of the existing brick and mortar structure requiring repair or adjustment, furnish and install new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, backfill, and clean and reinstall the salvaged frame or frame and cover, to repair or provide a vertical increase or decrease elevation adjustment to grade over six inches (6"),measured per foot height, or any fraction of a foot to the nearest 0.1'. On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

CF-377, Manhole Repair or Vertical Adjustment up to 6" Brick Work Only

Work to repair or provide brick work only for vertical adjustment up to 6" for manholes shall consist of excavation, removing all or a portion of the existing brick and mortar structure requiring repair or adjustment, and furnishing and installing new brick and mortar courses matching the existing size and

location of the original structure, sealing the exposed exterior surface, and backfill to repair or provide a vertical increase or decrease elevation adjustment to grade up to six inches (6"). Manhole Repair or Vertical Adjustment up to 6" Brick Work Only, measured per each (location). This item shall be used in conjunction with the appropriate pay items for installing a new manhole frame and cover. On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

CF-378, Manhole Repair or Vertical Adjustment over 6" Brick Work Only

Work to repair or provide brick work only for vertical adjustment over 6" for manholes shall consist of excavation, removing all or a portion of the existing brick and mortar structure requiring repair, and furnishing and installing new brick and mortar courses matching the existing size and location of the original structure, sealing the exposed exterior surface, and backfill. Manhole Repair or Vertical Adjustment over 6" Brick Work Only, to repair or provide a vertical increase or decrease elevation adjustment to grade over six inches (6"), shall be measured per foot height or any fraction of a foot to the nearest 0.1'. This item shall be used in conjunction with the appropriate pay items for installing a new manhole frame and cover. On rigid pavement streets, after adjustment of the manhole an isolation pad of 4,000 psi concrete shall be installed as per details shown on City of New Orleans Department of Public Works Standard Drawings and included in the unit price bid for this item.

H. Measurement and payment of Special Bid Items for Catch Basin and Manhole Repairs and Vertical Adjustment:

ITEM NO. PAY ITEM PAY UNIT

CF-301, Vertical Catch Basin Cover, per each*
CF-302, Vertical Catch Basin Frame, per each*
CF-303, Lockable Vertical Catch Basin Frame and Cover, per each*
CF-311, Vertical Catch Basin Front Grate No. 1, per each*
CF-312, Vertical Catch Basin Front Grate No. 2, per each*
CF-313, Vertical Catch Basin Front Grate No. 3, per each*
CF-315, Single Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-316D, Double Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-317, Single Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-318D, Double Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-331, Drop Inlet Catch Basin Grate, per each
CF-332, Drop Inlet Catch Basin Frame, per each
CF-335, Drop Inlet Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-336, Drop Inlet Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-351, Mountable Catch Basin Grate, per each*
CF-352, Single or Double Mountable Catch Basin Frame, per each
CF-353, Lockable Mountable Catch Basin Grate, per each*
CF-355, Single Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-356D, Double Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings, per each
CF-357, Single Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only, per each
CF-358D, Double Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only, per

each
CF-371, Manhole Cover, per each
CF-372, Manhole Frame, per each
CF-375, Manhole Repair or Vertical Adjustment up to 6" Reusing Existing Metal Castings, per each
CF-376, Manhole Repair or Vertical Adjustment over 6" Reusing Existing Metal Castings, per foot height
CF-377, Manhole Repair or Vertical Adjustment up to 6" Brick Work Only, per each
CF-378, Manhole Repair or Vertical Adjustment over 6" Brick Work Only, per foot height

*Note, double catch basins requiring two covers, frames, or grates each shall be paid for separately.

SECTION 3.17 - DRAIN LINE REPAIRS / REPLACEMENT

3.17.01 GENERAL

A. These items shall be governed by the requirements of the "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, latest edition, Section C701 Storm Drains shall be the General Conditions for this Contract and shall govern except as modified here-in. All workmanship, material and tests shall conform to Section E of the General Specifications of the S&WB and the S&WB Standard Drawing No. 7260-S or 7260-D for the type of pipe material installed. When Culverts and Storm Drains replacement or repair items have been shown on the unit price proposal the final approved quantity for installation, measurement, and payment shall be determined by and subject to written approval of the Director and shall not be considered a material part of the work contemplated. Only locations specifically approved in writing by the Director before or during construction shall be measured and paid for at the unit price bid with no adjustment to the unit price for an increase or decrease in the bid quantity for approved work.

B. The Contractor shall conduct his operations in such manner as to cause the least possible interruption to service. The Contractor shall maintain drainage and driveway access at the end of the day's pipe laying. Open trenches shall only be as long as the length of pipe to be laid that day. At the end of the day's work, the end of the last length of pipe laid shall be blanked with a cover to prevent intrusion of trash. The Contractor shall provide bracing at power poles as per instructions from the utility owner where the trench excavation is adjacent to the poles (no direct pay). The Contractor shall exercise caution when placing and compacting backfill and bedding material as not to damage the pipe or cause joints to move out of place. The Contractor shall replace, at his own expense, any pipe, fittings, and other materials in existing installation which are damaged due to his operations. All pipe installations shall be inspected by the engineer's field representative before backfilling operations commence.

C. New pipe between two existing structures and pipe used for point repairs shall match the alignment and elevations of the existing pipe to be replaced unless otherwise shown in the plans or directed by the Director or the S&WB.

3.17.02 REPLACEMENT

A Pipe used for the replacement of the entire length of existing drain lines between manholes or

structures shall be new reinforced concrete pipe conforming to Section E of the S&WB General Specifications installed as shown on SWBNO Standard Drawing No. D-3809, D-3810, D-3933, or D-3934.

B. New Class IV Reinforced Concrete Pipe shall be required when the cover over the pipe within the roadway between 2.0-2.5 ft. The installation of reinforced concrete pipe shall be installed as shown on SWBNO Standard Drawing No. D-3809, D-3810, D-3933 or D-3934.

3.17.03 DRAIN LINE REPAIRS

A. Pipe used for Point Repairs of Existing Drain Lines may be new reinforced concrete pipe conforming to Section E of the S&WB General Specifications or solid wall polyvinyl chloride (PVC) pipe at the Contractors option unless otherwise noted.

B. New Class IV Reinforced Concrete Pipe shall be required when the cover over the pipe within the roadway is less than 2.5 ft.

C. Solid wall PVC pipe less than 18-inches in diameter, unless otherwise noted, shall be SDR 26 (PS115) Polyvinyl Chloride (PVC) pipe manufactured in accordance with ASTM D3034, latest edition, and shall be U.L. listed. Solid wall PVC pipe sizes 18-inches through 30-inches in diameter, unless otherwise noted, shall be PS115 Polyvinyl Chloride (PVC) pipe manufactured in accordance with ASTM F679, latest edition, and shall be U.L. listed. The elastomeric gaskets and retainer rings shall be installed in accordance with ASTM D3212 and F477, or per latest Sewerage & Water Board requirements. The fittings for solid wall PVC pipe shall be SDR 35 and shall have the same inside diameter as the solid wall PVC.

D. PVC pipe used for drain point repairs up to 30" diameter shall be installed as shown on SWBNO Standard Drawing No. 4697-E5-A. PVC pipe connecting to brick manholes shall be installed as shown on SWBNO Standard Drawing No. 6178_B_6.

3.17.04 PAYMENT

A. Payment for drain line replacement or repairs shall conform to the "General Specifications for Street Paving," the City of New Orleans, State of Louisiana, latest edition, Section C701 Culverts and Storm Drains, C701.08 PAYMENT when listed on the Unit Price Form proposal.

SECTION 3.18 - TIMBER CURB

A. This item shall be governed by the requirements of Standard Specification Item C707 (64) Timber Curb except as modified here-in. The unit price bid per horizontal Linear Foot of finished timber curb for this item shall include removal and proper disposal of existing timber curb and posts, grading, furnishing, and installing all required timber posts and timber curb, and final grading.

B. Measurement and payment for Timber Curb, including posts, shall be made at the contract unit price per Linear Foot (LF) of timber curb under Special Bid Item No. CF - 15 TIMBER CURB when listed on the Unit Price Form.

SECTION 3.19 - TYPE-A DEAD END INSTALLATION

A. The Dead-End Installation shall be governed by the requirements of 2006 Edition LADOTD Standard Specifications for Roads and Bridges section 729.06 except as modified here-in. The Contractor shall be responsible for providing all materials including guard rail, u-channel signposts and required signs and construction of guard rail and installation of signs as required by standard plan HS-03. Payment for Item CF-16, when listed on the Unit Price Form, shall include all material, equipment, and labor necessary to complete installation including guard rail as noted.

B. Dead end road installations shall be as specified and located as shown on the project plans. Posts shall be vertical. Guard rail shall be constructed in accordance with 2006 Edition LaDOTD Standard Specifications for Roads and Bridges section 704. Contractor shall re-grade and ensure positive drainage within the limits of the area disturbed by construction. Any fill material shall be placed at no direct pay and shall meet all requirements for fill material of this project. Fill material shall be suitable on-site excavated earth material, subject to approval of the Director, or borrow material compliant with the requirements Standard Specification Item C723 Granular Material with subsection 1003.07 referencing 2006 Edition LaDOTD Standard Specifications for Roads and Bridges. Fill and borrow materials shall be free from waste, rubbish, large rocks, or other unsuitable or foreign material.

SECTION 3.20 - CONCRETE BARRIER OR MOUNTABLE CURB WITH LAYING STRIP

A. This item shall be governed by the requirements of Standard Specification Section C707 except as modified here-in.

B. See details for Concrete Barrier Curb and Laying Strip and for Concrete Mountable Curb and Laying Strip on the Construction Drawings Typical Roadway and Section Details sheets for additional concrete strip required to be placed between the concrete pavement and concrete curb for construction of composite roadways.

C. There shall be no direct measurement and payment for the laying strip portion of the concrete barrier curb or concrete mountable curb. All associated costs shall be included in other major items of the proposal.

SECTION 3.21 – PROJECT SIGN

A. This item shall be governed by the requirements of Standard Specification Section C729 except as modified here-in.

B. The CONTRACTOR shall provide one project identification sign in accordance with the Contract Documents at no direct pay.

PROJECT SIGN CONSTRUCTION

B. The sign shall be constructed of 1/2-inch exterior plywood with 4-inch by 4-inch supports and 2-inch by 4-inch cross bracing.

C. The sign face shall be 4-feet vertical by 8-feet horizontal.

C. The sign will be printed in color on 10-mil Coroplast®.

SIGN CONTENT

A. The sign shall include the following information and graphic elements:

1) The City of New Orleans Fleur De Lis Logo at Left as shown on the Sign Example.
2) New Day New Orleans at top center as shown on the Sign Example.
3) The project name or title underneath New Day New Orleans as shown on the Sign Example.
4) Underneath project name: City Agency: Department of Public Works as shown on the Sign Example.
5) Underneath City Agency: Project Engineer: (company name) as shown on the Sign Template.
6) Underneath Project Engineer: Contractor (company name) as shown on the Sign Template.
7) Underneath Contractor: Track our progress at nola.gov, as shown on the Sign Example.
8) The Mayor's name underneath City of New Orleans at right as shown on the Sign Example.
9) Underneath the Mayors name, the Councilmembers at Large as shown on the Sign Example.
10) Underneath the Councilmembers at Large, Council District members as shown on the Sign Example.

B. The DPW PM shall provide the editable sign file (in full-size PDF format) to the Contractor at the Pre-Construction meeting. Sign template provided may require editing to reflect the Project Name and General Contractor. Contractor shall verify content of template and submit PROOF to the Director for approval of Copy & Placement.

SIGN LOCATION, MAINTENANCE, AND REMOVAL

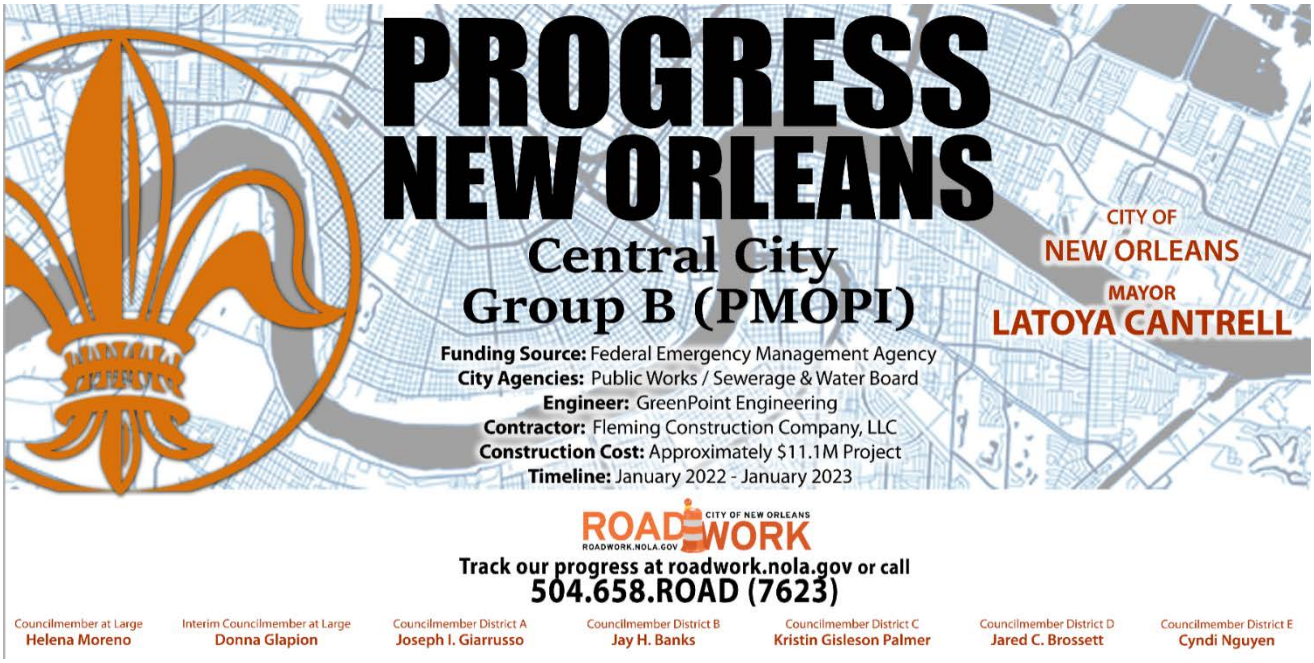
A. The project sign shall be located on the site as directed by the Director.

B. The sign shall be set 4 feet above the ground, measured from grade to the lower edge of the plywood sheet.

C. The CONTRACTOR shall maintain the sign in excellent condition throughout the duration of the project.

D. The CONTRACTOR shall remove the project sign and restore the area when directed by the owner upon preparation of the Notice of Completion.

SIGN EXAMPLE



SECTION 3.22 – NON-STANDARD SEWER REHABILITATION ITEMS

A. This section identifies special pay items applicable to the sewer rehabilitation work outlined in section 1.21 and 2.07 through 2.10 above.

B. Sanitary sewer rehabilitation including adjustment to sewer manhole covers shall be performed, measured, and paid for in accordance with the standard DPW specifications section C702 or the Special Provisions (this section) paragraph 3.15 above, where the Special Provisions supersede the standard specifications.

C. Sanitary sewer rehabilitation including replacement of sanitary sewer manhole covers shall be performed, measured, and paid for in accordance with the standard DPW specifications section C742 or the Special Provisions (this section) paragraph 3.15 above, where the Special Provisions supersede the standard specifications.

D. Sanitary sewer rehabilitation including the replacement of main line sanitary sewers, replacement of sanitary sewer lateral service connections and the lining of main line sanitary sewers, including the reinstatement of lateral service connections, shall be performed, measured, and paid for in accordance with the standard DPW specifications section C742.

E. Sewer Line Replacement by Pipe Bursting. In cases where main line sanitary sewer lines cannot be fully replaced by conventional excavation (due to trees or obstructions), the S&WB may direct the contractor to perform sanitary sewer line replacement by means of pipe bursting. Replacement of the existing sewer house connections shall be performed in accordance with DPW standard specifications section C742.03.

1. CSS742(X1), Install Sewer Mains by Pipe Bursting (Size). Payment shall be made at the contract unit price per linear foot of the size specified for work including replacement of

existing sewer main lines by pipe bursting as approved by the S&WB. Contractor shall include all labor materials and equipment to replace the main line sewer for the entire length from manhole to manhole. This work will be measured and paid for by the linear foot in the same manner as pay item C742(51) but without any provisions for depth.

2. CSS742(X2), Cut Pipe to Replace Existing Sewer House Connection from New Main to Back of Curb. Payment shall be made at the contract unit price per each for work including excavation and reinstatement of service connections disturbed from Install Sewer Mains by Pipe Bursting and the replacement of the service connection from the new main line to the back of the curb. Contractor shall include all labor materials and equipment to excavate, locate and expose each fitting, install a new fusible saddle, or tap for the appropriately sized main line sewer pipe, replace the sewer service lateral to the back of curb, including all required fittings and adjustments, and backfill and compact the excavation. With exception to the fusible saddle fitting, the work shall be performed as per DPW standard specification C742.03 and 742.05. This work will be measured and paid for by each in the same manner as pay item C742(60).

F. Sewer Line Point Repairs, Up to Twelve Feet. For the sewer rehabilitation work in this contract, sewer line point repairs shall be performed as specified in the DPW standard specification section C742.03 except that the length of the point repairs shall be twelve feet (12-ft).

1. CSS742(X3), Sewer Point Repair up to Twelve Feet (Size & Depth). Payment shall be made at the contract unit price per each of the size and depth specified for work including excavation, foundation lumber, bedding, drainage fabric, backfill, complete shoring, pumping as necessary and tie-ins. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

2. CSS742(X4), Sewer Point Repair beyond Twelve Feet (Size & Depth). Payment shall be made at the contract unit price per linear foot of the size and depth specified for work to including excavation, foundation lumber, bedding, drainage fabric, backfill, complete shoring, pumping as necessary and tie-ins. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

G. Find and Fix Lines. In some contracts the sewer rehabilitation work may include “Find and Fix” lines. These are line segments that were not locatable during inspection. The Contractor is responsible to locate the manholes for these line segments, perform sewer line cleaning and CCTV inspection. The manholes should then be secured to protect the safety of the public until the scope of rehabilitation has been determined. Manholes requiring vertical adjustment will be directed in the field and paid for under the respective bid unit item (Section 3.17.G above or Section C702). There is no direct payment for the coordination, locating or exposing of the manholes for lines identified as “Find and Fix” 2.09.E.

1. CSS742(X5), Sewer Main Line Cleaning (Size). Payment shall be made at the contract unit price per linear foot of the size specified for work including the cleaning of main line sewers in accordance with paragraph 2.09.E above in preparation for CCTV Inspection. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

2. CSS742(X6), Sewer Main Line CCTV Inspection (Size). Payment shall be made at the contract unit price per linear foot of the size specified for work including the CCTV inspection of main line sewers in accordance with paragraph 2.09.E above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

H. Sewer Service Lateral CIPP Lining. In some cases, sanitary sewer lateral house connections will require replacement but not be accessible due to oak trees, construction, or other obstructions. In these cases, with authorization from the S&WB, the Contractor will perform rehabilitation on these house connections by means of lateral CIPP lining from the sanitary sewer main line. Work shall be performed in accordance with paragraph 2.09.D above.

1. CSS742(X7), Sewer Service Lateral CIPP Lining. Payment shall be made at the contract unit price per each lateral service house connection including cleaning, CCTV inspection prior to the lining, the CIPP lining and the CCTV inspection upon completion of the lining in accordance with paragraph 2.09.D above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

I. Sewer Manhole Lining Rehabilitation. The sewer rehabilitation included in this contract will include the rehabilitation of manholes via a cementitious grout liner for either a partial depth or full depth. This work shall be performed in accordance with paragraph 2.09.F above.

1. CSS742(X8), Manhole Rehabilitation, Cementitious Liner, Partial Depth (2-feet). Payment shall be made at the contract unit price per each manhole and include the cleaning and cementitious liner application in the top 2 feet of the manhole in accordance with paragraph 2.09.F above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

2. CSS742(X9), Manhole Rehabilitation, Cementitious Liner, Full Depth. Payment shall be made at the contract unit price per vertical foot height of interior manhole walls from the top of bench to the underside of the frame and include the cleaning and cementitious liner application for the full height of the manhole in accordance with paragraph 2.09.F above. Contractor shall include all labor materials, equipment and appurtenances required to complete this work.

3. CSS742(X13), Sewer Service Lateral CCTV Inspection. Payment shall be made at the contract unit price per each lateral service house connection including CCTV inspection prior to the lining and CCTV inspection upon completion of the lining in accordance with paragraph 2.10 above. Contractor shall include all labor materials equipment and appurtenances required to complete this work.

J. Measurement and payment of Special Bid Items for Sewer Rehabilitation include:

ITEM NO.	PAY ITEM	PAY UNIT
CSS742(X1)	Install Sewer Mains by Pipe Bursting (Size)	Linear Foot
CSS742(X2)	Fuse Service Tee and Drill Pipe to Replace Existing Sewer House Connection from New Main to Back of Curb	Each
CSS742(X3)	Sewer Point Repair up to Twelve Feet	Each

	(Size & Depth)	
CSS742(X4)	Sewer Point Repair beyond Twelve Feet (Size & Depth)	Linear Foot
CSS742(X5)	Sewer Main Line Cleaning (Size)	Linear Foot
CSS742(X6)	Sewer Main Line CCTV Inspection (Size)	Linear Foot
CSS742(X7)	Sewer Service Lateral Lining (6" CIPP)	Each
CSS742(X8)	Manhole Rehabilitation, Cementitious Liner, Partial Depth (2-feet)	Each
CSS742(X9)	Manhole Rehabilitation, Cementitious Liner, Full Depth	Foot Height
CSS742(X10)	Removal of Cast Iron Flush Valve Apparatus from Sewer Manhole	Each
CSS742(X11)	Removal of water service line from sewer manhole	Each
CSS742(X12)	Locate and disconnect flush valve water service line from water main	Each
CSS742(X13)	Sewer Service Lateral CCTV Inspection	Each
CSS742(X14)	Well Point System	BLFT

K. Measurement and payment of for flush valve removal items CSS742(X10), CSS742(X11) and CSS742(X12) are specified in Section 2.10 above each item will be measured as a quantity of no more than one each per manhole containing a flush valve apparatus and/or water service connection.

SECTION 3.23 – NON-STANDARD WATER POINT REPAIR ITEMS

A. This section identifies special pay items applicable to the water point repairs work outlined in sections 1.22 and 2.12.

B. Payment for furnishing and installing water point repairs shall be made at the contract unit price including main line point repair installed as a complete system, including tie-ins, excavation, removal of existing pipe, pumping as necessary to prevent contaminating the existing system, bedding, complete shoring, backfilling material, hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.

C. Payment for furnishing and installing 1-inch through 2-inch Polyethylene Pipe for water house connections (LSL replacement) shall be made at the contract unit price per each, including excavation, backfilling, service saddles, corporation cock and removal of existing pipe and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for tie-ins to the main or meter.

D. Payment for furnishing and installing 2-inch Polyethylene Pipe watermain shall be made at the contract unit price per linear foot, including main line fittings (bends, tees, etc.), tie-ins, excavation, removal of existing pipe (if any), pumping as necessary to prevent contaminating the existing system, bedding, complete shoring, backfilling material, hauling and disposal of excavation material, and any

other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for 2" valves as required per the plans.

E. The contractor may request reimbursement of monthly water hydrant meter fees paid to the Board that were used for SWBNO Testing and Flushing of new water mains. The Contractor shall record usage type and read meter on a daily basis. Contractor, Resident Inspector and Board Construction Manager will sign and certify each month's usage.

F. All other items of work necessary to the performance of the project, for which no specific unit price and/or lump sum pay item is established, shall be considered and designated part of the construction, and the existing pay items shall be full compensation. Items including but not limited to, trench safety, traffic control, contract closeout, shop drawings, submittals, and office support shall be merged into the prices bid.

G. There will be no direct payment for temporary water mains, temporary water service connections, and any related work including temporary tie-ins, removal of temporary work after installation of permanent work, and other incidentals. The cost of all work shall be included in the water point repair unit bid prices.

H. Measurement and payment of Special Bid Items for Water Point Repairs include:

ITEM NO.	PAY ITEM	PAY UNIT
CSW741-01	Repair Water Main with Full Circle Clamp (Pipe Size 4" – 8")	Each
CSW741-02	Repair Water Main with Full Circle Clamp (Pipe Size 12" – 16")	Each
CSW741-03	Repair Water Main with Bell Joint Clamp (Pipe Size 4" – 12")	Each
CSW741-04	Repair Water Main with Bell Joint Clamp (Pipe Size 16" – 24")	Each
CSW741-05	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 4" – 12")	Each
CSW741-06	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 16" – 24")	Each
CSW741-07	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 4" – 12")	LF
CSW741-08	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 16" – 24")	LF
CSW741-09	Replace 5/8" to 1" Lead Service Line Water House Connection with 1" Polyethylene Water House Connection (From Main to Meter)	LF
CSW741-10	Replace 1.5" Lead Service Line Water House Connection (From Main to Meter)	LF
CSW741-11	Replace 2" Lead Service Line Water House Connection (From Main to Meter)	
CSW741-12	2" New Water Main with Main Line Fittings	LF

SECTION 3.24 – <u>WELL POINT SYSTEM</u>

PART 1 – GENERAL

1. Scope of Work
    1. Furnish, install, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

    2. The Contractor shall be responsible for the satisfactory performance of the system and for correcting any disturbance of natural bearing of soils or damage to structures caused by the dewatering system or by interruption of the continuous operation of the system as specified.

    3. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures. Prevent surface water from entering excavations by grading, dikes, or other means.

    4. Remove dewatering system once construction is complete and no damage will be caused to the installed pipe or structure from the well point system.

    5. Reference Section 01 100 Boring Logs and Coring Data for site specific geotechnical information.

2. Submittals
    1. Prior to excavation, the Contractor shall submit detailed drawings and design calculations descriptive of the proposed well point system used in maintaining dry conditions to the Engineer. This submittal shall be prepared and sealed by a professional engineer licensed in the State of LA.
    2. Submit plan showing arrangement, locations, and details of wells and well points; locations of risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.
    3. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
    4. Include written plan for dewatering operations including sequence of well and well-point placement coordinated with excavation shoring and bracings and control procedures to be adopted if dewatering problems arise
    5. Existing Conditions: Using photographs or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.
    6. Record Drawings: Identify locations and depths of capped wells and well points and other abandoned-in-place dewatering equipment.

3. Installation

1. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
2. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways, if required, using approved traffic control plans by authorities having jurisdiction.
3. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.
    1. Space well points or wells at intervals required to provide sufficient dewatering.
    2. Use slotted screen to prevent pumping of fine sands or silts from the subsurface.
    3. Provide two groundwater observation wells for each setup.
4. Place dewatering system into operation to lower groundwater level to allow for dry working conditions within the excavation. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.
5. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of the system becomes inadequate or fails.
6. Dewatering shall be required until the pipes and structures to be built have been completed to the extent that they will not be floated or otherwise damaged by allowing water levels to rise or return to natural elevations.

4. Operation
    1. Operate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Drain water-bearing strata above and below bottom of foundation of utilities and other structures where required.
        1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
        2. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
        3. Maintain piezometric water level a minimum of 24 inches below bottom of excavation.
        4. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.

2. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.

3. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

4. The dewatering system shall be operated so that the groundwater level outside the excavation is not altered to an extent that would damage or endanger adjacent structures or property.

5. Plug or fill well holes with sand or cut off and cap wells with a flowable fill of a

grout or sane mixture a minimum of 36 inches below the existing ground surface. Where well points are installed within the section of roadway to be replaced, the wells must be capped a minimum of 36 inches below the base course of the pavement section.

5. FIELD QUALITY CONTROL

1. Observation Wells: Provide a minimum of two observation wells or piezometers

2. Observe and record daily elevation of ground water and piezometric water levels in observation wells.

3. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made.

4. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.

5. While dewatering for new construction in the vicinity of existing structures, depletion of the groundwater level underneath these existing structures may cause settlement of within the site footprint and at some distance beyond the footprint. To avoid this settlement, the groundwater level under these structures shall be maintained by appropriate methods.

6. Survey-Work Benchmarks: Resurvey benchmarks regularly during dewatering and maintain an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Engineer if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent structures.

7. The contractor shall ensure appropriate the before and after condition of nearby structures and ground surfaces is recorded using photo and video documentation prior to the installation of any well points. The time and date of the recordings shall be labeled within the file.

6. Measurement and Payment

1. Well-pointing measured in areas of drainage and/or sanitary sewer installation with excavations deeper than 5 feet. Well-pointing measured for payment only with engineer's or owner's field approval.

2. Measurement. Well point systems or dewatering systems shall be measured by the "block linear foot" (BLFT) of street block requiring the well point system. The measurement shall be taken along the centerline of the block for the length of the open trench.

3. Payment. Shall be made at the contract unit price, per BLFT, for bid item CSS742(X14) WELL POINT SYSTEM measured as outlined. Such payment shall be

full compensation for all materials, equipment and labor necessary to furnish, install, operate and maintain the well point system, including any necessary traffic warning systems or any work necessary to restore the site to its original condition.

SECTION 3.25 – PRE AND POST REHABILITATION CCTV INSPECTION AND CLEANING DRAIN STRUCTURE(S)

SECTION 3.25.A – VIDEO RECORDING

A. The Contractor shall furnish all labor, equipment, supplies, and supervision and shall perform all work required in accordance with these specifications. CCTV inspection shall be performed in the areas selected and approved by the Owner.

B. It shall be the responsibility of the Contractor to schedule and perform investigations to prevent system overflows. If flows are such that they interfere with the Contractor's ability to collect accurate data, then the Contractor shall be responsible to schedule his work during low flow periods or to request written permission to perform by-pass pumping around the site. The Contractor may provide by-pass pumping only with specific approval from the City.

C. Inspection of storm drain infrastructure by means of CCTV equipment shall be performed to determine the location and extent of any obstructions and defects such as offset joints, protruding tees, broken pipe, and other pipe defects. Logs shall note the existence of any significant defects. Cleaning by the Contractor shall be performed prior to each CCTV inspection on each pipeline to be inspected.

D. CCTV inspections shall be performed on one drainage structure-to-drainage structure pipe segment at a time. The inspection shall be performed by moving the CCTV camera through the line along the axis of the pipe at a rate not to exceed 30 feet per minute. Any means of propelling the camera through the pipe that would exceed this rate of speed or produce non-uniform or jerky movements shall not be acceptable. The camera shall be stopped for a minimum of 5 seconds at each identifiable defect to ensure proper documentation of the line's condition. In addition, the camera shall be stopped at each service connection, and the camera shall pan the service connection to video inside the service line. CCTV inspection is performed from the upstream manhole/catch basin to the downstream manhole/catch basin when the conditions allow. If conditions do not allow an upstream to downstream inspection, the inspection will be performed in reverse (from the downstream to the upstream drainage structure).

E. A header screen showing tape number, segment number, and manhole number shall be taped for 10 seconds at the beginning of each televised line segment. All header information shall be recorded on the log forms.

F. At the Contractor's discretion the camera shall be stopped or backed up to view and analyze conditions that appear to be unusual or uncommon for a sound storm drain line. At all times, the operating technician shall be able to move the camera through the line in either direction

without loss of quality in the video presentation on the monitor. The picture shall be free of electrical interference and provide a clear, stable image of the specified resolutions at all times. The camera lens shall be cleaned, as required, to provide a clear image within the storm drain lines.

G. In the event that equipment becomes lodged in the line segment, the Contractor shall notify the City immediately. The City will remove the camera at no cost to the Contractor. Timely excavation is necessary to maintain project schedules and to eliminate the possibility of overflows resulting from the lodged equipment creating a blockage.

H. Continuous video recordings of the inspection view as it appears on the television monitor shall be taken. It is intended that a video recording will be made of the complete television inspection of all storm sewer lines as part of this project. The video recording shall be one on which both sound and video information can be reproduced with a video image equal to or better than the quality of the original picture on the television monitor.

A pan tilt zoom (PTZ) camera shall be used to conduct the inspection. The camera shall be waterproof and corrosion resistant and able to operate in temperatures between 0-50 degrees C (32-122F). The sensor shall be ¼" color CCD with minimum 1.5 lux sensitivity for resolution of minimum 460 NTSC TV lines. A full 360-degree axial pan is required with a variable pan speed not to exceed 25 degrees/second. The camera shall have a minimum 40:1 zoom lens capable of 10X optical and 4X digital, with auto or remote manual focuses. The adjustment of focus and iris shall allow optimum picture quality to be achieved and shall be remotely operated. The illumination shall be such as to allow an even distribution of light around the pipeline perimeter without the loss of contrast or flare out of picture shadowing.

The replay of the recorded video information, when reviewed on a monitor-receiver, shall be free of electrical interference and shall produce a clear, stable image with a horizontal resolution equal to that of the television monitor in the television inspection studio. The audio portion of the completed signal shall be sufficiently free of electrical interference and background noise to produce an oral report that is clear and complete, and easily discernible. The audio portion of the tape report shall include the location or identification of the section, the manhole-to-manhole direction of travel, and the distance traveled on the specific run encountered. The audio portion of the tape shall also identify all defects. The video equipment shall be continuously connected to the television inspection or monitoring equipment. The video and monitoring equipment shall have the built-in capability to allow the technician to instantly review both the audio and video quality of the video productions at all times during the television survey. Playback speed shall be continuously adjustable from one-third normal speed for slow motion viewing to normal playback speed.

A suitable distance-reading device which uses cable length to accurately measure the location of the camera in the pipe shall be provided. This device shall be accurate to +/- 1% of the length of the inspection.

I. Laser Equipment Inspection: If determined necessary by DPW, 2-D Laser scanning shall be conducted continuously and simultaneously with other inspection technology for the entire length of the selected pipe segment. Laser equipment shall be moved through the pipe on a

transport vehicle capable of supporting the laser inspection equipment above the water level. Tracked platforms must be capable of forward/stop/reverse mobility for detailed high-resolution scans to be collected at a specified interval.

The laser equipment shall be designed and manufactured to produce a high resolution of measurement resulting in 0.25% of internal diameter, with a laser sensor accuracy of 0.5% or greater (i.e., an accuracy of 0.5 inches at 100 inches in pipelines up to 30 inches in diameter and a repeatability of 0.10% or greater for pipelines from 15 inches to 30 inches in diameter). The laser equipment shall be properly calibrated per the manufacturer's documentation and the calibration shall be recorded for verification.

The laser equipment shall be capable of measuring the distances to objects and surfaces in drain lines and shall be capable of imaging drain lines less than 36" in diameter. The laser shall support 75 Hz scan rates or higher and be Class 1: eye-safe for operator safety. The laser sensor resolution shall be at least 1mm.

The laser equipment shall be operated in a manner to minimize measurement error sources attributable to the effects of the following:

1. Horizontal displacement from off-axis meander or pipeline alignment curvature that distorts cross-section measurement;
2. Vertical displacement due to sediment, debris, offset joints or other physical environment conditions that distorts cross-section measurement; and
3. Vertical displacement due to flow condition or other hydraulic environment factors that distorts cross-section measurement.

An overview of data collected by laser equipment is to be presented in a color-coded format as 2-D cross sections conveying pipe condition above the laser's centerline over the length of the inspection segment. The report shall provide a 2-D representation of an integrated overview of pipe wall thickness loss or increase data revealed from laser scanning and shall be presented in a color-coded format as an unrolled illustration of the pipe condition above the waterline over the length of the inspection segment. The pipe interior is to be flattened into a graphic whose y-axis represents pipe diameter, whose x-axis represents pipe length and whose color represents deviation from expected values indicating a gradation and severity of corrosion or buildup. Measured pipe internal diameter (ID) that coincides with expected values must be coded in a color that positively identifies and differentiates the measurement of the expected values from pipe wall loss or increase. Measured pipe ID that coincides with expected values must be coded green. Outward deformations, as measured by increasing pipe ID, must be colored on a yellow/red color scale, advanced deformation. Material gain (buildup) or inward deformation, as measured by decreasing pipe ID, must be on a blue color scale.

If DPW determines that Laser Inspection is necessary, it will negotiate a unit price for that inspection upon the first use of this type of inspection. The unit price developed will be entered into the contract and used for the duration of the contract at the fixed established unit price.

J. Video recordings shall be enclosed in plastic containers which shall clearly indicate the date the tape was recorded, the designated section(s) of storm sewer lines contained on the tape, and the referenced storm sewer inspection report covering the sections of the storm sewer lines so included. Two permanent labels are required. One label shall be placed on the spine and the

other on the face of the video. Recording of a single segment shall not span more than one video. The recording of a segment between manholes shall be continuous and complete. The videos become the property of the City, once submitted. The Contractor shall maintain a master copy of all videos and associated Inspection Reports for one year after Contract completion. Additional copies of the videos, if requested, shall be made by the Contractor on professional duplication equipment. Two permanent labels are required. One label shall be placed on the spine and the other on the face of the video. Permanently label each tape with the following information:

Spine of DVD Case

Contract No. _____ Disc No. _____

Face of DVD Case

Start Manhole	Finish Manhole

K. CCTV inspection footage of service laterals shall be included on separate videos. The Contractor may include as many service lateral inspections as possible on each video provided that all service lines from the same mainline are on the same video. The DVD spine label shall be identical to those for mainline inspection. The face label of the video shall include the following information: mainline information (upstream manhole to downstream manhole), service line location, survey start point, and survey finishing point.

SECTION 3.25.B – DRAIN LINE CLEANING

A. Standard line cleaning shall be performed to remove foreign material and restore pipe capacity to 95%. Standard cleaning shall be defined as three (3) complete passes of the storm drain line with the cleaning equipment. The term "complete passes" shall mean cleaning from the upstream manhole all the way to the downstream manhole. Cleaning shall be performed with combination cleaning / vacuum trucks.

B. Heavy line cleaning shall be performed, only if required and approved by the City, to remove foreign material and restore pipe capacity to 95%. Heavy line cleaning shall be defined as four (4) or more complete passes of the storm drain line with the cleaning equipment. The term "complete passes" shall mean cleaning from the upstream manhole all the way to the downstream manhole. Cleaning shall be performed with combination cleaning / vacuum trucks.

C. Conditions such as broken pipe and major blockages may prevent cleaning from being

accomplished, especially where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered and the contractor is unable to clean the entire line from all reasonable points of access and directions, the Contractor shall not be required to clean those specific pipe sections unless the Owner removes the apparent obstruction.

D. During cleaning operations, satisfactory precautions shall be taken by the Contractor in the use of cleaning equipment. Precautions shall be taken to ensure that damage to or flooding of public or private property does not occur during the cleaning procedure.

E. Selection of the equipment shall be the sole discretion of the Contractor and based on the conditions of lines at the time the work commences. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the storm drain lines and manholes. There shall be no change in cost for use of additional or different equipment utilized at the discretion of the contractor to perform work. Contractor shall notify project engineer and Owner of equipment to be used prior to use or initiation of any work.

F. All sludge, dirt, sand, rocks, grease, and other solid or semi-solid materials resulting from the cleaning operation shall be removed at the downstream manhole/catch basin of the section being cleaned. Passing materials from pipe segment to pipe segment, which could cause line stoppages, accumulations of debris in wet wells, interference with in-line permanent flow monitoring equipment or damage to pumping equipment will not be permitted.

G. If the CCTV inspection shows the cleaning to be unsatisfactory, the Contractor shall re-clean and re-inspect the pipe segment at his sole expense until the cleaning is shown to be satisfactory.

H. All sludge, dirt, sand, rocks, grease, and other solid or semisolid materials removed from the storm drain lines during the cleaning operation shall be drained of water and transported to an approved licensed landfill facility. All costs associated with debris disposal will be the responsibility of the Contractor or as otherwise specified herein.

SECTION 3.25.C – LATERAL DRAIN LINE CLEANING

A. Contractor will use a lateral launch inspection system, consisting of a robotic tractor and a lateral launch CCTV camera, to remotely deploy a pan & rotate camera into lateral pipes connected to a mainline storm drainpipe. Should Contractor encounter multiple laterals converging in a single tap, Contractor shall utilize a steerable lateral camera with guide pin to inspect the adjoining laterals separately. Each pipe shall be identified as an independent inspection for data submittal and invoicing purposes.

B. A mainline television camera is used to position the lateral camera launcher. The lateral camera is used to inspect each lateral from the mainline.

C. The television inspection of the lateral will be attempted from inside the mainline up into the

lateral or attempted from the service manhole towards the mainline. Lateral lines inspected from the service manhole towards the mainline will be attempted by using a mini push camera if necessary.

D. In the event a lateral pipe segment cannot be fully inspected after reasonable attempts to remove obstructions or traverse because of poor structural condition is not successful, Contractor shall provide all the information to the City and the City will determine alternate possible solutions or whether enough information has been obtained to safely assess the proximity of uninspected portions of pipe.

E. Under no circumstances shall a lateral line be cleaned or inspected on private property or beyond public right-of-way of non-local City street (i.e., federal, federal-aid or state routes) limits. Any cleaning or inspection services performed outside the City approved scope of work, private property, or otherwise specified herein will not reimbursable and all associated costs contractor responsibility. The connections points for all laterals at the mainline or connecting structure shall be inspected at no direct cost. The limits of lateral lines cleaning and inspection operations for lateral lines connecting a drainage structure to the mainline may end at the drainage structure; however, where feasible the contactor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. For lateral lines not connected to a drainage structure the lateral line shall be cleaned and inspected from the connection point to the mainline to the extent feasible on the private property side (side opposite the mainline). If the contractor is unable to reasonably clean or inspection a lateral line beyond the connection to the mainline the contractor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. Field reports and video logs shall clearly document distinguish whether the line cleaned or inspected is a mainline or lateral.

SECTION 3.25.D – DRAINAGE STRUCTURE CLEANING

A. The Contractor shall furnish all labor, equipment, supplies, and supervision and shall perform all work required in accordance with these specifications. Drainage structure cleaning, including catch basins, drop inlets, conflict boxes, manholes, etc. shall be performed in the areas selected and approved by the City. Only manholes / catch basins with large debris such as rocks, bricks, trash, tree limbs, etc. will require cleaning. Also, cleaning will be required if small deposits or water has accumulated at greater than or equal to 1/3 of the depth of the manhole / catch basin (measured from rim to invert of the lowest pipe).

B. Selection of the equipment shall be the sole discretion of the Contractor and based on the conditions of drainage structures at the time the work commences. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the drainage structures.

C. All sludge, dirt, sand, rocks, grease, and other solid or semisolid materials removed from the storm drainage structures during the cleaning operation shall be drained of water and transported to an approved licensed landfill facility. All costs associated with debris disposal will be the

responsibility of the Contractor or as otherwise specified herein.

SECTION 3.25.E – TELEVISION INSPECTION REPORTS

A. Television Inspection Report: The Contractor shall complete a television inspection report covering the television inspection work and the information acquired. The television inspection report shall be completed by the Contractor.

B. A television inspection code sheet shall be used consistently throughout the contract. All electronic data files shall be submitted on CD-ROM, or flash drive, as directed and approved by the City.

C. Video Data Display: At the start of each storm sewer length being surveyed, the length of pipeline from zero up to the cable calibration point shall be recorded and reported in order to obtain a full record of the storm sewer length. The length reading entered on to the data display at the cable calibration point must allow for the distance from the start of the survey is zero. In the case of surveying through a manhole where a new header sheet is required, the distance shall be set at zero with the camera focused on the outgoing pipe entrance.

D. Television Inspection Record: AT the start of each manhole length a data generator shall electronically generate and clearly display on the viewing monitor and video recording a record of data in alphanumeric form containing the following minimum information:

a. Automatic update of the camera's position, in feet and tenths, in the storm sewer line from adjusted zero;
b. Size and Length of Line, Type of material line composed of, etc.;
c. Upstream manhole and downstream drainage structure reference numbers;
d. Date of inspection;
e. Road name/location;
f. Direction of inspection (upstream or downstream);
g. Starting time of the inspection;
h. Pipe ID references;

Once the survey of the pipeline is under way, specific data should be continuously displayed on the viewing monitor and video recording. The size and position of the data display shall be such as not to interfere with the main subject of the picture yet shall be easily readable when the recording is replayed. At minimum, the following data should be displayed:

Automatic update of the camera's position, in feet and tenths, in the storm sewer line from adjusted zero; \

Upstream manhole and downstream manhole reference numbers

Each storm sewer length, i.e., the length of the storm sewer between two consecutive drainage structures, shall be entered on a separate coding sheet. Thus, where a Contractor elects to "pull through" a manhole during a CCTV Survey, he shall start a new coding sheet at the manhole

"pulled through" and shall re-set the distance to zero on the coding sheet.

All blind drainage structures and buried drainage structures shall be noted in the inspection report and logged on a separate log with the GPS location and type of structure. The log shall be provided to the City with each pay request.

The videos and corresponding reports shall be submitted to the City on a weekly basis for all work accomplished the previous week.

E. Laser Inspection Reporting: Laser scan final reporting shall include the pipe's true diameter, ovality (per ASTM FI216), x/y diameter, and maximum diameter. Segments or areas revealing deflection in horizontal alignment greater than 2% must be identified in the report. Where the presence of flow in the pipeline requires interpolation and estimation calculations to fill data gaps and complete the full circumference view, the method and calculations used to support these assumptions must be presented. Other data sources such as as-built data, if used for these calculations, must be identified in the report. To support identified radial localization of defects, individual ID measurements as computed from the axis of the inspected pipe must be presented in an illustrated ovality and deflection graphs covering the length of the inspection segment. Laser scan results identifying ovality and deflection must be presented in 2-D cross-sections. The color coding is to be identical to the aforementioned requirements. Where the presence of fluids in the pipe necessitates interpolation and estimation, calculations to fill gaps and complete the full circumference view will be performed. The method and calculations used to support these assumptions must be presented. Any high-resolution scan obtained during the inspection are to be provided along with the report in a 3-D point cloud (VRML) format including software for viewing on a PC.

Precision Ovality Scans including but not limited to Sensor Error, Axis Alignment Error, and Processing Errors must be accurate to +/- 1%.

The report shall provide a 2-D representation of an integrated overview identifying concentricity, and deviation from concentricity resulting in ovality and eccentricity, presented in a color-coded format as an unrolled illustration of the pipe condition to include the entire pipe circumference (above the flow line) as well as a cross-section view. The pipe interior is to be flattened into a graphic whose y-axis represents pipe diameter, whose x-axis represents pipe length and whose color represents deviation from expected values indicating a gradation and severity of the deviation from concentricity. Measured pipe internal diameter (ID) that coincides with expected values must be coded in a color that positively identifies and differentiates the measurement of the expected values from actual concentricity measurements

The report shall provide a 3-D representation with variations in pipe wall shown in sharp relief for easy visual analysis for each of the aforementioned 2-D representations.

SECTION 3.25.F – SUBMITTALS

A. DATA: Data in CD-ROM, or flash drive, format shall be submitted to the City within ten (10) business days from time of inspection. Three (3) hard copies of the inspection report listed above shall be submitted.

B. CCTV Inspections: The Contractor shall provide videos with audio comments in DVD, or flash drive, format recorded at Standard Play (SP).

a. Complete storm sewer line segments can be included on the same video (i.e., CCTV inspections for storm sewer line segments shall not be divided among videos).
b. The video format shall be an MPEG-1 compressed video, and resolution video format shall be QSIF (Quarter-size Standard Image Format) of 176 x 112 pixels for NTSC video format.
c. Two labels are required on each DVD. One label shall be placed on the spine of the DVD Cover and the other on the face of the DVD.

C. Other Required Submittals: The Contractor shall provide the following backup information to support and document each location that has been cleaned/inspected:
   a. Brief narrative describing scope of work for location and any findings after inspection.
   b. Maps/GIS Data of each location showing work completed
   c. Field logs and misc. information generated during field investigation. A log shall be made by the Contractor when each drainage structure-to- drainage structure pipe segment is televised. The log shall include at a minimum:
      a. Street name with municipal address hundred block number, and any intersecting street
      b. Location of each point of leakage
      c. Location of each service connection or other pipe entering the televised line
      d. Location and degree of offsets
      e. Location of any damaged sections, and nature of damage
      f. Location of buried structures or blind junctions
      g. Location and amount of any deflection in alignment or grade of pipe; also, the total length of pipe sag
      h. Pipe ID reference number, materials, diameter, and distance between pipe joints
      i. Date, city, drainage structure-to- drainage structure segment, reference drainage structure ID number
      j. Name of operator, and inspector
      k. Direction of flow
      l. If a reverse-set up
      m. Video Filename
   d. Confined space entry form (when required) per industry standards and any applicable federal or state requirements.
   e. The Contractor shall prepare and submit a list of any encountered defects, obstructions, and blockage locations on a weekly basis. Any locations with defects which appear to require immediate corrective action based on their size and/or type on a daily and weekly basis.

D. Progress Reports: The Contractor will be required to provide a weekly progress report to the City showing, at a minimum, the status of all locations previously worked on in the prior week. The report shall include the location/address, size of drain line being inspected, date the notice to proceed was issued for the location, the status (complete, ongoing, etc.), and the anticipated completion date. A final overall project report shall also be provided upon completion of all work. A hard copy and CD with PDF copy of all reports within the billing period shall be provided with each invoice submitted and the final report submitted with or prior to the final retainage invoice.

SECTION 3.25.G – MEASUREMENT AND PAYMENT

A. CCTV Inspection of Main Lines (and/or Laterals). Drain line laterals shall be considered any drain line or pipe connecting stubbed or otherwise tied into the main drain line. Laterals may originate from drainage structures or other connecting features to facilitate the flow of stormwater into the primary drainage system. Under no circumstances shall a lateral line be cleaned or inspected on private property or beyond public right-of-way of non-local City street (i.e., federal, federal-aid or state routes) limits. Any cleaning or inspection services performed outside the City approved scope of work, private property, or otherwise specified herein will not reimbursable and all associated costs contractor responsibility. The connections points for all laterals at the mainline or connecting structure shall be inspected at no direct cost. The limits of lateral lines cleaning and inspection operations for lateral lines connecting a drainage structure to the mainline may end at the drainage structure; however, where feasible the contactor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. For lateral lines not connected to a drainage structure the lateral line shall be cleaned and inspected from the connection point to the mainline to the extent feasible on the private property side (side opposite the mainline). If the contractor is unable to reasonably clean or inspection a lateral line beyond the connection to the mainline the contractor shall point and video record for a sufficient time to obtain a clear view of the lateral system on the private property side (side opposite the mainline) at no additional cost. Field reports and video logs shall clearly document distinguish whether the line cleaned or inspected is a mainline or lateral.

a. *Measurement:* CCTV Inspection of existing storm sewer pipe including drainage structures will be measured in place on a linear foot basis to the nearest foot. Measurement will be along the horizontal centerline of the pipe with no deductions for drainage structures and will be from center of drainage structures to center of drainage structures for the actual storm sewer line televised. CCTV of mainlines will include a view of the upstream and downstream drainage structures where possible to indicate the relative condition of said drainage structures. Measurement will be made for a various range of pipeline diameters listed under this item on the Proposal Form.
    i. The pipe segment length, with respect to the referenced drainage structure, shall be determined with a meter device, accurate to within ±2%. Markings on the cable, instruments requiring observation inside a drainage structure, or correction of each reading for the depth of the referenced drainage structure shall not be allowed. Accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape, or other suitable device.

b. *Payment:* Payment for CCTV inspection of the existing storm sewer pipe and drainage structures will be made for the respective quantities as determined above at the unit price bid in the Proposal Form. This price and payment shall be full compensation for all material, labor, and equipment, required for television set-up, including, storm sewer flow, camera retrieval, hard copy report, electronic report, video recording, measurement, etc.

B. Cleaning of Main Lines (and/or Catch Basin Laterals)

a. *Measurement:* Cleaning of existing storm sewer pipe including drainage structures will be measured in place on a linear foot basis to the nearest foot. Measurement will be along the horizontal centerline of the pipe with no deductions for drainage structures

and will be from center of drainage structures to center of drainage structures for the actual storm sewer line televised. Cleaning of mainlines will include a view of the upstream and downstream drainage structures where possible to indicate the relative condition of said drainage structures. Measurement will be made for a various range of pipeline diameters listed under this item on the Proposal Form.

i. If cleaning of an entire section cannot be successfully performed from one manhole/catch basin, the equipment shall be set up at the other manhole/catch basin and cleaning again attempted. If successful cleaning still cannot be performed or the equipment fails to traverse the entire manhole-to-manhole or catch basin to catch basin pipe segment, it will be assumed that a major blockage exists, and the cleaning operation will be abandoned. The cleaning operator will note these occurrences in his daily cleaning log. The Contractor will be compensated for cleaning for only the length associated with the portions thereof pipe successfully cleaned should this occur.

b. *Payment:* Payment for cleaning of the existing storm sewer pipe and drainage structures will be made for the respective quantities as determined above at the unit price bid in the Proposal Form. This price and payment shall be full compensation for all material, labor, and equipment, required for television set-up, including, storm sewer flow, camera retrieval, hard copy report, electronic report, video recording, measurement, etc.

C. Heavy Cleaning of Main Lines (and/or Catch Basin Laterals)

a. *Measurement:* Heavy cleaning of existing storm sewer pipe including drainage structures will be measured in place on a linear foot basis to the nearest foot. Heavy cleaning is defined as making four or more complete passes in the specific line segment being cleaned. Measurement will be along the horizontal centerline of the pipe with no deductions for drainage structures and will be from center of manhole to center of drainage structures for the actual storm sewer line televised. Heavy cleaning of mainlines will include a view of the upstream and downstream drainage structures where possible to indicate the relative condition of said drainage structures. Measurement will be made for a various range of pipeline diameters listed under this item on the Proposal Form.

b. *Payment:* Payment for heavy cleaning of the existing storm sewer pipe and drainage structures will be made for the respective quantities as determined above at the unit price bid in the Proposal Form. This price and payment shall be full compensation for all material, labor, and equipment, required for television set-up, including, storm sewer flow, camera retrieval, hard copy report, electronic report, video recording, measurement, etc.

SECTION 3.25.H – OBSTRUCTIONS AND BLOCKAGES

A. The Contractor will notify the City of any obstructions and blockages preventing the Contractor from completing his/her work. The City shall be notified after an attempt for standard cleaning has taken place. The Contractor shall submit a partial inspection report as outlined above in Sections 3.25.E & 3.25.F. The City will review the submittal and provide further guidance to the Contractor on a case-by-case basis. City may authorize "Heavy Cleaning" as outlined herein or approve additional means, as requested by the contractor. Any additional costs associated with additional

services to address obstructions and blockages shall be approved by the City prior to starting work, or incurring any mobilization or material, equipment, and labor costs. Contractor shall submit a request in writing for City approval complete with all necessary supporting backup and detailed estimate inclusive of all material, equipment, labor, and other incidental costs, in addition to any applicable taxes, fees, markup, profit, overhead, insurance, and bond, etc. costs in accordance with City requirements.

B. If a blockage or obstruction is encountered and conditions allow, the Contractor shall attempt to conduct the inspection and cleaning from the opposite end of the pipe and continue back towards the blockage or obstruction in order to ensure maximum data collection of the pipe segment. Any reverse set-up mobilization costs shall be at no direct pay.

   a. If a reverse set-up is required because the cleaning or CCTV in the downstream direction could not be completed, a new coding sheet shall be prepared for the start of the reverse set-up cleaning or CCTV. In no instance shall the pipe ID be altered so that the downstream drainage structure reference number is listed first and upstream drainage structure reference number listed. All reverse set-ups shall be logged on a separate log.

C. It shall be the responsibility of the Contractor to schedule and perform investigations to prevent system overflows. If flows are such that they interfere with the Contractor's ability to collect accurate data, then the Contractor shall be responsible to schedule his work during low flow periods or to request written permission to perform by-pass pumping around the site. The Contractor may provide by-pass pumping only with specific approval from the City.

D. Inspection of storm drain infrastructure by means of CCTV equipment shall be performed to determine the location and extent of any obstructions and defects such as offset joints, protruding tees, broken pipe, and other pipe defects. Field logs / reports shall note the existence of any significant defects. Cleaning by the Contractor shall be performed prior to each CCTV inspection on each pipeline to be inspected.

3. Measurement and Payment Bid Items:

ITEM NO.	PAY ITEM	PAY UNIT
CSD701-01	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15" diameter	Linear Feet
CSD701-02	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15" to 24" diameter	Linear Feet
CSD701-03	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27" to 30" diameter	Linear Feet
CSD701-04	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36" diameter and above	Linear Feet
CSD701-05	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15" diameter	Linear Feet

CSD701-06	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	Linear Feet
CSD701-07	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	Linear Feet
CSD701-08	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	Linear Feet
CSD701-09	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	Linear Feet
CSD701-10	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	Linear Feet
CSD701-11	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	Linear Feet
CSD701-12	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	Linear Feet

SECTION 3.25.I – POST REHABILITATION CCTV AND INSPECTION

In accordance with Section C204 Environmental Protection and Stormwater Pollution Prevention Plan from the General Specifications, the Contractor is responsible for the long-term operation and maintenance of the related best management practices. Post rehabilitation CCTV and inspection is required, at no direct pay, to evaluate the storm sewer’s capacity and ensure that the restored pipe is free from debris, obstructions, or foreign material which would have been caused by construction activities of the Contractor. Post rehabilitation CCTV and inspection shall follow the requirements of Sections 3.25.A through Section 3.25.F.

SECTION 3.26 – WATERLINE PIPE BURSTING

These items shall be governed by the requirements of General Specification Section C741 except as modified here-in.

INSTALLATION:
The installation of the new water main shall conform to the manufacturer's recommendations.

Pipe bursting and fusion equipment shall be operated by personnel with a minimum of 2 years of experience in the installation of the polyethylene pipe 8 inches or greater, using pipe bursting lining technology. The technician shall possess a certificate of training endorsed by the manufacturer of the pipe bursting equipment, a certificate of training endorsed by the manufacturer of thermal fusion equipment in butt fusing of HDPE pipe, and a certificate of training endorsed by the supplier or manufacturer of HDPE electro-fusion fusion couplers to be used in the method. In lieu of certificate, evidence of training may be substituted. The technician’s experience and references shall be made available upon request by the Engineer.

Prior to starting the Work, the Contractor shall submit construction sequence and staging plan (inclusive of proposed insertion and receiving pits), traffic control plan, temporary water supply layout, installation details and sketches, shop drawings, equipment catalog data, product specifications, and other pertinent information for the HDPE pipe installation work

After the completion of pipe bursting and installation of all fittings, offsets hydrant leads, valves, and service saddles but prior to the change over of service connections, the Contractor shall complete testing on the new main in accordance with Section C741.05. Following successful testing, the Contractor shall change over service connections from the temporary watermain to the new main.

If plans specify trench method of installation, but the Project Engineer and SWBNO approves Pipe Bursting method: Payment for furnishing and installing New Watermains by Pipe Bursting shall be made at the contract unit price for corresponding C741(51) PVC existing contract item of equal diameter per linear foot.

The Contractor shall reference ASTM Standards:

ASTM F 2620 - Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings

ASTM D 3035 - Polyethylene Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter

ASTM D 3261 - Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

ASTM D 3350 - Polyethylene Plastic Pipe and Fittings Materials

ASTM F 714 - Standard Specification for Polyethylene Plastic Pipe Based on Outside Diameter

ASTM F 1055 – Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe and Tubing

MEASUREMENT AND PAYMENT:

If plans specify Pipe Bursting as the only acceptable installation method: Payment for furnishing and installing New Watermains by Pipe Bursting shall be made at the contract unit price per linear foot, including fusing main line fittings (bends, tees, etc.), known offsets, temporary services, tie-ins, removal of existing pipe (if any), dewatering pumping as necessary to prevent contamination, excavation of insertion and receiving pits, shoring, backfilling material, hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for demolishing and abandoning existing valve manholes.

If plans specify trench method of installation, but the Project Engineer and SWBNO approves Pipe Bursting method: Payment for furnishing and installing New Watermains by Pipe Bursting shall be made at the contract unit price for corresponding C741(51) PVC existing contract item of equal diameter per linear foot, including fusing main line fittings (bends, tees, etc.), known offsets, temporary services, tie-ins, removal of existing pipe (if any), dewatering pumping as necessary to prevent contamination, excavation of insertion and receiving pits, shoring, backfilling material, hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for demolishing and abandoning existing valve manholes.

Payment for furnishing and installing New Water Mains by Pipe Bursting shall be made at the contract unit price per linear foot, including fusing main line fittings (bends, tees, etc.), known offsets, fire hydrant leads, tie-ins, removal of existing pipe (if any), minor dewatering, excavation of insertion and receiving pits, complete shoring, backfilling material, and hauling and disposal of excavation material,

and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.
Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT

If installation method not specified:

C741(51)(C)(1)	8” PVC New Water Main with Main Line Fittings, Linear Foot
C741(51)(E)(1)	12" PVC New Water Main with Main Line Fittings, Linear Foot
C741(51)(F)(1)	16" PVC New Water Main with Main Line Fittings, Linear Foot
C741(51)(H)(1)	20" PVC New Water Main with Main Line Fittings, Linear Foot
C741(51)(I)(1)	24" PVC New Water Main with Main Line Fittings, Linear Foot
C741(51)(J)(1)	30" PVC New Water Main with Main Line Fittings, Linear Foot

If installation is specified in plans as Pipe Bursting:

CSW741(51)(C)(4)	8” HDPE New Water Main with Main Line Fittings by Pipe Bursting, Linear Foot
CSW741(51)(E)(4)	12” HDPE New Water Main with Main Line Fittings by Pipe Bursting, Linear Foot

SECTION 3.27 – NON-STANDARD BID ITEMS

ITEM NO	PAY ITEM	PAY UNIT
CF-3	Sidewalk, Driveway, and Curb Saw Cutting	LF
CF-4	Pavement Saw Cutting Adjacent to Existing Pavement and at Patches to Utility Trenches	LF
CF-5	Removal of Handicapped Ramps, Curb and Gutter, and Concrete Sidewalks at Intersections Including Saw Cutting	SY
CF-6	ADA-Accessible Curb Ramps, Curb and Gutter,, and Concrete Sidewalks at Intersections	SY
CF-7	4” Concrete Sidewalk (Special Finish)	SY
CF-8	6” Concrete Driveway (Special Finish)	SY
CF-9	6” Concrete Driveway (Special Finish) (Pea Gravel)	SY
CF-10	Root Pruning	EACH
CF-13	Sidewalk Transition Adjacent to Handicapped Ramps.	EACH
CF-14	Surface Applied Tactile / Detectable Warning Surface Tiles	EACH
CF-15	Timber Curb	LF
CF-16	Type-A Dead-End Installation	EACH
CF-301	Vertical Catch Basin Cover	EACH
CF-302	Vertical Catch Basin Frame	EACH
CF-303	Lockable Vertical Catch Basin Frame and Cover	EACH
CF-311	Vertical Catch Basin Front Grate No. 1	EACH
CF-312	Vertical Catch Basin Front Grate No. 2	EACH
CF-313	Vertical Catch Basin Front Grate No. 3	EACH
CF-315	Single Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-316D	Double Vertical Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-317	Single Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH

CF-318D	Double Vertical Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH
CF-331	Drop Inlet Catch Basin Grate	EACH
CF-332	Drop Inlet Catch Basin Frame	EACH
CF-335	Drop Inlet Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-336	Drop Inlet Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH
CF-501	Install Temporary Pavement, 2” Thick	SY
CF-351	Mountable Catch Basin Grate	EACH
CF-352	Single or Double Mountable Catch Basin Frame	EACH
CF-353	Lockable Mountable Catch Basin Grate,	EACH
CF-355	Single Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-356D	Double Mountable Catch Basin Repair or Vertical Adjustment Reusing Existing Metal Castings	EACH
CF-357	Single Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH
CF-358D	Double Mountable Catch Basin Repair or Vertical Adjustment Brick Work Only	EACH
CF-371	Manhole Cover	EACH
CF-372	Manhole Frame	EACH
CF-375	Manhole Repair or Vertical Adjustment up to 6” Reusing Existing Metal Castings	EACH
CF-376	Manhole Repair or Vertical Adjustment over 6” Reusing Existing Metal Castings	Foot Height
CF-377	Manhole Repair or Vertical Adjustment up to 6” Brick Work Only	EACH
CF-378	Manhole Repair or Vertical Adjustment over 6” Brick Work Only	Foot Height
CSD701-01	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	LF
CSD701-02	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	LF
CSD701-03	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	LF
CSD701-04	CCTV Inspection of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	LF
CSD701-05	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	LF

CSD701-06	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	LF
CSD701-07	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	LF
CSD701-08	Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	LF
CSD701-09	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, under 15” diameter	LF
CSD701-10	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 15” to 24” diameter	LF
CSD701-11	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 27” to 30” diameter	LF
CSD701-12	Heavy Cleaning of Main Storm Sewer Lines and Laterals, including Drainage Structures, 36” diameter and above	LF
CSS742(X1)	Install Sewer Mains by Pipe Bursting (Size)	LF
CSS742(X2)	Fuse Service Tee and Drill Pipe to Replace Existing Sewer House Connection from New Main to Back of Curb	EACH
CSS742(X3)	Sewer Point Repair up to Twelve Feet (Size & Depth)	EACH
CSS742(X4)	Sewer Point Repair beyond Twelve Feet (Size & Depth)	LF
CSS742(X5)	Sewer Main Line Cleaning (Size)	LF
CSS742(X6)	Sewer Main Line CCTV Inspection (Size)	LF
CSS742(X7)	Sewer Service Lateral Lining (6” CIPP)	EACH
CSS742(X8)	Manhole Rehabilitation, Cementitious Liner, Partial Depth (2-feet)	EACH
CSS742(X9)	Manhole Rehabilitation, Cementitious Liner, Full Depth	Foot Height
CSS742(X10)	Removal of Cast Iron Flush Valve Apparatus from Sewer Manhole	EACH
CSS742(X11)	Removal of water service line from sewer manhole	EACH
CSS742(X12)	Locate and disconnect flush valve water service line from water main	EACH
CSS742(X13)	Sewer Service Lateral CCTV Inspection	EACH
CSS742(X14)	Well Point System	BLFT
CSW741-01	Repair Water Main with Full Circle Clamp (Pipe Size 4” – 8”)	EACH
CSW741-02	Repair Water Main with Full Circle Clamp (Pipe Size 12” – 16”)	EACH

CSW741-03	Repair Water Main with Bell Joint Clamp (Pipe Size 4” – 12”)	EACH
CSW741-04	Repair Water Main with Bell Joint Clamp (Pipe Size 16” – 24”)	EACH
CSW741-05	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 4” – 12”)	EACH
CSW741-06	Repair Water Main by Remove and Replace – Minimum Length 4 FT, Maximum Length 10 FT (Pipe Size 16” – 24”)	EACH
CSW741-07	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 4” – 12”)	LF
CSW741-08	Repair Water Main by Remove and Replace – Beyond 10 FT, Maximum 18 FT (Pipe Size 16” – 24”)	LF
CSW741-09	Replace 5/8” to 1” Lead Service Line Water House Connection with 1” Polyethylene Water House Connection (From Main to Meter)	EACH
CSW741-10	Replace 1.5” Lead Service Line Water House Connection (From Main to Meter)	EACH
CSW741-11	Replace 2” Lead Service Line Water House Connection (From Main to Meter)	EACH
CSW741-12	2” New Water Main with Main Line Fittings	LF
CSW741(51)(C)(4)	8” HDPE New Water Main with Main Line Fittings by Pipe Bursting	LF
CSW741(51)(E)(4)	12” HDPE New Water Main with Main Line Fittings by Pipe Bursting	LF

- END OF SECTION -

Attachment 2 – DPW General Specifications for Street Paving

GENERAL SPECIFICATIONS

FOR

STREET PAVING

2015 EDITION

DEPARTMENT OF PUBLIC WORKS

CITY OF NEW ORLEANS

LOUISIANA

Adopted by the Commission Council on November 5, 2015 by Ordinance No. 026696 MCS

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OFFICIALS

Of The

CITY OF NEW ORLEANS

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Mayor

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President

STACY HEAD
Vice President

District Councilmembers:

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Price: $100.00 per printed copy or downloaded at no cost at http://www.nola.gov/dpw/

DEPARTMENT PERSONNEL MAY OBTAIN COPIES OF THIS BOOK FROM:

City of New Orleans
Department of Public Works
Engineering Division
1300 Perdido Street - Room 6W03
New Orleans, Louisiana, 70112

Title VI Notice: The Department of Public Works (DPW) fully complies with Title VI of the Civil Rights Act of 1964 and related statutes, executive orders, and regulations in all programs and activities. DPW operates without regard to race, color, national origin, income, gender, age, and disability. Any person who believes him/herself or any specific class of persons, to be subjected to discrimination prohibited by Title VI may by him/herself or by representative file a written complaint with the Louisiana Department of Transportation (LaDOTD). The LaDOTD Title VI Program Manager may be reached via phone at 225-379-1361. A complaint must be filed no later than 180 days after the date of the alleged discrimination.

DPW meetings are conducted in accessible locations and materials can be provided in accessible formats and in languages other than English. If you would like accessibility or language accommodation, please contact the Title VI Community Outreach Specialist at DPW at 504-658-8000.

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PART I - GENERAL PROVISIONS

SECTION C101
DEFINITIONS OF TERMS

Whenever in these specifications and contract, the following terms or pronouns in place of them, are used, the intent and meaning shall be interpreted as follows, unless such interpretations shall be inconsistent with or repugnant to the manifest intent and context of the said specifications and contract.

C101.01 AGENT: Person or persons authorized to act on behalf of the Director (See "Director").

C101.02 BIDDER: Any individual, partnership, firm or corporation submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.

C101.03 CALENDAR DAY: Any day of the week including Saturday, Sunday and Holiday, regardless of weather conditions, beginning and ending at midnight.

C101.04 CHIEF PROCUREMENT OFFICER: The duly authorized representative of the Director of Finance through whom proposals are issued and received in completed form from bidders.

C101.05 CITY OF NEW ORLEANS OR **CITY:** The incorporated municipality or City of New Orleans in the State of Louisiana.

C101.06 CONTRACT: The written agreement between the City of New Orleans and the Contractor setting forth obligations of the parties thereunder for performance of the prescribed work. The contract documents consist of the proposal, the General Specifications for Street Paving, the Special Specifications, the contract bond and the plans, including all modifications thereof incorporated in the documents before their execution; as well as any and all drawings and supplemental agreements which reasonably could be required to complete the construction in an acceptable manner.

C101.07 CONTRACT BOND: The security designated in the Uniform Bid Form to be furnished by the bidder as surety for the faithful performance of the contract and the specifications in all their details, except that said contract bond shall not cover maintenance after acceptance of the work.

C101.08 CONTRACT TIME: The number of working days or calendar days allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is shown in the contract, in lieu of a number of working or calendar days, such work shall be completed by that date.

C101.09 CONTRACTOR: The individual, partnership, firm or corporation to whom the contract is awarded.

C101.10 COUNCIL: The duly constituted and authorized governing body of the City of New Orleans.

C101.11 DEPARTMENT: The Department of Public Works of the City of New Orleans.

C101.12 DIRECTOR OF FINANCE: The authorized head of the subdivision of the City Government charged with receiving, expending and accounting of public money.

C101.13 DIRECTOR OR **DIRECTOR OF PUBLIC WORKS:** The authorized head of the subdivision of the City Government having jurisdiction over public streets, public alleys, bridges and related structures. Whenever the word "Director" appears herein, it is understood that an appointed agent may act for the Director.

C101.14 FIELD CHANGE AUTHORIZATION: A document outlining agreements reached in the field which authorizes changes necessary in the work. This document shall become a part of a plan change.

C101.15 FORCE ACCOUNT: A method of payment for extra work based on expenses incurred, including the actual cost of labor, material and equipment required to do the work.

C101.16 LaDOTD: Louisiana Department of Transportation and Development

C101.17 MAJOR ITEM: An item included in the contract as awarded, that has a total cost equal to or greater than ten (10%) percent of the original contract amount.

C101.18 MUTCD: Manual on Uniform Traffic Control Devices.

C101.19 PLAN CHANGE: An approved document issued to the Contractor covering changes in the plans or quantities, or both, and establishing the basis of payment and time adjustments for the work affected by the changes.

C101.20 PLANS: The contract drawings which show the location, type, dimensions and other details of the prescribed work consisting of, but not limited to, general and detail Drawings including such working drawings as may be furnished or approved by the Director.

C101.21 PROJECT: A specific undertaking of construction as described by the contract.

C101.22 PROPOSAL: The offer of a Bidder, on the prescribed form, to perform the stated work and to furnish the labor and materials at the prices quoted on the bid form.

C101.23 PROPOSAL GUARANTY: The security, commonly known as the bid bond, designated in the Uniform Bid Form to be furnished by the bidder as a guaranty of good faith to enter into a contract with the City of New Orleans if the contract is awarded to him.

C101.24 QUALIFIED PRODUCTS LIST (QPL): Lists maintained by the LaDOTD's Materials and Testing Section for products that do not lend themselves to the preparation of meaningful specifications, or for which repetitive full testing is too time consuming or expensive to be practical

for routine project control.

C101.25 SPECIAL SPECIFICATIONS: The contract specifications which include project specific details as well as additions and revisions to the General Specifications.

C101.26 SUBSTANTIAL COMPLETION: When the Contractor considers the Work ready for full occupancy or utilization by City, Contractor shall declare in writing to the Director that the Work is substantially complete and request that the Director issue a notice of substantial completion.

The date, upon which the Director agrees to issue the certificate of substantial completion, shall govern in regard to assessment of any liquidated damages, as described elsewhere in these specifications.

C101.27 SURETY COMPANY: The corporate body which is bound with and for the Contractor, who is primarily liable, and which engages to be responsible for his payment of all debts pertaining to and for his acceptable performance of the work for which he had contracted.

C101.28 TESTING LABORATORY: An independent testing laboratory retained by the City for the purpose of testing materials entering into the project.

C101.29 THEORETICAL SECTION: Theoretical Section shall be the measurement of the volume based upon horizontal distances and average end areas taken from the plans and the end areas will be bounded by the original ground line and the theoretical pay line as shown on the plans.

C101.30 TRUCK MEASURE: Truck Measure is based upon the capacity of hauling vehicles. Truck Measure is the volumetric measurement of a specific truck used for the hauling of material. Computation of truck volume shall be made in accordance with LaDOTD's EDSM III, 1.1.12. Contractor shall have hauling vehicles certified in accordance with these specifications as well as State and other local agency requirements.

C101.31 UNIFORM BID FORM: The approved or prepared form on which the bidder is to submit or has submitted his proposal for the work contemplated.

C101.32 WORK: The furnishing of labor, material, equipment, transportation supervision and tools or other facilities necessary to complete the contract.

C101.33 WORKING DAY: A calendar day, with exceptions stated herein, on which weather and other conditions not under control of the Contractor will permit construction operations to proceed for at least five (5) continuous hours of the day with the normal working force engaged in performing the controlling items of work.

No working days will be charged for the following days:

(1) Saturdays and Sundays.
(2) City recognized holidays or non-working days that are defined as regular legal holidays or special holidays that are proclaimed by the Mayor or fixed by the City Council.

(3) Days on which delays are attributable to the direct effect of strikes, riots or civil commotions.

Should the Contractor elect to work on the afore-stated days, and is so authorized by the Director to do so, these days will be charged as working days. The Contractor shall be charged for these days and shall reimburse the City for any overtime expenses required for services rendered on the above referenced days.

BIDDING REQUIREMENTS (CONTACT BUREAU OF PURCHASING FOR FULL REQUIREMENTS)

SECTION C106
CONTRACT PLANS AND SPECIFICATIONS FOR THE WORK

C106.01 The Contractor shall keep one copy of all plans and specifications on the work site, in good order, available to the Director.

C106.02 In the event of discrepancy or conflict in provisions of the various contract documents, precedence shall be given to the provisions as contained in the document which appears first in the following list: Proposal/bid, Special Specifications, Construction Plans, General Specifications and Standard Plans for Street Paving, Sewerage & Water Board General Specifications and Standard Drawings, the latest edition of LaDOTD Louisiana Standard Specifications for Roads and Bridges. The conflicting provision in the document appearing later in the above list is declared "null and void".

CONTRACT

SECTION C121
ASSIGNMENT AND SUB-LETTING

C121.01 A contract cannot be assigned without the prior written consent and approval of the Director.

C121.02 Any supplemental contract or agreement which the Contractor may propose to enter into with a sub-Contractor for the construction or execution of a portion of the contract shall not create any contractual relationship between any sub-Contractor and the City, and, the employment of a sub-Contractor shall in no way be construed to mean that the Contractor and his sureties are released from any of their responsibilities under the contract.

SECTION C122
RIGHTS OF VARIOUS INTERESTS

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this contract, the respective rights of the various interests involved shall be established by the Director.

The Contractor shall cooperate with officials of utility companies to avoid delays in completion of work due to non-removal or non-adjustment of utilities.

Some utility facilities will be removed, relocated, or adjusted in accordance with agreements between the City and utility companies. Such work may be underway concurrently with the Contractor's work and within construction limits covered by this contract.

The Contractor shall consider in his bid all permanent and temporary utilities, lines and appurtenances in their present or relocated positions and that no additional compensation will be allowed for delays, inconvenience or damage sustained by him due to interference from the said utility lines and appurtenances or the operation of moving them.

SECTION C123
ANNULMENT OF CONTRACT BY CITY

If at any time the Director shall be of the opinion that the Contractor is unnecessarily delaying any part of the work or is willfully violating any of the provisions of the specifications or is executing the same in bad faith, or if the Contractor shall become insolvent or declared bankrupt, or shall commit any act of insolvency or bankruptcy, or shall make any assignment for the benefit of creditors, or for any cause whatsoever shall fail to carry on the work in an acceptable manner, the Director shall, in writing, advise the Contractor wherein he believes the contract is being violated and at the same time demand immediate correction. Should the Contractor fail on receipt of such notification to immediately comply with the specifications, it shall then be the duty of the Director to at once, in writing, notify the bondsman of the Contractor of the Contractor's dereliction and at the same time

request a compliance with the specifications by the bondsman. Should the bondsman in turn fail to effect a compliance with the specifications within five (5) days, it shall then be the duty of the Director to promptly report the fact to the Mayor and the Mayor shall be privileged to annul the contract, which annulment shall carry with it forfeiture of all monies then due the Contractor or that may become due the Contractor, together with the full amount of the bond described in Section C119 of these specifications such forfeiture operating not as a penalty, but as acknowledgement of liquidated damages. The Director shall then have the power to place on any work such labor as he may deem advisable, by contract or otherwise, and to complete the work, or any part thereof, and to use such materials, equipment, and or property of the Contractor, as he may find at the site, or to procure other materials for the completion of the contract and to charge the cost of said labor and additional materials to the contract.

SECTION C124
CONTRACTORS RIGHT TO STOP WORK OR TERMINATE CONTRACT

If the work should be stopped under an order of any court or other public authority, for a period of ninety (90) or more calendar days through no act or fault of the Contractor or of anyone employed by him, or if the City should fail to pay the Contractor in accordance with Section C138 any sum not in dispute and certified by the Director, then the Contractor may upon seven (7) days written notice to the City and the Director, stop or terminate this contract and recover from the City payment for all work executed and accepted and any loss sustained upon any plant or materials and reasonable profit and damages. Such written notice shall be made certified U.S. Mail.

PROSECUTING THE WORK

SECTION C125
PUBLIC CONVENIENCE

C125.01 During the progress of the work the safety of the public, transit users, pedestrians, and residents in the actual and immediate vicinity of the project area must be provided. Convenient access to driveways, houses and buildings along the street must be maintained wherever possible. Temporary approaches to and crossings of intersecting streets and sidewalks must be provided for and kept in good condition wherever practicable. Detour or warning signs shall be provided and placed in advance of the actual project site. The size and information included on such signage will be dictated by the Director of Public Works, Chief Traffic Engineer, or his/her appointee. Sidewalks shall be kept in a clean and passable condition, free of debris and hazardous conditions.

C125.02 Garbage Collection and Mail Service: The Contractor shall ensure that garbage collection and mail service shall have an access provided for on a continuous basis during construction of the project.

C125.03 Noise Control: Contractor shall comply with the city code - Article IV "Noise" to avoid excessive noise. Such measure shall be appropriate for the normal ambient sound levels in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound muffling devices, and operated in a manner to cause the least noise, consistent with efficient performance of the work.

C125.04 Dust Control: The Contractor is responsible to comply with federal, state and local laws and regulations controlling pollution of the environment, including air, water and noise. The following are dust control methods that are required by the City to control fugitive dust from LAND CLEARING ACTIVITIES, EARTH MOVING ACTIVITIES, STORAGE PILES, DISTURBED SURFACE AREAS OR INACTIVE CONSTRUCTION SITES, UNPAVED ROADS AND SHOULDERS, PAVED ROAD TRACK-OUT. *Use of these control methods **DOES NOT** automatically assure compliance with the Federal and State regulations. **Use of more than one method may be necessary.***

CONTROL METHOD	DESCRIPTIONS
Watering	1. Application of water by means of water trucks, hoses, and/or sprinklers at sufficient frequency and quantity prior to conducting, during, and after construction activities. 2. Need sufficient quantities to keep the surface moist. 3. Pre-application of water to the depth of the proposed cuts or equipment penetration. 4. Apply at sufficient frequency and quantity to develop a surface crust. 5. Required application frequency will vary according to soil type, site-specific conditions, weather conditions, and amount of vehicle traffic.

Coverings	1. Tarps, plastic, or other materials can be used as a temporary covering. 2. When used, coverings must be anchored to prevent wind from removing them.
Wind fencing	1. Three to five foot barriers with 50% or less porosity, adjacent to roadways or urban areas. 2. Normally used in conjunction with watering or chemical stabilization.
Cover haul vehicles	Entire surface should be covered with water or tarps once vehicle is fully loaded.
Wheel washers	1. Should be placed where vehicles exit unpaved areas onto paved areas. 2. May be adjusted to spray entire vehicle including bulk-stored material in haul vehicles.
Sweep/Clean roadways	Either sweeping or water flushing may be used. Requires routine street sweeping if subject to material accumulation.
Site access improvements	1. Install a gravel pad or grizzly at the access point to your site. 2. Designate a single site entrance and exit. 3. Stay on established routes. 4. Reduce speed may need to be used with watering or chemical stabilization. 5. Maintained Gravel/Recycled Asphalt to a size and depth effective in controlling dust.
Restrict Access	1. Install fencing around the perimeter of property. 2. Install “No Trespassing” signs. 3. Eliminate Unnecessary travel, Restrict access or redirect traffic to reduce vehicle trips.
Altering loading and unloading procedures	1. Confine loading and unloading procedures to the downwind side of storage piles. 2. May need to be used in conjunction with wind sheltering.
Location	Locate haul roads as far from existing housing as possible.
Pre-grading planning	1. Grade each phase separately and time to coincide with the construction phase. 2. Grade entire project but apply chemical stabilizers or ground cover to graded areas where construction is scheduled to begin more than 60 days after grading is complete.
Operate off-road haul vehicles appropriately	1. Mix material with water prior to loading, and/or to entire surface of material after loading. 2. Empty loader slowly and keep bucket close to the truck while dumping. 3. Apply water as necessary during loading operation.
Alternative haul vehicles	Use bottom-dumping haul vehicles.
Chemical Stabilizers	1. Most effective in areas that are not subject to daily disturbances or on areas where active operations have ceased. 2. Apply per manufacturer’s recommendations. 3. Best for use on storage piles subject to infrequent disturbances. 4. Not recommended for high volume or heavy equipment traffic use.
Vegetation	Establish as quickly as possible when active operations have ceased.

During periods of high winds	1. Apply chemical stabilizers per manufacturer's directions, and prior to expected wind events. 2. Apply water as necessary, and prior to expected wind events. 3. Install temporary covers and Cover all haul vehicles. 4. Stop work and vehicle activity temporarily. 5. Clean streets with water flushing.

SECTION C126
PERFORMANCE OF WORK

C126.01 Construction Progress Schedule: Prior to beginning the work the Contractor shall submit to the Director a Construction Progress Schedule giving a satisfactory schedule of operations that provides for completion of the work within the contract time. This schedule shall be on the prescribed bar graph form and shall allocate the entire contract time. The Contractor shall have copies of the schedule available at the preconstruction conference.

If the Contractor's operations are affected by changes in the plans or the amount of work, or if the Contractor has failed to comply with the approved schedule, or if requested by the Director, the Contractor shall submit a revised Construction Progress Schedule for approval. This revised schedule shall show how the Contractor proposes to prosecute the balance of the work. The Contractor shall submit the revised schedule monthly or within 14 calendar days after the date of request or by the Director.

The approved Construction Progress Schedule will be used as the basis of establishing the controlling item of work, charging contract time and as a check on the progress of the work. The Construction Progress Schedule shall show only one controlling item of work for each contract day. If the Construction Progress Schedule has not been approved prior to the issuance of the Notice to Proceed, the Director will establish the controlling work item and charge contract time accordingly.

The most recent approved Construction Progress Schedule shall be maintained on-site by the Contractor at all times during the course of the contract.

C126.02 Work shall be commenced within ten (10) days after receipt of written Notice to Proceed from the Director. The entire project shall be completed within the time stipulated in the contract. If the Contractor is delayed at any time in the progress of the work by any act or neglect of the City, or by changes ordered in the work, or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any causes beyond the Contractor's control, or by any causes which the Director shall decide to justify the delay, then the time of completion shall be extended for such a reasonable time as the Director may decide. Written claims for time extensions shall be made within thirty (30) days of the first date of claim. But neither the extension of time for any reason beyond the date herein fixed for the completion of the work, nor the acceptance of any part of the work shall constitute a waiver by the City of the right to abrogate the contract for abandonment or delay in the manner provided by Section C124 of these specifications. Upon completion of the work, and before acceptance and final payment, the Contractor shall clean up the work and adjacent property and remove therefrom all surplus and discarded materials, rubbish and temporary structures, and shall leave the street or streets and the median (if any), upon which he

has been engaged in a neat and clean condition throughout the entire length of the improvement. For Working Day projects, work shall automatically be suspended on Saturdays, Sundays, all legal holidays, and after five-thirty (5:30) P.M. until seven (7:00) A.M. of the following day, unless permitted in writing by the Director. Said permission will not be unreasonably withheld. If the Contractor is delayed at any time in the progress of the work by any act or neglect of the City, the Contractor may be compensated for such delay at the discretion of the Director.

C126.03 The number of days allowed for completion of the work will be stated in the contract.

The Director will furnish the Contractor a monthly statement showing the number of days charged to the contract for the preceding month and the number of days specified for completion of the contract. The specified days for completion will not include additional days to be added for plan changes. The Contractor will be allowed thirty (30) days in which to file a written protest setting forth in what respect said monthly statement is incorrect; otherwise, the statement shall be deemed to have been accepted by the Contractor as correct.

If a protest is filed by the Contractor, the Director will conduct such reviews and investigations as required to rule on the protest within thirty (30) days from the date the statement is furnished by the Contractor. The number of days charged as listed, or revised within the allotted time, shall become final at the end of this thirty (30) day period, subject to change only through legal action.

When the contract time is on a calendar daily basis, it shall consist of the number of calendar days stated in the contract beginning with the date stipulated in the Notice to Proceed, including Saturdays, Sundays, holidays and non-work days. All calendar days elapsing between the effective dates of written orders by the Director to suspend work and to resume work for suspensions not the fault of the Contractor will be excluded.

When the contract time is a fixed calendar date, it shall be the date on which all work on the project shall be completed.

The contract time only for the work as awarded is based on the original quantities and includes the time necessary to procure material, equipment and an adequate labor force to complete the work in quantities set forth in the proposal. The contract time will be increased for performance of extra work commensurate with the following:

(1) Mathematical Increase: Upon completion and acceptance of the project, the original contract time will be adjusted proportionally to the amount of the final estimate divided by the original contract amount, except that, in the case of total project cost underrun, the original contract time will not be decreased.

(2) Increase for Difficulty: When the contract is altered and the Contractor requests additional contract days, the document authorizing or ordering alterations will show (a) the number of additional days justified, (b) the number of days added by anticipated overrun in costs (if any) due to alterations and (c) the difference between these two numbers. The difference between the two numbers will be added to the contract time.

(3) In no event shall the total contract time exceed the amount of contract time actually

expended.

If the Contractor finds it impossible, for reasons beyond his control, to complete the work within the contract time as specified or as extended in accordance with the provisions of this Subsection, the Contractor may, at any time prior to the expiration of the contract time as extended, make timely written request to the Director for an extension of time setting forth therein the reasons which the Contractor believes justify granting his request. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Director finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, the Director may extend the contract time in such amount as conditions justify.

Apart from extension of time for unavoidable delays and the waiving of any applicable liquidated damages, in no event shall the City or Engineer be liable to the Contractor, any Subcontractor, supplier, or any other person or organization, or any surety, and no payment or allowance of any kind shall be made to the Contractor as compensation for damages because of hindrance or delay for any cause in the progress of work, whether such delay be avoidable or unavoidable.

When substantial completion has been certified by the Director, daily time charges will cease. Daily time charges will recommence after a punch list has been prepared and given to the Contractor. Daily time charges will continue to accrue until all punch list items have been completed to the satisfaction of the Director.

C126.04 Should the Contractor fail to complete the work within the time specified in the Uniform Bid Form and allowed by the Director as provided for in these specifications, the Contractor shall pay to the City, not as a penalty, but as acknowledged liquidated damages, the sum per day stipulated in the Uniform Bid Form for each working day that he is delinquent. This amount shall be reported to the Director of Finance, who will deduct the same from any balance then due or which may become due the Contractor. The City will not ask the Contractor to waive "notice of default".

C126.05 Construction Progress Photographs: Construction photographs are a mandatory requirement of this contract. Contractor shall be responsible for the production of construction photographs as provided herein. The Director shall designate the subject of each photograph.

Notwithstanding any other provisions of these specifications, the Contractor shall take a minimum of 24 photographs at a minimum of eight (8) different locations per pay period. The intent of the photographs is to record the work in progress and show general views of the project as well as interesting items of the work. Photographs of each work item shall be taken before work begins, and after completion of work, as evidence of work performed.

Additionally, for each pay request the Contractor shall provide before, during, and after photographs of each work item that is being invoiced. The photographs should be taken from the same vantage point for each work item. The photographs shall be taken in sufficient frequency to clearly document the damaged area and all stages of the repair work performed. The intent of these photographs is to the document the construction has been performed in order to facilitate the City with requesting reimbursement for the work.

All photographs shall be produced by a competent photographer, and shall be color photographs of commercial quality. Digital Photography: Use 2.1 megapixel density or greater for photographs. Submit digital photographic files in JPEG file format. Photos shall be identified with description of view, date photographed, photographer's name, project number and name, and name of Contractor.

Photographic files become the property of the City. Do not publish photographs without written consent by the City. Submit one set of Progress Photographs with each Application for Payment at the times established for submittal of Applications for Payment. Monthly Applications for Payment shall be deemed incomplete if not accompanied by the required Progress Photographs. Contractor's failure or election to not submit a monthly Application for Payment shall not affect the requirement for monthly Progress Photographs.

No direct payment will be made for construction photographs.

C126.06 Field Office: For each major street project or as directed by the Director, the Contractor shall provide a field office (or an office trailer) on an approved site in close proximity to the work in accordance with the following requirements.

The field office shall be weather tight and constructed of wood, metal, masonry or other approved material for the purpose of housing the personnel, plans, records and reports as necessary. The field office shall have a minimum floor space of 160 square feet (15 sq m), or other approved size, that provides sufficient space with a minimum ceiling height of 7 feet (2.1 m). The field office shall have at least one outside door and have sufficient windows. The field office shall have electric lighting and power outlets as directed. The building and contents shall be secured by suitable locks and catches. The Director shall be afforded access to the field office at all times and shall be provided with a set of keys as necessary. The Contractor shall provide suitable desks, chairs and file cabinets for personnel using these facilities. The field office shall be heated and air conditioned, and have approved sanitary facilities. The field office shall be furnished, equipped, satisfactorily maintained, moved as directed, and subsequently removed from the project upon completion of construction.

The cost shall be included in Bid Item C727 (51) – Mobilization.

C126.06 Red-line drawings: Contractor shall provide manually marked-up "red line" drawings to the owner. The original contract drawings shall be modified to show all additions, deletions, and other changes made during construction to pavement, water, sewer, and drainage facilities. Drawing modifications shall include both a markup of the graphics and a brief written explanation describing any changes. Wherever applicable, revisions shall include updates to details, sections, index, notes, drawing call-outs, plan, and plan & profile views.

Each Sheet of the red line drawings shall include a stamp showing: RED-LINE DRAWINGS, name of Contractor, Superintendent's signature, and Date. Drawings shall also include: All field changes, any change in line or grade from the original drawings, location of mains and house service connections, and the limits of pavement removal and replacement.

To promote accuracy; during construction red line drawings shall be updated on a bi-weekly basis

with copies provided to the project engineer as work is completed for each block. Redlines shall be jointly reviewed/developed by the Contractor and Resident Inspector and discussed at each construction progress meeting. The Contractor shall furnish a final set of redline drawings prior to final inspection. The Contractor shall furnish redline drawings at no direct payment.

SECTION C127
PREPARATION AND RESPONSE FOR TROPICAL EVENTS AND OTHER WEATHER-RELATED EMERGENCIES

If there is an emergency declared by the federal, state, or city government in Orleans Parish, or in any portion thereof, or in any surrounding parish which affects the ability of the project to continue on schedule, then all work on this project shall cease until such time as the Contractor is instructed to resume work by the Department of Public Works, which has jurisdiction over this project.

If there is any type of work which must proceed to prevent harm to persons or property, or damage to the project itself, then Contractor should immediately contact the Department of Public Works for necessary instructions. If Contractor is unable to contact the Department of Public Works, the Contractor may perform the work necessary to prevent such harm in accordance with industry safety standards.

Contractor shall be entitled to an extension of time for the period of the stoppage, but shall not be entitled to any additional compensation by reason thereof.

SECTION C128
PERMITS AND REGULATIONS

C128.01 Permits and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the Contractor.

C128.02 The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as planned and specified. The Contractor is required to observe all laws and ordinances relating to the obstructing of streets, maintaining signals, keeping open passageways and protecting them where exposed to danger, and all general ordinances affecting him or his employees or his work hereunder in his relations to the City, or any persons, and to obey all laws and ordinances controlling or limiting the Contractor while engaged in the prosecution of the work under this contract. If the Contractor observes that the plans and specifications, or either, are at variance with laws and regulations, he shall promptly notify the Director in writing, and of any necessary changes in the work. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules or regulations, and without such notice to the Director he shall bear all costs arising therefrom.

C128.03 Required Safety Provisions: It shall be the duty and responsibility of the Contractor to provide all reasonable measures necessary to insure safety of the public. Types and placement of barriers, warning signs, lights, etc. shall be reviewed by the Director and be in conformance with the MUTCD.

C128.04 Required Traffic Provisions. The Contractor shall take appropriate measures to assure that traffic conditions as near normal as possible shall be maintained at all times so as to minimize inconvenience to the occupants of the adjoining property and to the general public. The Director may permit the Contractor to close streets and alleys to all traffic for a prescribed period of time.

Warning signs shall be placed far enough in advance of the construction operations to alert traffic within a public street, and cones or other approved devices shall be placed to channel traffic in accordance with instructions of the Director. Fire hydrants, fire stations, fire escapes, driveways and any other vital facilities as designated by the Director shall not be blocked or interfered with in connection with the work required for the approved work. The Contractor shall maintain safe crossings for vehicular traffic at all street intersections unless exception is made by the Director and the Contractor shall maintain safe crossings for pedestrians at intervals of not more than approximately one block of street. Subject to the foregoing exception, the work shall be so arranged that at least one-half of the street shall be open for traffic at all times unless otherwise approved by the Director.

The Contractor shall employ the services of a Professional Engineer, licensed by the State of Louisiana, who has background in traffic flow and control, to prepare and submit a detailed traffic control plan on behalf of the Contractor for review and approval by the Director. Such services will be paid under item C713(51).

The detailed traffic control plan is required on all streets and sidewalks where access will be impeded by work, except as designated by the Director.

C128.05 Notifications Required: The Contractor shall give 48 hours advanced notification of work and street impairment to the police, fire and other city departments and to the general public. The Contractor shall designate person(s) who can be contacted and shall be available on a 24 hour, seven days per week basis throughout the life of the project. The name and telephone number of the designated individual(s) shall be furnished to the Director prior to starting construction. The individual contacted shall be able to respond to emergencies occurring along the project area during normal, after work and holiday hours.

SECTION C129
TEMPORARY SIGNS, BARRICADES PAVEMENT MARKINGS, CONSTRUCTION SIGNING, TRAFFIC MAINTENANCE AND PUBLIC SAFETY

C129.01 Description: With reference to Section 713 of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, Latest Edition, Contractor shall be required to furnish, install and maintain temporary construction barricades, lights, signals, pavement markings and signs; provide flagmen; and comply with all other requirements regarding the protection of the work, workmen and safety of the public. Signs, barricades, temporary pavement markings, etc., shall conform to the details shown on the plans, the MUTCD and these specifications.

C129.02 Liability: Signs and barricades, and arrangements thereof, as shown on the plans, are minimum requirements and shall not be construed as negating requirements for additional proper and special signs and barricades, etc., as may be required by the Director. Appropriate signs for special conditions shall be furnished and installed as directed. Requirements as to proper signs, barricades or other safety precautions promulgated by the Contractor's insurers are not negated by these specifications.

These specifications shall not be construed as relieving the Contractor of any of his responsibilities for the safety of the traveling public, for any liability in connection therewith, or compliance with City and State laws or ordinances.

C129.03 Construction Requirements: Signs, barricades and related devices will be required when the Contractor's work is in progress on portions of the work covered by the Notice to Proceed, or when operations are suspended but the traveled portion of the road or sidewalk is not in a safe condition for the traveling public. During such times that barricades are not in place, appropriate regulatory signs shall be erected and maintained by the Contractor.

If partial Notice to Proceed is issued, the Contractor shall immediately begin erection of signs and barricades over the affected portions of the project to the extent necessary to comply with the requirements herein. When the full Notice to Proceed is issued, barricades will be erected at the beginning and end of the project, and signing throughout the remainder of the project shall be completed.

In no event shall construction work under the contract begin until signs, barricades and other traffic control devices, as provided above, have been erected and approved.

C129.04 The Contractor shall cooperate with the Director in placing of signs, as well as the City's forces responsible for maintenance of City signs, so that appropriate signs are in place at all times.

Signing shall remain in place and be maintained by the Contractor, supplemented by additional signs as required, throughout the life of the contract. Signs placed by the Contractor shall not be removed, unless required by the Director, until the project is completed and can be removed only upon final acceptance of the work.

Signs, barricades and related devices furnished and placed by the Contractor shall, upon removal, remain his property.

C129.05 Pavement Markings, color, width, type and material requirements of markings shall be in accordance with the MUTCD, and plan requirements. Temporary centerline and/or lane line markings shall be placed on each lift of asphaltic concrete surfacing subjected to traffic during construction. Temporary markings shall be in place at the end of each day's asphaltic concrete surfacing or cold planing operations on all lanes that are open to traffic.

Roadway centerlines and/or lane lines shall be marked with four (4') foot long stripes placed on approximate forty (40') foot centers. On the final surface, temporary markings shall be placed with sufficient accuracy to avoid conflict with permanent striping. The Contractor shall satisfactorily remove all temporary pavement markings by approved methods after completion of permanent

striping.

A pay item for this section is included in Section C713.

SECTION C130
MATERIALS, EQUIPMENT, EMPLOYEES
CONTRACTOR QUALITY CONTROL

C130.01 The Contractor shall provide and maintain an adequate quality control system along with personnel, equipment, supplies, and facilities necessary to obtain samples, perform tests and provide quality control of work.

The Contractor shall perform quality control sampling, testing and inspection during the work at a rate sufficient to ensure that the work conforms to the project specifications.

C130.02 Unless otherwise specified, all materials shall be new and workmanship, materials, appliances and equipment shall be of good quality and suitable for the character of work for which they are required.

C130.03 Disorderly, intemperate, or incompetent persons shall not be allowed upon the work. The Contractor's superintendent who neglects or refuses to comply with the instructions of the Director, shall, at the request of the Director, be promptly removed from the project.

All Contractors' employee personnel shall be qualified and capable of performing the necessary work in a competent and workmanlike manner as to assure the City that the quality of the work is in accordance with the general acceptance of the trade for such work. Any representative of the Contractor or Subcontractor who, in the opinion of the Director, does not perform in a skillful manner or is disorderly shall be, upon written request, immediately removed by the Contractor or Subcontractor. A person removed shall not return to the work site without written approval. If the Contractor fails to remove such a person or fails to furnish suitable and sufficient personnel to properly prosecute the work, the Director may suspend the work by written notice.

C130.04 All materials must be submitted in accordance with the instructions of the Director not less than ten (10) days in advance of commencing work. Materials furnished which do not fully comply with the requirements of the specifications shall be immediately removed from the work upon order of the Director.

SECTION C131
REMOVAL OF IMPROPER MATERIAL

All materials to be provided by the Contractor shall be of the best quality, and if the Contractor shall bring or cause to be brought on the work materials which do not conform to the requirements of the contract, the Director shall order the same to be removed at the expense of the Contractor. Should the Contractor refuse to remove the improper material, the Director may have the material removed at the expense of the Contractor.

SECTION C132
REMOVAL OF EQUIPMENT

In the case of annulment of this contract before completion from any cause whatever, the Contractor, if notified to do so by the City, shall promptly remove any part or all of his equipment and supplies from the property of the City, failing which, the City shall have the right to remove such equipment and supplies at the expense of the Contractor.

SECTION C133
SUSPENSION OF WORK

C133.01 The Director will have the authority to suspend the work wholly or in part due to the failure of the Contractor to correct conditions unsafe for the workmen or the general public; for failure to carry out provisions of the contract; for failure to carry out orders; for such period as he may deem necessary due to unsuitable weather; for conditions under the control of the Contractor considered unsuitable for the prosecution of the work or for any other condition or reason affecting the public welfare, health and safety. No allowance shall be made to the Contractor for damages sustained or alleged to have been sustained by him on account of such suspension of work. The period of such suspension, to be determined by the Director and recorded in writing shall be added to the time specified in the proposal for the completion of the work.

C133.02 If the work is suspended, all materials delivered at the work but not yet placed therein shall be neatly piled so as not to constitute an obstruction or hazard and shall remain the responsibility of the Contractor. Contractor shall have the prerogative to remove materials, tools, etc. to protect same during such time of work suspension.

SECTION C134
WARRANTY REQUIREMENTS

The Contractor guarantees, by his signing of the contract, all materials and workmanship provided under the contract to be free of defects for a period of one year after the date substantial completion is recorded in the Mortgage Office. This guarantee will include all electrical and mechanical equipment and apparatus.

The Contractor guarantees by his execution of the contract, that for a period of one year after the date of substantial completion of the project or a portion thereof as established by the Director all necessary repairs to or replacement of said defective warranted equipment, apparatus, or material and workmanship shall be made by the Contractor at no cost to the City.

All instruction sheets that are required to be furnished by the manufacturer for materials and supplies and for operation shall be delivered by the Contractor to the Director prior to substantial completion of the project, and shall include the manufacturer's standard written warranty for each piece of mechanical and electrical equipment or apparatus furnished under the contract.

When the contract includes landscaping or maintenance of any form of plant life, unless otherwise provided, the warranty period for this portion of the contract shall be one year or two consecutive

planting seasons, whichever is longer, commencing after the date substantial completion is recorded in the Mortgage Office.

CHANGES, ACCEPTANCE, AND PAYMENT

SECTION C135
CHANGES IN THE WORK

The Director shall have the right to make alterations in the line, grade, plan, form or dimensions of the work herein contemplated, either before or after the commencement of the work and without notice to the sureties. If such alterations diminish the quantity of work to be done, they shall not constitute a claim for damages for anticipated profits for the work deleted.

But when the reduction in quantity of work is a material part of the work contemplated, the Contractor may be entitled to compensation, except for anticipated profits, as determined by the Director, including overhead and equipment charges which the Contractor may have incurred in expectation of the quantity of work originally estimated unless specifically provided herein:

A material part is the decrease of twenty-five (25%) or more of the original bid quantity for any major item. A major item is defined as an item included in the contract as awarded, that has a total cost equal to, or greater than ten (10%) percent of the original contract amount.

If the quantity for any major item of work is increased by 25% or less of the original bid quantity the increase shall be paid according to the quantity of work actually done and at the price established for such work under this contract. If its quantity is increased by more than 25%, its unit bid price may be negotiated at the discretion of the Director, before the work is performed.

SECTION C136
EXTRA WORK

C136.01 The Contractor shall be prepared to do any extra work for which there is no price or quantity included in the contract but which is deemed necessary to fully complete the work. Such extra work shall form a part of the contract and shall be executed in the manner as if it had been included in the original estimate of quantities.

C136.02 Extra work shall be paid for at a unit price or lump sum to be agreed upon in advance in writing by the Director and the Contractor. Where such price and sum cannot be agreed upon by both parties, or where this method of payment is impractical, the Director may order the Contractor to do such work on a force account basis. The Contractor shall submit a detailed cost breakdown with each request for additional work.

C136.03 In computing the price of extra work on a force account basis, the Contractor shall be paid for all foremen and labor actually engaged on the specific work, at the current actual rate of wage for each and every hour that said foremen and labor are engaged in such work, plus twenty-five (25%) percent of the total thereof for superintendence, overhead and profit and use of small tools, hand tools and power tools not exceeding 2 HP; and in addition, the Contractor shall be allowed an amount sufficient to cover bond, Workmen's Compensation and all other Federal, State, or Municipal Employer payroll taxes. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance and taxes.

For all material used, the Contractor shall receive the actual cost of such material delivered at the site of the work, as shown by original receipted bill, to which shall be added fifteen (15%) percent for superintendence, overhead and profit.

For any equipment used that is owned by the Contractor, the Contractor shall be allowed an appropriate rental based upon the latest rental price as determined by the "Rental Rate Blue Book" in their most recent publication of their rental rate booklet, to which ten (10%) percent shall be added for fuels, oils, lubricants, tires, tracks and other general maintenance items.

Regardless of whether or not the Contractor owns or rents equipment, payment for use of such equipment shall be the minimum cost that would be incurred by the Contractor if it were rented on a hourly, daily, weekly or monthly basis whichever is cheapest for the City. The minimum cost shall be determined as the minimum number of days, including rain days, holidays and weekends, the equipment is required to be on the job site to complete the work in an expeditious manner. The Contractor shall also be paid the actual cost of transportation for any equipment which he owns and which he has to transport to the project for the extra work, to which no per cent shall be added.

No compensation for expenses incurred in executing extra work, other than herein specifically mentioned, will be allowed. If the Contractor is required to rent equipment for extra work, he will be paid the actual rental and transportation costs of such equipment, to which ten (10%) per cent shall be added for fuels, oils, lubricants, tires, tracks and other general maintenance items. The basis upon which rental costs are to be charged shall be agreed upon in writing before work is started.

Actual rental and transportation costs shall be obtained from receipted invoices and freight bills.

When the Contractor engages Subcontractors to perform certain portions of the work, he will be paid his actual cost of subcontracting to which ten (10%) per cent shall be added for his superintendence, overhead and profit. The Director reserves the right to approve the sub-Contractor for any extra work.

C136.04 A daily record of extra work done on the force account basis shall be submitted to the Director or his representatives by the Contractor within forty-five (45) days following the execution of the work. No less than two (2) copies of such record shall be made on suitable forms and signed by both the representative of the Director and the Contractor; one copy is to be retained by the Contractor. All bills for materials used on extra work shall be submitted to the Director by the Contractor upon certified statements to which will be attached original bills covering the cost of such materials.

C136.05 Payment for extra work of any kind will not be allowed unless the same has been approved in writing by the Director.

C136.06 If the Contractor deems additional compensation is due for work, material, delays, inefficiencies, disruptions or other additional costs or expenses not covered in the contract or not ordered as extra work, the Contractor shall notify the Director in writing of his intention to make a claim for such additional compensation before beginning the work on which the claim is based or within one working day of encountering the conditions or effects which the Contractor claims entitle him to additional compensation. If such notification is not given or the Director is not afforded

proper facilities by the Contractor for keeping account for actual costs incurred by the Contractor, the Contractor hereby agrees and shall be deemed to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the Director has kept account of the costs as aforesaid shall not be construed as proving or substantiating the validity of any claim.

SECTION C137
MANNER OF ACCEPTANCE

Upon substantial completion of all the work executed under the contract, the same shall be accepted by the Director, in the manner provided for in Section C138 of these Specifications.

SECTION C138
METHOD OF ACCEPTANCE & PAYMENT

C138.01 Payment for the property owner's portion of the cost of the work, and the City's portion of the cost of the work, if any, shall be made in accordance with the provisions of the law regulating and governing the manner and mode of paying for the cost of paving, repaving, surfacing, resurfacing, etc., unless otherwise stipulated in the Uniform Bid Form and Special Specifications.

C138.02 Railroad's or Electric Street Car's portion of the cost of the work when executed under these specifications shall be paid for in the same manner as the City's and Property Owner's portion unless otherwise stipulated in the Uniform Bid Form and project specifications.

C138.03 During the progress of the work the Contractor shall be paid monthly for work completed during the month. These payments shall be made to the extent of: 1. Ninety-five (95%) percent of the value of the work when the original contract value exceeds one million five hundred thousand dollars ($1,500,000.00). 2. Ninety (90%) percent of the value of the work when the contract value is one million five hundred thousand dollars ($1,500,000.00) or less. No allowance shall be made in the computation of monthly estimate for material delivered at the site of the work and not actually put into place, except with the prior approval of the Director. The retained percentage of each monthly estimate shall be paid to the Contractor not less than forty-five (45) days after the date of the recorded acceptance in the Mortgage Office of the Parish of Orleans of the completed work and upon the production of Mortgage Certificate properly dated and signed by the Recorder of Mortgages evidencing the fact that there are no recorded liens or any other encumbrances against the said work or the funds in the hands of the City of New Orleans due the Contractor for said work. Partial payment as hereinabove described will be made on estimates of the work done since the commencement or last previous estimate and shall not in any respect, act as an acceptance of the work to be done therefore or release the Contractor from any responsibility whatever, in connection therewith. At the time of making the final estimate upon the completion of the work as a whole, the entire work shall be subject to revision and adjustment by the Director.

C138.04 Supplemental Payments: A supplemental payment request will be permitted prior to the regular monthly payment when work is performed for which change orders were not approved in time to be included on the previous payment and the amount of the change order involved is sixty thousand dollars ($60,000) or more.

C138.05 Final Payment:

(1) When the contract is substantially complete as defined herein, the Contractor shall request the Director to arrange an inspection for substantial completion with all user agencies. All signs must be up, erected and functioning as part of the substantial completion. This inspection shall take place within ten (10) working days of receipt of the request. The Director will promptly make such inspection, and when the work is found acceptable under the contract and the contract fully performed or substantially completed, the Director shall promptly issue a certificate over his own signature, stating that the work required by this contract has been completed or substantially completed and is accepted by him under the terms and conditions thereof. The entire balance found to be due the Contractor including the retained percentage, less an amount based on the Director's estimate of the fair value of the claims against the Contractor and the cost of completing the unsatisfactory items of work with specified amounts for each item shall be due and payable. A punch list shall be prepared for unsatisfactory items which will be filed with the certificate of substantial completion and shall include reasonable values which may be more than bid price assigned to each punch list item, said amounts to be withheld by the City pending completion of that item by the Contractor. If claims against unsatisfactory items are more than the retainage, then the value of such claims shall be retained by the City. Retainage shall be paid to the Contractor at the expiration of the forty-five (45) day lien period. Deduction may be withheld for incomplete punch list items. The date of substantial completion of a project or specified area of a project is the date when the construction is sufficiently completed in accordance with the contract documents as modified by any change orders agreed to by the parties so that the City can occupy the project or specified area of the project for the use for which it was intended.

(2) Before the final payment is issued, if required in the Special Conditions, the Contractor shall certify in writing to the Director that all payrolls, material bills, and other indebtedness connected with the work have been paid, or otherwise satisfied, except that in case of disputed indebtedness or liens, if the contract does not include a payment bond, the Contractor may submit in lieu of certification of payment a surety bond in the amount of the disputed indebtedness or liens, guaranteeing payment of all such disputed amounts, including all related costs and interest in connection with said disputed indebtedness or liens which the owner may be compelled to pay upon adjudication.

(3) The making of final payment shall constitute a waiver of all claims by the City, other than those arising from unsettled liens, from faulty work appearing within the guarantee period provided in the special conditions, from the requirements of the drawings and specifications, or from manufacturer's guarantees.

(4) If after the work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor, and the Director so certifies, the Director of Finance shall, upon certification by the Director, and without terminating the contract, make payment of the balance due for the portion of the work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment.

(5) Outside or user agencies required to accept any portions of the project shall be subject to the provisions of this section. Failure of the outside agency to inspect their area of work within ten (10) working days will not affect or delay the issuance of a certificate of substantial completion.

C138.06 Should the acceptance fail to be recorded within five (5) working days, the Contractor may, at his option, record this document at his cost.

C138.07 Partial Payments: Provided work is prosecuted in accordance with provisions of the contract and with satisfactory progress the Director will make the first progress estimate within two (2) calendar months from the date indicated to begin work in the Notice to Proceed. The Director will determine the progress estimate date. Each successive progress estimate will be made on this same date of each month thereafter until completion of the contract.

Each progress estimate will be an approximation of the proportionate value of the work performed up to the date the estimate is made and will be based on material in place and labor expended thereon, but no more than ninety-five (95%) percent of the total contract price of the work will be paid in advance of final acceptance.

The amount of said estimate, after deducting appropriate retainage and all previous payments, shall be payable to the Contractor.

Monthly estimates will be approximate and subject to corrections in the estimate rendered following discovery of any error in any previous estimates.

Should defective work or material be discovered or reasonable doubt arise as to the integrity of any part of the work completed prior to final acceptance and payment, there will be deducted from the first estimate rendered after such discovery an amount equal in value to the defective or questioned work, and this work will not be included in a subsequent estimate until defects have been remedied or causes for doubt removed.

If the Contractor is not a corporation, the Contractor's Federal Identification Number (if a firm) or Social Security Number (if an individual) shall be furnished to the Director of Finance upon request before payments will be made to the Contractor for any work under the contract.

Payment of the monthly estimates shall not be taken as an admission that the work is done or that its quality is satisfactory, nor as a release of the Contractor from the responsibility for any portion thereof, but the whole work and all particulars relating thereto shall be subject to revision and adjustment by the Director at the time of final acceptance and payment of the final estimate.

SECTION C139
PAYMENT WITHHELD

The City may withhold that portion of the payment to such extent as may be necessary to protect itself against loss from:

(a) Defective work not remedied.
(b) All costs associated with cancelled or failed tests.
(c) Failure of the Contractor to make payments properly to sub-Contractors for material or labor.
(d) A reasonable doubt that the contract can be completed for the balance then unpaid.

When the above grounds are removed payments shall be made for amounts withheld because of them.

SUPERINTENDENCE AND INSPECTION

SECTION C140
DIRECTOR OF PUBLIC WORKS' AUTHORITY

The Director shall have the right to:

(1) Stop the work;

(2) Reject the work;

(3) Have access to work site whenever the work is in preparation or in progress;

(4) Determine the amount or quantity, or the classification of several kinds of work or material, which are to be paid for under the contract;

(5) Coordinate the work with utility companies, railroad companies and all governmental user agencies.

Should the Contractor fail to correct defective work as required in this contract or persistently fail to carry out the work in accordance with the contract documents, the Director may by written notice direct the Contractor to stop the work or any portion thereof until the defective work has been remedied to the satisfaction of the Director. The right to stop the work shall not be construed to create a duty on the part of the Director to exercise this or any other right under the contract. The Director shall also have the right to stop the work should the Contractor fail to maintain contract safety provisions.

The Director will not be responsible for construction means, methods, techniques, sequences or procedures or for safety precautions and programs in connection with the work. These duties and responsibilities are exclusively the Contractor's obligations. The Director will not be responsible for the acts or omissions of the Contractor, Subcontractors or any of their agents or employees, or any other persons performing any of the work.

The Director will have authority to reject work which does not conform to the contract documents. The Director may require special inspections for testing of the work at any stage of preparation or completion. However, this right shall not be construed to create a duty on the part of the Director to exercise this or any other right under the contract.

SECTION C141
SUPERINTENDENCE

C141.01 The Contractor must at all times have an authorized representative on the work site to whom orders can be given; this representative will have full authority to carry out all orders given by the Director, and shall keep on the work, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Director.

C141.02 The Authorized Representative (superintendent) shall represent the Contractor and all directions given to same by the Director shall be as binding as if given to the Contractor. Directions shall be confirmed in writing upon written request in each case. The Contractor shall give efficient supervision to the work, using its best skill and attention.

C141.03 If the Contractor, in the course of the work, finds any discrepancy between the plans and the physical condition of the locality, or any errors or omissions in plans or in the layout as given by points and instructions, it shall be the duty of the Contractor to immediately inform the Director in writing, and the Director shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk.

SECTION C142
INSPECTION

C142.01 Duly authorized representatives of the Department will be assigned by the Director to observe the work; their duties will be to see that proper materials are used and that the work is done in accordance with the plans and specifications and to notify the Contractor and the Director of any deficiencies or non-compliance with the project plans and specifications. The right of final condemnation or acceptance of the work shall not be waived by the Director at any time during the progress of the work or after its completion.

C142.02 The Contractor shall be responsible for the faithful execution of his contract and his presence or absence is in no manner to be presumed to relieve in any degree the responsibility or obligations of the Contractor. The decision of the Director shall be final and binding upon all technical questions concerning the execution of the work, in the interpretation of the specifications, and as to all measurements.

C142.03 The Contractor shall notify the Director as to the exact time at which he proposes to begin work so that the Director may provide for the inspection of all materials used and all work done under this contract. Such inspection may extend to all or any part of the work and to the preparation or manufacture of materials to be used, whether within the limits of the work on the street, or at any other place.

C142.04 The Director shall have free access to all parts of the work and to all places where any parts of the materials to be used are procured, manufactured or prepared.

C142.05 The Contractor shall furnish the Director all information relating to the work and the materials therefore, which may be deemed necessary or pertinent, and with such samples of materials as may be required. The Contractor, at his own expense, shall supply such labor and assistance as may be necessary in the handling of materials for proper inspection, or for inspection of any work done by him. The City of New Orleans shall, at its own expense, retain the services of an independent testing laboratory to perform physical, chemical and other pertinent tests on materials entering into the project. All reports on materials tested by the testing laboratory will be sent to the Director and the Contractor stating whether or not the materials conform to these specifications.

C142.06 The duly authorized representatives of the Director shall have no authority to permit deviation from or to relax or extend any of the provisions of the specifications without the written permission of the Director, or his Agent, nor to delay the Contractor by failure to inspect materials and work with reasonable promptness.

C142.07 The Contractor shall provide the Director with a schedule of his intended job progress before work proceeds. This schedule shall be in the form of a Gantt Chart and shall include major items of work and indicate when the Contractor has planned the performance of these work items. The Director may request the Contractor to update this schedule as work progresses under the contract.

SECTION C143
PLANT INSPECTION

Plant inspection may be required for all asphaltic concrete pavements, precast concrete curb and Portland cement concrete. When payment is to be made by the tonnage, haul tickets shall be signed by a representative of the testing laboratory.

The cost of plant inspection shall be borne by the City of New Orleans.

SECTION C144
FINAL AUTHORITY

The Director shall decide all questions which may arise to the quality and acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of said work and shall decide all questions which may arise as to the interpretation of all plans and specifications relating to the work.

INJURY AND DAMAGES

SECTION C145
INJURY TO WORK

The Contractor shall be responsible for all injury which the work may suffer, without respect for cause, until it has been accepted as substantially complete by the Director.

SECTION C146
INJURIES TO PERSONS AND PROPERTY

C146.01 The Contractor shall alone be held responsible for all injuries to persons, and for all damage to the property of the City or others, caused by or resulting from the act of omissions of himself, his employees or his agents, during the progress of, or connected with the prosecution of the work, whether within the limits of the work or elsewhere, and whether under the contract proper or as extra work.

C146.02 The Contractor must protect and support all water, sewer and gas pipes or other conduits and buildings, walls, fences or other properties which may be damaged during the performance of his work. He shall take all reasonable and proper precautions to protect persons, animals and vehicles of the public from injury, and whenever necessary shall erect and maintain a fence or railing around any excavation, and place a sufficient number of warning lights about the work and keep them burning from twilight until sunrise, and shall employ one or more watchmen as an additional security whenever they are needed. He must, as far as practicable and consistent with good construction, permit access to private and public property and leave fire hydrants and catch basins free from encumbrances. He must restore, at his own expense, all injured property caused by any act of omission or commission on his part, or on the part of his agent, including sidewalks, curbing, sodding, pipes, conduits, sewers and other public property, to a condition as good as it was when he entered upon the work.

C146.03 During the progress of any and all parts of the work contemplated, the Contractor shall be required to prohibit and prevent any and all riding, driving on, or using in any manner any portion of such completed work except after the time hereinafter specified. To prevent the use of any completed work as above noted, the Contractor, at his own expense, shall effectually guard such portion of the work, with barriers sufficiently strong to afford the necessary protection.

C146.04 The Contractor shall indemnify and save harmless and defend the City from all suits and actions that may be brought against it by reasons of any injury, or alleged injury, to the person or property of another, resulting from negligence or carelessness in the execution of the work, or because of failure to properly light and guard the same.

C146.05 The Contractor must protect all vegetation or plant life, in whatever form, other than that proposed to be removed, altered or otherwise affected as part of the project. No parking upon, or use of, the median or neutral ground for storage of materials, equipment or supplies shall be permitted and no material, equipment or supplies may be stored or used on any unpaved area below the dripline of any tree unless specifically authorized by the Director. In case of damages of

any type to vegetation or plant life designated to remain in the project area, the Contractor shall replace the items in like kind or repair such damage to the satisfaction of the Department of Parks and Parkways staff without additional compensation.

C146.06 The Contractor must minimize damage to streets used for access to the project for the delivery of materials, equipment or supplies by observing weight and speed limits as defined in the City Code. Access routes to the work site from designated "truck routes" will be established at the pre-construction meeting. The Contractor and his sub-Contractor(s) will be required to adhere to these routes to and from the project site. The routes may be revised by the Director to accommodate the work as it progresses. The Contractor is required to keep the work site clean, particularly the roadways adjacent to the work site. The Contractor shall clear such roadways of dirt, silt, sand or other such material as often as necessary, or as specified by the Director. The work site shall be left in a clean condition at the close of each work day.

SECTION C147
DAMAGES

Should the Contractor be of the opinion at any time that he has sustained damages under this contract, for which he should be compensated, he shall make a written statement to the Director of the nature of the damage claimed within thirty (30) calendar days after sustaining such damages. The Director shall thereupon render a decision in the matter.

SECTION C148
OTHER STATUTES

Unless in direct conflict with the provisions stated herein, all state of Louisiana statutes applicable to construction shall be hereby adopted.

PART II - EARTH WORK

SECTION C201
CLEARING AND GRUBBING

C201.01 DESCRIPTION: This work consists of required clearing, grubbing, removing and disposing of vegetation and debris within the limits of the right-of-way and easement areas, except such items that are designated to remain or to be removed under other items.

This work consists of cutting trees, logs, brush, stumps and debris; excavating and removing stumps, roots, submerged logs, snags and other vegetative or objectionable material; disposing of removed material in a satisfactory manner and cleaning the area. When fencing or utility relocation is required, an area of 10 feet wide, adjacent to and inside the right-of-way line, shall be cleared and grubbed.

C201.02 GENERAL CONSTRUCTION REQUIREMENTS: The Director will designate trees, shrubs, plants and other items to remain. The Contractor shall preserve the items designated to remain. Equipment, materials and supplies shall not be stored in proximity of items designated to remain. Trees shall be removed without damaging items marked to remain. In case of damage to bark, trunks, limbs or roots of vegetation marked to remain, the Contractor shall repair such damage at no direct pay by horticultural and tree surgery practices published by the American Association of Nurserymen (AAN). Trees shall not be felled outside of the right-of-way. Damage outside the right-of-way caused by the Contractor's operations shall be the Contractor's responsibility.

C201.03 CLEARING AND GRUBBING: Clearing and grubbing shall be done within the construction limits and to a point in fills 15 feet beyond the toes of foreslopes and in cuts 15 feet beyond the tops of backslopes, when width of right-of-way permits, or to the limits shown on the plans; also from areas required for outfall ditches and channel changes. Trees, stumps, roots and other protruding vegetative obstructions not designated to remain shall be cleared and grubbed (including mowing when required by the Director). Undisturbed stumps, roots and nonperishable solid objects which will be a minimum of one foot below the subgrade or slope of embankments will be permitted to remain provided they do not extend more than six inches above the original ground line or low water level.

Except in areas to be excavated, stump holes and other holes left from clearing and grubbing shall be backfilled with usable soil which shall be thoroughly compacted.

C201.04 MEASUREMENT: No measurement of area will be made for payment.

C201.05 PAYMENT: Payment for clearing and grubbing will be made at the contract unit price under:

ITEM NO.	PAY ITEM	PAY UNIT
C201(01)	Clearing and Grubbing	Lump Sum

SECTION C202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS

C202.01 DESCRIPTION: This work consists of removal and satisfactory disposal of pavements, sidewalks, curbs, gutters and other obstructions not designated or permitted to remain, except obstructions to be removed under other contract items. It shall also include salvaging of designated materials and backfilling resulting trenches, holes and pits, except the area to be excavated. At locations where pavement, curbs or gutter, sidewalk, driveway, or footlaps are to be removed but are not to be replaced, the Contractor shall backfill the area with selected excavated or other suitable approved material at no direct payment.

C202.02 GENERAL CONSTRUCTION REQUIREMENTS: The Contractor shall remove and dispose of all pavements, sidewalks, curbs, gutters and other obstructions. Designated salvageable material shall be removed, without unnecessary damage, in sections which may be readily transported. Salvageable material shall be stacked at specified storage areas by the Contractor. When no storage sites are specified, salvaged materials shall be delivered to the street maintenance yard. Materials not designated to be salvaged shall be disposed of, off the project, outside the view of the traveling public with written permission of the property owner on whose property the material is placed. Copies of agreements with property owners shall be furnished to the Director prior to beginning of work. Saw cut may be required prior to removal.

C202.03 MEASUREMENT: When the contract stipulates that payment will be made for the removal of specific items on a unit basis, measurement will be made by the unit stipulated in the contract.

If the contract does not include pay items for removal of structures and obstructions, the removal work will not be measured for payment.

Hauling salvaged materials to specified storage sites will not be measured for payment.

Saw cut will be measured by the linear foot unless otherwise noted.

C202.04 PAYMENT: Payment for "removal and disposal of existing Portland Cement Concrete Pavement" shall be made at the contract unit price, including removal of asphaltic concrete pavement, regardless of thickness, on top of the existing Portland Cement Concrete Pavement and curb and gutter bottom if monolithic with pavement.

Payment for removal and disposal of "existing sidewalk, driveway, footlap," "existing curb", "existing curb and gutter bottom", "existing gutter bottom or rolling strip" and "existing asphaltic concrete pavement" shall be made at the contract unit price.

Payment for "saw cut" shall be made at the contract unit price per Linear Foot.

When the removal is an area to be excavated and payment is made under other items, no deduction will be made for those items.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C202(52)(C)	Removal and Disposal of Existing Portland Cement Concrete Pavement.	Square Yard
C202(52)(D)	Removal and Disposal of Existing Sidewalk, Driveway, Foot Lap (Concrete, Brick, Asphalt, etc.)	Square Yard
C202(52)(E)	Removal and Disposal of Existing Curb (Concrete, Asphalt, Brick, Stone, etc.)	Linear Foot
C202(52)(F)	Removal of Existing Curb and Gutterbottom	Linear Foot
C202(52)(G)	Removal of Existing Gutterbottom or Rolling Strip	Linear Foot
C202(52)(I)	Removal of Existing Asphaltic Concrete Pavement	Square Yard
C202(53)(C)	Removal of Existing Concrete Bus Pad	Square Yard
C202(54)(A)	Removal and Disposal of Concrete or Stone Headers	Linear Foot
C202(54)(B)	Removal and Salvage of Stone Headers	Linear Foot
C202(55)	Saw Cut Concrete Curb, Pavement, Side-Walk, Driveway, etc. According to Plans (_" Depth)	Linear Foot
C202(56)	Saw Cut, Wheel Cut or Spade Cut Existing Asphalt, According to Plans (_" Depth)	Linear Foot

SECTION C203
PREPARATION OF ROADWAY PAVEMENT SUBGRADE

C203.01 The roadway pavement subgrade shall be made to conform to the lines and elevations shown on plans, and to the proper crown as prescribed in these specifications.

C203.02 The surface of the finished subgrade shall be parallel to and conform to the cross section of the roadway pavement.

C203.03 Berms, ridges of earth, or other material that will interfere with the immediate discharge of water to the side of the crown shall not be left on the subgrade. The subgrade shall be maintained free from ruts so that it will, at all times, drain properly with no standing water. Excavation shall not exceed the prescribed lines and elevations so as to obviate the necessity for refilling.

Stumps and roots exposed in the preparation of the subgrade shall be, as directed by the Director, either removed or excavated to a depth of not less than one (1') foot below the subgrade and the resultant excavation filled with sand and compacted.

All equipment (excavation, compaction, hauling trucks, etc...) shall be subject to approval prior to usage. When the subgrade strength is sufficiently strong to support construction traffic without rutting, heavy equipment may be used

The subgrade shall be uniformly compacted by light weight roller (five tons). When the subgrade is in a wet condition, it shall be allowed to dry until the material is within reasonable limits of optimum moisture before compaction is attempted.

Upon completion of compaction by light weight roller the exposed subgrade areas shall be properly proof rolled in order to verify suitability of subgrade to receive the base course.

Proof roll shall consist of passing over the exposed surface with a 25 ton (+/- 1-ton) loaded tandem dump truck during dry weather and observed by the Director. Result of observations shall be documented including horizontal limits of area rolled, approximate extent of vertical deflections, and any observed excessive rutting or pumping (soft spots). Excessive rutting shall be considered prolonged deflection (rutting) in excess of 1-inch for new construction or ½-inch for reconstruction. Excessive pumping shall be considered temporary deflection with rebound (pumping) in excess of 1-inch for new construction or ½-inch for reconstruction. Areas of surface soils that are observed to excessively rut or excessively pump under the truck load (unsuitable subgrade) shall be removed to such an extent as directed by the Director, replaced with sand, and compacted under the Unsuitable Subgrade, Excavation, & Sand filling item. Additionally the Director may have testing performed on areas exhibiting excessive rutting or pumping and/or require adjustments or revision to the location or type of geogrid or backfill material to be installed.

When the Contractor encounters subgrade conditions that are impossible to proof roll and equipment is unable to move freely, the Contractor shall notify the Director.

C203.04 When subgrade is approved as the subbase for the pavement base material, it shall be constructed to have, as nearly as practicable, a uniform density throughout its entire width. Wherever the subgrade extends beyond the lateral limits of an old roadway, or wherever an old gravel, macadam, or other hard compacted crust comes within six (6") inches of the elevation of the finished subgrade, such old roadway or crust shall be plowed, loosened or scarified to a depth of at least six (6") inches and the loosened material redistributed across the full width of the subgrade, adding suitable material when necessary, so that when compacted to the required elevation, alignment and cross section, the subgrade will approach as nearly as possible a condition of uniform density. Compaction of the subgrade material shall be accomplished with a self-propelled roller weighing not less than five (5) tons.

Hand tamping portions of the subgrade, when necessary, may be directed by the Director. In such cases where hand tamping is permitted, the tamper shall be of an approved pneumatic type. Berms, ridges of earth, or other material that will interfere with the immediate discharge of water to the side of the crown shall not be left on the subgrade. The subgrade shall be maintained free from ruts so that it will, at all times, drain properly with no standing water. All depressions developing under traffic on the subgrade, or in connection with rolling, shall be filled with suitable material. Rolling shall be continued until the subgrade is uniformly compacted, properly shaped, and true to grade and alignment. It is not intended that the rolling shall be continued beyond this point, as the purpose of rolling is not to produce a subgrade that cannot be further compacted, but to produce a uniformly compacted subgrade. All hauling shall be distributed over the width of the subgrade so far as practicable, so as to leave it in a uniformly compacted condition. After being prepared in the above manner, the subgrade shall be so maintained until the concrete pavement or pavement foundation has been placed thereon. Excavation shall not exceed the prescribed lines and elevations so as to obviate the necessity for refilling. When considered necessary or of assistance in producing a compact, solid surfacing, the subgrade shall be well-sprinkled with water before being rolled.

C203.05 No geotextile or other base or subbase course shall be placed until the subgrade has been approved by the Director.

C203.06 GEOTEXTILE and GEOGRID FOR STABILIZATION: This work consists of furnishing and placing geotextile fabric and geogrid in accordance with these specifications and in conformance with the details shown on the plans.

Geotextile fabric and geogrid shall conform to Section C203.07 and C203.08. Rolls of geotextile fabric and geogrid shall be kept covered at all times until used. Geotextile fabric and geogrid that has been installed shall be covered with embankment within 7 calendar days. When ultraviolet damage occurs, the geotextile fabric and geogrid shall be removed and replaced. The geotextile fabric and geogrid shall be placed at the locations shown on the plans or as directed. Adjacent rolls of geotextile fabric and geogrid will be overlapped or sewn. When rolls are overlapped, the overlap shall be a minimum of three (3') feet, including the ends of the rolls. The top layer of the geotextile fabric and geogrid shall be parallel with adjacent rolls and in the direction of construction.

The geotextile fabric shall be placed as smooth as possible with no wrinkles or folds, except in curved road sections. For curved road sections, the geotextile fabric shall be folded to accommodate the curve. The fold shall be in the direction of construction and pinned or stapled. Ruts that occur during construction shall be filled and compacted prior to placement of geotextile fabric.

Damaged geotextile fabric and geogrid shall be either removed and replaced with new geotextile fabric and geogrid or covered with a second layer of geotextile fabric and geogrid extending three (3') feet in each direction from the damaged area

C203.07 GEOTEXTILE:

Work under this section includes furnishing and placing the specified geotextile on the existing subgrade or base. Geotextile manufacturers are encouraged to furnish engineering assistance during installation of woven fabric. In addition, manufacturers might provide special equipment which will ease handling and installation.

The woven fabric shall meet the following minimum requirements:

1. Grab Tensile Strength - 400 lbs. minimum per ASTM D-4632.
2. Trapezoid Tear Strength - 130 psi minimum per ASTM D-4533.
3. Bursting Strength - 620 psi minimum per ASTM D-3787.
4. Puncture Resistance - 130 lbs. minimum per ASTM D-4833.

The geotextile shall be delivered in rolls to facilitate installation. During shipment and storage the woven fabric shall be wrapped in a heavy-duty covering to protect it from direct sunlight, ultraviolet rays, temperatures greater than 140 degrees F. (60 degrees C.) mud, dirt, dust, debris and abrasion. The manufacturer shall furnish certified test reports showing that the geotextile meets the requirements of this section.

Unless otherwise specified by the manufacturer, installation of woven fabric shall be as follows:

1. The subgrade shall be graded to the elevations required by the plans.
2. Geotextiles which have a difference between the textures of the two sides shall be unrolled with the bearded or fuzzy side down and smooth side up.
3. The geotextile shall be spread in a uniform manner, lapped and in accordance with the manufacturer's recommendations, and stretched taut on transverse direction as required to prevent the subbase from pumping into the sand-shell base. Tears or rips in the fabric shall be patched.

No payment will be made for fabric used in patching or overlaps. Geotextile will be paid for per square yard in place at the price bid in the proposal. This price shall include all labor, equipment and materials required to install fabric according to the plans and specifications.

C203.08 GEOGRID:

The Contractor shall install a prior approved geogrid over the geotextile fabric in full compliance

with manufacturer's recommendations, to the alignment and grades designated, in locations shown on the plans or as directed by the Director. Use only material that has been approved by the Director. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section. The Contractor shall check the geogrid, upon delivery, to assure the proper material has been received.

The geogrid shall be a regular grid structure formed by punching and drawing a continuous sheet of select polypropylene material and shall have aperture geometry and rib and junction cross-sections sufficient to permit significant mechanical interlock with the material being stabilized. The geogrid shall have high flexural rigidity and high tensile modulus in relation to the material being stabilized and shall also have a high level of continuity through all ribs and junctions of the grid structure. The geogrid shall maintain its confinement and interlock capabilities under repeated dynamic loads while in service and shall also be resistant to ultraviolet degradation, to damage under normal construction practices, and to all forms of biological or chemical degradation normally encountered in the material being stabilized.

The geogrid shall meet the following minimum requirements**:**

1. Nominal Aperture size – 0.6 inches minimum to 1.6 inches maximum
2. Ultimate Tensile Strength – 850 lb/ft minimum per ASTM D-6637
3. Tensile Strength at 2% strain – 280 lb/ft minimum per ASTM D-6637
4. Tensile Strength at 5% strain – 580 lb/ft minimum per ASTM D-6637
5. Carbon Black Content – 0.5% minimum per ASTM D-4218

The Contractor may request a product from any geogrid manufacture listed on LaDOTD's Qualified Products List for approval.

Subgrade soil shall be prepared as indicated on the construction drawings or as directed by the Director. Geogrid shall be laid at the proper elevation and alignment as shown on the construction drawings. Geogrid shall be oriented such that the roll length runs parallel to the road direction. Geogrid shall be overlapped a minimum of 2-foot and there is no extra pay for overlapped area. Care shall be taken to ensure that geogrid sections do not separate at overlaps during construction. Placement of geogrid around corners will require cutting of geogrid product and diagonal overlapping of same to ensure that excessive buckling of grid material does not occur. Exercise care during placement of embankment over geogrid so as not to damage geogrid.

C203.09 MEASUREMENT: Roadway excavation, excluding pavement removal paid for in other items, shall be measured by the cubic yard, theoretical section, computed by the average end area methods.

Shape ditches to cross section as shown on the plans shall be measured by the linear foot.

Unsuitable subgrade, excavation, and sand filling, where directed for use by the Director, shall be measured by the cubic yard truck measure.

Geotextile fabric shall be measured by the square yard of covered areas in place. There will be no measurement for overlaps.

Geogrid will be measured by the square yard in place. There will be no measurement for overlaps.

C203.10 PAYMENT: Payment for the accepted quantities will be made at the contract unit prices.

Payment for "Roadway Excavation" shall include excavating, hauling, disposing of the excavated materials.

Payment for "Unsuitable Subgrade Excavation & Sand Filling" shall include excavation, disposal of unsuitable subgrade and replacing this material with sand, graded and compacted.

No direct payment will be made for grading and/or compacting the subgrade.

Payment will be made under:

ITEM NUMBER	PAY ITEM	PAY UNIT
C203(51)	Roadway Excavation	Cubic Yard
C203(53)	Shape Ditches	Linear Foot
C203(58)	Unsuitable Subgrade, Excavation, & Sand Filling	Cubic Yard (Truck Measure)
C203(59)	Geotextile Fabric for Stabilization	Square Yard
C203(60)	Geogrid	Square Yard

SECTION C204
ENVIRONMENTAL PROTECTION AND STORMWATER POLLUTION PREVENTION PLAN

The Contractor shall comply with federal, state, and local laws and regulations controlling pollution of the environment, including air, water and noise. The Contractor shall take precautions to prevent pollution of waters and wetlands with fuels, oils, asphalts, chemicals or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

The Contractor certifies under penalty of law that he understands and will abide by the terms and conditions of the following:

- **(a)** Permit LAS000301: Municipal Separate Storm Sewer System MS4 Permit (LAS000301) for the Orleans Parish area. This permit requires a Stormwater Pollution Prevention Plan (SWPPP) for applicable activities;
- **(b)** Permit LAR200000: Stormwater Discharges from Construction Activities from 1 to less than 5 acres (when applicable). This permit requires a SWPPP;
- **(c)** Permit LAR100000: Storm Water Discharges from Construction Activities from 5 acres or more (when applicable). This permit requires a SWPPP;
- **(d)** Section 54-154.1 of the New Orleans Municipal Code.

The use of erosion control features or methods other than those in the contract shall be as directed.

The Contractor's Storm Water Pollution Prevention Plan shall be comprised of all relevant components specified in the U.S. Environmental Protection Agency document entitled, "Storm Water Management for Construction Activities", and shall include Section 204.03, Temporary Erosion Control, the City of New Orleans General Specifications along with applicable supplemental specifications, special provisions, and the plans.

Construction operations in rivers, streams, lakes, tidal waters, reservoirs, canals and other impoundments will be restricted to areas where it is necessary to perform filling or excavation to accomplish the work and areas which must be entered to construct temporary or permanent structures. As soon as conditions permit, streams and impoundments shall be cleared of obstructions placed therein or caused by construction operations.

Frequent fording of waterways with construction equipment will not be permitted.

No residue from dust collectors, concrete mixers, vehicle wash racks, or entrance/exit debris shall be dumped into a stream or drainage structure. Attention is further directed to the federal, state and local air pollution control programs and their rules and regulations regarding air pollution, especially open burning, fugitive dust and asphaltic concrete plant restrictions. The Contractor shall maintain and operate equipment to minimize noise and vibration. Engines shall be equipped with properly functioning mufflers. The Contractor shall assure the activities near noise and vibration sensitive areas, such as churches, hospitals and schools are not unduly disruptive.

C204.01 REQUIREMENTS FOR NEW CONSTRUCTION AND DEQ PERMITS:

(a) Requirements for new construction:

<table>
<tr><td>• UNDER ONE ACRE DISTURBED
(Approx. ½ square block)</td><td>• FIVE ACRES OR MORE DISTURBED</td></tr>
<tr><td>. Storm Water Control Measures (SCMs) in place. (SCMs formerly known as BMP)
. NOI (Notice of Intent) not required.
. Complete Inspection Reports and submit one copy to DPW. Contractor and inspector should keep a copy on file.</td><td rowspan="3">. SCMs in place

. Must have NOI completed, sent to DEQ, and posted.

. Must prepare SWPPP, post prominently

. Must have General Permit posted on site with DEQ permit number for specific site.

. Must complete Notice of Termination (NOT) and submit to DEQ.</td></tr>
<tr><td>• ONE TO FIVE ACRES DISTURBED</td></tr>
<tr><td>. SCMs in place
. Must prepare SWPPP, post prominently
. Must have General Permit posted on site
. NOI not required.
. Complete All Req’d. Reports and submit them to DPW</td></tr>
</table>

(b) Compliance with DEQ Permits:

Description: This work consists of constructing and maintaining the SWPPP (Storm Water Pollution Prevention Plan) and Storm Water Control Measures (SCMs) for all construction sites which include clearing, grading, construction or excavation.

Required steps for disturbed sites exceeding one (1) acre:

1. Prepare a STORM WATER POLLUTION PREVENTION PLAN (SWPPP). This program will show how the Contractor will control runoff from the construction site. The basic idea is to KEEP all soil, dirt and pollutants within the limits of the site. (NOTE: AN EROSION CONTROL PLAN SHEET IS NOT A SWPPP.)

Typical parts of the SWPPP include:

a. Site description and endangered species in the area.
b. Controls to be used to reduce pollution.
  i). Storm Water Control Measures (SCMs)
  ii). Sediment and Erosion Controls to be installed.
c. Inspections and Record Keeping.
d. Site Notice.
e. Certification.

2. Submit a NOTICE OF INTENT (NOI) to DEQ. For LARGE construction sites (larger than 5 acres.) The Contractor has authority to begin as per DEQ permit 48 hours after the postmark date on the NOI.

3. Put up the SITE NOTICE at the construction site.

4. INSTALL all erosion control structures (SCMs) BEFORE starting construction

5. MAINTAIN all SCMs during construction and mark any changes on the SWPPP.

6. INSPECT all SCMs as indicated in the SWPPP and make any needed corrections or changes to the construction site.

7a. For SMALL sites (less than 1 acre), INSTALL SCMs. Inspect, maintain, and keep records.

7b. For MEDIUM construction sites (larger than 1 acre and less than 5 acres), after construction is completed and the soil has been stabilized, fill out a Completion Report and submit it to DPW project manager.

7c. For LARGE construction sites (larger than 5 acres), after construction is completed and soil has been stabilized, fill out a Notice of Termination (NOT) and submit NOT to DEQ (same address as shown below)

Inspection: Contractor shall inspect and repair or replace, as needed, all job site SCMs a minimum of:

- Weekly, and
- Before, during, and after a major rain event, or as necessary.

Contractor shall document each inspection in the SWPPP.

Permits: Permits are required for any clearing, grading, construction or excavation which is larger than 1 acre. The Contractor is responsible to obtain coverage under the Storm Water General Permit with DEQ (Office of Environmental Service, PO Box 4313, Baton Rouge, LA 70821-4313).

Activities EXEMPT from the required permit include:

- Clearing of land SOLELY for agriculture purposes,
- Oil and gas exploration, production, processing, transportation or treatment,
- Repaving roads and reworking utilities and pipelines unless more than 1 acre is disturbed,
- Routine maintenance performed to maintain the original line and grade, hydraulic capacity or original purpose of the facility (include culvert replacement, road patching, shoulder grading, pothole filling, road replacement without adding lanes, tree/brush removal)

Copies of the required DEQ permits shall be submitted to the Department of Public Works.

MEASUREMENT AND PAYMENT: Unless otherwise specified in Section C204.03, No direct payment shall be made for obtaining and maintaining the necessary permits, preparation, installation and inspection of the Storm Water Control Measures (SCMs) including all labor equipment or materials required to complete the Storm Water Management Program (SWPPP).

C204.02 – STORM WATER POLLUTION PREVENTION PLAN (SWPPP) and STORMWATER CONTROL MEASURES (SCMs)

(a) General:

1. The Contractor shall prepare and maintain a Storm Water Pollution Prevention Plan (SWPPP), which describes in specific details the Contractor's program to prevent contamination of the storm water collection system for this project. A suggested Template and Sample SWPPP Inspection Report, as well as other valuable information can be found at EPA's website http://cfpub.epa.gov/npdes/stormwaterlswppp.cfm.

2. Contractor shall implement, maintain, and inspect all erosion and sediment controls identified in the SWPPP. The program shall address both common construction activities and extraordinary events. The Contractor shall remove all temporary SCMs, such as silt fences, catch basin filters, wash areas, etcetera at the end of construction.

3. Contractor shall include Water Pollution Control Drawings (WPCD) in the SWPPP to illustrate the locations, applications, and deployment of the Storm Water Control Measures (SCMs) identified in the SWPPP. The WPCDs shall be included as an attachment to the SWPPP.

4. Storm Water Control Measures (SCMs): The Storm Water Control Measures (SCMs) are techniques, processes, activities, or structures used to reduce the pollutant content of a storm water or non-storm water discharge. SCMS may include simple, non-structural methods such as good housekeeping, staff training, and preventive maintenance. Additionally, SCMs may include structural modifications such as the installation of berms, canopies, or treatment control.

5. The Contractor shall comply with laws, rules, and regulations of the State of Louisiana and agencies of the United States Government prohibiting the pollution of lakes, wetlands, streams, or river waters from the dumping of contaminates, refuse, rubbish, or debris.

6. The Contractor shall submit copies of the SWPPP a minimum of 10 working days prior to beginning construction, to the Director. Contractor shall update the SWPPP as necessary during the work to prevent contamination of the storm water collection system.

7. Before start of work, Contractor shall train all employees and Subcontractors on the approved SWPPP and related WPCD and provide the Department of Public Works with written documentation of said training.

8. Suggested SCMs can be obtained from LA DEQ Small Business Assistance Program, 201 Evans Rd. Bldg. 4, Suite 420 Harahan LA. Phone 504-736-7739.

(b) Construction: The Contractor shall keep a copy of the SWPPP on the job site. The Contractor shall provide continuously at the jobsite all the tools, equipment, and materials necessary to implement the SWPPP at all times from project initiation through completion, including any punchlist or warranty work on the project. At a minimum the following requirements shall be met as applicable, to the maximum extent practicable, at construction sites:

1. Storm Drain System Protection: At the first order of work, the Contractor shall protect the existing storm drain system from entrance of construction debris and pollutants. Such protection shall include implementing the SCMs as outlined in the SWPPP. Protection shall prohibit the discharge of untreated runoff from temporary or permanent street maintenance/landscape maintenance material and waste storage areas from entering the storm drain system. Sediment that is generated on the project site shall be retained using structural drainage controls. In addition, the protection system shall have a minimum of three features:

- **a)** A particulate filter of geosynthetic material securely fastened in place such that it cannot be bypassed without significant physical damage;
- **b)** A prefilter for the particulate filter; and
- **c)** On-hand materials to close off the inlet or opening in the case of a significant pollution spill. Contractor shall monitor and maintain all storm drain inlet protection devices during rain events to prevent flooding.

2. Material Management & Storage: No construction-related materials, wastes, spills or residues shall be discharged from the project site to streets, drainage facilities or adjacent properties by wind or runoff. All materials and/or equipment storage areas where liquid construction materials are placed shall be protected by a physical barrier capable of containing the entire volume of stored liquid materials. During active construction activities, portions of the barrier may be removed for access. However, the barrier materials must be readily accessible for replacement by onsite construction personnel. The barrier must be in place at all times during the absence of Contractor personnel at the storage site. Building materials shall be placed on pallets and covered in event of rain. Do not store materials in the street or gutter area.

3. Equipment & Vehicle Maintenance: Non-storm water runoff from equipment and vehicle washing and any other activity shall be contained at the project site and shall not be allowed to discharge from the project site to streets, drainage facilities or adjacent properties by wind or runoff. The Contractor shall inspect vehicles and equipment on each day of use. Leaks shall be repaired off-site if possible. If necessary to repair on site, the runoff must be contained, or the problem vehicle or equipment shall be removed from the project site until repaired. If necessary, drip pans shall be placed under the vehicles or equipment while not in use to catch and/or contain drips and leaks.

4. SCMs Inspection: The Contractor shall inspect all pollution control SCMs regularly. The Contractor shall also repair/replace any damaged or clogged element on a daily basis. During periods of precipitation where any runoff occurs, the system shall be checked twice a day, seven days a week, whether or not any work has been performed. The Contractor shall keep a monitoring inspection log of each inspection.

5. Spill Prevention & Cleanup Plan: Contractor shall have a spill prevention plan and spill cleanup materials readily available and addressed in the SWPPP. Spills shall be cleaned up immediately using dry methods if possible. Spill cleanup material shall be properly disposed of offsite. Contractor shall keep a record of any spills in the inspection log. In addition, at the end of the project, the Contractor must certify that all contaminated materials have been properly disposed in accordance with the SWPPP.

6. Asphalt & Concrete Activities: Asphalt and concrete activities shall be scheduled for dry weather. Contractor shall prohibit saw cutting during a storm event of 0.25 inches or greater. Store bags of cement away from gutters and storm drains, sealed and covered, protected from rainfall runoff and wind. Place tarp under cement mixer before operating to catch spills. Never dispose of cement washout or concrete dust onto driveways, streets, gutters or storm drains.

7. Sidewalk Washing: The following methods should be utilized to prevent discharge of sidewalk cleaning wastewater into the storm drain system:

- **a)** Sweep and pick up all areas to be cleaned before using water.
- **b)** Manually scrape gum from sidewalks and other surfaces.
- **c)** Must use high pressure and low volume of water with no additives and at an average usage of 0.006 gallons per square foot of surface area to be rinsed.
- **d)** Use a wet/dry vacuum to collect wash water for disposal. Large volumes of wash water may require the use of a small sump pump to remove wash water from the job site.
- **e)** One or more of the following methods are recommended to prevent pollutants from entering the storm drain system:
  - Sandbags can be used to create a barrier around storm drains.
  - Rubber mats or plugs can be used to seal drain openings.
  - Temporary berms or containment pads help keep water on site.
  - Use berms of sandbags to direct wash water to landscaping.
  - Use large squeegees to accumulate sheet flow for collection.
  - Remember to remove plugs, berms, and sandbags or you may be liable for possible flooding.
- **f)** Wash water that contains hazardous waste such as oil-saturated absorbents, water with lead or other heavy metals from oxidized paint, and solvent cleaners requires special treatment and must be disposed of through a hazardous waste facility.

8. Employee SCMs Training: Contractor shall train employees and Subcontractors on SCMs implementation, general good housekeeping, and proper spill containment and cleanup. Before start of work, Contractor shall provide the Department of Public Works and the Sewerage & Water Board with written documentation of training and keep all documentation in the SWPPP.

9. Inspection: Contractor shall maintain SCMS at all times on a daily basis, shall inspect and repair or replace, as needed, all job site SCMS a minimum of:

- Biweekly
- Before, during and after a major rain event.

Contractor shall document the inspections in the SWPPP.

10. Dewatering: Avoid dewatering discharges where possible by using the water for dust control, infiltration, etcetera.

(c) Temporary Erosion Control:

1. This work consists of constructing and maintaining temporary erosion control features shown on the plans or as directed. Installation of temporary erosion control features shall be coordinated with construction of permanent erosion control features to the extent necessary to ensure economical, effective and continuous control of erosion and water pollution throughout the life of the contract.

The Contractor shall comply with a Storm Water Pollution Prevention Plan (SWPPP) and Storm Water Control Measures (SCMS) approved by the Department when conducting clearing or earthwork operations. The SWPPP shall include the erosion control features as shown on the plans, or as directed, in addition to other required components of the SWPPP specified by the US Environmental Protection Agency (EPA) and the Louisiana Department of Environmental Quality (LDEQ). The plan shall indicate the use of contract items and the coordination of this work with the scheduling of clearing and earthwork. SCMs include but are not limited to:

a) All mechanical equipment intended for use at said construction site must be properly maintained,
b) Erect silt barrier fencing around the construction site,
c) Cover all drain inlets in the immediate area of the construction site until all work is completed,
d) Spread and compact all fill material within a short time after delivery (approximately 48 hours),
e) Drive creosote pilings soon after their delivery (approximately 48 hours),
f) Cover any loose piles of dirt or creosote pilings with plastic, if they will not be put into place in a short time,
g) Clean all mortar and cement mixing equipment in such a manner that the discharge does not enter the storm water system, but is removed as solid waste to a proper location,
h) Cover all piles of sand used for mortar with plastic,
i) Do not store fuel, automotive fluids, paint, glue, solvents, plaster, or other petroleum products on site for extended periods of time, or in areas where they are subject to spillage or open to the elements. Such products should remain in their original packaging until ready for use,
j) Maintain proper absorbent and dirking material to guard against accidental spillage of automotive fluids and other liquid products used on site,
k) Seed grass mulch and fertilize (taking care not to over-fertilize) the soil areas of the

construction site after all work is completed,

l) Have all workers and equipment enter the construction area from a single stable entrance,

m) Have all work coordinated by a single Contractor who is responsible for the SWPPP.

2. Control of Erodible Soil:

a) General: The Contractor shall prevent the transmission of soil particles into streams, canals, lakes, reservoirs or other waterways. Except as necessary for construction, excavated material shall not be deposited into streams or impoundments, or in a position close enough to be washed in waterways by high water or runoff. The Contractor shall not disturb lands or waters outside the limits of construction, except as authorized.

b) Adjacent to Waterways: Stream banks shall be kept in their natural state. The Contractor shall not unnecessarily strip protective vegetation in the vicinity of stream banks and shall conduct operations without damage to banks. Banks shall not be excavated except as shown on the plans or as otherwise approved in writing. Work roads requiring bank cuts shall be approved by the Director prior to making such cuts. The banks shall be restored by the Contractor to the satisfaction of the project Director.

c) Adjacent to Property: The location of, and method of operation in, borrow pits, material pits and disposal areas obtained by the Contractor for waste material from the project (other than commercially operated sources) shall be the Contractor's responsibility.

3. Materials: Materials not covered by project specifications shall meet commercial grade standards and shall be approved before being incorporated into the project. No testing of materials used in temporary erosion control features will be required. Acceptance of temporary erosion control materials will be by visual inspection.

a) Mulches: Mulch shall comply with LaDOTD Subsection 1018.19 and emulsified asphalt shall conform to LaDOTD Section 1002. Use of cypress mulch is discouraged.

b) Seeding: Grass shall be an approved quick-growing species suitable to the area, providing a temporary cover which will not compete with permanent grasses. Rye grass is the only acceptable grass for winter cover.

c) Slope Drains: Slope drains may be constructed of pipe, fiber mats, rubble, Portland cement concrete, asphaltic concrete, plastic sheets or other acceptable material.

d) Fertilizer: Fertilizer shall comply with LaDOTD Subsection 1018.16.

e) Silt Fencing: Silt fencing shall be wire-supported or self- supported systems. Other silt fencing systems may be used when approved.

i) Wire-Supported: Wire-supported silt fencing shall consist of standard woven livestock wire, and minimum of 14-gage (2.0 mm diameter) wire, a minimum of 36 inches (900 mm) in height with a maximum wire spacing of 6 inches (150 mm). Posts shall be either wood or steel installed a minimum of 2 feet (0.6 m) in the ground. Filter material shall be burlap weighing approximately 7 1/2 ounces per square yard (0.25 kg per sq. m), approved jute fabric or approved geotextile fabric. Geotextile fabric shall comply with Section 1019, Class F.

ii) Self-Supported: Self-supported silt fencing shall consist of an approved geotextile

fabric suitably attached to posts of either wood or steel installed in accordance with plan details. Geotextile fabric shall comply with LaDOTD Section 1019, Class G.

f) Lime: Agricultural lime shall comply with LaDOTD Subsection 1018.17.

g) Temporary Construction Entrance: Temporary construction entrances shall consist of stone or recycled Portland cement concrete complying with LaDOTD Subsection 711.02, 2 lb (1 kg) class placed on geotextile fabric complying with Section 1019, Class D. The geotextile fabric underliner shall be placed at the locations designated for temporary construction entrances before stone or recycled Portland cement concrete is placed. The stone or recycled Portland cement concrete shall be placed and compacted to the required thickness as directed. This work also includes additional measures required to remove mud from truck tires, such as wash racks, etc.

h) Hay Bales: Hay or straw bales shall be rectangular bales, acceptable to the Director. The average length of bales shall be 34 inches (850 mm) minimum.

4. Exposure of Erodible Earth: The Director may direct the Contractor to provide immediate permanent or temporary erosion or pollution control measures to prevent contamination of streams, lakes, tidal waters, reservoirs, canals or other impoundments or prevent detrimental effects on property outside the right-of-way and damage to the project. Limitations of areas in which excavation and embankment operations are underway shall be commensurate with the Contractor's capability and progress in keeping finish grading, temporary erosion control, and permanent erosion control measures in accordance with the accepted schedule.

5. Incorporation of Erosion Control features: Use of temporary erosion control features will be authorized to correct unforeseen conditions that develop during construction; to control erosion prior to the time it is practical to construct permanent control features; or to provide immediate temporary control of erosion that develops during normal construction operations but is not associated with permanent erosion control features. Permanent erosion control features shall be incorporated into the project at the earliest practical time. Temporary erosion control features will be used as directed in areas where stage construction or other conditions not under control of the Contractor preclude completion of a section of roadway in a continuous manner, or where subsequent construction operations will cause damage to permanent erosion control features.

6. Construction Requirements: Temporary erosion control features shall consist of, but not be limited to, temporary seeding, temporary mulching, sandbagging, slope drains, sediment basins, sediment check dams, erosion checks, artificial coverings, berms, and stone entrances. The Director may direct use of temporary erosion control features or methods other than those included in the original contract. Soil deposits outside the right-of-way shall be immediately removed and the surface repaired at no direct pay. The Director shall have the authority to require the Contractor's operations to be discontinued until erosion deposits have been cleared and the area restored.

a) Temporary Seeding: Seeding shall be done in accordance with LaDOTD Section 717, except that ground preparation will be limited to blading the area. Lime or fertilizer shall be applied in accordance with LaDOTD Section 718; however, lime or fertilizer may be omitted or the application rate reduced as directed.

b) Temporary Mulching: Mulch and emulsified asphalt shall be furnished and applied in accordance with LaDOTD Section 716. Mulch may be omitted or the application rate reduced as ordered. When permanent seeding operations begin, temporary mulch materials may be plowed under during ground preparation.

c) Sandbagging: Sandbags shall be placed as directed.

d) Baled Straw or Hay: Baled straw or hay shall be placed as directed to form checks or dams to control erosion and siltation. Bales shall be properly staked or otherwise secured as directed, as shown on the plans. The bales shall be buried as necessary to prevent scour under the bales. A minimum of 2 stakes shall be driven through each bale.

e) Filter Socks: Filter socks may be used in lieu of baled straw or hay in front of catch basins.

f) Geotextile Filters: Use geotextile filters in combination with filter socks at catch basins in lieu of baled straw or hay.

g) Slope Drains: Slope drains shall be constructed with acceptable materials in accordance with plan details or as directed, if necessary to prevent scour. The discharge area shall be stabilized or protected by temporary riprap as directed. Cost of discharge area protection will be included under the slope drain item.

h) Sediment Basins: Sediment basins shall be constructed in accordance with plan details or as directed.

i) Sediment Check Dams: Check dams shall be constructed at locations shown on the plans or as directed. Check dams shall be constructed before clearing and grubbing or grading in the area is begun unless otherwise directed.

j) Silt Fencing: Silt fencing shall be furnished and constructed at designated locations or other locations, as directed by the Director.

k) Berms: Earth berms shall be constructed as directed to divert the flow of water from erodible surfaces.

l) Unforeseen Conditions: When unforeseen conditions are encountered, the Director may direct the Contractor to construct such temporary devices as required to control erosion during construction. Details may be developed jointly by the Director and the Contractor.

m) Maintenance of Erosion Control Features: The Contractor shall install, construct, repair, and maintain temporary erosion control features within 7 calendar days of being instructed to do so by the Director. Temporary erosion control features shall be inspected at least once every 14 calendar days and within 24 hours after a rainfall event of 0.5 inches or greater. The features are to be maintained as described below and, if required, replaced as directed at no direct pay.

- **i)** Temporary Seeding: The seeded areas showing erosion after inspection shall be reseeded if necessary.
- **ii)** Mulches: Mulched areas showing erosion shall be repaired and the mulch reapplied if necessary.
- **iii)** Straw or Hay Bale Barriers: The bale barriers shall be inspected after each rainfall and time frame as defined above and at least daily during prolonged rainfall. Close attention shall be paid to the repair of damaged bales, "end runs" and undercutting beneath bales.
- **iv)** Filter Socks and Geotextile Fabric: Ensure that filter socks remain in place and that geotextile filters do not allow runoff to enter the catch basin around the edges.
- **v)** Slope Drains: Slope drains shall be inspected weekly and after each rainfall as defined

above, and repairs made if necessary. The Contractor shall avoid the placement of any material on and prevent construction traffic across the slope drain.

vi) Sediment Check Dams: Sediment deposits shall be removed when the deposits reach one-half the height of the check dam. Inspections shall be made to insure that the center of the dam is lower than the edges. Erosion around the edges shall be corrected immediately.

vii) Silt Fencing: Sediment deposits shall be removed when the deposits reach one-half the height of the fence. If the fabric on the silt fence decomposes or becomes ineffective, the fabric shall be replaced promptly.

viii) Temporary Stone Construction Entrance and/or Wash Racks: The construction entrance shall be maintained to allow for removal of mud from the tires. The sediment from the wash rack runoff shall be removed once the wash rack is no longer performing as intended.

n) Removal of Temporary Erosion Control Features: Temporary erosion control feature existing at the time of construction of permanent erosion control features shall be removed or incorporated into the soil in such manner that no detrimental effect will result. The Director may direct that temporary features be left in place. Sediment in sediment basins, silt fences, check dams, and other catchment areas shall be removed, replaced with acceptable soils in accordance with LaDOTD Subsection 203.06, and compacted as directed at no direct pay.

C204.03 Protection During Suspension of Operations: Prior to the suspension of operations, the Contractor shall shape the top of the earthwork in such manner as to permit runoff of rainwater and shall construct earth berms along the top edges of embankments to intercept runoff water. Temporary slope drains shall be provided in the earth berm to carry runoff. When such preventive measures fail, the Contractor shall immediately take other action as necessary to prevent erosion and siltation. The Director may direct the Contractor to perform other erosion control work during suspensions of contract time.

C204.04 Measurement: When temporary erosion and pollution control measures are required due to the Contractor's negligence or failure to install permanent controls, such work shall be performed by the Contractor at no direct pay. Required temporary erosion and pollution control work which is not due to the Contractor's negligence will be measured as follows:

When separate items for temporary erosion control devices are included in the contract, and the work is ordered, the quantities to be paid for will be the weight in pounds (kg) of Temporary Seeding and in tons (Mg) of Temporary Mulching; the volume in cubic yards (cu m) of Sandbagging with the measurement of sand being made in a batch box or other satisfactory means; the number of hay bales placed; the length in feet (m) of Temporary Slope Drains measured along the ground surface and Silt Fencing measured along ground surface between end posts; the number of Sediment Basins and Sediment Check Dams acceptably constructed; the number of gallons (L) of emulsified asphalt, and the number of construction entrances.

Temporary erosion control items may be eliminated when conditions do not justify their use.

When temporary erosion control work is ordered and is not covered by contract items, the work shall be performed as extra work in accordance with LaDOTD Subsection 109.04 except that no extra work order will be required prior to starting work.
The construction of temporary earth berms along edges of the roadway to prevent erosion during grading and subsequent operations will not be measured for payment.

In case of failure of the Contractor to control erosion, or siltation, the Director may employ outside assistance or use his own forces to provide the necessary corrective measures, and the cost thereof will be deducted from payments for the work. Partial payments will be withheld until satisfactory temporary erosion control is established.

C204.05 Payment: Payment for temporary erosion control items that are included as contract items will be made at the contract unit prices.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C204(01)	Temporary Sandbagging	Cubic Yard
C204(02)	Temporary Hay or Straw Bales	Each
C204(03)	Temporary Slope Drains	Linear Foot
C204(04)	Temporary Sediment Basins	Each
C204(05)	Temporary Sediment Check Dams	Each
C204(06)	Temporary Silt Fencing	Linear Foot
C204(07)	Temporary Stone Construction Entrance	Cubic Yard
C204(08)	Curb Inlet Drain Filter (9” Diam. X 8 Ft. Long)	Each
C204(09)	Curb Inlet Drain Filter (6” Diam. X 6 Ft. Long)	Each

PART III - BASE AND SUBBASE COURSE

SECTION C302
BASE AND SUBBASE COURSE

C302.01 This work consists of furnishing and placing a base or subbase course on a prepared subgrade in accordance with these specifications and in close uniformity with the lines, grades, thicknesses, typical cross sections and materials shown on the plans or included herein.

Subbase under asphaltic concrete pavements and base under Portland cement concrete pavements shall be required when the natural insitu subgrade soil, as determined by soil tests, is not an A.A.S.H.T.O. A 4 or better material. When the subgrade *natural ground* is an A 4 material, the maximum liquid limit shall be twenty-five (25) and the maximum plasticity index shall be six (6), otherwise subbase material is required under asphaltic pavements and base material is required under concrete pavements.

C302.02 DEFINITIONS:

(a) A.A.S.H.T.O. American Association of State Highway and Transportation Officials unified soil classification system.

(b) Base An engineered layer of approved material placed directly below the pavement and can be one of a number of materials.

(c) Subbase An engineered layer of approved material placed below the base.

(d) Subgrade The existing insitu soil at its interface with the subbase, base or pavement.

The base and subbase courses shall be of the materials noted or specified on the approved plans and can only be changed with the approval of the Director.

C302.03 MATERIALS FOR BASE AND SUBBASE:

(a) Sand shall be natural or pumped sand with a maximum liquid limit of twenty-five (25) and a maximum plasticity index of six (6), free from trash, weeds or other foreign or deleterious material.

(b) Recycled Portland Cement Concrete: Recycled Portland Cement Concrete shall be 100 percent crushed Portland Cement Concrete and will be permitted in combination with an approved stone for base course. After being crushed, the recycled Portland Cement Concrete or the combination of stone and recycled Portland Cement Concrete shall conform to the following gradation:

U.S. SIEVE	PERCENT PASSING
1 ½"	100
1"	90-100
¾"	70-100
No. 4	35-65
No. 40	12-32
No. 200	5-12

The fraction of recycled Portland Cement Concrete passing the No. 40 sieve shall be non-plastic.

(c) Stone shall consist of 100 percent stone and shall conform to the following gradation:

U.S. SIEVE	PERCENT PASSING
1 ½"	100
1"	90-100
¾"	70-100
No. 4	35-65
No. 40	12-32
No. 200	5-12

The fraction of stone passing the No. 40 sieve shall be non-plastic.

(d) Asphaltic Concrete shall conform to the requirements of Sections C501-C509.

(e) Cold-milled Asphaltic Concrete may be used when approved by the Director.

(f) Other Base Materials may also be used when approved by the Director.

C302.04 DENSITY REQUIREMENTS:

MATERIAL	TEST	DENSITY PERCENT OPTIMUM
Sand Subbase	A.S.T.M. D698	95
Sand Base	A.S.T.M. D698	96
Crushed Concrete or Stone	La.D.O.T.D. 418E	95
Cold-milled Asphaltic Concrete	La.D.O.T.D. 418E	95

The density requirements for other material shall be in accordance with the requirements of the Director.

C302.05 TESTING: A testing program, acceptable to the Director, shall be conducted on subgrade, subbase and base under the direction of a Louisiana licensed civil engineer. Soil borings and laboratory analysis are required for the design of the roadway section. Classification and density tests are required on the subbase and base materials. The number and location of the tests are to be approved by the Director.

C302.06 The base and subbase shall be constructed so that contamination, segregation, soft spots, wet spots and other deficiencies are prevented.

C302.07 MEASUREMENT: The quantities for payment will be based on the horizontal dimensions and compacted thickness of the completed course shown on the plans, and any adjustments approved by the Director.

C302.08 PAYMENT: Payment for base course or subbase course will be made at the contract unit price per Cubic Yard (net section) including prime coat.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C302(51)	Base Course	Cubic Yard, Net Section
C302(53)	Subbase Course	Cubic Yard, Net Section

SECTION C306
SCARIFYING AND COMPACTING ROADBED

C306.01 DESCRIPTION: This work consists of scarifying, shaping, and compacting an existing roadbed to form a subbase or base course in accordance with these specifications, and in conformity with the lines, grades, depth and cross section shown on the plans or established.

C306.02 CONSTRUCTION REQUIREMENTS: Existing materials shall be scarified for the full width of roadbed and a minimum depth of 6 inches, shaped to the required section, and uniformly compacted to density requirement as specified in C302.04. Any damage to the scarified roadbed prior to compaction shall be corrected at no direct pay. The scarified, shaped and compacted roadbed shall have a smooth, uniform, closely knit surface, free from ridges, waves, depressions or loose material. The recompacted roadbed shall be primed in accordance with Section C505.

C306.03 MAINTENANCE OF COMPACTED ROADBED: The Contractor shall protect the compacted roadbed from damage due to either public traffic or construction operation and shall maintain the roadbed in satisfactory condition at all times, including the asphaltic prime coat. Any damage shall be immediately repaired by the Contractor at no direct pay.

C306.04 MEASUREMENT: The quantities of scarifying and compacting roadbed for payment will be the design lengths or areas as specified in the plans and adjustments thereto. Design quantities are based on the horizontal length of the roadbed shown on the plans. Design quantities will be adjusted when the Director makes changes to adjust to field conditions, if plan errors are proven, or when design changes are necessary.

C306.05 PAYMENT: Payment for scarifying and compacting roadbed will be made at the contract unit price, including prime coat.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C306(52)	Scarifying and Compacting Roadbed	Square Yard

PART IV - SURFACE COURSE

SECTION C402
TRAFFIC MAINTENANCE AGGREGATE

C402.01 DESCRIPTION: This work consists of furnishing and constructing aggregate surfacing for maintenance of traffic detour as directed and in accordance with the following requirements.

C402.02 MATERIALS: Aggregate for maintenance of traffic shall be crushed stone, crushed concrete, or approved equal.

C402.03 EQUIPMENT: Equipment necessary to produce a finished product meeting the specification requirements shall be furnished and maintained by the Contractor.

C402.04 CONSTRUCTION REQUIREMENTS: When directed, the Contractor shall satisfactorily place, shape, compact and maintain areas requiring traffic maintenance aggregate. When directed, the aggregate material shall be reused on the project at designated locations for traffic maintenance at no direct pay. When aggregate surfacing is no longer necessary for maintenance of traffic, the Contractor shall, unless otherwise directed, remove the aggregate surfacing and dispose of the removed materials in accordance with Section C202.

C402.06 MEASUREMENT: When directed, traffic maintenance aggregate shall be furnished and measured by the cubic yard, truck measure. Traffic maintenance aggregate for access to driveways and temporary surfacing of utility trenches will be provided and placed at no direct pay.

C402.07 PAYMENT: Payment for traffic maintenance aggregate maintained and subsequently removed (when required) will be made at the contract unit price.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C402(51)	Traffic Maintenance Aggregate	Cubic Yard (Truck Measure)

PART V - ASPHALTIC CONCRETE PAVEMENTS

SECTION C501
ASPHALTIC CONCRETE MIXTURES

C501.01 DESCRIPTION: These specifications are applicable to asphaltic concrete wearing, binder and base course mixtures of the plant mix type.

This work consists of furnishing and constructing one or more courses of asphaltic concrete mixture applied hot in conformance with these specifications and in conformity with the lines, grades, thicknesses and typical sections shown on the plans or established. The mixture shall consist of aggregates and asphalt with additives combined in proportions which meet the requirements of this Section including Table 1 and the absolute viscosity test of Subsection C503.02. Equipment and processes shall conform to Section C503.

Substitutions will be allowed for mixes without requiring a plan change as follows:

1. Wearing course of the same or higher stability for binder course.
2. Wearing or binder course for base course.
3. Higher stability for lower stability mix of the same course.

When any substitution is made, the plant requirements for the mixture used shall apply. The stability requirements of Table 1 of the mix used shall be equal to or greater than the mix originally specified.

Quality assurance requirements and design procedures shall be as specified in the latest edition of the LaDOTD's publication entitled "Application of Quality Assurance Specifications for Asphaltic Concrete Mixtures."

C501.02 MATERIALS: The Contractor shall keep accurate records, including proof of deliveries of materials for use in asphaltic concrete mixtures. Copies of these records shall be furnished to the Director upon request. Material shall conform to the following Subsections:

Asphalt (C1002.01)
Silicone and Anti-Strip Additives (C1002.02)
Aggregates (C1003.01 & C1003.06)
Hydrated Lime (LaDOTD 1018.03(a))
Mix Release Agent (LaDOTD 1018.26)

(a) Asphalt: Asphalt cement Grade AC-30 shall be used, except when mixtures contain 20% to 30% reclaimed asphaltic pavement, Grade AC-10 shall be used.

The Contractor shall reduce the amount of asphalt cement in the plant's storage or working tanks to 20% or less before adding another grade of asphalt cement or asphalt cement from another source.

(b) Additives:

(1) Silicone: Silicone additives, when needed, shall be dispersed into the asphalt by methods and in concentrations given in LaDOTD-QPL 22.

(2) Anti-Strip (AS): An anti-strip additive shall be added at the minimum rate of 0.5% by weight of asphalt and thoroughly mixed with the asphalt cement at the plant. Additional anti-strip additive shall be added up to 1.2% by weight of asphalt in accordance with Subsection C501.03(b).

(3) Hydrated Lime: Hydrated lime additive may be incorporated into all asphaltic concrete mixtures at the rate specified in the approved job mix formula. The minimum rate shall not be less than 1.5% by weight of the total mixture. Hydrated lime additive shall be added to and thoroughly mixed with aggregates in conformance with Subsection C503.02(e). Hydrated lime may be added as a mineral filler in accordance with Heading (c)(3).

(c) Aggregates: Aggregates shall meet the requirements of Table 1 and Subsection C1003.06.

(1) Recycled Portland Cement Concrete: Recycled Portland Cement Concrete will be allowed in base courses with a maximum of 70% recycled portland cement concrete by weight combined with new aggregates. Recycled concrete shall be crushed and screened into a minimum of two stockpiles composed of different sized aggregates separate from other materials at the plant. Recycled concrete shall be dried as required for new aggregates.

(2) Reclaimed Asphaltic Pavement (RAP): Reclaimed asphaltic pavement shall be stockpiled separate from other materials at the plant and will be subject to approval prior to use. Such stockpiles shall be uniform and free of soil, debris, foreign matter and other contaminants. Reclaimed materials that cannot be broken down during mixing or that adversely affect paving operations shall be screened or crushed to pass a 2-inch sieve prior to use.

(3) Mineral Filler: Mineral filler conforming to the requirements of Subsection C1003.06(10) may be used in all mixtures.

(4) Screenings: Screenings conforming to the requirements of Subsection C1003.06(6) may be used in all mixtures.

(5) Crushed Aggregates: Crushed aggregates are crusher generated materials manufactured by crushing materials which have a maximum of 10% passing the No. 4 sieve.

a. Type 3 Mixes: For Type 3 mixes, a minimum of 65% by weight of the new aggregates used in wearing and binder courses for travel lanes shall be crushed aggregates; the remaining 35% may be natural sand and mineral filler.

b. Friction Ratings for coarse aggregates shall be determined in accordance with Subsection C1003.06. The allowable usage of coarse aggregates shall be as follows.

Friction Rating	Allowable Usage
I	All mixtures
II	All mixtures
III	All mixtures
IV	All mixtures except Type 3WC

Type 3 WC (with ADT/lane greater than 1000 VPD) may use this aggregate provided a minimum of 50% by weight of the coarse aggregates in the mixture have a Friction Rating of I or II. This aggregate may also be used in mixtures for shoulders, drives, curbs, detours, etc.

C501.03 DESIGN AND QUALITY CONTROL OF MIXTURES:

(a) General: It is the intent of these specifications that the mixtures produced and placed meet the requirements for 100% payment. The Contractor shall be responsible for design, production, transportation and laydown of mixtures. Work shall meet the requirements of this Section and be subject to acceptance by the Department.

The Contractor shall exercise quality control over materials and their assembly, design, processing, production, hauling, laydown and associated equipment. Quality control is defined as the constant monitoring of equipment, materials and processes to ensure that mixtures produced and laid are uniform, are within control limits, and meet specification requirements. When these specifications are not being met and satisfactory control adjustments are not being made, operations shall be discontinued until proper adjustments and uniform operations are established. Control shall be accomplished by a program independent of, but correlated with, the Department's testing and shall ensure that the requirements of the job mix are being achieved and that necessary adjustments provide specification results.

The Contractor shall conduct such tests as necessary, in addition to the required tests, to design, control and place mixtures within specifications.

The quality of mixtures will be evaluated during two phases, mixture produced at the plant, and mixture hauled, laid and compacted. Quality of both phases will be evaluated in series of lots conforming to Subsection C501.11. A lot is a segment of continuous production of asphaltic concrete mixture from the same job mix formula produced for the Department at an individual plant. Plant quality control testing shall be conducted on each lot independent of delivery points. Project site quality control testing shall be conducted on each project for that portion of the lot placed on that project.

When the plant is in operation, the Contractor shall have a Certified Asphaltic Concrete Plant Technician at the plant that is capable of designing asphaltic concrete mixes, conducting any test or

analysis necessary to put the plant into operation and producing a mixture meeting specifications. Daily plant operations shall not begin unless the Certified Asphaltic Concrete Plant Technician is at the plant. The Asphaltic Concrete Technician certification will be awarded by the DOTD upon satisfactory completion of the DOTD's requirements.

(b) Job Mix Formula: The Contractor shall design the mixtures for optimum asphalt content and comply with requirements of DOTD TR 303, Method B; however, Method A may be used when approved. The job mix formula shall include the recommended formula and supporting design data. The recommended formula shall be submitted for approval to the Director on a properly completed Asphaltic Concrete Job Formula form. No mixture shall be produced until the proposed job mix formula has been approved.

The proposed job mix formula shall indicate a single anti-strip additive rate which is 0.1% greater than the percentage which will yield a minimum of 90% coating when tested in accordance with DOTD TR 317 or 0.1% greater than the percentage which will produce a minimum Tensile Strength Ratio (TSR) of 75% when tested in accordance with DOTD TR 322 whichever gives the greatest amount of anti-strip additive. The approved limit shall be 0.2% by weight of asphalt, with the lower limit being the quantity determined in accordance with DOTD TR 317 and the maximum limit not to exceed 1.2% by weight of asphalt.

The job mix formula shall indicate a single rate of hydrated lime additive when used. The job mix formula rate of hydrated lime additive shall not be less than 1.5% by weight of total mixture.

The job mix formula shall produce an asphaltic concrete mixture with a minimum TSR of 75% when tested in accordance with DOTD TR 322. The Contractor's proposed job mix formula shall indicate a minimum TSR value of 75% attained in accordance with DOTD TR 322 on plant-produced mixture or laboratory-produced mixture. The Department may validate the plant produced mixture, at its option. When the Department's validation result is less than 75% TSR, no further production for the job mix formula or any proposed job mix formula substituted for that mix type will be accepted on any DOTD project having DOTD TR 322 requirements until a passing plant-produced TSR value is verified by the Department. A previously validated and approved job mix formula may be produced in lieu of the disapproved job mix formula.

The job mix formula shall indicate the optimum mixing temperature which is the midpoint of the range shown on the Optimum Mixing and Compaction Temperatures Chart for the asphalt cement used. This chart shall be furnished by the Materials and Testing Section of the DOTD, or by the produce1xof the asphalt cement used. The job mix formula limits for mix temperature will be +/- 25^{o}F from the optimum mixing temperature.

When aggregates with a water absorption value greater than 2.0% determined in accordance with AASHTO T 84 for fine aggregate or AASHTO T 85 for coarse aggregate are used in the mixture, the Contractor shall increase the initial optimum asphalt cement content to compensate for the asphalt cement absorbed by the aggregates. When aggregates with an asphalt absorption value greater than 0.5%, determined in accordance with DOTD TR 320, are used in the mixture, the Contractor

shall increase the initial optimum asphalt cement content to compensate for the asphalt cement absorbed by the aggregates.

The job mix formula will allow the full range of gradation mix tolerances within the mix type specification limits.

The plant shall be operated to produce, on a continuing basis, a mixture uniformly conforming to the approved job mix formula. When this is not the case, the Contractor shall make satisfactory adjustments or cease operations. The Director may permit the Contractor to submit a new Asphaltic Concrete Job Mix Formula for approval. The Contractor shall submit a new job mix formula whenever a plant begins initial operations for the Department in a specific location or whenever a plant experiences a change in materials or source of materials. A new job mix formula will also be required whenever there are significant changes in equipment, such as the introduction of a new crusher, drum mixer, burner, etc.

(c) Control Charts: For control purposes, the Contractor shall obtain a minimum of one sample of mixture from each lot. Test results for extracted gradation (DOTD TR 309), percent crushed (DOTD TR 306) and asphalt content (DOTD TR 308) of each lot shall be plotted on control charts. The upper and lower control limits as shown on the approved job mix formula shall be included on the control chart. When the results of two consecutive extracted gradations on any sieve, except the No. 200, fall within 1% of the approved job mix formula gradation limit, or fall erratically within the range, the Contractor shall immediately make corrections to maintain the mix within the specified limits.

When the results of two consecutive extracted gradations on the No. 200 sieve fall within 0.5% of the approved job mix formula gradation limit or fall erratically within the range, the Contractor shall immediately make corrections.

(d) Reclaimed Asphaltic Pavement (RAP): The quantity of reclaimed asphaltic pavement to be used shall be designated in the job mix formula and meet the requirements of Table 1. The approved quantity shall be established after testing for absolute viscosity in accordance with Subsection C503.02(a). When mixtures contain less than 20% reclaimed asphaltic pavement, Grade AC-30 asphalt cement shall be used. Grade AC-10 asphalt cement shall be used in mixtures containing from 20% to 30% RAP. The mixture produced shall conform to the requirements for the type mixture specified. The Director may require the Contractor to reduce the percentage of reclaimed asphaltic pavement to meet acceptance criteria.

When RAP is used in the mixture, the new aggregate shall be dried and heated in a dryer to a sufficiently high temperature to produce a mixture with a minimum discharge temperature of 280^{o}F.

C501.04 WEATHER LIMITATIONS: Asphaltic concrete mixtures shall not be applied on a wet surface or when ambient temperature is below 40^{o}F, except that material in transit, or a maximum of 50 tons in a surge bin or silo used as a surge bin at the time plant operation is discontinued may be laid; however, mixture laid shall perform satisfactorily and meet specification requirements. Inclement weather will be sufficient reason to terminate or not begin production.

When base course materials are placed in plan thicknesses of 2 3/4 inches or greater, these temperature limitations shall not apply provided all other specification requirements are met.

C501.05 SURFACE PREPARATION: The surface to be covered shall be approved prior to placing mixtures. The Contractor shall maintain the surface until it is covered.

(a) Cleaning: The surface to be covered shall be swept clean of dust, dirt, caked clay, caked material and loose material by revolving brooms or other mechanical sweepers supplemented with hand equipment as directed. When mixtures are to be placed on portland cement concrete pavement or overlaid portland cement concrete, the Contractor shall remove excess joint filler from the surface by an approved burning method. The Contractor shall remove any existing raised pavement markers prior to asphaltic concrete overlay operations.

When brooming does not adequately clean the surface, the Contractor shall wash the surface with water in addition to brooming to clean the surface.

When liquid asphalt is exposed to traffic for more than 2 calendar days, becomes contaminated, or degrades due to inclement weather, the liquid asphalt shall be reapplied at the initial recommended rate at no direct pay.

(b) Applying Liquid Asphaltic Materials:

(1) Existing Pavement Surfaces: Before constructing each course, an approved asphaltic tack coat shall be applied in accordance with Section C504. The Contractor shall protect the tack coat and spot patch as required.

(2) Raw Aggregate Base Course and Raw Embankment Surfaces: The Contractor shall apply an approved asphaltic prime coat to unprimed surfaces, or protect in-place prime coat and spot patch as required with asphaltic prime coat, in accordance with Section C505.

(3) Cement and Lime Stabilized or Treated Embankment and Base Course Surfaces: The Contractor shall apply an approved asphaltic curing membrane when none is in place, or protect the in-place curing membrane and spot patch, as required, with asphaltic material in accordance with Section 506.

(4) Other Surfaces: Contact surfaces of curbs, gutters, manholes, edges of longitudinal and transverse joints, and other structures shall be covered with a uniform coating of an approved asphaltic tack coat conforming to Section C504 before placing asphalt mixtures.

C501.06 JOINT CONSTRUCTION:

(a) Longitudinal Joints: Longitudinal joints shall be constructed by setting the screed to allow approximately 25% fluff and also overlapping the paver approximately 2 inches onto the adjacent pass. Prior to rolling, the overlapped mix shall be pushed back to the uncompacted side, without scattering loose material over the uncompacted mat, to form a vertical edge above the joint. The vertical edge shall then be compacted by rolling to form a smooth, sealed joint. Longitudinal joints in one layer shall offset those in the layer below by a minimum of 3 inches; however, the joint in the top layer shall be offset 3 inches to 6 inches from the centerline of pavement when the roadway comprises two lanes of width, or offset 3 inches to 6 inches from lane lines when the roadway is more than two lanes. The narrow strip shall be constructed first.

Where adjacent paving strips are to be placed, the longitudinal edge joint of the existing strip shall be tacked.

(b) Transverse Joints: Transverse joints shall be butt joints formed by cutting back on the previously placed mixture to expose the full depth of the lift. An approved 10-foot static straightedge shall be used to identify the location at which the previously placed mixture is to be cut back to maintain no greater than a 1/8 inch deviation in grade. The cut face of the previously placed mat shall be lightly tacked before fresh material is placed. The screed shall rest on shims that are approximately 25% of plan thickness placed on the compacted mat or the screed shall be set at a distance that is 25% of plan thickness above the mat surface. Transverse joints shall be formed by an adequate crew. Transverse joints shall be checked by the Director for surface tolerance using a stringline extended from a point 10 feet before the joint to a point approximately 40 feet beyond the joint. Any deviation in grade from the stringline in excess of 3/16 inch for roadway wearing courses and 1/4 inch for other courses shall be immediately corrected prior to the paving operation continuing beyond 100 feet of the transverse joint. Additionally, the transverse joint shall meet the surface tolerance requirements of Table 1. The Contractor shall make necessary corrections to the joint before continuing placement operations.

Transverse joints in succeeding lifts shall be offset at least 2 feet.

(c) Sawing and sealing of joint in an asphaltic concrete overlay: When new concrete pavement or existing concrete foundation is to be overlaid with asphaltic concrete, joints shall be sawed or formed and sealed.

Saw cut shall be made in the overlay at the locations of all transverse and longitudinal joints in the concrete pavement. The sawed joints will have a minimum of 1/8" wide by 1" deep. Cleaning and drying the saw cut before applying hot poured sealant as specified in Subsection C601.04(g).

Sawing and sealing of joints in an asphaltic concrete overlay will be made at no direct pay.

C501.07 HAULING, PAVING AND FINISHING: Mixtures shall be transported from the plant and delivered to the paver at a temperature no cooler than 25^{o}F below the lower limit of the approved job mix formula. The temperature of the mix going through the paver shall not be cooler than 250^{o}F.

No loads shall be sent out so late in the day that completion of spreading and compaction of the mixture cannot be completed during daylight, unless artificial lighting has been approved.

When segregation occurs, haul trucks shall be loaded with a minimum of three drops of mix, the last of which shall be in the middle.

Each lift of asphaltic mixture shall be placed in accordance with the specified lift thickness. When no lift thickness is specified, binder and wearing course mixtures shall be placed in lifts not exceeding 2 inches plan thickness. Base course mixtures shall be placed in lifts of such thickness that all specification requirements are met.

With the Director's approval, motor patrols may be used to fill isolated depressions in the initial layer, provided this construction does not result in unsatisfactory subsequent lifts.

(a) Coordination of Production: The Contractor shall coordinate and manage plant production, transportation of mix and placement operations to achieve a high quality pavement and shall have sufficient hauling vehicles to ensure continuous plant and roadway operations. The Director will order a halt to operations when sufficient hauling vehicles are not available.

On final wearing course construction under traffic with pavement layers of 2 inches compacted thickness or less, the Contractor will be permitted to pave one travel lane for a full day. The Contractor shall pave the adjacent lane the next work day. When the adjacent travel lane is not paved the next calendar day and the longitudinal joint is exposed to traffic for more than 3 calendar days, the entire length of exposed longitudinal joint shall be cut back to plan thickness to a vertical edge and heavily tacked. When pavement layers are greater than 2 inches compacted thickness, the Contractor shall place approximately 1/2 of each day's production in one lane and the remainder in the adjacent lane.

Pavement shall be protected from traffic until it has sufficiently hardened to the extent the surface is not damaged.

(b) Paving Operations: All mixtures shall flow through the paver hopper. Mixtures dropped in front of the paver shall be either lifted into the hopper or rejected and cast aside. Delivery of material to the paver shall be at a uniform rate and in an amount within the capacity of paving and compacting equipment. The paver speed and number of trucks shall be adjusted to have one truck waiting in addition to the one at the paver in order to maintain continuous paving operations. The height of material in front of the screed shall remain uniform.

Transfer of mixture from haul truck to paver may be made by direct unloading into the paver hopper or by use of approved mechanical transfer devices to transfer mix from a haul truck or windrow. During mixture transfer, the paver shall not be jarred or moved out of alignment. During truck exchanges the level of mix in the paver hopper shall not drop so low as to expose the hopper feed slats.

Pavers shall be designed and operated to place mixtures to required line, grade and surface tolerance without resorting to hand finishing.

Longitudinal joints and edges shall be constructed along lines established. An acceptable method of longitudinal control shall be placed by the Contractor for the paver to follow. The paver shall be positioned and operated to closely follow the established line. Irregularities in alignment shall be corrected by trimming or filling directly behind the paver.

After each load of material has been placed, the texture of the unrolled surface shall be checked to determine its uniformity. The adjustment of screed, tamping bars, feed screws, hopper feed, etc., shall be checked frequently and adjusted as required to assure uniform spreading of the mix to proper line and grade and adequate compaction. When segregation of materials or other deficiencies occur, paving operations shall be suspended until the cause is determined and corrected.

Surface irregularities shall be corrected directly behind the paver. Excess material forming high spots shall be removed. Indented areas shall be filled and finished smooth. Hand placement in

accordance with Heading (c) for surface repair will be permitted. Material shall not be cast over the surface.

When paving and finishing operations are interrupted so that the mixture remaining in trucks, paver, paver hopper or on the pavement cools to such extent that it cannot be placed, finished or compacted to the same degree of smoothness and with the same texture and density as the uncooled mixture, the cooled mixture shall be removed and replaced at no direct pay.

When additional mix is required to increase superelevation in curves, the use of automatic slope control will be optional with the Contractor.

(c) Hand Placement: When the use of mechanical finishing equipment is not practical, the mix may be placed and finished by hand to the satisfaction of the Director. No casting will be allowed including casting the mixture from the truck to the grade. During paving operations material shall be thoroughly loosened and uniformly distributed. Material that has formed into lumps and does not break down readily will be rejected. The surface shall be checked before rolling and irregularities corrected.

C501.08 COMPACTION:

(a) General: After placement, mixtures shall be uniformly compacted by rolling while still hot, to at least the density specified in Table 1. If continuous roller operation is discontinued, rollers shall be removed to cooler areas of the mat, where they will not leave surface indentations. The use of steel wheel rollers which result in excessive crushing of aggregate will not be permitted.

The rolling pattern established by the Contractor shall be conducted by experienced operators in consistent sequences and by uniform methods that will obtain specified density and smoothness. Individual roller passes shall uniformly overlap preceding passes to ensure complete coverage of the paving area. The speed and operation of rollers shall not displace, tear or crack the mat. Non-vibrating steel wheel rollers shall be operated with drive wheels toward the paver. Any operations causing displacement, tearing or cracking of the mat shall be immediately corrected.

Equipment which leaves tracks or indented areas which cannot be corrected in normal operations or fails to produce a satisfactory surface shall not be used. Operation of equipment resulting in accumulation of material and subsequent shedding of accumulated material into the mixture or onto the mat will not be permitted.

To prevent adhesion of mixture, wheels of steel wheel rollers shall be kept properly moistened, but excess water will not be permitted.

Vibratory rollers may be used provided they do not impair the stability of the pavement structure or underlying layers.

The surface of mixtures after compaction shall be smooth and true to cross slope and grade within the tolerances specified. Mixtures that become loose, broken, contaminated or otherwise defective shall be removed and replaced with fresh hot mixture compacted to conform with the surrounding mixture.

Ripples in the mat surface will not be accepted. Lots with rippled areas will be subject to rideability testing by the Department. These areas will be compared with the balance of the lot and adjacent acceptable riding surfaces to determine acceptability. Areas identified by such testing as unacceptable shall be corrected at no direct pay. Damage to the longitudinal joint shall be minimized to conform to Subsection C501.07(a).

(b) Breakdown Rolling: Breakdown or initial rolling shall be accomplished with a static or vibratory steel-wheel roller designed for initial compaction of hot asphaltic concrete mixtures conforming to Subsection C503.06.

(c) Finish Rolling: Finish rolling shall be accomplished with an approved nonvibrating steel wheel roller conforming to Subsection C503.06 until roller marks have been eliminated.

After finish rolling, newly finished pavements shall have a uniform, tightly-knit surface free of cracks, tears or other deficiencies. Deficiencies shall be corrected at no direct pay and the Contractor shall adjust operations to correct the problem. This may require the Contractor to adjust the mix or furnish additional or different equipment.

(d) Hand Compaction: Along forms, curbs, headers, walls and at other places inaccessible to rollers, mixture shall be uniformly compacted to the satisfaction of the Director with approved hand tampers or mechanical tampers, conforming to Subsection C503.07.

C501.09 PAVEMENT SAMPLES: Samples shall be cores approximately 4" in diameter taken by an approved core drill. The Contractor shall furnish samples cut from the completed work. The removed pavement shall be replaced with hot or cold mixture and refinished during the work day coring is performed. No additional compensation will be allowed for furnishing test samples and replacing the areas with new pavement. Samples shall be taken by the Contractor in the presence of the Director's representative from areas selected by the Director in accordance with Subsection C501.11(b)(2)c. When the design thickness is greater than 1-3/8", cores less than 1-3/8" thick shall not be used as pavement samples for payment determination.

Cores shall be transported to the plant in approved transport containers or one-gallon friction-top cans. Regardless of transport container used, the container will be sealed, signed, and dated by the inspector using an approved method. The individually wrapped core will also be sealed, signed, and dated by the inspector using an approved method. Any evidence of tampering with the core wrappings, sticker, or of opening the container or friction-top can will result in the cores being rejected. Additional pavement samples will be required.

C501.10 DIMENSIONAL REQUIREMENTS: Mixtures that are specified for payment on a cubic yard or square yard basis shall conform to the following dimensional requirements. Overthickness and overwidth will be waived at no direct pay.

When grade adjustments are permitted for all mixtures except the final wearing course, areas with underthickness in excess of 1/4" shall be corrected to plan thickness at no direct pay by furnishing and placing additional mixture in accordance with Subsection 501.10(e). For the final wearing course, areas with underthickness in excess of the 1/4" shall be corrected to plan thickness at no direct pay by furnishing and placing a supplemental layer of wearing course mixture meeting

specification requirements in accordance with Subsection 501.10(e) over the entire area for the full width of the roadway when grade adjustments are permitted.

When grade adjustments do not permit, the deficient overthickness area shall be removed and replaced at no direct pay.

(b) Width: The width of completed courses will be determined in accordance with DOTD TR-602. Underwidths shall be corrected by furnishing and placing additional mixture a minimum of 1 foot wide and plan thickness at no direct pay.

C501.11 ACCEPTANCE REQUIREMENTS: All Department inspection procedures, including sampling and testing, form the basis for acceptance of the asphaltic concrete. Any section of pavement that is obviously deficient shall be satisfactorily corrected or replaced. Sampling and testing shall be accomplished following a stratified sampling plan in accordance with the Materials Sampling Manual and specified test procedures. Times and locations shall be established by the Director.

A standard lot is the production of asphaltic concrete mix from the same job mix formula produced for the Department at an individual plant in one day. Additional adjustments may be made to the standard lot size as specified in this Subsection. Minor adjustments will be made to the lot size to accommodate hauling unit capacity.

Acceptance testing for Marshall properties, percent anti-strip additive, percent hydrated lime (when used), quality of asphalt cement, aggregate gradation, percent crushed aggregate, percent asphalt cement, and percent moisture in loose mix will be conducted on the total lot quantity. Acceptance testing for pavement density, surface tolerance and dimensional tolerances will be conducted on that portion of the lot placed on each contract.

Pavement density and surface tolerance requirements will not be applied for short irregular sections, such as drives, aprons and turnouts; however, mix shall be placed to provide a neat, uniform appearance and shall be compacted by satisfactory methods.

For projects, or separate locations within a project, requiring over 100 tons of mixture, one sample will be taken for Marshall properties testing for each 250 tons or portion thereof produced. Sampling and testing for aggregate gradation, asphalt content and percent crushed shall be in accordance with Heading (b)(2)b. Five samples shall be taken for determination of pavement density, with the sampling distribution to be determined by the Director.

For projects, or separate locations within a project, requiring less than 100 tons, the job mix formula, materials, and plant and paving operations shall be satisfactory to the Director. Payment adjustments for Marshall properties will be based on "Individual Test Within Lot" values in Table 2. Sampling and testing requirements for aggregate gradation, surface tolerance and pavement density may be modified by the Director and the payment adjustment for deviations waived.

(a) Inspection: Mix exhibiting deficiencies before placement such as segregation, contamination, lumps, nonuniform coating, excessive temperature variations in surface texture and appearance or other deficiencies, apparent on visual inspection, will not be accepted. Poor

construction practices such as handwork, improper truck exchanges, improper joint construction, or other deficiencies, apparent on visual inspection, will not be accepted.

Deficiencies revealed by visual inspection after placement and before final acceptance shall be corrected at no direct pay.

When requested by the Contractor, the acceptability of mixtures or work rejected by visual inspection will be evaluated by tests and measurements.

(b) Sampling and Testing:

(1) Without Payment Adjustments: The Department will take samples or perform tests as outlined in these specifications to ensure that the asphaltic concrete conforms to Department standards, which include job mix limits, typical sections, material properties, surface deviations and verification of control testing. The Department will perform tests for gradation, percent crushed, percent asphalt cement, and Marshall properties to determine the acceptability of the asphaltic concrete without payment adjustment. Deviations from specified tolerances will not be accepted. When a sample or test indicates a deviation from a specified tolerance, the Contractor shall take immediate corrective action, or operations shall be discontinued.

(2) With Payment Adjustments: When the mix does not meet requirements in the areas listed in this Section, the Payment Adjustment Schedules shown in Table 2 will be applied. Production of mix that is not eligible for 100% will not be allowed on a continuous basis. When test results demonstrate that payment adjustments are necessary, satisfactory control adjustments shall be made, or production shall be discontinued.

The Department will pay the Contractor at an adjusted rate as specified in Table 2 for tests conducted by the Department on samples obtained from each lot of material, in accordance with the following Headings. In addition a payment adjustment will be applied for the use of asphalt cement which does not meet specifications.

a. Marshall Stability: Testing for Marshall Stability will be conducted by the Director. Compacted specimens of mixture shall conform to the properties in Table 1 when tested in accordance with DOTD TR 305 for both an individual and an average of four samples taken from each lot after the mixture is placed in trucks. One sample will be taken from each of four sublots. Temperature at the time of molding specimens shall be within 15^{o}F of mix temperature at the time of sampling. When an individual test or the average of tests representing the lot is outside acceptance limits shown in Table 1, an adjustment in unit price for the lot will be made in accordance with Table 2.

b. Aggregate Gradation, Asphalt Content and Percent Crushed: Sampling and testing for aggregate gradation, asphalt content and percent crushed will be conducted by the Director. One loose mix sample, representing one/half day of production from an individual plant, randomly spaced throughout the production of each one/half day of production, will be taken after placement of the mix in the truck. These samples shall be tested at the plant laboratory in accordance with DOTD TR 309, TR 307 and TR 306, respectively. If the test results are within the job mix control limits given in Table 1, no payment adjustment will be made. When test results from the sample are outside the job mix control limits, the

Contractor's Certified Plant Technician will make immediate adjustments to maintain the mix within specified limits.

c. Pavement Density: Acceptance testing for pavement density will be conducted by the Director. Upon completion of compaction, five pavement samples per contract shall be obtained in accordance with Subsection C501.09 from each lot within 24 hours after placement of the lot. When this falls on a day the Contractor's crews are not working, sampling shall be done within 3 calendar days. The lot will be divided into five sublots of approximately equal length. One sample shall be obtained from each sublot. The number of samples representing a lot will not be less than five. The density requirement for the average of five samples will be as shown in Table 1 determined in accordance with DOTD TR 304. Payment will be made in accordance with Table 2.

When the sampling location determined by random sampling falls within areas that are to be replaced or within 1 foot of the pavement edge, another random sampling location will be used.

d. Longitudinal Surface Tolerance: Testing for surface tolerance will be required for each lot on the final roadway wearing course lift. Testing will be the responsibility of the Director. The surface will be tested with a ten (10') foot rolling straightedge in the longitudinal direction of the pavement before completion of the project. The rolling straightedge will be furnished by the Contractor and shall be recently calibrated. Surface corrections shall be made in accordance with subsection 3 below. The requirements for longitudinal surface tolerance on the final roadway wearing course lift shall be:

1. Longitudinal Surface Finish: One path in each lane of the finished surface will be selected at random. Intersections, driveways, drainage structures, bus pads or other roadway obstructions, shall be eliminated from the path of the straightedge.

2. Longitudinal variations: Longitudinal variations in the roadway wearing course surface will be subject to provisions of this section. Surface-finish deficiencies exceeding three-eighths (3/8") inch for more than 10% percent of the lot, shall be corrected in accordance with subsection 3 below. After corrections have been made, the entire lot will be subject to the provisions of this section.

3. Correction of Deficient Areas: Deficiencies to be corrected in the final wearing course shall be corrected by milling, removing and replacing or furnishing and placing a supplemental layer of wearing course mixture at least 2" thick for the full width of the roadway; all in a manner satisfactory to the Director and at no additional cost to the City.

e. Anti-Strip Additive: Testing for addition of anti-strip additive will be conducted at a frequency of twice per lot. When anti-strip additive is not added within the range given on the approved job mix formula, an adjustment in unit price will be made in accordance with Table 2. The payment adjustment required will be on the averaged whole percent payment for the lot. The lot will be divided into two approximately equal sublots. The percent pay will be adjusted for each sublot, then averaged to determine the payment adjustment for the lot.

C501.12 GEOTEXTILE FABRIC FOR PAVING (FOR CONCRETE WEARING COURSE ON PORTLAND CEMENT CONCRETE BASE):

(a) DESCRIPTION. Work shall include furnishing and placing the specified geotextile fabric on the pavement prior to installing the asphalt wearing course.

(b) MATERIALS. The geotextile fabric shall be nonwoven fabric and meet the following minimum requirements:

Tensile Strength (ASTM D-1682)	110 lbs (in either direction)
Elongation (ASTM D-1682)	55% (in either direction)
Melting point	320^{o}F
Asphalt Retention	0.20 gal/sy

(c) CONSTRUCTION REQUIREMENTS:

(1) The pavement should be free from dirt, water, oil and foreign material. Cracks wider than 3/8" should be filled as specified in subsection C724.09.

(2) Prior to installation of the geotextile fabric a tack coat must be applied at the rate recommended by the manufacturer.

(3) The geotextile fabric shall be delivered in rolls to facilitate installation.

(4) During shipment and storage the geotextile fabric shall be wrapped in a heavy-duty covering to protect it from direct sunlight, ultraviolet rays, temperatures greater than 140^{o}F (60^{o}C), mud, dirt, dust, debris and abrasion.

(5) The manufacturer shall furnish a sample and certified test reports showing that the geotextile fabric meets the requirements of these subsections.

(6) Unless otherwise specified by the manufacturer the geotextile fabric shall be unrolled directly on top of the pavement in a uniform manner, free of wrinkles, and all sections overlapped by two (2') feet. Tears or rips in the fabric shall be patched.

C501.13 MEASUREMENT: Asphaltic tack coat, prime coat or curing membrane will not be measured for payment.

(a) Weight Measurement: Asphaltic concrete will be measured by the ton of 2,000 pounds from printed weights as provided in Section C503. Stamped printer tickets will be issued for each truckload of material delivered. Material lost, wasted, rejected or applied contrary to specifications will not be measured for payment.

Estimated quantities of asphaltic concrete shown on the plans are based on 110 lb/sq yd/inch thickness.

(b) Volume or Area Measurement: The quantities for payment will be the design quantities specified in the plans and adjustments thereto. Design quantities will be adjusted when the Director makes changes to adjust to field conditions or when design changes are necessary. Design quantities are based on the horizontal dimensions and compacted thickness of the completed course shown on the plans.

(c) Geotextile: Geotextile fabric shall be measured by the square yard, based on the theoretical area on the plans. Fabric used in patching or overlaps shall not be measured for payment.

C501.14 PAYMENT: Payment for asphaltic concrete will be made at the contract unit price on a lot basis. When the mix does not conform to acceptance requirements, payment will be made at an adjusted price per unit of measurement in accordance with Section C1002 and Table 2. The Director will provide adjustment percentage for properties of asphaltic materials.

(a) General: Payment for asphaltic concrete will include furnishing all required materials, producing the mixtures, preparing the surfaces on which the mixtures are placed, hauling the mixtures to the work site, and placing and compacting the mixtures.

(b) Wearing Course Mixes: The lowest percentage of contract price will be used for final adjustment in unit price for deficiencies in Marshall Stability, pavement density, surface tolerance, anti-strip additive, and asphalt cement properties.

(c) Base, Binder and Shoulder Mixes: The lowest percentage of contract price will be used for final adjustment in unit price for deficiencies in Marshall Stability, pavement density, anti-strip additive, and asphalt cement properties.

(d) Geotextile: Geotextile fabric will be paid for per square yard at the contract unit price which includes furnishing equipment, labor and materials to complete the item.

Payment will be made under:

ITEM NO.	**PAY ITEM**	**Pay Unit**
C501(51)	Asphaltic Concrete	Ton
C501(52)	Asphaltic Concrete	Cubic Yard
C501(53)	Asphaltic Concrete (___" Thick)	Square Yard
C501(54)	Geotextile Fabric for Paving	Square Yard

TABLE 1

REQUIREMENTS FOR ASPHALTIC CONCRETE MIXTURES

A. Mixture Requirements

U. S. Sieve % Passing	Type 3 Wearing Course	Binder Course	Type 5A Base	Mix Tolerance
1-1/2"	------	------	100	-----
1"	100	100	80 - 100	± 6
3/4"	95 - 100	85 - 100	------	± 6
1/2"	85 - 100	70 - 100	------	± 6
3/8"	70 - 100	60 - 95	------	± 6
No. 4	50 - 75	40 - 70	35 - 70	± 6
No. 10	28 - 55	28 - 50	------	± 6
No. 40	14 - 30	14 - 30	16 - 40	± 5
No. 80	8 - 20	8 - 20	------	± 4
No. 200[4]	3.0 - 8.0	3.0 - 8.0	3.0 - 8.0	± 2.0
Extracted Asphalt, %	------	------	------	± 0.4
Mix Temperature	------	------	------	± 25°F
% Curshed, Min.	85	70	As Needed	------
Aggregates[1] (Grade)	A,B,C	A,B,C,I	A,B,C,D,G,H,I	------
Marchall Stability, lbs.				
No. of Blows	75	75	75	------
Design[2]	1700	1700	1400	------
Minimum	1500	1500	1200	------
Individual	1300	1300	1000	------
Marshall Flow,	1/100 in. 6 - 15	5 - 15	15 Max	------
% Voids	3.0 - 5.0	3.0 - 5.0	3.0-5.0	------
% VFA	70 - 80	70 - 80	70-80	------
% VMA Min[3]	14.5	14.0	13.0	------
% RAP, Max.	0.0	30.0	30.0	------

B. Pavement Requirements

Density, %:

Pavement Wearing & Binder Courses - 95.0

Base Course - 94.0

Grade Tolerance Variation, Inches:

Roadway Wearing Courses - 1/2

Binder Courses - ½

1 A - Gravel, B - Slag, C - Stone approved for wearing surface, D - Stone, G - Sand Gravel, H - Recycled portland cement concrete, I - Reclaimed asphaltic pavement. See Subsection C501.02(c).

2 The Contractor shall design a mixture at a stability value based on historical plant performance that will ensure compliance with 100 percent payment requirements for the average of four samples. Values listed may be used as guide.

3 For Design Guideline. For mixes with a theroetical gravity greater than 2.47, a tolerance of minus 1.0 percent will be applied to tthe minimum VMA.

4 Max of 6.5 percent passing the No. 200 sieve for design of all mixtures.

TABLE 2

PAYMENT ADJUSTMENT SCHEDULES

	Percent of Contract Unit Price/Lot[1]				
	100	98	95	80	50 or Remove [2]
Marshall Stability (lb):					
. Type 3 WC & BC:					
Lot (Average)	1500 & Above	------	1400 - 1499	1250 - 1399	Below 1250
Individual Test Within Lot	1300 & Above	Below 1300	------	------	------
. Type 5A Base:					
Lot (Average)	1200 & Above	------	1100 - 1199	1000 - 1099	Below 1000
Individual Test Within Lot	1000 & Above	Below 1000	------	------	------
Pavement Density: (% of Laboratory Density)					
95.0	95.0 & Above	------	94.0 - 94.9	92.0 - 92.9	Below 92.0
94.0	94.0 & Above	------	93.0 - 93.9	91.0 - 92.9	Below 91.0
Anti-Strip Addictive, % Below Job Mix Formula	Within Job Mix Formula	0.2 or less	More than 0.2	------	------

[1] Portion of lot placed on the project

[2] At the option of the Director

SECTION C502
SUPERPAVE ASPHALTIC CONCRETE MIXTURES

502.1 Description: These specifications are applicable to Superpave Asphaltic Concrete wearing, binder and base course mixtures of the plant mix type.

All references herein shall conform to the LaDOTD Louisiana Standard Specifications for Roads and Bridges, Latest Edition, Section 502, and latest revisions thereto. Section 502 shall govern except as amended herein. All references to the "department" and to "the Director" shall mean the City's representative in these specifications. Wearing Courses shall be (1/2" Nominal Size) and Binder and Base Courses shall be (3/4' or 1" Nominal Size and conforming to the Lift Thickness shown in Table 502-3). The use of a Material Transfer Device is not allowed unless receiving written approval from the Director.

502.2 Materials: See Latest Edition of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, including revisions thereto, except as modified herein.

(a) Asphalt Cement: The asphalt cement grades used shall be as specified in Table C502-1.

Table C502-1
Superpave Asphalt Cement Usage

Current Traffic Load Level	Mixture Type[1]	Grade of Asphalt Cement
Level A	Incidental Wearing Course	PG64-22
Level 1	Binder and Wearing Course Base Course	PG64-22 PG64-22*

[1] Nominal Aggregate Size must conform to the Lift Thickness requirements listed in Table C502-3 for each lift of asphalt.
* Binder and Base Course containing between 20 and 30 percent RAP shall use PG58-28. All Wearing Courses shall use PG64-22.

502.4 Job Mix Formula: Validation will be based on the first lot test results. All the specification criteria must be met for production to continue.

502.5 Plant Quality Control: This section does not apply to these specifications.

502.6 Plant Acceptance: This section does not apply to these specifications.

502.10 Roadway Quality Control: See Latest Edition of the LaDOTD Louisiana Standard Specifications including revisions thereto, except as modified herein. All references to Surface Tolerance and IRI specifications will not apply to these specifications.

502.11 Roadway Acceptance: See Latest Edition of the LaDOTD Louisiana Standard Specifications including revisions thereto, except as modified herein.

Density: Acceptance testing for pavement density will be conducted by the Director. One pavement core for each mix use shall be taken from each sublot within 72 hours after placement. Sampling shall be performed by the Director using the random number tables shown in DOTD TR 605. When the sampling location determined by random sampling falls within areas that are to be replaced, within 1 foot of the pavement edge, or within 5 feet of a transverse joint; another

sampling location will be determined. Samples will be drilled by the Contractor at the locations determined by the Director. The Director shall transport the cores to the asphalt plant for testing by the Director's representative. The Contractor's representative will inspect the cores upon delivery to the plant and before any testing is performed on the core. Any damaged cores or cores that are less than 1 3/8"; can be rejected at that time and a new sampling location must be determined and the core re-drilled. The removed pavement shall be replaced with hot or cold mixture and refinished during the work day the coring is performed. Cores less than 1 3/8" thick shall not be used as pavement samples for payment determination. The average density of all cores for each lot shall be greater than 92% of Maximum Theoretical Gravity (TR 327). Roadway density will be calculated using the lot average for Maximum Theoretical Gravity.

502.13 Quality Level Analysis: This section does not apply to these specifications.

502.14 4 Lot Sizes: This section has been modified as follows:

A lot is a segment of continuous production of asphaltic concrete mixture from the same job mix formula produced for a given job at an individual plant. A standard lot will be defined as:

- 2000 tons production
- Partial lots will require testing at the frequency of one test per 500 tons, and portion thereof.

Each lot will be sub-divided into four equal sublots based on expected production. Testing will be conducted as follows:

- First Sublot –
  - Tests will be performed on aged specimens compacted to N-design as follows:
    - Percent Voids
    - Percent VFA
    - Percent VMA
  - Theoretical Maximum Specific Gravity (Gmm)
  - Gradation, AC Content and Percent Crushed
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum
- Second Sublot –
  - Theoretical Maximum Specific Gravity (Gmm)
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum
- Third Sublot –
  - Tests will be performed on aged specimens compacted to N-design as follows:
    - Percent Voids
    - Percent VFA
    - Percent VMA
  - Theoretical Maximum Specific Gravity (Gmm)
  - Gradation, AC Content and Percent Crushed
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum

- Fourth Sublot –
    - Theoretical Maximum Specific Gravity (Gmm)
    - Aged or un-aged specimens compacted to N-maximum as follows:
        - Percent Gmm at N-initial
        - Percent Gmm at N-Maximum

Tests for Theoretical Maximum Specific Gravity, Voids, VMA and VFA shall be conducted by the Director. If lot averages (minimum two samples) exceed tolerances listed in Table C502-3, an adjustment must be made to the mix by the Contractor to bring the mix back within tolerance. If two consecutive lots are out on the same parameter, production must be halted and the mix re-designed.

Tests for Gradation, AC Content, and Percent Crushed and for aged or un-aged specimens compacted to N-maximum shall be conducted by the Contractor's Quality Control representative. If lot averages (minimum two samples) exceed tolerances listed in Table C502-2, an adjustment must be made to the mix by the Contractor to bring the mix back within tolerance. If two consecutive lots are out on the same parameter, production must be halted and the mix re-designed.

502.15 Measurement: See latest Edition of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, including revisions thereto, except as modified herein.

(a) Weight Measurement: Asphaltic concrete will be measured by the ton of 2,000 pounds (megagrams) from printed weights as provided in Section 503. Stamped printer tickets will be issued for each truckload of material delivered. Material lost, wasted, rejected or applied contrary to specifications will not be measured for payment.

Estimated quantities of asphaltic concrete shown on the plans are based on 110 lb/sq yd/inch (2.35 kg/sq m/mm) thickness.

(b) Volume or Area Measurement: The quantities for payment will be the design quantities specified in the plans and adjustments thereto. Design quantities will be adjusted when the Director makes changes to adjust to filed conditions or when design changes are necessary. Design quantities are based on the horizontal dimensions and compacted thickness of the complete course shown on the plans.

(c) Surface Tolerance Incentive Measurement: This Standard Specification section does not apply to this project.

502.16 Payment: Payment shall be made based on the measurement specified and adjusted for % Air Voids and Average Roadway Density in accordance with Table C502-4 included herein.

Payment will be made under:

ITEM NO.	PAY ITEM	Pay Unit
C502(51)	Superpave Asphaltic Concrete	Ton
C502(52)	Superpave Asphaltic Concrete	Cubic Yard
C502(53)	Superpave Asphaltic Concrete (" Thick)	Square Yard

Table C502-2

Superpave Requirements

A. REQUIREMENTS FOR EXTRACTED ASPHALT CEMENT AND AGGREGATE GRADATION					
U.S. (Metric) Sieve Passing	1/2 inch (12.5 mm) Nominal	3/4 inch (19 mm) Nominal	1 inch (25 mm) Nominal		Mix Tolerance[1]
2 inch (50 mm)	---	---	---		±6
1 1/2 inch (37.5 mm)	---	---	100		±6
1 inch (25 mm)	---	100	90-100		±6
3/4 inch (19 mm)	100	90-100	89 Max		±6
1/2 inch (12.5 mm)	90-100	89 Max	---		±6
3/8 inch (9.5 mm)	89 Max.	---	---		±6
No. 4 (4.75 mm)	---	---	---		±6
No. 8 (2.36 mm)	28-58	23-49	19-45		±5
No. 16 (1.18 mm)	---	---	---		±4
No. 30 (600 µm)	---	---	---		±3
No. 50 (300 µm)	---	---	---		±3
No 100 (150 µm)	---	---	---		±2
No. 200 (75 µm)	2.0-10.0	2.0-8.0	1.0-7.0		±1.5
Extracted Asphalt, %	---	---	---		±0.4
Mix Temperature	---	---	---		±25°F (±14°C)
Aggregate[2]	A,B,C	A,B,C	A,B,C,D,E		---
B. PAVEMENT REQUIREMENTS					
Density, Min. 92.0 (% of Maximum Theoretical Gravity) Roadway Travel Lane Wearing, Binder and Base Courses					
Density, Min. 89.0 (% of Maximum Theoretical Gravity) Shoulders, Patching and Widening					

[1] Job Mix Formula based on validated mix design. Tolerances apply only to Lot average (2 samples minimum).

[2] A - Gravel, B - Slag, C - Stone approved for wearing surface, D - Stone, E - Reclaimed Asphaltic Pavement. See Subsection 502.02(c).

Table C502-3
Superpave Mixture Criteria

Nominal Max., Size Agg.	0.5 inch (12.5 mm)	0.75 inch (19 mm)	1.0 inch (25 mm)		
Type of Mix	Incidental Paving	Wearing Course	Binder Course	Binder Course	Base Course
Level	A	1	1	1	1
Asphalt Binder	Table C502-1				
Coarse Agg. Angularity, + No. 4 (4.75 mm)	55	75	75	75	75
Fine Agg. Angularity, Min. % - No. 4 (4.75 mm)	40	40	40	40	40
Flat and Elongated Particles, % Max. (5:1) + No. 4 (4.75 mm)	10				
Sand Equivalent, Min. % (Fine Agg.), - No. 4 (4.75 mm)	40	40	40	40	40
Natural Sand Max. % of New Agg.	N/A	15	15	15	15
RAP, Max. % of Mix[1]	20	20	30	30	30
Compacted Mix Volumetrics					
VMA, Min. %	13	13	11	11	11
Air Voids, %	2.5-4.5				
VFA, %	68-78				
$N_{initial}$ 91% max. (Gyrations)	7	7	7	7	7
N_{design} 96.5±1.5 % (Gyrations)	75	75	75	75	75
N_{max} 98 % max. (Gyrations)	115	115	115	115	115
Moisture Sensitivity, TSR Min.	80				
Dust/Effective Asphalt Ratio, %	0.6 – 1.6				
Lift Thickness, inch	1.5 – 2.0	1.5 – 2.0	2.0 – 3.0	2.5 – 4.0	2.5+

[1] For RAP percentages between 20 and 30 percent, use asphalt cement grade PG58-28.

Table C502-4
Payment Adjustment Schedule for Superpave

Parameter[1]	Percent of Contract Unit Price/Sublot		
	100	95	50 or Remove[2]
% Air Voids	2.5 – 4.5	2.0-2.4 or 4.6-5.0	<2.0 or >5.0
Average Roadway Density, % G_{mm}	≥ Lower limit	-0.1 to -0.9 below lower limit	-1.0 below lower limit

[1]The percent payment for plant acceptance will be the Lot Average for air voids,. Roadway pay is based on average roadway density of the sublot cores. The percent payment for roadway acceptance will be the average of the percent payments for density. The total percent payment for the Superpave mixture will be the lowest value of the percent payments for plant acceptance and roadway acceptance.
[2]At the option of the Director.
[3]Lot sizes less than 2000 tons will be accepted based on the average of all values reported.

SECTION C503
ASPHALTIC CONCRETE EQUIPMENT AND PROCESSES

C503.01 DESCRIPTION: This section specifies requirements for certification of plant and paving equipment used in producing, placing and compacting asphaltic concrete mixtures. It includes methods and equipment for handling and storing materials and transporting asphaltic concrete to the jobsite.

When less than 250 tons of mixture is required for a project or at separate locations within a project or for short irregular sections within a project, the paving equipment shall conform to the requirements of this Section, except that pavers without electronic screed and slope control devices may be permitted.

C503.02 PLANT EQUIPMENT:

(a) General: Plants furnishing asphaltic concrete mixtures in accordance with Section C501 shall be certified in accordance with current LaDOTD procedures. The plant and laboratory equipment, meters, scales, and measuring devices, shall be tested, inspected and certified every 90 calendar days and more often when directed, by a qualified independent scale service or the Weights and Measures Division, Louisiana Department of Agriculture and Forestry.

Asphaltic concrete shall be mixed at a central mixing plant by either the batch, continuous, or drum mixing process. Aggregates, additives and asphalt shall be proportioned in accordance with the approved Job Mix Formula.

The complete process, including plant with necessary auxiliary equipment and controls, operating procedures, and testing and sampling methods shall be approved during operation prior to use. Such approval will require a verification that the hardening properties of asphalt recovered from samples of mixture taken at the plant will not exceed the absolute viscosity value obtained on residue from the thin film oven test of the original asphalt by more than 2,000 poises. When samples of mixture are taken from the pavement, the absolute viscosity of recovered asphalt shall not exceed 12,000 poises. Asphalt shall be extracted from the mixture in accordance with DOTD TR 308 and recovered in accordance with AASHTO T 170. Absolute viscosity at 60^{O}C (140^{O}F) of the recovered asphalt shall be tested in accordance with AASHTO T 202.

The Contractor shall have a plant site laboratory conforming to LaDOTD Section 722 as a part of the plant facilities. The plant laboratory shall be equipped with a constant temperature oven capable of maintaining any temperature between 100^{O}F and 400^{O}F +/- 5^{O}F for drying aggregates and determining the moisture content of loose mix, a specimen ejector for removing specimens from Marshall molds, and other laboratory equipment used to perform Quality Control Testing.

(b) Asphalt Preparation Equipment: The asphalt working tank shall be capable of uniformly heating the material by approved methods, under positive control, to the required temperature. The asphalt circulating system shall be of adequate size to ensure proper and continuous circulation (except while asphalt is being measured). Pipelines and fittings shall be heated or

insulated. Proper mixing temperature of asphalt shall be maintained. A sampling spigot shall be provided in each tank or the supply line.

(c) Anti-Strip Additive Equipment: Anti-strip additive shall be dispensed directly into the asphalt feed line at a location between the asphalt control valve and the end of the asphalt discharge line. The process for accomplishing this shall be approved and shall provide that the required quantity of anti-strip additive is uniformly proportional to the quantity of asphalt. The process shall have a means by which such uniformity can be easily verified. The equipment shall include a positive displacement accumulating meter which accumulates and displays materials used, and reads to the nearest 0.25 gallon. The additive storage tank shall be a recirculating tank provided with uniform heat and an indicating thermometer at an approved location near the tank discharge point.

(d) Cold Aggregate Feeder: The plant shall be provided with accurate mechanical means for uniformly feeding aggregate into the dryer. Feeders shall be capable of uniformly delivering the maximum number of required aggregate sizes in their proper proportion. When more than one cold bin feeder is used, each shall operate as a separate unit. The individual controls shall be integrated with a master control for all materials.

Cold aggregate bins shall be of sufficient size to store the amount of aggregates required for continuous plant operation. Partitions between bins shall extend a minimum of 1 foot above the top of bins and be sufficient to eliminate contamination. The unit shall include a feeder mounted under bins with each bin compartment having an accurately controlled individual gate to form an orifice for measuring the material drawn from it. The orifice shall be rectangular, with one dimension adjustable by positive mechanized adjustment with locking system. Indicators shall be provided on each gate to show the gate opening in inches.

The plant shall be modified as required to permit recycling operations in conformance with air pollution standards. A separate cold feed system, including weight indicating apparatus, shall be provided for reclaimed asphaltic pavement.

Calibration of gate openings shall be based on the weight of samples taken from bin material. Material shall be fed from a bin through the individual orifice and bypassed to a container to be weighed. Material from each bin shall be calibrated separately. Weight calibration curves shall be developed and kept on file. The calibration process shall be part of the Contractor's quality control and shall be shown as a function of belt speed and gate opening. The method and frequency shall be as directed.

When a cold feed system is the only system used to control the proportioning of aggregates, an automatic plant shutoff shall be provided to operate when any aggregate bin becomes empty or flow is interrupted.

(e) Hydrated Lime Additive Equipment: When hydrated lime additive is mixed with aggregate on the belt feed, the hydrated lime additive equipment shall be interlocked and synchronized with cold feed controls to operate concurrently with the cold feed operation. A positive signal system

which shall automatically shut the plant down when a malfunction causes an improper supply of additive or water shall be installed. The plant shall not operate unless the entire additive system is functioning properly. The hydrated lime additive system shall consist of the following equipment.

(1) A separate bulk storage bin with a vane feeder or other approved feeding system which can be readily calibrated. The system shall provide a means for easy sampling of additive and verification of the quantity dispensed by weight. The feeder system shall require a totalizer.

(2) An approved spray bar or other approved system capable of spraying the composited aggregate with potable water before the addition of hydrated lime additive when the moisture content of the composited aggregate falls below 3 percent. An alternative system for spraying coarse aggregate stockpiles may be allowed when approved. The approved equipment and methods shall consistently maintain the aggregates in a uniform, surface wet condition. The moisture content of the aggregate-lime additive mixture following spraying and mixing shall be introduced into the automatic moisture controls of the plant.

(3) An approved pugmill or other approved mixing device to uniformly coat the composited aggregates with the hydrated lime additive shall be located between the point at which the additive is placed on the composited aggregate and the dryer.

The hydrated lime additive shall be dispensed directly onto the composited aggregate between the cold feed and the dryer. When cold feed control is used, the additive shall be introduced after the composited aggregate has passed through the vibrating scalping screen. The additive shall be uniformly blended with the composited aggregate before entry into the dryer. The process and equipment used for mixing the lime additive and aggregate shall be approved and shall provide that no less than the required amount of additive is continuously blended with the aggregate. When a belt scale is used on the composited aggregate feed belt, it shall be positioned to record the combined weight of the blended aggregate and hydrated lime additive.

(f) Mineral Filler Equipment: Mineral filler shall be proportioned separately from a hopper equipped with an adjustable feed which can be accurately and conveniently calibrated and which shall be interlocked with the aggregate and asphalt feeds. The feeder shall accurately proportion the mineral filler and shall be designed to give a constant flow of material. For batch plants, the mineral filler shall be batched into the mix along with the aggregates. For continuous mix and drum mixer plants, the mineral filler shall be introduced to the mix at an approved location sufficiently in advance of the addition of the asphalt to give proper drying time.

(g) Screening System: Plant screens shall be provided as required for proportioning, capable of screening aggregates to the required sizes and having normal capacity in excess of the full capacity of the mixer or dryer. The screens shall be exposed for inspection as directed.

The plant shall have a scalping system on the fine sand cold bin and other bins as necessary, to ensure removal of objectionable material.

When a belt scale is used, an additional vibrating scalping screen will be required between the aggregate cold feed discharge and belt scale. Other processes will require a vibrating scalping screen between the cold feed discharge and mixing process. The screens shall be sized to remove all oversize aggregate and other objectionable material.

(h) Dryer: The plant shall include one or more dryers that shall continuously agitate aggregates during heating and drying. The equipment shall be capable of heating and drying aggregates in the necessary quantities to supply the mixing unit continuously at its operating capacity and at a specified temperature and acceptable moisture content. The dryer shall be equipped with automatic burner controls. Slope of dryers shall be in accordance with approved recommendations of the dryer manufacturer.

(i) Hot Bins: Bin sizes shall be adequate for continuous operation of the plant at rated capacity. Bins shall be arranged to ensure separate and adequate storage of appropriate fractions of aggregate. Adequate dry storage shall be provided with an overflow pipe or chute to prevent contamination of materials. Each size of aggregate shall be stored in separate bins when screens are used. For screenless operation, aggregate shall be stored in one or more bins with adequate provisions to prevent segregation.

(j) Thermometers: The plant will not be permitted to operate with faulty or inadequate thermometers, and the thermometers listed herein shall be immediately repaired or replaced when faulty operation is detected. The plant shall be equipped with the following thermometers.

(1) Asphalt: A thermometer graduated in 5^{o}F increments and having an accuracy of +/- 5^{o}F shall be fixed in the asphalt feed line at an approved location near the discharge valve at the mixer unit to indicate the temperature of asphalt from storage.

(2) Anti-Stripping Additive: A thermometer graduated in 5^{o}F increments and having an accuracy of +/- 5^{o}F shall be placed at an approved point near the anti-stripping tank discharge point prior to the meter.

(3) Heated Aggregates for Asphaltic Mixture: The plant shall be equipped with an approved recording thermometer graduated in maximum 10^{o}F increments and having an accuracy of +/- 5^{o}F and a sensitivity which will provide an indication of temperature change at a rate of at least 10^{o}F per minute. It shall be placed at the dryer discharge chute to register automatically the temperature of heated aggregates for batch plants, and at an approved location for continuous or drum-mixer plants to register automatically the temperature of the asphaltic mixture at discharge.

(k) Dust Collector: When a dust collection system returns fines to the mixture, the fines shall be returned at a uniform and regulated rate and at an approved location. In the drum-mix process, baghouse fines shall be added near the asphalt discharge. Baghouse fines shall be dispensed into the aggregate mixture by an approved feed control device from a collector box, surge bin or filler silo. This provision does not apply to primary collectors.

(l) Asphalt Measuring Equipment: Asphalt may be measured either by weight or volumetric measurement.

(1) Weight Measurement: Scales shall conform to Heading (n) of this Subsection and shall read to the nearest pound.

(2) Volumetric Measurement: Measurement by volume shall be by means of a positive displacement pump and shall be recorded in digital form to the nearest gallon. Provisions shall be made to periodically check by weight the quantity of asphalt delivered. The rate of asphalt delivered shall be continuously displayed in digital form corrected to 60^{o}F and the quantity totalized. The quantity of asphalt shall be corrected to the approved job mix temperature. Measurement shall be continuous and accurate to 1.0% of the required measurement.

(m) Mixer Unit: The mixer unit shall produce a uniform blend at the specified production rate, with rapid and complete asphalt coating of aggregate that will give a minimum coating of 95% of the coarse aggregate particles retained on the No. 4 sieve when tested in accordance with AASHTO T 195.

(1) Batch Plants: Batch plants shall have an approved pugmill and spray bar. The pugmill shall have an approved rated capacity. It shall be operated at an approved capacity not to exceed the rated capacity. The mixer shall have an approved timing device to prevent entrance of additional material during mixing. The discharge gates shall be locked to ensure proper mixing. The device shall also lock the asphalt bucket throughout the dry mixing period.

(2) Drum-Mixer Plants: Drum-mixer plants shall have an approved drying and mixing operation. Aggregate and asphalt shall be fed into the drum-mixer so that aggregates are dried, uniformly mixed and adequately coated with asphalt.

(3) Continuous Mix Plants: Continuous mix plants shall have an approved drying and mixing operation. The plant shall have an approved pugmill and spray bar. The pugmill shall be operated at an approved capacity not to exceed the rated capacity with the aggregates uniformly mixed and adequately coated with asphalt.

(n) Weigh Hoppers: Weigh hoppers used in weighing aggregates, asphalt and mixtures shall be constructed to prevent leakage and shall be suspended from scales conforming to this Subsection.

In batch plants, asphalt and aggregate hoppers shall be of sufficient size to weigh the total batch in one operation.

Hoppers for weighing a mixture from a storage or surge bin shall be constructed and used to prevent segregation of mixture loaded into the haul truck.

(o) Scales and Printer Systems:

(1) Scales: Scales shall be accurate to +/- 0.5% of the indicated load. They shall be designed, constructed and installed so that operations do not affect their accuracy.

To determine the total weight of mix loaded in trucks, the Contractor shall provide springless dial scales or load cell scales for weigh hoppers. When weigh hoppers are not used, the Contractor shall provide truck platform scales. The Contractor shall provide belt scales for conveyor systems when the drum-mixer process is used.

(2) Printer System for Batch Plants: To determine percent asphalt cement for the mix, the Contractor shall provide an approved printer system which will print separately the weight of aggregates and asphalt. These weights shall be used for calculating the percent asphalt in the mixture. When a mixture is loaded directly into the haul truck, these weights shall be used for the purpose of determining pay weights for the mix. Printing equipment shall also print zero weight for each batch and total weight of mixture loaded in trucks.

In the event of a breakdown of the printing mechanism, the Contractor may be permitted to operate during the 48-hour period immediately following the breakdown, provided an accurate weight of mixture can be determined and provided repeated breakdowns do not occur.

(3) Printer Systems for Plants Using Storage or Surge Bins: When storage or surge bins are used, the Contractor shall provide truck-platform scales or weigh hopper to determine pay weights for the mix. The weigh hopper shall be equipped with an approved automatic printer system that will print zero weight, batch weight and total weight of mixture loaded into the truck.

Truck-platform scales shall be of sufficient length to weigh the entire unit transporting the mix. Scales shall be equipped with an approved automatic printer system that will print the tare weight as well as the total weight of the unit and the mix.

Scales with electronic digital readout displays, that do not automatically reset to zero after the tare weight is obtained, shall print the tare weight, zero weight and either the total weight of mix loaded into the unit or the total weight of the unit and mixture. Scales with electronic digital readout displays that automatically return to zero after the tare weight is obtained, shall print the tare weight and either the total weight of mix loaded into the unit or the total weight of the unit and mixture.

When scales are located so that a truck leaves the scales between empty weighing and loaded weighing, the printer shall print the tare weight, zero weight before loaded weighing, and total weight of the unit and mix. In the event of a breakdown of the printing mechanism, the Contractor may be permitted to operate during the 48-hour period immediately following the breakdown provided an accurate weight of mixture can be determined and repeated breakdowns do not occur.

(p) Mix Release Agent Dispenser System: The plant shall be equipped with an approved pressurized system capable of spraying a uniform coating of an approved asphalt mix release agent into the haul unit bed prior to loading. Diesel is not allowed as a mix release agent.

C503.03 STORAGE SILOS AND SURGE BINS: Storage silos or surge bins for storing asphaltic concrete mixtures may be used with approval.

(a) Conditions of Use: Use of silos or bins shall conform to the limitations on retention time, type of mixture, heater operation, bin atmosphere, bin level or other characteristics set forth in these specifications and other requirements stated in granting approval of these facilities. An indicator device which is activated when material in the bin drops below the top of the sloped portion shall be affixed to each bin and be visible to the loading operator. Mixtures shall be maintained above this level during production, except for extended periods when the plant is not in operation.

(b) Heated Silos: The storage silo heating system shall be capable or uniformly maintaining mix temperature without localized heating.

Maximum allowable storage time for asphaltic concrete mixtures is 18 hours. The Director may grant permission to exceed the storage time, provided test results and other data indicate that the additional storage time is not detrimental to the mix.

(c) Unheated Surge Bins: The maximum allowable storage time for unheated surge bins is 2 hours. The Department may grant permission to exceed the 2-hour storage time, provided test results and other data indicate that the additional storage time is not detrimental to the mix.

(d) Loading and Unloading Mixtures: The system shall be capable of conveying the mixture from plant to bin or silo by a drag slat enclosed conveyor system or other approved system. The conveyor shall be of an enclosed continuous type designed to prevent spillage and to remove the mix from the plant as fast as it is produced.

The mix shall be transported directly from plant to silos or bins by means of the conveyor system. The mixture from the silo or surge bin shall remain within +/- 15^{o}F of plant discharge temperature.

When the mixture is placed into a silo or bins through a surge device, an automatic warning system shall be provided to audibly warn the operator of a gate malfunction.

Silo or bin unloading gates shall be either clam shell gates operating under gravity feed or other approved gates that will not cause segregation or be detrimental to the mix.

C503.04 HAULING EQUIPMENT: Equipment for transporting asphaltic mixtures shall have tight, clean, smooth metal beds, sprayed daily or as often as directed with an approved asphalt mix release agent. Diesel fuel will not be allowed as a release agent.

Each vehicle shall have a cover of canvas or other suitable material large enough to completely cover the top and extend over the sides of the bed to protect the mixture from the weather or loss of

heat due to excessive haul time. The cover shall have sufficient tie-downs to hold the cover to the bed during hauling. The covers shall be used as directed.

The hauling unit shall discharge the mixture in a continuous manner so the spreader apron of the paver will not be overloaded. When the hauling unit/paver combination causes a surface deviation in excess of 1/8 inch, measured longitudinally with an approved 10-foot metal static straightedge, or other surface defects, the use of such hauling unit or paver shall be immediately discontinued. When rolling straightedge results indicate surface deviations which result in less than 100% payment or excessive correction of bumps, the results will be analyzed to determine if the deviations are caused by the hauling unit/paver combination. If the hauling unit/paver combination is determined to be the cause, their combination shall be discontinued.

Equipment such as bottom dumps shall be capable of discharging the mixture in a uniform windrow longitudinally down the pavement. A maximum of one truck load shall be allowed on the pavement. The temperature of the material in the windrow shall not drop below 275^{o}F. The maximum amount of windrowed material allowed will be reduced if temperature requirements cannot be met. Distortions in surface tolerance resulting from improper unloading of the mixture shall be corrected immediately.

When size, speed and condition of trucks interfere with orderly paving operations, changes in equipment and/or operations shall be made.

Load Restrictions: Load restrictions shall be in accordance with the following:

The Contractor, Subcontractors and suppliers shall comply with legal load restrictions in hauling of materials or equipment on completed bridge structures, bases and pavements. A special permit will not relieve the Contractor of liability for damage resulting from moving of material or equipment. In no case shall the legal load limits be exceeded unless permitted in writing.

Operation of equipment of such weight or height or so loaded as to cause damage or overstress to structures, roadways or other construction will not be permitted. Hauling of materials over the base or surface course under construction shall be limited as directed. The Contractor shall be responsible for all damage done by hauling equipment.

C503.05 PAVING EQUIPMENT: Pavers shall be equipped with screed and slope control devices.

Equipment that is pushed by the paver shall be of such size and capacity that the paver will push them without affecting surface smoothness or edge line of the mixture.

Pavers shall be capable of placing mixtures within specified tolerances. A screed or strike-off assemble shall be used to distribute the mixture over the entire paving strip. The width of the paving strip will be approved. Assemblies, including extensions, shall place mixtures uniform in appearance and quality. The assembly shall be adjustable to provide the required cross section. The assembly shall be equipped with a heater and either a vibrator or tamping bars.

In hilly terrain, when mix is discharged directly into the paver hopper, a positive connection shall be provided between paver and hauling unit. When the hauling unit discharges directly into the paver hopper, the paver shall be capable of pushing the hauling unit.

Pavers shall be equipped with hoppers adequately designed and maintained to prevent spillage. Pavers shall also be equipped with augers to place the mix evenly in front of the screed, including extensions. Pavers shall be equipped with a quick and efficient steering device and shall be capable of traveling both forward and in reverse. Pavers shall be capable of spreading mixes to required thickness without segregation or tearing.

For shoulder construction, modified pavers or widening machines may be used when permitted.

A screed extension shall consist of a screed plate or plates, which meet all requirements for the screed, set forth in these specifications. The bottom surface of the screed extension shall be in the same plane as the bottom surface of the screed plate. A screed extension shall be used when mix is being placed within the traveled way and the paving strip is wider than the screed. Auger assembly extensions shall be used when screed extension in excess of 1 foot on a side are to be consistently used in the pavement operation. Such auger extensions shall extend to within 1 foot of the end of the screed. With approval, the use of an auger extension with screed extensions in excess of 1 foot on one side may be waived for transitions, taper sections and similar short sections. The Director may waive the requirement for auger extensions when hydraulically extended screeds, which trail the main screed assembly, are used, provided required density and surface texture are obtained.

A strike-off assembly or boxed extension shall not be used for paving within the traveled way, except when approved for short irregular sections or sections which are exceptions to the typical.

Pavers shall be equipped with screed and adjustable slope control devices capable of placing the mixture to grade within the tolerances specified, and distributing the mixture over the entire lane width and such partial lane widths as may be approved.

When a malfunction occurs in the automatic screed control device during laydown operations, work may continue for the balance of that day on any course other than the final wearing course. Any overrun resulting from placing material without the automatic screed control device shall be borne by the Contractor. When a screed control device malfunctions during final wearing course paving operations, plant operations shall be immediately discontinued and shall not be resumed until the screed malfunction has been remedied. Material in transit may be placed; however, slope tolerance, surface tolerance and grade tolerance shall be met.

When less than 250 tons of mixture is required for a project or at separate locations within a project or for short irregular sections within a project, the paving equipment shall conform to the requirements of this Section.

C503.06 COMPACTION EQUIPMENT:

(a) General: Compaction equipment shall be self-propelled and be capable of reversing without backlash. Compaction equipment shall be certified prior to use.

Poorly performing compaction equipment will be decertified and shall be replaced with suitable equipment or supplemented as necessary.

(b) Steel Wheel Rollers: Steel wheel rollers may be either vibratory or nonvibratory. Wheels shall be true to round and equipped with suitable scrapers and watering devices. Vibratory rollers shall be designed for asphaltic concrete compaction and shall have separate controls for frequency, amplitude and propulsion.

C503.07 MISCELLANEOUS EQUIPMENT AND HAND TOOLS: Power revolving brooms or power blowers and asphalt distributors shall be provided and maintained in a satisfactory working condition.

In areas that are inaccessible to conventional rollers, satisfactory mechanical compaction equipment, or hot hand tampers, shall be used. Tamping tools may be used for compacting edges.

The asphalt distributor shall be equipped with a suitable spray bar and nozzles designed to distribute material within the specified temperature range and shall be equipped with thermometers to indicate temperature of material in the tank. The distributor shall be designed to maintain a constant uniform pressure on asphaltic material as it passes through nozzles and to apply asphaltic material at the required rate. The distributor shall be equipped with a valve system that control the flow of asphaltic materials, a pump tachometer or pressure gauge that registers pump output, a bitumeter and odometer that indicates both the speed of the distributor in feet per minute and total distance traveled, and measuring devices, as necessary.

Charts shall be provided for an accurate, rapid determination and control of the amount of asphaltic materials being applied per square yard of surface under operating conditions. The bitumeter shall be calibrated to ensure accurate spraying operations and shall be kept clean of asphaltic buildup. The distributor shall be equipped with a hand-held spray attachment for applying asphaltic materials to areas inaccessible with the spray bar.

C503.08 HANDLING OF AGGREGATES: Aggregates shall be stored at the plant site so that no intermixing will occur. Material shall be stockpiled so that no detrimental degradation or segregation of aggregates will occur; no appreciable amount of foreign material will be incorporated into aggregates; and there will be no intermingling of stockpiled materials. Stockpiles shall be well drained.

Blending of aggregates shall be done from cold feed bins and not in stockpiles or on the ground at the plant site or the source.

Gradation and other properties of aggregate in stockpiles shall be such that when the aggregates are combined in proper proportions, the resulting combined gradation will meet the requirements of the approved job mix formula.

Proportioning of material at the cold feed shall be established to meet the approved job mix gradation requirements. Plants operating with only cold feed control shall not require additional manipulation to meet job mix requirements.

(a) Drying: Aggregates shall be heated and dried to produce a mixture meeting specification requirements. The quantity of material fed through the dryer shall be held to an amount which can be adequately heated and dried. When proper drying is not achieved and the quality of the mix is impaired, the Contractor shall adjust the rate of production of the dryer to obtain satisfactory results. The burner fuel used shall be clean burning so there is no contamination of aggregates. Contaminated aggregates or mixtures will be rejected.

(b) Hot Aggregate Storage: When batch plants are used, hot aggregates shall be stored in bins. Storage shall be accomplished to minimize segregation and loss of temperature of aggregates. When plant operation is interrupted and the temperature of material in hot storage cools to 25^{o}F or more below the specified mixing temperature, bins shall be pulled and the material discarded. When a plant changes type of mix and the change requires a change of materials, bins shall be pulled and the material discarded.

C503.09 PROCESSING OF ASPHALT, ADDITIVES AND AGGREGATES: Aggregates shall be combined, either before or after drying, depending on the type of plant used, to meet the approved job mix formula. Asphalt shall be measured and introduced into the mixer or dryer in the quantities specified on the approved job mix formula.

The aggregate, asphalt and the mixture shall be processed at the temperature specified in the approved job mix formula. The temperature of the mixture at discharge from the mixer shall be within +/- 25^{o}F of the optimum mixing temperature in the job mix formula. When the mixing, coating, placing or density requirements are not being met, the Director may require that the job mix temperature be changed or that the foregoing temperature range be restricted.

The moisture content of the final mixture shall be minimized and uniformly controlled to ensure that placing and density requirements are met. The maximum allowable moisture content of the final mixture shall be 0.5% by weight when tested in accordance with DOTD TR 319.

When the automatic adjustments or other critical control and shutoff devices are not functioning, the plant shall not operate.

(a) Plants with Pugmills: Prior to adding asphalt, the combined aggregate shall be thoroughly mixed dry, after which the proper amount of asphalt shall be sprayed over aggregates and mixed to produce a homogeneous mixture in which all aggregate particles are uniformly coated. Mixing times shall be in accordance with the approved job mix formula.

(b) Drum-mixer and Continuous Mix Plants: The system shall provide positive weight control of cold aggregates fed by a belt scale or other device interlocked with the asphalt measuring system to maintain required proportions of combined aggregates and asphalt. Aggregates shall be heated, dried and mixed with asphalt to produce a homogeneous mixture in which all aggregate particles are uniformly coated. Approved methods shall be provided to waste the first and last output of the plant after each interruption.

The Contractor's Certified Asphaltic Concrete Plant Technician shall measure the moisture content of the cold feed aggregates daily when starting the plant. Adequate scheduled tests during plant operations and adjustments to the plant shall be made to correct for moistures in the aggregate. The schedule for moisture content testing will be subject to approval.

Provisions shall be made for introducing the latest moisture content of the cold feed aggregates into the belt weighing system, thereby correcting wet aggregate weight to dry aggregate weight. Dry weight of the aggregate flow shall be displayed digitally in appropriate units of weight and time, and the quantity used totalized. The rate of flow of asphalt anti-strip, and lime (when used) shall also be digitally displayed and the quantity used totalized.

For mineral filler, a separate bin and feeder in accordance with Subsection C503.02(d) shall be furnished with its drive interlocked with the aggregate feeders. Mineral filler shall be introduced directly into the drum near the asphalt discharge.

SECTION C504
ASPHALTIC TACK COAT

C504.01 DESCRIPTION: This work consists of preparing and treating existing asphaltic or concrete surface with asphaltic material in accordance with these specifications and in conformity with the lines shown on the plans or established in the field.

C504.02 ASPHALTIC MATERIALS: Tack coat shall be a modified asphalt emulsion (Grade SS-1, SS-1H or CMS-2) or a modified asphalt emulsion (Grade CRS-2P, CRS-2L, SS-1P or SS-1L) conforming to Section C1002.

C504.03 WEATHER LIMITATIONS: Asphaltic tack coat shall not be applied on a wet surface or when the ambient air temperature is below 40^{o}F.

C504.04 EQUIPMENT: The Contractor shall provide equipment for applying asphaltic material and preparation of the surface to be tacked. Equipment shall conform to Subsection C503.07. A hand-held pressure nozzle may be used for tack coat application in lieu of the spray bar/tachometer combination for irregular sections or short sections of 1500 feet or less.

C504.05 SURFACE PREPARATION: The surface shall be cleaned by sweeping or other approved methods. Edges of existing pavements which will form joints with new pavement shall be satisfactorily cleaned before tack coat is applied.

C504.06 APPLICATION: Asphalt shall be uniformly applied to a clean dry surface with no bare areas, streaks or puddles with an asphaltic distributor at a rate in accordance with Table 3. These rates may be raised or reduced as directed.

TABLE 3
ASPHALTIC TACK COATS

Existing Surface	Rate (Gal/sq yd)[1]
Bleeding Surface Treatment	0.02
Dry Surface Treatment	0.03
New Hot Mix	0.03
Old Hot Mix	0.07
Portland Cement Concrete	0.07
Friction Course	0.05
Cold Planed Surface[2]	0.08

[1] Rates are minimum rates of undiluted asphaltic material.
[2] Minimum of two applications.

The minimum application temperature for modified asphalt emulsions and emulsified asphalt Grades CRS-2L and CRS-2P is 160^{O}F and Grades SS-1, SS-1H, CRS-2, SS-1L and SS-1P is 70^{O}F.

Tack coat shall be applied in such manner as to cause the least inconvenience to traffic. The Contractor will be permitted to apply the tack coat 1 calendar day prior to the mixture laydown; however, when tack coat has been damaged by traffic pick-up or contaminated by dirt, dust or mud, the surface shall be cleaned and retacked prior to the mixture laydown at no direct pay. Tacked surfaces exposed to traffic for more than 24 hours or damaged due to inclement weather shall be retacked at no direct pay.

C504.07 MEASUREMENT AND PAYMENT: Asphaltic tack coat will not be measured for payment; however, payment under the contract will be subject to the payment adjustment provisions of Section C1002 for specification deviations of the asphaltic materials. The Director will provide the payment adjustment percentage for asphaltic materials.

SECTION C505
ASPHALTIC PRIME COAT

C505.01 DESCRIPTION: This work consists of preparing and treating a surface with asphaltic material in conformance with these specifications and in conformity with lines shown on the plans or established in the field.

C505.02 ASPHALTIC MATERIALS: Prime coat shall be cutback asphalt Grade MC-30, MC-70, or AEP Emulsified Asphalt conforming to Section C1002.

C505.03 WEATHER LIMITATIONS: Asphaltic materials shall not be applied on a wet surface or when ambient air temperature is less than 35^{O}F in the shade.

C505.04 EQUIPMENT: The Contractor shall provide the necessary equipment for proper construction of the work. Equipment shall be approved before construction begins and shall be maintained in satisfactory working condition. Equipment shall conform to Subsection C503.07.

C505.05 SURFACE PREPARATION: The surface to be coated shall be shaped to required grade and section shall be free from ruts, corrugations, segregated material or other irregularities, and shall be compacted to required density. Delays in priming may necessitate reprocessing or reshaping to provide a smooth, compacted surface.

C505.06 APPLICATION: Prime coat shall extend 6 inches beyond the width of surfacing shown on the plans. The prime coat shall not be applied until the surface has been satisfactorily prepared and is dry.

Prime coat shall be applied at the rates and temperatures shown in Table 4. Quantities of prime coat shall not vary from that shown in Table 4.

TABLE 4
PRIME COATS

	Application Rate (Gallon/square yard)		**Application Temperature(^{o}F)**	
Asphalt Grade	**Min.**	**Max.**	**Min.**	**Max.**
MC-30	0.15	0.30	60	120
MC-70	0.15	0.30	100	180
AEP	0.15	0.30	60	120

C505.07 PROTECTION: After prime coat has been applied it shall cure for a minimum of 24 hours before the surfacing is placed. The Contractor shall keep traffic off the surface until the prime coat has properly cured, unless otherwise permitted.

If traffic is permitted, the Contractor may be required to spread approved granular material, as directed, over the prime coat at no direct pay.

The prime coat shall be maintained intact. When required, the primed surface shall be thoroughly cleaned prior to the placement of surfacing.

Where the prime coat has failed, the failed area shall be cleaned and be recoated with prime coat at no direct pay. When the prime coat is generally unsatisfactory, the Contractor shall reprime the unsatisfactory surface at no direct pay.

C505.08 MEASUREMENT AND PAYMENT: Asphaltic prime coat will not be measured for payment; however, payment under the contract will be subject to the payment adjustment provisions of Section C1002 for specification deviations of the asphaltic materials. The Director will provide the payment adjustment percentage for asphaltic materials. Payment for surface preparation will be made under other items.

SECTION C506
POROUS ASPHALTIC CONCRETE PAVEMENT

C506.01 DESCRIPTION: This work consists of constructing a porous asphalt pavement on a prepared sub-grade in accordance with this section and in conformity with the lines, grades, thicknesses and typical sections shown on the plans or established in the field.

The porous asphaltic concrete pavement shall consist of a mixture of aggregates, bituminous binder material including polymer modified asphalt, fibers, mineral filler, anti-strip additives, and other optional additives as may be specified.

C506.02 REFERENCES:

- AASHTO T96 – Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact
- AASHTO T209 – Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
- AASHTO T283 – Standard Method of Test for Resistance of Compacted Asphalt Mixtures to Moisture-Induced Damage
- ASTM D3203 – Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
- ASTM D4791 – Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
- ASTM D5821 – Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
- ASTM D6752 – Standard Test Method for Bulk Specific Gravity and Density of Compacted bituminous Mixtures Using Automatic Vacuum Sealing Method
- NAPA IS-115 – Open-Graded Asphalt Friction Courses, Design, Construction & Maintenance
- NAPA IS-131 – Porous Asphalt Pavements for Stormwater Management
- NAPA – National Asphalt Pavement Association
- NCAT – National Center for Asphalt Technology

C506.03 MATERIALS: The Contractor shall keep accurate records, including proof of deliveries of materials for use in porous asphaltic concrete mixtures. Copies of these records shall be furnished to the Director upon request. Material shall conform to the following Subsections:

Asphalt (C1002.01)
Silicone and Anti-Strip Additives (C1002.02)
Aggregates (C1003.01 & C1003.06)
Hydrated Lime (LaDOTD 1018.03(a))
Mix Release Agent (LaDOTD 1018.26)

as well as the following:

(a) Asphalt Binder: An asphalt binder shall meet the requirements of section C502.02.

(b) Additives: Additives such as cellulose or mineral filler, or anti-strip additives, shall be included as allowed by the Director.

(c) Aggregates: Coarse aggregate shall be that part of the aggregate retained on the No. 8 sieve and shall consist of clean, tough, durable fragments of crushed stone, or crushed gravel of uniform quality. Coarse aggregate shall:

(1) Have a percentage of wear as determined by AASHTO T96 of not more than 30 percent;

(2) Have at least 75% by mass (weight) of the material coarser than the No. 4 sieve with at least two (2) fractured faces, and 90% shall have one or more fractured faces as determined by ASTM D5821;

(3) Have not more than 5% of flat or elongated pieces (>5:1) as specified in ASTM D4791;

(4) Be free from clay balls, organic matter, and other deleterious substances.

(5) The nominal maximum aggregate size shall be ¾ inch.

C506.04 JOB MIX FORMULA: The Contractor shall develop for approval a job mix formula for proportioning of each type of porous asphalt pavement proposed for use as specified in accordance with C501 and the following:

(a) The recommended percent of bituminous material is 6% minimum based on the total weight of the mix, to assure adequately thick layers of asphalt around the aggregate.

(b) Fines in the job mix formula shall have a maximum of 20% passing the #4 sieve and 2.5% passing the #200 sieve.

(c) Mix design shall result in pavement that accepts 60 inches/hour (30 gallons per hour in a 12 inch diameter ring). Testing shall be in accordance with NCAT.

(d) Air void content shall be >16%.

C506.05 WEATHER LIMITATIONS: The Contractor must comply with Section C501 as well as the following:

(a) The ambient air temperature during the past 24 hours shall be above 50 degrees Fahrenheit,

(b) The asphalt laying temperature should be within 10 degrees Fahrenheit of the comparative temperature in the approved job mix design.

C506.06 SURFACE PREPARATION: The surface to be covered shall be approved prior to placing mixtures. The Contractor shall maintain the surface until it is covered. The stormwater storage/infiltration beds shall be in accordance with the following:

(a) Coarse aggregates shall meet the size and grading requirements as defined in Standard Sizes of Coarse Aggregate, AASHTO Specifications, 30th Ed., 2010, or later, unless otherwise specified.

(b) Coarse aggregate for groundwater recharge bed shall be 2-1/2" to 1-1/2" uniformly graded Crushed coarse aggregate, with a wash loss of no more than 0.5%, AASHTO size number 2 per AASHTO Specifications, 30th Ed., 2010, or later.

(c) Choker base course aggregate for groundwater recharge bed shall be 1" to 3/8" uniformly graded, crushed coarse aggregate, or approved equal, AASHTO Specifications, 30th Ed., 2010, or later.

(d) Filter fabric shall be Propex PERC™ Pervious Concrete Infiltration Fabric or approved equal.

(e) Impervious liner – shall be Permalon, PLY-X 150, or approved equal.

C506.07 JOINT CONSTRUCTION:

(a) Joints between old and new pavements or between successive days work shall be made to ensure a thorough and continuous bond between the old and new mixtures. Whenever the spreading process is interrupted long enough for the mixture to attain its initial stability, the paver shall be removed from the mat and a joint constructed.

(b) Transverse joints shall be butt joints formed by cutting the pavement in a vertical plane at right angles to the centerline, at location approved by the Director. The Director will determine locations by using a straightedge at least 16 feet long. The transverse joint shall be thoroughly coated with Type RS-1 emulsified asphalt just prior to depositing the pavement mixture when paving resumes.

(c) Tapered joints shall not be allowed. Longitudinal joints that have become cold shall be coated with Type RS-1 emulsified asphalt before the adjacent mat is placed. If directed by the Director, joints shall be cut back to a clean vertical edge prior to applying the Type RS-1 emulsified asphalt.

C506.08 HAULING, PAVING AND FINISHING: Mixtures shall be transported in clean vehicles with tight, smooth dump beds that have been sprayed with a non-petroleum release agent or soap solution to prevent the mixture from adhering to the dump beds.

Mineral filler, fine aggregate, slag dust, and similar materials shall not be used to dust truck beds.

(a) The asphaltic mixture shall be placed using self-propelled paving equipment with an activated screed or strike-off assembly capable of being heated in necessary, and capable of spreading and finishing the mixture without segregation. Track pavers are recommended.

(b) The use of water to cool the asphaltic mixture is prohibited.

(c) Place lifts no more than 24 hours after each previous lift to minimize the use of tack coats. Tack coats will only be allowed if required by the Director.

(d) The finished surface shall be of a uniform texture and evenness, and shall not show any indication of tearing, shoving, or pulling of the pavement during placement.

C506.09 COMPACTION:

(a) General: After placement, mixtures shall be uniformly compacted by rolling while still hot. If continuous roller operation is discontinued, rollers shall be removed to cooler areas of the mat, where they will not leave surface indentations. The use of steel wheel rollers which result in excessive crushing of aggregate will not be permitted.

(1) Roll the asphalt using a two-axle tandem roller when it is cool enough to withstand the roller without displacement of the asphalt, and using rollers sufficient to compact the asphalt without crushing the aggregate or compromising the required void content and infiltration rates.

(2) The number, mass (weight), and type of rollers furnished shall be sufficient to obtain the required compaction while the mixture is in a workable condition. Generally one breakdown roller will be needed for each paver used in the spreading operation.

(A) Breakdown rolling shall occur when the mix temperature is between 275 and 325 degrees Fahrenheit.

(B) Intermediate rolling shall occur when the ix temperature is between 200 and 275 degrees Fahrenheit.

(C) Finish rolling shall occur when the mix temperature is between 150 and 200 degrees Fahrenheit.

(3) Unless otherwise specified, the longitudinal joints shall be rolled first. Next, the Contractor shall begin rolling at the low side of the pavement and shall

proceed toward the center or high side with lapped rolling parallel to the centerline.

(4) Roll until all roller marks are gone; however, avoid excessive rolling which could reduce the infiltration capabilities of the asphalt.

(5) To prevent adhesion of the mixture to the rolls, rolls shall be kept moist with clean water or water mixed with very small quantities of detergent or other approved materials. Excess liquid will not be permitted.

(6) Any mixture that becomes loose and broken, mixed with dirt, or is in any way defective shall be removed and replaced with a fresh hot mixture. The mixture shall be compacted to conform to the surrounding area with segregation. Any area showing deficiencies shall be replaced at the Contractor's expense.

(b) Hand Compaction: Along forms, curbs, headers, walls and at other places inaccessible to rollers, mixture shall be uniformly compacted to the satisfaction of the Director with approved hand tampers or mechanical tampers, conforming to Subsection C503.07.

C506.10 PAVEMENT SAMPLES: Samples shall be cores approximately 4" in diameter taken by an approved core drill. The Contractor shall furnish samples cut from the completed work. The removed pavement shall be replaced with hot or cold mixture and refinished during the work day coring is performed. No additional compensation will be allowed for furnishing test samples and replacing the areas with new pavement. Samples shall be taken by the Contractor in the presence of the Director's representative from areas selected by the Director in accordance with Subsection C501.11(b)(2)c. When the design thickness is greater than 1-3/8", cores less than 1-3/8" thick shall not be used as pavement samples for payment determination.

Cores shall be transported to the plant in approved transport containers or one-gallon friction-top cans. Regardless of transport container used, the container will be sealed, signed, and dated by the inspector using an approved method. The individually wrapped core will also be sealed, signed, and dated by the inspector using an approved method. Any evidence of tampering with the core wrappings, sticker, or of opening the container or friction-top can will result in the cores being rejected. Additional pavement samples will be required.

C506.11 ACCEPTANCE REQUIREMENTS: All Department inspection procedures, including sampling and testing, form the basis for acceptance of the asphaltic concrete. Any section of pavement that is obviously deficient shall be satisfactorily corrected or replaced. Sampling and testing shall be accomplished following a stratified sampling plan in accordance with the Materials Sampling Manual and specified test procedures. Times and locations shall be established by the Director.

A standard lot is the production of asphaltic concrete mix from the same job mix formula produced for the Department at an individual plant in one day. Additional adjustments may be made to the standard lot size as specified in this Subsection. Minor adjustments will be made to the lot size to accommodate hauling unit capacity.

Testing:

(1) Quality Assurance (QA) Inspector: The Contractor shall provide at the Contractors' sole expense and the Director's approval a third-party QA Inspector to oversee and document mix production. All mix testing results during production shall be submitted to the QA Inspector.

The QC plan may be altered at the discretion of the Director and based on written recommendations from the QA Inspector.

For small batch production, the Director may also modify or eliminate some testing requirements in the QC plan.

(2) During Production: The Contractor shall sample, test, and evaluate the mix in accordance with the methods and minimum frequencies in the Table 1. Test results shall be delivered to the Director.

Table 1: QC/QA Testing requirements during production

Test	Minimum Frequency	Test Method
Temperature in Trucks Prior to leaving Plant	Six times per day	--
Gradation	Greater of either (a) 1 per 500 tons, (b) 2 per day, or (c) 3 per job	AASHTO T30
Binder Content	Greater of either (a) 1 per 500 tons, (b) 2 per day, or (c) 3 per job	AASHTO T164
Air Void Content	Greater of either (a) 1 per 500 tons, (b) 2 per day, or (c) 3 per job	ASTM D6752, Volumetric Measurement

Testing of the temperature, binder content, and air void content shall be within the limits set by this specification.

Testing of the gradation shall not vary from the approved design mix by more than the tolerances in Table 2.

Table 3: QC/QA testing tolerances during production

Sieve Size	Percent Passing
0.75	--
0.50	+/- 6.0
0.375	+/- 6.0
No. 4	+/- 5.0
No. 8	+/- 4.0
No. 200	+/- 2.0

Should the asphalt fail to meet all testing requirements initially, production modifications shall be made until the porous asphalt mix is within required tolerances. After the corrective action has been taken, the resulting mix will be sampled and tested again at the Contractor's expense.

If the resampled asphalt fails to meet all testing requirements again, the Director will be immediately informed and provided with the test results. The Director may determine that it is in the best interest of the project that production is ceased at that time. The Contractor will be responsible for all costs associated with the inability of the asphalt plant to meet all testing requirements.

(3) Following Placement: The full permeability of the pavement surface shall be tested prior to final acceptance in accordance with NCAT.

Test in place base and surface course for compliance with requirements for thickness, void content and unit weight as described above by using 1' x 1' slab samples. Repair or remove and replace unacceptable work as directed by the Director at the Contractor's cost.

Test finished surface for smoothness using a 10 foot straightedge applied parallel with and at right angles to the centerline of the paved area. Surface will not be accepted if gaps or ridges exceed 3/16 of an inch. The smoothness requirements specified herein apply only to the top lift of each layer, when asphalt is constructed in more than one lift.

QC/QA requirements during paving are summarized in Table 3.

Table 3: QC/QA requirements during paving

Activity Schedule	Frequency	Tolerance
Inspect truck beds for pooling (draindown)	Every truck	--
Take surface temperature behind joint heater	Each pull	10 degrees F of compaction temperature
Test surface smoothness and positive drainage with a 10 foot straight edge	After compaction	3/16 inch
Hose test with at least 5 gpm water	After compaction	Immediate infiltration, no puddling

C506.12 PROTECTION OF ASPHALTIC PAVEMENT: The minimum times prior to opening the pavement to traffic are as follows:

- After pavement has been permitted to cool to below 100 degrees Fahrenheit for all traffic,
- 24 hours for pedestrian traffic, and
- 48 hours for vehicular traffic.

The Contractor shall protect the porous asphalt from severe weather conditions and contamination by dust, dirt, mud, or other fine grained material or sediment. The asphalt shall be protected by an approved method from the time of placement until final acceptance of the project. Any damage to the porous asphalt caused by the Contractor's equipment shall be repaired by the contactor at no cost to the City. Any portion of the porous asphalt that becomes contaminated to the extent that drainage is reduced or inhibited shall be removed and replaced at no expense to the City.

C506.13 MEASUREMENT: Asphaltic tack coat, prime coat or curing membrane will not be measured for payment.

(a) Weight Measurement: Porous asphaltic concrete will be measured by the ton of 2,000 pounds from printed weights as provided in Section C503. Stamped printer tickets will be issued for each truckload of material delivered. Material lost, wasted, rejected or applied contrary to specifications will not be measured for payment.

Estimated quantities of porous asphaltic concrete shown on the plans are based on 110 lb/sq yd/inch thickness.

(b) Volume or Area Measurement: The quantities for payment will be the design quantities specified in the plans and adjustments thereto. Design quantities will be adjusted when the Director makes changes to adjust to field conditions or when design changes are necessary. Design quantities are based on the horizontal dimensions and compacted thickness of the completed course shown on the plans.

(c) Geotextile: Geotextile fabric shall be measured by the square yard, based on the theoretical area on the plans. Fabric used in patching or overlaps shall not be measured for payment.

C506.14 PAYMENT: Payment for porous asphaltic concrete will be made at the contract unit price on a lot basis. When the mix does not conform to acceptance requirements, payment will be made at an adjusted price per unit of measurement in accordance with Section C1002 and Table 2. The Director will provide adjustment percentages for properties of asphaltic materials.

(a) General: Payment for porous asphaltic concrete will include furnishing all required materials, producing the mixtures, preparing the surfaces on which the mixtures are placed, hauling the mixtures to the work site, and placing and compacting the mixtures.

(b) Wearing Course Mixes: The lowest percentage of contract price will be used for final adjustment in unit price for deficiencies in Marshall Stability, pavement density, surface tolerance, anti-strip additive, and porous asphalt cement properties.

(c) Base, Binder and Shoulder Mixes: The lowest percentage of contract price will be used for final adjustment in unit price for deficiencies in Marshall Stability, pavement density, anti-strip additive, and porous asphalt cement properties.

(d) Geotextile: Geotextile fabric will be paid for per square yard at the contract unit price which includes furnishing equipment, labor and materials to complete the item.

Payment will be made under:

ITEM NO.	**PAY ITEM**	**Pay Unit**
C506(51)	Porous Asphaltic Concrete	Ton
C506(52)	Porous Asphaltic Concrete	Cubic Yard
C506(53)	Porous Asphaltic Concrete (___" Thick)	Square Yard
C501(54)	Geotextile Fabric for Paving	Square Yard

SECTION C507
ASPHALTIC BINDERS

C507.01 DESCRIPTION: This section specifies requirements for the selection and placement of asphaltic interlayer reinforcement for flexible and rigid pavement.

C507.02 REFERENCES:

- Asphalt Institute Handbook.
- AASHTO Standard Specification for Highway Bridges.
- ASTM D276 – Standard Test Methods for Identification of Fibers in Textiles.
- ASTM D4595 – Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
- ASTM D4694 – Standard Test Method for Deflections with a Falling-Weight-Type Impulse Load Device.
- ASTM D4759 – Standard Practice for Determining the Specification Conformance of Geosynthetics.
- ASTM D5340 – Standard Test Method for Airport Pavement Condition Index Surveys.
- ASTM D5261 – Standard Test Method for Measuring Mass per Unit Area of Geotextiles.
- ASTM D6637 – Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Test Method; 2001.
- DIN EN ISO 10319 (2008-10) – Geosynthetics - Wide-Width Tensile Test (ISO 10319:2008).
- FHWA Federal Highway Administration – Design Guidelines.

C507.03 SYSTEM DESCRIPTION:

(a) Flexible Pavements: Provide interlayer reinforcement system installed between asphalt layers in a pavement structure to distribute loads, reinforce the pavement and reduce reflective cracking distresses.

(b) Rigid or Composite Pavements: Provide interlayer reinforcement system installed between freshly leveled asphalt overlay to absorb the strain and stress energy developed by traffic-induced working concrete joints and by slab shrinkage and expansion due to thermal changes.

C507.04 QUALITY ASSURANCE:

(a) Manufacturer Qualifications:

(1) Manufacturer with at least 10 years of documented experience in the manufacture and installation of fiberglass interlayer grids to reduce thermal or load associated cracking distress, and in the manufacture of the tack coat that meets the specification.

(2) Manufacturer with documented evidence of an established quality control program to assure products with consistent compliance with the requirements of this specification. Such a program would be ISO 9001:2008 Registration.

(3) Annual conformance testing performed by an accredited third party testing facility.

(b) Installer Qualifications:

(1) Firm with documented experience in the installation of fiberglass interlayer grid systems with at least two projects of similar construction and scope.

C507.05 DELIVERY, STORAGE, AND HANDLING:

(a) Store products in manufacturer's unopened packaging until ready for installation.

(b) Store in a dry, covered location that is free of dust, dirt, and moisture. Prevent excessive mud, fluid concrete, asphalt, or other deleterious materials from coming in contact with reinforcement grid materials.

(c) Store at temperatures between minus 29°C (minus 20°F), below 82°C (180°F) and maximum relative humidity of 85%.

C507.06 PROJECT CONDITIONS:

(a) Do not place grid reinforcement when the asphalt surface is wet, or contaminated with oil, soil or excessive dust.

(b) Existing pavement should show no signs of poor drainage, pumping of fines, excessive deflections or structural instability.

(c) Receiving surface shall be smooth, with the existing cracks pretreated per SHRP-H-348.

(d) Make all repairs as required prior to placement of interlayer system.

(e) Do not install asphalt on the grid reinforcement when the underlying asphalt surface is hotter than 60°C (140°F) or in the case of new asphalt, do not install prior to the asphalt cooling to 43°C (110°F) at least once previously.

C507.07 MATERIALS:

(a) The asphalt reinforcement grid shall consist of a high strength, fiberglass grid custom knitted and coated with an elastomeric polymer and self-adhesive glue.

(b) In addition, the reinforcement grid shall have the following/adhere to the following Minimum Average Roll Values (MARV) for material properties and should adhere to the strength properties in Table 1.

Table 1 –Material and Strength Properties

	PRODUCT PROPERTIES	METHOD	UNITS	Type 1	Type 2
Material Properties	Aperture Size (Center to Center)		mm (inch)	12.5 x 12.5 (0.5 x 0.5)	25.0 x 25.0 (1.0 x 1.0)
	Percent Open Area	CW-02215 MOD.[1]	%	Greater than or equal to 50	Greater than or equal to 50
	Fiberglass Coating			Elastomeric Polymer	Elastomeric Polymer
	Mass / Unit Area	ASTM D5261	g/m² (oz/yd²)	405 (12.0)	405 (12.0)
	Roll Width		m (ft.)	1.5 (5.0)	1.5 (5.0)
Strength Properties	Fiberglass Coating Softening Point	ASTM D36	°C (°F)	Greater than 149 (300)	Greater than 149 (300)
	Tensile Strength (MD x CD)	ASTM D6637	kN/m (lb./in)	100 x 100 (560 x 560)	100 x 100 (560 x 560)
	Tensile Strength @2%	ASTM D6637	kN/m (lb./in)	80 x 80 (456 x 456)	80 x 80 (456 x 456)
	Elongation at Break	ASTM D6637	(%)	Less than 3	Less than 3
	[1] - Army Corp of Engineers test method correlated to light emitted through fabric.				

Table 2 Product Performance Requirements

	TEST DESCRIPTION	TEST METHOD	METHOD OF MEASURE	PERFORMANCE
Performance Requirements	Coating Softening Temperature vs. HMA Asphalt Binder Compaction Temperature	Temperature Comparison	Job Mix Formula Compaction Temperature Requirement	Coating Softening Point > HMA Compaction Temperature
	Field Millability and Recyclability Validation	Field Milling of Asphalt with Interlayer System	References or Reports	Documented Experience
	Asphalt : Grid composite stiffness for durability of composite layers over life of pavement during individual and long term deformation	3Pt Beam Test at 70°F, Grid with polymer tack at mid depth relative to a control with polymer emulsion tack coat – cyclic stress controlled loading	Minimum Improvement Factor vs. Control	> 3x
	Fatigue and Rutting Performance	Circular Full Scale APT [1] Testing vs. Control	Rutting and Fatigue	> 2x (rutting) >3x (fatigue)
	Fatigue and Reflective Cracking	MMLS3 Scaled APT [1] Testing vs. Control	Fatigue and Reflective Cracking Testing	>3x
	Full Scale Crack and Durability Test	NCAT Test Track [1] Performance	Number of ESALS	>40 million

[1] : APT – Accelerated Pavement Testing

(c) The hot applied tack shall have the following/adhere to the following properties in Table 3.

Table 3 Typical Physical Properties

PARAMETER	TEST METHOD	MIN	MAX
Rotational Viscosity @ 149 °C, cP	AASHTO T316	----	3000*
Penetration @ 25 °C , dmm	ASTM D5	----	25
Softening Point, °C	ASTM D36	70	99
Original DSR @ 82 °C , G*/sin δ, kPa	AASHTO T315	1.0	----
Creep Stiffness, m-value @ 0 °C on original binder	AASHTO T313	0.285	----

* Rotational viscosity shall be waived if material can be successfully applied in the field.

C507.08 PREPARATION:

(a) Do not begin interlayer system until existing pavement condition has been evaluated and all repairs have been completed.

(b) Seal cracks between 3mm (1/8”) and 6 mm (1/4”) with an acceptable crack filler. Repair wider cracks using a method that provides a level surface. All holes shall be filled with hot asphalt and compacted level with adjacent surfaces.

(c) Surfaces shall be mechanically cleaned by sweeping and vacuuming and be free of oil, vegetation, sand, dirt, water, gravel, and other contaminants prior to placement of interlayer reinforcing.

(d) Cracks shall be marked and recorded prior to and after the true and leveling course. Identifying and preserving the crack location will ensure that the interlayer system is properly centered on each crack when full interlayer system coverage of the site is not specified.

C507.09 INSTALLATION:

(a) Storage of Material:

(1) Prior to use, store reinforcement rolls in unopened packaging vertically (on end) under dry, covered conditions free from dust, dirt, and moisture to prevent roll distortion and contamination.

(2) Store the product at temperatures above minus 29°C (-20°F), below 82°C (180°F) with a relative humidity of less than 85%.

Install interlayer reinforcement system in accordance with Tensar International’s installation guidelines.

(b) Leveling Course:

(1) Leveling course shall be a minimum thickness of 19 mm (3/4”) and shall have a surface temperature cooler than 60°C (140°F) and will have cooled to 43°C (110°F) at least once previously.

(2) Crack areas showing excessive surface irregularities shall be leveled prior to placement.

(3) Slab joint showing upward tenting shall be saw-cut to relieve pressure prior to leveling.

(c) Asphalt Reinforcement Grid Placement:

(1) Surface temperature shall be between 5°C and 60°C (40-140°F) prior to laying the grid reinforcement.

(2) The placement surface must be dry. Since moisture affects the adhesion of the grid to the pavement surface, grid placement should not be undertaken if rain is likely to fall prior to covering the grid with an asphalt mat overlay. Grid that is placed and will not adhere due to moisture shall be removed and replaced at the Contractor's expense.

(3) Reinforcement grid shall be laid out by mechanical means or by hand using sufficient pressure to eliminate ripples. Remove any ripples by pulling the grid tight. Cutting of the grid may be done on tight radii to prevent ripples.

(4) Lap transverse joints in the direction of the paving 76 mm to 152 mm (3-6"); longitudinal joints shall be overlapped 25 mm to 50 mm (1-2") or as recommended by the manufacturer, whichever is greater.

(5) Following the placement of the material, activate self-adhesive glue by rolling with a rubber coated drum roller or a pneumatic tire roller. In no instance shall steel-wheeled or vibratory rollers be used. Rolling shall continue until the adhesive is activated and the grid is bonded to the truing and leveling course. During rolling operations, roller tires shall be kept clean to the satisfaction of the Director. Reinforcement shall be laid and rolled over ironworks (i.e., manhole covers, drainage grates, etc.). Once the grid has been rolled, these portions of the mats covering the ironworks shall be removed by cutting the reinforcement grid with a utility knife or other similar tool.

(6) Construction and emergency vehicles will be allowed to run on the reinforcement grid after rolling. However, any damaged or de-bonded sections of the grid resulting from these vehicles, as determined by the Director, shall be immediately replaced with new grid sections, taking care to place the adhesive backing down and to overlap the grid already in place. As before, replacement sections shall be rolled in accordance with manufacturer's recommendations. Interlayer system shall be rolled until the adhesive is activated and the replacement grid section is bonded to the truing and leveling course. Any dirt, dust or other contaminants deposited on the grid-covered truing and leveling course by the construction equipment, maintenance vehicles, or emergency vehicles shall be removed by mechanical sweeping or vacuuming the surface. No additional payment will be made to replace sections of grids damaged by construction equipment, maintenance vehicles, or emergency traffic. No payment will be made to sweep or vacuum the surface, or to remove contaminates deposited by such traffic.

(7) Protect the asphalt reinforcing grid until placement of the finished asphalt topping. Repair damaged sections prior to placement of finished asphalt topping.

(8) Place the asphaltic overlay course the same day the interlayer reinforcing grid is placed.

(9) Overlay course shall be a minimum thickness of 40 mm (1-1/2").

(10) When a tack coat is specified, the approved tack coat should be used in conjunction with the interlayer system.

(i) If placed prior to the interlayer it must fully cure prior to placement of interlayer system,

(ii) if placed after to interlayer material it must fully cure prior to any construction traffic over the surface including paving

(d) FIELD QUALITY CONTROL

(1) Testing and Inspection shall be provided by an independent laboratory provided by the Contractor and acceptable to the Director.

(2) Perform adhesion tests in accordance with the following:

(i) Place approximately 1 m² (1 sq. yd.) of interlayer reinforcing grid on a properly prepared leveling course that is representative of the project condition.

(ii) Activate self-adhesive glue by rolling with a rubber-tired roller or by applying adequate pressure to fully activate the pressure-sensitive adhesive.

(iii) Use a calibrated spring balance by inserting the hook of the balance under the center of the grid and pulling upward until the grid starts to pull away from the surface.

(iv) A 9 kg (20 pound) pull is required without pulling the grid free or creating ripples in the grid.

(v) Consult grid manufacturer if grid does not meet this pull rating and do not place asphalt topping until an acceptable adhesion is achieved.

(3) Frequency of Tests:

(i) Adhesion Test: Provide a minimum of one test per 300 m² (3,000 sq. ft.) of surface area.

C507.10 PAYMENT: Payment for asphaltic binder will be made at the contract unit price.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C507(51)	Asphaltic Binder	Square Yard

SECTION C509
COLD PLANING ASPHALTIC PAVEMENT

C509.01 DESCRIPTION: This work consists of removing asphaltic concrete surfacing in accordance with these specifications and in conformity with the average depth, width, grade, cross-slope and typical sections shown on the plans or established in the field.

C509.02 EQUIPMENT: Equipment for cold planing asphaltic surfacing shall be certified, self-propelled planing machines or grinders. They shall have sufficient power, traction and stability to remove the thickness of asphaltic concrete necessary to provide profile grade and cross slope uniformly across the surface. Cold planing equipment shall be capable of working from an erected string line, shoe device or a traveling reference plane that will accurately reflect, for a minimum length of 30 feet, the average grade of the surface on which it is to be operated and shall have an automatic system for controlling cross slope at a given rate. Adequate loading equipment shall be provided to immediately remove materials cut from the surface and discharge the cuttings into a truck or on the shoulder as specified or directed. When cuttings are placed directly on the shoulder or used in asphaltic concrete, surfacing with lightweight aggregate shall be removed separately. Adequate personnel shall be provided to ensure that the cuttings are removed from the surface daily. The drum shall be round and true with sufficient number of teeth to yield a uniform and fine textured surface for bonding of the subsequent overlay. The machine shall be equipped with means to control dust created by the cutting action and shall have a system providing for uniformly varying the depth of cut while the machine is in motion.

C509.03 CONSTRUCTION REQUIREMENTS:

(a) GENERAL: The maximum forward speed of the planing machine shall be 40 feet per minute. The Director may approve forward speeds greater than 40 feet per minute provided the planed surface is uniform and fine textured and conforms to the surface tolerance requirements for a binder course. This speed shall be reduced as directed to provide a planed surface of uniform and fine texture with the specified grade and cross slope. Ridges left in the surface due to missing teeth shall be corrected by additional passes. The maximum depth of cold planing shall be 2 inches per pass when traffic is being maintained. Teeth lost during planing shall be immediately replaced.

Thirty foot (minimum) traveling reference plane shall be used on each pass of the planing machine. A shoe device to match the curb may be used when directed. The reference plane shall be placed on the best available adjacent surface.

When the entire roadway width has not been planed to a flush surface by the end of a work period resulting in a vertical or near vertical longitudinal face exceeding 2 inches in height, this longitudinal face shall be sloped as directed. Transverse faces present at the end of a work period shall be beveled as directed. Provisions shall be made at drives and turnouts to maintain local traffic.

Asphaltic concrete next to structures that cannot be removed by the planing machine shall be removed by other acceptable methods.

Pavement surfaces resulting from planing operations shall be of uniform texture, grade and cross-slope and free from loose material. Planed surfaces not meeting these requirements shall be replaned at no direct pay. No uneven, undulating surfaces will be accepted. The Contractor shall provide drainage of planed areas by cutting through the shoulder to the ditch.

The cold planing operation shall not precede the subsequent paving operation by more than 10 calendar days. This time may be extended by the Director upon request by the Contractor if extensive joint repairs or patching is required. For single lift overlays requiring shoulder stabilization, the cold planing operation shall not precede the subsequent paving operation by more than 30 days.

On roadways that are open to traffic, pavement striping removed by planing shall be replaced with temporary pavement markings at the end of each day's planing operations in accordance with Section C713.

Unless otherwise specified, surfacing material removed by planing shall become the property of the Contractor and shall be disposed of in accordance with Subsection C202.02. When specified on the plans, a portion or all of the surfacing material removed by planing will be retained by the Department and shall be hauled by the Contractor to the specified location and stockpiled as directed. Excess material shall then become the property of the Contractor and shall be disposed of in accordance with Section C202.02.

Required joint repairs shall be made after planing. Pavement patching should be completed before planing. When additional areas requiring patching are exposed by planing operations, such additional patching shall be performed after planing. Pavement patching shall be in accordance with Section C724.

(b) Except when planing reaches to the existing concrete base layer, the surface tolerance requirements of the cold planed surface shall meet the requirements for binder course in Section C501.

C509.04 MEASUREMENT: Measurement will be made by the square yard of asphaltic concrete surfacing satisfactorily removed.

C509.05 PAYMENT: Payment of cold planing asphaltic pavement will be made at the contract unit price, which includes removal of asphaltic concrete surfacing to the necessary depth, texturing the pavement surface, disposal of removed materials and cleaning the roadway. Payment for temporary pavement markings will be included under appropriate pay items.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C509(51)	Cold Planing Asphaltic Pavement (___" Average Thick)	Square Yard

PART VI - PORTLAND CEMENT CONCRETE PAVEMENT

SECTION C601
PORTLAND CEMENT CONCRETE PAVEMENT

C601.01 GENERAL CONSIDERATIONS:

(a) The Contractor shall construct the roadway pavement in substantial conformance with these specifications and in reasonable close conformity with the locations, lines, grades, slopes, thickness, sections and strength shown on the plans and included herein.

(b) Pavement shall be Portland Cement Concrete constructed over an approved base.

C601.02 REFERENCED SPECIFICATIONS:

LaDOTD	Louisiana Standard Specifications for Roads and Bridges, latest edition
ASTM	American Society of Testing and Materials
ACI	American Concrete Institute
AASHTO	American Association of State Highway and Transportation Officials, "Standard Specifications for Transportation, Materials and Methods of Sampling & Testing"
AWPA	American Wood Preservers Association

C601.03 PAVEMENT THICKNESS: The pavement thickness shall be dependent upon soil properties, traffic type and frequency as determined by the Director. Unless otherwise stated, all streets shall be reinforced concrete having a minimum thickness of eight (8") inches.

C601.04 MATERIALS: Materials shall be furnished only from sources approved by the Director.

(a) Cement: Shall conform to the requirements of ASTM C 150, Type I or Type II.

(b) Aggregates:

(1) Fine aggregate shall be a clean natural sand conforming to the requirements of ASTM C 33.

(2) Coarse aggregate shall be clean, hard, durable gravel, crushed stone or crushed concrete conforming to the requirements of ASTM C 33, Gradation No. 467 or 57.

(c) Admixtures:

(1) If used, air entraining admixtures shall conform to the requirements of ASTM CZ60.

(2) Water used in mixing concrete shall be potable and fit for human consumption.

(3) Water reducing admixtures and water reducing, retarding admixtures shall conform to the requirements of ASTM C 494.

(4) Super plasticizers shall conform to the requirements of ASTM C 494, Type F or G.

(d) Fly Ash: Fly ash shall meet the requirements of ASTM C 618, Class C. Fly ash is approved for use in pavements only and not in structures.

(e) Ground granulated Blast Furnace slag shall meet the requirements of ASTM C 989.

(f) Expansion Joint Filler:

(1) Filler shall be clear-heart redwood, clear all-heart western red cedar, Idaho white pine, western white spruce, northern white pine, sugar pine, western hemlock, white fir, or other material approved by the Director.

(2) The dimensions shall be as specified with a tolerance of 1/16 inch in thickness, 1/8 inch in depth, and plus or minus 1/4 inch in length. The load required to compress the material in an oven dry condition to 50% of its original thickness shall not exceed 1,800 psi.

(g) Joint Sealing Compound: Joint sealing compound shall meet all of the requirements as stated below, heated and applied in strict conformance with manufacturer's recommendations.

(1) Hot Poured Asphalt Mineral Filler: Asphalt mineral filler shall be homogenous and shall be composed of asphalt and mineral filler. The asphalt shall be free from impurities. Asphalt mineral filler shall conform to the following requirements:

PROPERTY	AASHTO TEST METHOD	REQUIREMENT	
		MINIMUM	MAXIMUM
Softening Point, Ring and Ball Method, ^{o}F	T 53	125	145
Penetration at 32^{o}F, 200 grams, 60 seconds	T 49	15	--
Penetration at 77^{o}F, 100 grams, 5 seconds	T 49	50	70
Ductility at 77^{o}F, cm	T 51	15	--
Asphalt, %	T 44	45	55
Mineral Filler, %	T 44	45	55
Water, %	T 55	--	2

(2) Hot Poured Elastic Asphaltic Type: This sealer shall conform to AASHTO Designation M 173, except the pour point test will be performed only as deemed necessary. Materials shall be applied in accordance with the sealer manufacturer's recommendations.

(3) Hot Poured Catalytically Blown Asphalt: Catalytically blown asphalt shall be uniformly blended with 10% diatomaceous earth filler which passes the No. 325 sieve. It shall form a suitable joint and crack sealer which may be melted to pouring consistency in a regular asphalt kettle at a temperature of 400°F to 485°F.

The material shall conform to the following requirements:

PROPERTY	AASHTO TEST METHOD	REQUIREMENT	
		MINIMUM	MAXIMUM
Penetration at 77°F, 100 grams, 5 seconds	T 49	68	88
Penetration at 32°F, 200 grams, 60 seconds	T 49	38	--
Penetration at 115°F, 50 grams, 5 seconds	T 49	--	160
Softening Point, Ring and Ball Method, °F	T 53	175	200
Flash, Cleveland Open Cap Method, °F	T 48	500	--
Specific Gravity, 77/77 %F	--	1.02	--
Ductility at 77°F, 5 cm/minute, cm	T 51	5	--
Flow, 140°F, cm	T 187	8	0.5
Ash Weight, %	T 111	8	20
Shock Test, 30°F	M 190-5.3.1	No Cracking	

(4) Cold Applied Sealing Compound: The Contractor may use cold applied sealing compound such as silicon sealants. Silicon rubber base joint sealing compound shall conform to Federal Specifications TT-S-001543A for Class A sealants.

(f) Metal parting strips used to form keyed joints shall be 16-gauge galvanized steel.

(g) Reinforcing Steel:

(1) Reinforcing bars shall conform to "Specifications for Billet-Steel Bars for Concrete Reinforcement" (ASTM A 615), "Specifications for Deformed Rail-Steel Bars for Concrete

Reinforcement" (ASTM A 616), "Specifications for Deformed Rail-Steel Bars for Concrete Reinforcement with 60,000 psi Minimum Yield Strength," or "Specifications for Axle-Steel Bars for Concrete Reinforcement" (ASTM A 160). Deformations for deformed bars shall conform to "Specifications For Deformations for Deformed Steel Bars for Concrete Reinforcement" (ASTM A 305).

(2) Bar and rod mats for concrete reinforcement shall conform to "Specifications for Fabricated Steel Bar or Rod Mats for Concrete Reinforcement" (ASTM A 124).

(3) Wire for concrete reinforcement shall conform to "Specifications for Cold-Drawn Steel Wire for Concrete Reinforcement" (A.S.T.M. A 82).

(4) Welded wire fabric for concrete reinforcement shall conform to "Specifications for Welded Steel Wire Fabric for Concrete Reinforcement" (A.S.T.M. A 185) except that the weld-shear strength requirement of Section 5b of those specifications shall be extended to include a wire size differential up to and including six gauge.

(5) When placed, all reinforcement shall be free from dirt, oil, paint, grease, mill scale, loose or thick rust, or other deleterious substances. When bending is required, it shall be accurately done. All reinforcement shall be placed in the exact positions shown on the plans. Reinforcement shall be securely held in position by wiring and blocking it from the forms and by wiring it together at intersections so that it will not be displaced during depositing and compacting of the concrete.

(h) Curing compound shall be a white pigmented, impervious membrane conforming to the requirements of ASTM C 309, Type 2.

(i) Tie bars shall be deformed concrete reinforcing steel conforming to ASTM A 615, Grade 40.

(j) Dowels and dowel assemblies shall be as shown on the plans and shall conform with the requirements of Subsection C601.16.

(k) Load transfer devices shall consist of approved dowel bar assemblies, either painted or plastic coated (see standard drawings).

(1) Dowel Bars: Dowel bars shall be plain bars conforming to ASTM Designations A 615, A 616, A 617, and their supplementary requirements. Paint for dowel bars shall conform to AASHTO Designation M 72.

Plastic-coated dowel bars shall be undercoated with an adhesive and given an outer coat of extruded polyethylene plastic in accordance with the coating requirements of AASHTO Designation M 254 and the following:

Adhesive Undercoating:

Adhesive Thickness 3 to 10 mils

Outer Coating:

Coating Material	High Density Polyethylene
Coating Thickness	14 to 20 mils

Total Thickness of Adhesive:

Undercoating and Outer Coating	20 to 30 mils

(2) Dowels shall have a uniformly round cross-section and shall be saw-cut, smooth and free of burrs, projections, and deformations. Dowels shall be coated with one coat of an approved paint and thoroughly coated with an approved lubricant. In lieu of painted and lubricated dowels, plastic-coated dowel bars may be used. Plastic-coated dowel bars may be placed by approved mechanical devices equipped with suitable means to control proper depth and alignment of the dowel bars. Bars shall be positioned parallel to the pavement centerline and surface. Bars shall be firmly held in position by the mechanical device until concrete has been thoroughly consolidated around the bars. Painted and greased dowel bars shall be placed in approved metal dowel assemblies. An approved sleeve shall be furnished with each dowel bar used in expansion joints. The sleeve shall fit the dowel bar tightly and the closed end shall be watertight.

C601.05 FORMS:

(a) Straight-sided forms shall be made of metal having a thickness of not less than 7/32" and shall be furnished in sections not less than 10' in length. On curves with a radius greater than 150', straight forms of shorter lengths will be permitted. Forms shall have a depth not less than the specified edge thickness of the pavement and a base width at least 0.8 of the depth, except as otherwise approved by the Director.

Flexible or curved forms of proper radius shall be used on curves of a 150' radius or less and shall be of a design acceptable to the Director. Forms shall be provided with adequate devices for secure setting. Flange braces shall extend outward on the base not less than two-thirds the height of the forms. Forms with battered top surfaces and bent, twisted or broken forms shall be removed from the work. Repaired forms shall not be used until inspected and approved.

When approved by the Director, built-up forms may be used; however, the built-up forms shall not exceed 2". No limitation will be made on the use of built-up forms or the amount of build-up where the total area of pavement of any specified thickness on the project is less than 2,000 square yards. The top face of the form shall not vary from a true plane more than 1/8" in 10' and the upstanding leg shall not vary more than 1/4" from the vertical. The forms shall contain provisions for locking the ends of abutting form sections together tightly and for secure setting.

(b) Alignment and grade elevation of forms shall be checked and corrections made by the Contractor prior to placing concrete. When any form has been disturbed or any grade has become unstable, the form shall be reset and rechecked.

(c) Form removal shall be done carefully without damage to green concrete and in no case less than 12 hours after placing concrete. Holes or voids in surfaces shall be immediately filled with 1:2 mortar and floated smooth. Formed edges shall be cured after removal of forms.

C601.06 JOINTS AND REINFORCEMENT:

(a) Expansion Joints:

(1) Expansion joints should be 3/4" in thickness and will have smooth dowel bar assemblies. Dowels should be sized and spaced in accordance to the standard plans.

(2) Expansion joints shall be placed at all intersections and points of curvature; joints shall not exceed 300' center to center spacings.

(b) Contraction Joints:

(1) Contraction joints will have smooth dowel bar assemblies.

(2) Doweled contraction joint assemblies shall be placed at maximum 20' centers and at a minimum 10' centers. Dowels shall be sized and spaced according to the standard plans.

(c) Longitudinal Joints:

(1) Longitudinal joints shall be spaced so that pavement widths do not exceed 14'. Joints shall be formed by parting strips and doweled with deformed tie bars in accordance with the standard plans.

(2) Irregular slopes of pavement, cul de sacs and intersections shall be doweled in panels no larger than 14' on any side. They shall be formed by parting strips and doweled with the same deformed tie bars as above.

C601.07 CONCRETE PROPERTIES AND PROPORTIONS OF MATERIALS:

(a) The Contractor shall submit an appropriate mix design to the designated testing laboratory. The mix design shall be reviewed and forwarded to the Contractor and consulting engineer within 48 hours of receipt.

(b) The specified 28-day compressive strength (f'_c) shall be a minimum of 4,000 psi or as noted on the plans.

(c) Concrete shall have a minimum cementitious content of 500 pounds per cubic yard, be designed with a water reducing admixture, and have a maximum slump of 4 inches.

(d) High early strength concrete shall have a minimum cementitious content of seven sacks and be designed to provide a minimum strength of 3000 psi before the pavement can be opened to traffic where the pavement thickness exceeds nine inches, else a minimum strength of 4,000 psi

before the pavement can be opened to traffic. Additional test cylinders should be cast at the time of placement.

(e) Fly ash may be substituted for cement at the ratio of one pound of fly ash for each pound of cement up to a total of 150 pounds of fly ash per cubic yard of concrete in accordance with the approved mix design. Slag cement may be used to replace up to ½ of the total cementitious content.

(f) Concrete with a temperature of 95^{o}F or greater at the time of placement, or concrete not deposited within one-and-one-half hours after initial injection of the water to the mix, shall be rejected. Any deviations from the above requirement shall be verified for strength by additional cylinders at the expense of the Contractor.

C601.08 CONCRETE MIXING AND DELIVERY:

(a) Concrete mixing shall be in accordance with the requirements of ACI 304R-00.

(b) Concrete delivery shall be in accordance with the requirements of ASTM C 94.

C601.09 PLACING AND FINISHING:

(a) Concrete may be placed and finished by machine. Concrete shall be placed between the forms in such a manner as to avoid segregation, avoid damage to forms and joints, and avoid unnecessary movement once it has been placed.

(b) The subgrade or base course shall be brought to a proper cross-section. High areas shall be trimmed to proper elevation. The finished grade shall be maintained in a smooth and compacted condition until the pavement is placed. No concrete shall be placed until the subgrade or base course has been approved.

(c) The subgrade or base course shall be uniformly moist when concrete is placed. If it becomes too dry, the subgrade or base course shall be sprinkled, but the method of sprinkling shall not be such as to form mud or pools of water.

(d) Concrete Placement:

(1) Concrete shall be deposited on the grade in such a manner as to require as little rehandling as possible. All equipment shall be designed and operated so as to assure placement and spreading of concrete without segregation. Placement shall be continuous between transverse joints without the use of intermediate bulkheads. Necessary hand-spreading shall be done with shovels or other approved tools, excluding rakes.

(2) Concrete shall be consolidated by use of a vibrating screed or internal vibrators approved by the Director.

(3) Concrete shall not be placed on a frozen subgrade when the air temperature is below freezing, or when the air temperature is expected to go below 32^{o}F within 12 hours with a minimum concrete temperature of 50^{o} F.

(4) The roadway pavement shall be of the size and shape shown on the plans including integral curb. It shall consist of one course of concrete with joints, dowels, etc., as called for in the plans.

(5) Final strike-off, consolidation and finishing shall conform to the requirements of Subsection C601.09.e, except metal tine texturing will not be required. The surface texture shall be a broom finish.

(6) Tolerance for surface smoothness shall be 1/4" in 10', except at high and low points and utility structures in the street.

(7) If split slab construction is used and not slip formed, forms on each side of the slab will be required. The side of the slab to be joined during a later placement will have tie bars. Caution shall be exercised in removing the form and in straightening the tie bars.

(e) Final Strike Off, Consolidation and Finishing.

(1) Sequence: The sequence of operations shall be the strike off, consolidation floating and removal of laitance, straight edging, and final surface finish.

(2) In general, the addition of water to the surface of concrete to assist in finishing operations will not be permitted unless approved by the Director. If approved, it shall be applied as a fog spray by means of approved spray equipment.

(3) During final surface-finish operations, all areas that are improperly finished shall be refloated and refinished as required.

(4) Concrete adjacent to joints shall be compacted or firmly placed, without voids or segregation, against the joint material. It shall also be compacted and firmly placed under and around load transfer devices, joint assembly units and other features designed to extend into the pavement. Concrete adjacent to joints shall be consolidated.

(5) After concrete has been placed and vibrated adjacent to joints as required, the finishing machine shall be brought forward operating in a manner to avoid damage or misalignment of joints. The finishing machine shall be stopped when the front screed is approximately 8 inches from the joint. Segregated concrete shall be removed from in front of and off the joint. The front screed shall be lifted and set directly on top of the joint and the forward motion of the finishing machine resumed. When the second screed is close enough to permit excess mortar in front of it to flow over the joint, it shall be lifted and carried over the joint. Thereafter, the finishing machine may be run over the joint without lifting the screed or on top of the joint.

(6) Machine-Finishing: Vibrators for full width vibration of concrete paving slabs shall not be operated longer than 15 seconds in one location. If uniform and satisfactory density of concrete is not obtained by the vibratory method at joints, along forms, at structures, and throughout the pavement, the Contractor shall furnish equipment and use methods which will provide pavement conforming to the specifications.

(7) Hand-Finishing: Unless otherwise specified, hand-finishing methods will not be permitted except in the event of a breakdown of the mechanical equipment. Hand methods may then be used to finish the concrete already deposited on grade. When a breakdown occurs in pavement areas not exceeding a width of 16' or irregular in dimension where operations of mechanical equipment are impractical, the pavement may be finished by hand methods.

(8) Concrete, as soon as it is placed, shall be struck off and screeded.

(9) The screed for the surface shall be at least 2 feet longer than the maximum width of slab to be struck off. It shall be of approved design, sufficiently rigid to retain its shape, and constructed of either metal or other suitable material shod with metal.

(10) Consolidation shall be attained by the use of a suitable vibrator or other approved equipment.

(11) In operation, the screed shall be moved forward on forms with a combined longitudinal and transverse shearing motion, moving always in the direction in which the work is progressing and so manipulated that neither end is raised from the side of the forms during the strike-off process. If necessary, this shall be repeated until the surface has a uniform texture, is true to grade and cross-section, and is free from porous areas.

(12) Longitudinal Float Method: The mechanical longitudinal float shall be of a design approved by the Director and shall be in good working condition. The tracks from which the float operates shall be accurately adjusted to the required crown. The float shall be accurately adjusted and coordinated with the adjustments of the transverse finishing machine so that a small amount of mortar is carried ahead of the float at all times. The forward speed shall be adjusted so that the float will lap the distance specified by the area of pavement at least twice. Excessive operation over a given area will not be permitted. Any excess water or soupy material shall be wasted over the side forms on each pass.

(13) Pan Float Method: The Contractor may use a machine composed of cutting and smoothing float or floats suspended from and guided by a rigid frame. The frame shall be carried by four or more visible wheels riding on and constantly in contact with the side forms.

(14) If necessary, following one of the preceding methods of floating, long handled floats, having blades not less than 5' in length and 6" in width, may be used to smooth and fill in open-textured areas in the pavement. Long handled floats shall not be used to float the

entire surface of the pavement in lieu of, or supplementing one of the preceding methods of floating. When strike-off and consolidation are done by hand methods and the crown of the pavement will not permit use of the longitudinal float, the surface shall be floated transversely by means of the long handled float. Care shall be taken not to work the crown out of the pavement during the operation. After floating, any excess water and laitance shall be removed from the surface of the pavement by a straightedge, 10' or more in length. Successive drags shall be lapped one-half the length of the blade.

(15) Straightedge Testing and Surface Correction: After floating has been completed and excess water removed, but while the concrete is still plastic, the surface of the concrete shall be tested for trueness with an accurate 10' straightedge swung from handles approximately 3' longer than one-half the width of the slab. The straightedge shall be furnished and used by the Contractor. It shall be held with the surface in successive positions parallel to the road centerline and the whole area gone over from one side of the slab to the other as necessary. Advance along the road shall be in successive stages of not more than one-half the length of the straightedge.

Any depressions found shall be immediately filled with freshly mixed concrete, struck off, consolidated and refinished. High areas shall be cut down and refinished. Special attention shall be given to assure that the surface across the joints meets with requirements for smoothness. Straightedge testing and surface corrections shall continue until the entire surface is found to be free from observable departures from the straightedge and the slab conforms to the required grade and cross-section.

(16) Final Finish and Texture: Unless otherwise specified, the final finish and texture shall be obtained using a broom in accordance with this subsection. The surface texture shall be a broom finish. It shall be applied when the water sheen has practically disappeared. The broom shall be drawn from the center to the edge of the pavement with adjacent strokes slightly overlapping. The brooming operation shall be so executed that the corrugation produced in the surface shall be uniform in appearance and not more than 1/16" in depth. Brooming shall be completed before the concrete is in such condition that the surface will be torn or unduly roughened by the operation. The surface, thus finished, shall be free from rough and porous areas, irregularities and depressions resulting from improper handling of the broom. Brooms shall be of such quality, size and construction and be so operated as to produce a surface finish meeting the approval of the Director. Subject to satisfactory results being obtained, the Contractor will be permitted to use mechanical brooming in lieu of manual brooming.

(17) Edging at Forms and Joints: After the final finish, but before the concrete has taken its initial set, the edges of pavement along each side of transverse expansion joints, formed joints and transverse construction joints shall be worked with an approved tool and rounded to the radius specified. A well-defined, continuous radius shall be produced and a smooth, dense mortar finish obtained. The surface of the slab shall not be unduly disturbed by tilting the tool during use. Tool marks appearing on the slab adjacent to joints shall be eliminated by brooming the surface. In doing this, the rounding of the corner of the

slab shall not be disturbed. All concrete on top of the joint filler shall be removed. All joints shall be tested with a straightedge before the concrete has set. Corrections shall be made if one side of the joints are higher than the other or if the joints are higher or lower than in adjacent slabs.

C601.10 CURING AND PROTECTING:

(a) Immediately after completion of finishing operations and as soon as marring of concrete will not occur, the entire surface of newly placed concrete shall be covered and cured with a white pigmented impervious membrane.

(b) The Contractor shall have available at the job site, sufficient covering material to cover and properly protect the last hour's pour against the effects of rain. This covering material may be burlap mats, waterproof paper or combined burlap and white polyethylene sheeting. Failure to provide sufficient cover material or to adequately take care of curing requirements shall be cause for immediate suspension of concreting operations.

(c) Curing compound shall be applied under pressure by mechanical sprayers at the rate recommended by the manufacturer. In no case should less than one gallon per 100 square feet of surface area be applied. The spraying equipment shall be the full atomizing type equipped with a tank agitator. At the time of use, the compound shall be stirred continuously by mechanical or other approved means. Hand-spraying odd widths or shapes and on surfaces exposed by the removal of forms will be permitted provided the curing compound has been thoroughly agitated prior to placing it in the hand sprayer. The curing compound shall be applied to the inside faces of joints to be sealed. In split-slab construction, the curing compound shall be applied in such a manner as to prevent the spraying of exposed reinforcing steel.

(d) Upon removal of side forms, the sides of the slabs and curbs exposed shall be protected immediately in such a manner as to provide a curing treatment equal to that provided for the surface.

(e) Curbs not cast integrally with the slab shall be cured in the manner specified above immediately after completion of finishing.

C601.11 OPENING FOR TRAFFIC:

(a) When the concrete strength determined by testing reaches 75% of design strength or 3,000 psi, or when approved by the Director, the street shall be open to traffic.

(b) No traffic shall be allowed on the pavement until all joints have been cleaned and sealed.

C601.12 ACCEPTANCE CRITERIA:

(a) For the purpose of establishing the thickness of concrete pavements or foundation, either plain or reinforced, constructed or specified herein, cores taken by the testing laboratory will be used.

The average thickness of the concrete pavement to be used as a basis for the price to be paid shall be the average thickness of the core drilling from the concrete, representing the area bounded between lines drawn at right angles to the center of the roadway and at a point halfway between any two consecutive cores. Cores will be taken at about the center of each 500 square yards (approximately) of paved lane or a major fraction thereof, with a minimum of one core per lane per block. No less than four cores shall be taken from the pavement or foundation built under any one contract. The following schedule will be used to determine the unit price to be paid for the work:

THICKNESS AS DETERMINED BY CORES	PROPORTIONAL PART OF CONCRETE PRICE ALLOWED
Full specified thickness or greater	100%
0.0 to 0.2 inch or less below specified thickness	100%
0.21 to 0.3 inch below specified thickness	90%
0.31 to 0.4 inch below specified thickness	85%
0.41 to 0.5 inch below specified thickness	80%
0.51 to 0.75 inch below specified thickness	70%
0.75 to 1.0 inch below specified thickness	60%

Should any core show a deficiency of more than 1" below the specified thickness, additional cores will be taken 5' on either side of the deficient core. If both of these cores are within the 1" tolerance, the procedure will be to cut cores in the following order: 25', 50', 100', the same to be measured from the location of the original core found to be deficient in thickness, then at 100' intervals until a thickness within the 1" tolerance is found in both directions.

Any cores required over those specified to establish the average thickness of the pavement or foundation shall be made at the expense of the Contractor. Areas found to be deficient in thickness by more than 1" shall be evaluated by the Director. If, in his judgement, the deficient areas warrant removal, they shall be removed and replaced with concrete of the thickness shown on the plans.

(b) Compressive Strength: Payment for compressive strength shall be paid in accordance with the following table:

PAYMENT (PERCENT OF CONTRACT UNIT PRICE/LOT)[1]	AVERAGE COMPRESSIVE STRENGTH, PSI[3]	
	WITHOUT AIR ENTRAINMENT	WITH AIR ENTRAINMENT
100	4000 & Over	3600 & Over
98	--	--
95	3500 to 3999	3150 to 3599
80	3000 to 3499	3000 to 3149
50 or Remove and Replace[2]	Below 3000	Below 3000
Correct or Remove and Replace[2]	--	--

[1] Payment adjustments shall be cumulative.

[2] At the option of the department after investigation.

[3] At 28 days.

C601.13 MEASUREMENT: The area of all roadway pavements will be determined by actual measurements from back of curb to back of curb and no allowance will be made for curvature of the cross section. Deductions will not be made for the rails of electric and other railroads, nor for subsurface structures in the street occupying less than twelve square feet of area, when these are within the area or areas paved under the contract.

C601.14 PAYMENT: Payment for Portland cement concrete pavement will be on a lot basis, at the contract unit price per square yard, which includes furnishing and placing all materials including tie-bars, dowel bars, joint material and welded wire fabric. If the pavement does not conform to acceptance requirements, payment will be made at an adjusted unit price in accordance with Section C601.12.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C601(54)	Reinforced Concrete Pavement (___" Thick)	Square Yard
C601(55)	Surcharge for High Early Strength (__" Thick)	Square Yard
C601(56)	Reinforced Concrete Bus Pad (___" Thick)	Square Yard

SECTION C604
PERVIOUS PORTLAND CEMENT CONCRETE PAVEMENT

C604.01 GENERAL CONSIDERATIONS:

(a) The Contractor shall construct the roadway pavement in substantial conformance with these specifications and in reasonable close conformity with the locations, lines, grades, slopes, thickness, sections and strength shown on the plans and included herein.

(b) Pavement shall be Portland Cement Concrete constructed over an approved base.

C604.02 REFERENCED SPECIFICATIONS:

- Annual Book of ASTM Standards, 2014; American Society for Testing and Materials, Philadelphia, PA.
- Standards of the American Association of State Highway and Transportation Officials (AASHTO).
- American Society of Testing and Materials ASTM C 29 “Test for Unit Weight and Voids in Aggregate.”
- ASTM C 33 “Specification for Concrete Aggregates. ”ASTM C 42 “Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
- ASTM C 117 “Test Method for Material Finer than 75 μm (No. 200) Sieve in Mineral Aggregates by Washing.”
- ASTM C 138 “Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.”
- ASTM C 140 “Methods of Sampling and Testing Concrete Masonry Units.”
- ASTM C 150 “Specifications for Portland Cement” (Types I or II only).
- ASTM C 172 “Practice for Sampling Fresh Concrete.”
- ASTM C 260 “Specification for Air-Entraining Admixtures for Concrete.”
- ASTM C 494 “Specification for Chemical Admixtures for Concrete.”
- ASTM C 595 “Specifications for Blended Hydraulic Cements” (Types IP or IS only).
- ASTM C 618 “Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Portland Cement Concrete.”
- ASTM C 989 “Specification for Ground Granulated Blast-Furnace Slag for use in Concrete and Mortars.”
- ASTM C 1077 “Practice for Laboratories Testing Concrete and concrete Aggregates for use in Construction and Criteria Laboratory Evaluation.”
- ASTM C 1688 “Standard Test Method for Density and Void Content of Freshly Mixed Pervious Concrete.”
- ASTM D 448 “Specification for Standard Sizes of coarse Aggregate for Highway Construction.
- ASTM D 1557 “Tests for Moisture-Density Relations of Soils and Soil Aggregate Mixtures using 10 Pound Rammer and 18-inch Drop”
- ASTM E 329 “Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel and Bituminous Materials as used in Construction.”

- ASTM C 1701 **"**Standard Test Method for Infiltration Rate of In Place Pervious Concrete

C604.03 QUALITY ASSURANCE:

(a) Perform work of this section in accordance with ACI 522.

(b) Follow recommendations of ACI 306R when concreting during cold weather.

(c) Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.

C604.04 CONTRACTOR QUALIFICATIONS:

(a) The Contractor shall employ no less than one National Ready Mixed Concrete Association (NRMCA) Certified Pervious Concrete Craftsman who must be on site, overseeing each placement crew during all concrete placement, or the Contractor shall employ no less than three NRMCA Certified Pervious Concrete Installers, who shall be on site working as members of each placement crew during all concrete placement unless otherwise specified. Alternative documentation of qualifications shall be permitted when approved by the Director. Prior to award of the contract, the placing Contractor shall furnish a statement attesting to qualifications and experience and the following:

(1)A minimum of 3 completed projects, total square footage to exceed 10,000 sf with addresses.
(2) Unit weight acceptance data.
(3) In-Situ pavement test results including void content and unit weight.
(4) Sample of Product (i.e. core or test panel)

(b) If the placing Contractor and concrete producer have insufficient experience with Portland Cement pervious concrete pavement (less than 3 successful jobs), the placing Contractor shall retain an experienced consultant or NRMCA Certified Pervious Craftsman to monitor production, handling, and placement operations at the Contractor's expense.

(c) Test Panels: Regardless of qualification, Contractor is to place, joint and cure two test panels, each to be a minimum of 225 sq. ft. at the required project thickness to demonstrate to the Director's satisfaction that in-place unit weights can be achieved and a satisfactory pavement can be installed at the site location.

(d) Test panels may be placed at any of the specified Portland Cement pervious locations on the project or at another test site. Test panels shall be tested for thickness in accordance with ASTM C 42; void structure in accordance with ASTM C 138; and for core unit weight in accordance with ASTM C140, paragraph 6.3.

(e) Satisfactory performance of the test panels will be determined by:

(1) Compacted thickness no less than ¼" of specified thickness.

(2) Void Structure: 15% minimum; 28% maximum.
(3) Unit weight plus or minus 5 pcf of the design unit weight.
(4) If measured void structure falls below 13% or if measured thickness is greater than ¼" less than the specified thickness of if measured weight falls less than 5 pcf below unit weight, the test panel shall be removed at the Contractor's expense and disposed of in an approved landfill.

(f) If the test panel meets the above-mentioned requirements, it can be left in-place and included in the completed work.

C604.05 PROJECT CONDITIONS:

(a) Protect adjacent work from splashing of paving materials. Remove all stains from exposed surfaces of paving, structures, and grounds. Remove all waste and spillage. Do not damage or disturb existing improvements or vegetation. Provide suitable protection where required before starting work and maintain protection throughout the course of the work. Restore damaged improvements, including existing paving on or adjacent to the site that has been damaged as a result of construction work, to their original condition or repair as directed to the satisfaction of the City, and authority having jurisdiction at no additional cost.

(b) Do not place Portland cement pervious concrete pavement mixtures when the ambient temperature is 40 degrees Fahrenheit or lower, unless otherwise permitted in writing by the Director.

C604.06 CONCRETE MIX DESIGN:

Contractor shall furnish a proposed mix design with proportions of materials prior to commencement of work. The data shall include unit weights determined in accordance with ASTM C 1688.

C604.07 STORMWATER STORAGE/INFILTRATION BEDS:

(a) Coarse aggregates shall meet the size and grading requirements as defined in Standard Sizes of Coarse Aggregate, Table 4, AASHTO Specifications, Part I, 13th Ed., 1982, or later, unless otherwise specified.

(b) Coarse aggregate for groundwater recharge bed shall be 2-1/2" to 1-1/2" uniformly graded Crushed coarse aggregate, with a wash loss of no more than 0.5%, AASHTO size number 2 per AASHTO Specifications, 30th Ed., 2010, or later.

(c) Choker base course aggregate for groundwater recharge bed shall be 1" to 3/8" uniformly graded, crushed coarse aggregate, or approved equal, AASHTO Specifications, 30th Ed., 2010, or later.

(d) Filter fabric shall be Propex PERC™ Pervious Concrete Infiltration Fabric or approved equal.

(e) Impervious liner – shall be Permalon, PLY-X 150, or approved equal.

C604.08 MATERIALS:

(a) Cement. Portland Cement Type I or II conforming to ASTM C 150 or Portland Cement Type IP or IS conforming to ASTM C 595. Slag or Flyash may be used as part of the total cementitious content.

(b) Aggregate. Use #9 (1/4") Washed, crushed limestone coarse aggregate. If other gradation of aggregate are to be used, submit data on proposed material to City for approval.

(c) Admixtures. The following admixtures may be used as needed:

(1) Type A/F Water Reducing – ASTM C 494.
(2) Air Entraining Agent – ASTM C 260. May be used to improve resistance to freeze/thaw cycles.
(3) A viscosity modifier. Used to reduce paste drain down caused by using a dirty aggregate.
(4) Buckeye Cellulose fibers. Dosed at the rate of 3# per cubic yard.

(d) The following admixtures shall be used:

(1) A hydration stabilizer that also meets the requirements of ASTM C 494 Type B Retarding or Type D Water Reducing/Retarding admixtures. This stabilizer suspends cement hydration by forming a protective barrier around the cementitious particles, which delays the particles initial set.
(2) HydroMax® Internal Curing Admixture dosed at the rate of 1.5 oz/cwt of total cementitious material. Should reduce the amount of cementitious material needed as well as the need for a viscosity modifier.
(3) Water: Potable water shall be used.

(e) Proportions:

(1) Cement Content: For pavements subjected to vehicular traffic loading, the total cementitious material shall not be less than 480 lbs. per cu. yd. For other pavement areas not subject to vehicular traffic loading, the total cementitious material shall not be less than 450 lbs. per cu. yd.
(2) Aggregate Content: the volume of aggregate per cu. yd. shall be equal to 27 cu. ft. when calculated as a function of the unit weight determined in accordance with ASTM C 1688. An aggregate/cement ratio range of 4:1 to 4.5:1. A unit weight range of 105 lbs/cu. ft. to 140 lbs/cu. ft. per ASTM C 1688. Voids of 15% to 28%.
(3) Admixtures: Shall be used in accordance with the manufacturer's instructions and recommendations.
(4) Mix Water: Mix water shall be such that the cement paste displays a wet metallic sheen without causing the paste to flow from the aggregate. (Mix water yielding a cement paste with a dull-dry appearance has insufficient water for hydration). Water cement ratios can range from 0.24 to 0.39. Insufficient water results in inconsistency in the mix and poor bond strength. High water content results in the paste sealing the void system

primarily at the bottom and poor surface bond.

C604.09 INSTALLATION:

(a) Subgrade Preparation.

(1) Existing subgrade under bed areas shall NOT be compacted or subject to excessive construction equipment traffic prior to stone bed placement.
(2) Where erosion of subgrade has caused accumulation of fine materials and/or surface ponding, this material shall be removed with light equipment and the underlying soils scarified to a minimum depth of 6 inches with a York rake or equivalent and light tractor.
(3) Bring subgrade of stone recharge bed to line, grade, and elevations required.
(4) Fill and lightly regrade any areas damaged by erosion, ponding, or traffic compaction before the placing of stone.

(b) Recharge Bed Installation.

(1) Upon completion of subgrade work, the Director shall be notified and shall inspect at his discretion before proceeding with recharge bed installation.
(2) Filter fabric, pipe, and recharge bed aggregate shall be placed immediately after approval of subgrade preparation. Any accumulation of debris or sediment which has taken place after approval of subgrade shall be removed prior to installation of filter fabric at no extra cost to the City.
(3) Place PERC™ filter fabric in accordance with manufacturer's standards and recommendations. Adjacent strips of filter fabric shall overlap a minimum of sixteen inches (16"). Secure fabric at least two feet (2') outside of bed and take steps necessary to prevent any runoff or sediment from entering the storage bed. Place impervious liner over geo-textile extending six feet (6') beyond toe of slope face at building face, secure as recommended by manufacturer.
(4) Install coarse aggregate in 6 inch maximum lifts. Lightly compact each layer with equipment, keeping equipment movement over storage bed subgrades to a minimum. Install aggregate to grades required on the drawings.
(5) Install 1" thick choker base course size #57 (AASHTO) aggregate evenly over surface of stone bed, sufficient to allow placement of pavement, and notify Director for approval.
(6) Following placement of bed aggregate, the filter fabric shall be folded back along all bed edges to protect from sediment washout along bed edges. At least a two foot (2") strip shall be used to protect beds from adjacent bare soil. This edge strip shall remain in place until all bare soils contiguous to beds are stabilized and vegetated. In addition, hay bales shall be placed at the toe of slopes which may be adjacent to beds to further prevent sediment from washing into beds during site development. As the site is fully stabilized, excess filter fabric along the bed edges can be cut back to gravel edge.

C604.10 PORTLAND CEMENT PERVIOUS PAVEMENT CONCRETE MIXING, HAULING AND PLACING:

(a) Mix Time. Central mixed concrete shall be mixed for a minimum of one minute after introduction of all materials into mixer. Truck mixers shall be operated at the speed designated as mixing speed by the manufacturer for 75 to 100 revolutions of the drum.

(b) Transportation. The Portland Cement aggregate mixture may be transported by ready mix trucks or dump trucks or mixed on site and should be used within one (1) hour of the introduction of mix water, unless otherwise approved by the Director. This time can be increased to 180 minutes when utilizing the hydration stabilizer specified above at the proper dosage rate, unless otherwise approved by the Director.

(c) Each truck should not haul more than two (2) loads before being cycled to another type concrete, unless delivered by dump truck or if a stabilizing hydration agent is used in the pervious concrete mix design or if field experience proves that there is no significant concrete buildup in concrete mixer after delivery.

(d) Prior to placing concrete, the subbase shall be soaked and in a wet condition (no ponding of water) at time of placement. Failure to provide a moist subbase will result in a reduction in strength of the pavement.

(e) Discharge shall be a continuous operation and shall be completed as quickly as possible. If consolidation occurs during concrete discharge, placement shall be halted and wet concrete removed (this may happen towards the end of some loads).

(f) Concrete shall be deposited as close to its final position as practicable and such that fresh concrete enters the mass of previously placed concrete. The practice of discharging onto subgrade and pulling or shoveling to final placement is not allowed.

(g) Placing and Finishing Equipment. Unless otherwise approved by the Director in writing, the Contractor shall provide mechanical equipment of either slipform or form riding with a following compactive unit that will provide a minimum of 10 psi vertical force. The pervious concrete pavement will be placed to the required cross section and shall not deviate more than +/- 3/8 inch in 10 feet from profile grade.

(h) If placing equipment does not provide the minimum specified vertical force, a full width roller or other full width compaction device that provides sufficient compactive effort shall be used immediately following the strike-off operation.

(i) Strike off the pervious concrete 1/2" to 3/4" above the final grade prior to compaction, if needed, by using either slip-form, form riding vibrating screed, form riding aluminum roller screed or laser screed. Strike off may be done by hand for sidewalks. Care must be taken to avoid filling voids in the concrete.

(j) If vibration, internal or surface applied, is used, it shall be shut off immediately when forward progress is halted for any reason.

(k) The Contractor will be restricted to pavement placement widths of a maximum of fifteen (15') feet unless the Contractor can demonstrate competence to provide pavement placement widths greater than the maximum specified to the satisfaction of the City.

C604.11 CURING:

(a) Curing procedures shall begin immediately following all finishing operations if PerviouShield™ liquid spray on curing compound/densifier is used.

(b) Curing procedures shall be complete within 20 minutes after the final placement operations if polyethylene sheeting is used. The pavement surface shall be covered with a minimum .31 mil thick polyethylene sheet (painters plastic) or other approved covering material prior to final cross rolling of the surface and then covered with a layer of four to six (4 – 6) mil thick polyethylene sheeting. Prior to covering, an evaporative reducer shall be sprayed above the surface when required due to ambient conditions (high temperature, high wind, and low humidity). The cover shall overlap all exposed edges and shall be secured (without using dirt or stone) to prevent dislocation due to winds or adjacent traffic conditions.

(c) Cure Time: Portland Cement Type I, II, or IS – 7 days minimum.

(d) No truck traffic shall be allowed for 10 days (no passenger car/light trucks for 7 days and no pedestrian traffic for 24 hours).

C604.12 JOINTING:

(a) Control (contraction) joints shall be installed as indicated by plans. They shall be installed at a depth of the 1/ 3 to 1/4 the thickness of the pavement.

(b) These joints can be installed in the plastic concrete or saw cut. If saw cut, the procedure should begin as soon as the pavement has hardened sufficiently to prevent raveling and uncontrolled cracking (normally after curing), minimum of 24 hours after placement. Removal of plastic to perform saw cutting will cause pervious concrete to hydrate too quickly (Not a concern if PerviouShield™ is used). If plastic is removed to accommodate saw cutting, re-hydrating of pervious concrete is required. Walking on pervious concrete too early can damage concrete surface

(c) Transverse constructions joints shall be installed whenever placing is suspended a sufficient length of time that concrete may begin to harden.

(d) Isolation (expansion) joints should be used in structure widths exceeding thirty (30) feet or at seventy five (75) feet on sidewalks or when pavement is abutting slabs or other adjoining structures.

(e) Expansion joint material shall be K-form screed rail or approved equal. To reduce raveling, if transverse or isolation joints are used, or where pervious concrete meets impervious pavement, extra compaction may be necessary.

(f) Additional installation specifications for the pervious concrete provided by the material source and Director shall be followed strictly.

C604.13 PORTLAND CEMENT PERVIOUS PAVEMENT CONCRETE TESTING, INSPECTION, AND ACCEPTANCE:

(a) The City will retain an independent testing laboratory. The testing laboratory shall conform to the applicable requirements of ASTM E 329 "Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction" and ASTM C 1077 "Standard Practice for Testing Concrete and Concrete Aggregates for use in Construction, and Criteria for Laboratory Evaluation" and shall be inspected and accredited by the Construction Materials Engineering Council, Inc. or by an equivalent recognized national authority.

(b) The Agent of the testing laboratory performing field sampling and testing of concrete shall be certified by the American Concrete Institute as a Concrete Field Testing Technician Grade I, or by a recognized state or national authority for an equivalent level of competence.

(c) Testing and Acceptance.

(1) A minimum of 1 gradation test of the subgrade is required every 5000 square feet to determine percent passing the No. 200 sieve per ASTM C 117.

(2) A minimum of one test for each load of pervious concrete in accordance with ASTM C 172 and ASTM C 29 to verify unit weight shall be conducted. Delivered unit weights are to be determined in accordance with ASTM C 29 using a 0.25 cubic foot cylindrical metal measure. The measure is to be filled and compacted in accordance with ASTM C 1688. The unit weight of the delivered concrete shall be +/- 5 pcf of the design unit weight.

(3) Test panels shall have two cores taken from each panel in accordance to ASTM C 42 at a minimum of seven (7) days after placement of the pervious concrete. The cores shall be measured for thickness, void structure, and unit weight. Untrimmed, hardened core samples shall be used to determine placement thickness. The average of all production cores shall not be less than ½" less than the specified thickness. After thickness determination, the cores shall be trimmed and measured for unit weight in the saturated condition as described in paragraph 6.3.1 of 'Saturation' of ASTM C 140 "Standard Methods of Sampling and Testing Concrete Masonry Units." The trimmed cores shall be immersed in water for 24 hours, allowed to drain for one (1) minute, surface water removed with a damp cloth, the weighed immediately. Range of satisfactory unit weight values are +/- 5 pcf of the design unit weight.

(4) After a minimum of seven (7) days following each placement, three cores shall be taken in accordance with ASTM C 42. The cores shall be measured for thickness and unit weight determined as described above for test panels. Core holes shall be filled

with concrete meeting the pervious design or other concrete material as permitted by the Director.

(d) Maintenance.

There shall be a maintenance plan submitted to the Director to prevent the clogging of the pervious concrete pavement which shall include periodic testing for flowability by the pervious concrete installer prior to the pervious concrete being opened to service, with flow rates reported in writing to the City and again at six (6), twelve (12) eighteen (18) and twenty-four (24) months and again report the results in writing to the Director. It is the Contractor's responsibility to help the City to develop a maintenance plan. Acceptable methods to restore levels of flowability are either to vacuum or powerwash the pervious concrete sections.

C604.14 PAYMENT: Payment for Portland cement concrete pavement will be on a lot basis, at the contract unit price per square yard, which includes furnishing and placing all materials including tie-bars, dowel bars, joint material and welded wire fabric. If the pavement does not conform to acceptance requirements, payment will be made at an adjusted unit price in accordance with Section C601.12.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C604(54)	Pervious Concrete Pavement (___" Thick)	Square Yard

PART VII - INCIDENTAL CONSTRUCTION

SECTION C701
CULVERTS AND STORM DRAINS

Culverts and storm drains shall conform to all of the requirements of the General Specifications and Standard Plans of the Sewerage & Water Board (S&WB) of New Orleans (the latest revision) except as noted.

C701.01 GENERAL:

(a) The Contractor shall furnish all materials, equipment, labor and supervision to remove the existing deteriorated main, install new mains and fittings, including appurtenances such as tie-ins to existing system, lumber foundation, bedding, backfilling, necessary dewatering and by-passing during the execution of this contract.

(b) All workmanship, material and tests shall conform with Section E of the General Specifications of the S&WB and S&WB Standard Drawing No. 7260-D except as noted herein.

(c) The Contractor shall notify the Chief of Network Engineering of the S&WB in writing not less than three or more than ten working days in advance of starting the job so as to schedule the inspection of the work. Failure to do so prior to starting work will result in the Contractor being required to expose the bedding on all pipe previously installed.

(d) The Contractor may use more than one crew in performing work in various sections of a system at a given time, provided he has the approval of the Director.

(e) The Contractor performing work under this contract shall be required to coordinate his operations with the S&WB and other utilities prior to making any excavation so that the location of their services can be identified. The Contractor shall exercise caution in making excavations to avoid damage to these services and other utilities.

(f) The Contractor will be furnished a list of the locations of water and sewer house connections. It will be the Contractor's responsibility to verify the location of these so as to avoid damage. Furnishing this information should not be construed as a waiver of the Contractor's liability, but rather an attempt on the part of the S&WB to minimize the Contractor's hazard. The existing house connections submitted in the list are from S&WB records and could vary from the actual location. Any damage to the existing water, sewer and drain connections resulting from negligence shall be repaired by the S&WB at the expense of the Contractor. The Contractor is also responsible for damage to other utilities and the property of others.

(g) Existing drain house connections shall be tied into the new mains. No new drain house services shall be installed.

C701.02 INSTALLATION: Where the entire drain line is replaced between manholes, the drain pipe shall be reinforced concrete pipe conforming to Section C of the General Specifications of the S&WB and to the Standard City Plans, unless otherwise noted. Installation of drain lines, including bedding and foundation lumber, shall be in accordance with S&WB Standard Drawings No. D-3809, No. D-3810, No. D-3933 and D-3934.

The new drain lines and house connections, where required, shall be installed at the existing elevations and locations indicated, unless changed by the Director. The Contractor shall schedule his work so that the drain lines and catch basin connections between two manholes are completed before moving to another location (this will minimize the spillage of storm water into an open trench). The Contractor shall isolate the block where the work is in progress by plugging the upstream and downstream manholes. Should the storm water build up to within three feet of the top of the upstream manhole, or if directed by the Director, the Contractor shall pump the water to the downstream manhole or to a nearby catch basin, through bypass pumping. No mains or lines shall be left open overnight; a temporary tie-in shall be made between the end of the new main and the existing, and plugs at manholes shall be removed so as to allow flow to continue until work is resumed.

Backfill material shall be pumped sand and shall be placed at or near optimum moisture content and compacted according to one of the following procedures:

Backfill material shall be placed in layers not to exceed 12 inches. Each layer shall be compacted to a minimum of 95 percent of maximum density using approved mechanical compaction equipment, or:

Backfill material may be placed in layers not exceeding 3 feet by thoroughly flooding and compacting each layer to a minimum of 95 percent maximum density at or near optimum moisture content using approved mechanical compaction equipment, prior to placing a subsequent layer. During placement, backfill materials shall be thoroughly saturated with water and satisfactory drainage of materials shall be provided. The above backfill material compaction procedures shall be applied also for any service connections and point repairs.

Filter cloth around the joints of drain lines shall be non-woven conforming to LaDOTD Specification Section 1019, class B.

C701.03 DRAIN HOUSE CONNECTIONS: All existing drain house connections shall be removed and replaced with new PVC pipe from the new drain line to one (1') foot behind the curb where it will be tied to the existing drain house connection pipe.

The need for replacing existing drain house connections from the back of the curb to the property line (or any point between) shall be determined by the S&WB after field inspection or as indicated on the drawings. The new pipe will be tied to the existing pipe at that point.

If the existing drain line is being removed and not replaced, or if the S&WB determines it is necessary, an alternate method may be utilized by connecting the existing drain house connections

into a PVC collector line located behind the curb and tied into the catch basins or manholes, as directed by the S&WB.

The new house connection pipe may be connected to the new reinforced concrete pipe by drilling the concrete pipe and by using a rubber boot (Kor-n-Seal boot or approved equal) or sand impregnated PVC bell grouted in the concrete pipe, to connect the new PVC pipe.

No bends greater than 45 degrees will be allowed in drain house connection pipe.

No drain house connection shall be installed in the corners of catch basins. All connections shall be in the side or back of the catch basins.

All pipes and fittings shall be approved by the S&WB. The connection of any two dissimilar house connection materials shall be accomplished by the installation of a “No-Hub” coupling consisting of a neoprene sleeve and bushing adapter and two stainless steel bands. The coupling shall be manufactured in strict accordance with Fernco specification, or approved equal.

Where it is necessary to connect the drains to existing manholes, catch basins, or canals, the existing short bell pieces remaining in the wall of the structure shall be inspected. If in bad condition, the short bell pieces shall be broken out and new short bell pieces inserted to the full thickness of the walls and permanently grouted (see S&WB Dwg. 6178-B-6). The annular space between the concrete pipe and the wall of the structure shall be grouted with a type three, high early strength cement, or quick setting EMBECO or similar material.

If a PVC pipe is to be connected to a manhole or other concrete or brick drainage structure, the Contractor shall use a sand-impregnated PVC stub, grouted with cement grout as specified above, for the manhole connection.

Drain house connections shall be backfilled as described herein for drain lines.

C701.04 POINT REPAIRS OF EXISTING DRAIN LINES: Where the existing drain line has to be removed and replaced with new concrete pipe, said pipe fittings shall conform with Section E of the S&WB General Specifications. Bedding and foundation lumber for the drain line shall conform with S&WB drawings No. D-3809, No. D-3910, No. D-3933 and No. D-3934. Bedding and foundation lumber shall extend under the existing pipe for a distance of not less than 12 inches from the end of pipe to insure proper bedding under the coupling.

The Contractor shall make point repairs to the lines at specific locations shown on the drawings and as listed in the schedule of bid prices. Point repairs shall be made by dry type and shall conform to Section XII of NASSCO (National Association of Sewer Service Companies). The Contractor shall make an excavation to expose a basic "ten (10) linear feet" of main per point repair. Any additional footage of repair beyond the ten-foot minimum for each point repair shall be approved by the Director or as indicated on the Drawings as “Beyond point repair”. The Contractor is required to have all materials and equipment on hand prior to the start of excavation so that there will be a

minimum of inconvenience to the residents. All trenches must be backfilled at the end of the day. Backfill will be in accordance with the same as described herein for new drain lines.

For drain point repairs, and for all other drain repairs, the connection of any two dissimilar materials shall be accomplished by the installation of a "no-hub" coupling consisting of a neoprene sleeve and bushing adapter, two stainless steel bands, and stainless steel screws. The coupling shall be manufactured in strict accordance with Fernco coupling specifications, or approved equal.

C701.05 INSPECTION: At the completion of the point repair or replacement of mains between manholes, and prior to final acceptance, the S&WB may inspect the mains with a remote controlled television unit or by visual inspection of large lines. The Contractor will be required to repair, at his expense and in an approved manner, all defects in his workmanship disclosed by these tests and inspections before final acceptance.

C701.06 AS BUILT DRAWINGS: The Contractor shall furnish a set of "as built" drawings upon completion of the work and prior to final inspection. These drawings shall be a legibly marked set of prints of the Contract Drawings, revised to show clearly all field changes.

C701.07 MEASUREMENT: Drain pipes will be measured in place and the length determined by measuring from center to center of manholes, or other subsurface structures of which they form a part. If the drain line is connected to a square or rectangular manhole, the measurement will be to the center of the manhole. If the drain line is connected to a box canal wall, the measurement will be to the face of the wall.

C701.08 PAYMENT: Payment for the accepted quantities will be made at the contract unit price.

(a) Payment for reinforced concrete pipe shall be made at the contract unit price, per linear foot of the types and sizes specified, including excavation, removal of existing pipe (if any), foundation lumber, bedding, engineering fabrics, backfill, complete shoring, pumping as necessary and tie-ins to manholes and catch basins. (Bid Items C701(53) or C701(54)).

(b) Payment for reinforced concrete wye in a new drain line shall be made at the contract unit price per Item No. C701(59) and shall be in addition to the payment per linear foot for reinforced concrete drain pipe.

Payment for reinforced concrete wye in an existing drain line shall be made at the contract unit price per Item No. C701(65), including a ten (10') foot point repair (total length including wye),couplings, excavation, removal of existing pipe, granular bedding, engineering fabric, backfill, foundation lumber, shoring, and pumping as necessary and saw cutting of existing pipe. (Bid Items (C701(53) or C701(54)).

(c) Payment for reinforced concrete tee shall be made at the contract unit price, per Item No. C701(66).

(d) Payment for point repairs of existing drain lines, up to ten (10') feet shall be made at the contract unit price, per each of the sizes specified, including excavation, foundation lumber, bedding, engineering fabrics, backfill, complete shoring and pumping, as necessary, pipe fittings, couplings, saw cutting existing pipe, removal of existing pipe, and tie-ins to existing manholes if required as per Item No. C701(68). Payment for point repair beyond ten (10') feet shall be made at the contract unit price per linear foot, including the above work, as per Item No. C701(69).

(e) Drain house connections from new drain line to back of curb shall be paid per each including, fittings, tie-ins, excavation, backfilling, removal of existing pipe (if any) and drilling the reinforced concrete pipe, per Item No. C701(70). Payment for drain service line tie-ins beyond back of curb will be made by linear foot of tie-in service lines, including the removal of existing pipes, fittings, and backfill (Item C701(71)). PVC collector line to catch basins for drain house connections shall be paid per linear foot, including, fitting tie-ins to catch basins, excavation, and backfilling per item No. C701(72).

Payment will be made under:

ITEM NUMBER	PAY ITEM	PAY UNIT
C701(53)	Reinforced Concrete Pipe (Size)	Linear Foot
C701(54)	Reinforced Concrete Arch Pipe (Size)	Linear Foot
C701(57)	Yard Drain Service Line (Size & Type)	Linear Foot
C701(58)	Reset Culvert Pipe (Size)	Linear Foot
C701(59)	Reinforced Concrete Wye or Arch Equivalent – New (size)	Each
C701(65)	Reinforced Concrete Wye or Arch Equivalent – Existing (size)	Each
C701(66)	Concrete Tee (size)	Each
C701(67)	Clean and Flush Culvert	Linear Foot
C701(68)	Point Repair of Existing Drain Lines up to Ten (10') Feet (size)	Each
C701(69)	Point Repair of Existing Drain Lines Beyond Ten (10') Feet (size)	Linear Foot
C701(70)	Drain House Connection (size) From New Drain Line to Back of Curb	Each
C701(71)	Drain House Connection Beyond Back of Curb (Size)	Linear Foot
C701(72)	Collector Line to Catch Basins for Drain House Connections (Size)	Linear Foot
C701(73)	Abandoning Existing Drainage Pipes in Place and Fill with Flowable Material (size)	Linear Foot
C701(74)	Removal and Disposal of Existing Drain Lines (Not in Same Trench) Including Backfilling with River Sand and Compaction	Linear Foot

SECTION C702
MANHOLES, CATCH BASINS, DROP INLETS, AND CLEAN-OUTS

C702.01 DESCRIPTION: This work consists of the construction and adjustment of manholes, catch basins, drop inlets, and cleanouts in accordance with the General Specifications and Standard Plans of the Sewerage & Water Board of New Orleans (latest revision), and in conformity with lines shown on the plans or established. The surrounding structure shall be backfilled and compacted in accordance with Subsection C701.02.

C702.02 CONSTRUCTION REQUIREMENTS:

(a) MANHOLES: (No. 1, No. 2, No. 3, Standard Drain Manholes, Special Drain Manholes and Special Conflict Manholes.) Manholes shall be built according to the Standard Plans of the S&WB and/or as indicated on the plans.

(b) CATCH BASIN ADJUSTMENTS: (Type A, type B and type C.)

(1) Type A: The work consists of making slight adjustments in alignment and raising or lowering the elevation of the casting, no additional walls are required.

(2) Type B: The work consists of building a wall inside the wall and outside of the front wall of the basin or racking over or drawing in the rear wall and building a brick wall outside of the front of the front wall or vice versa, and preserving and reusing the footing courses and subgrade lumber and the side walls.

(3) Type C: The work consists of removing the basin completely and rebuilding it either at the same location or at a different location, as directed.

(c) CATCH BASINS AND DROP INLETS: (No. 1, Double No. 1, No. 2, No. 3, No. 4, No. 5, Standard Catch Basin, Standard Drop Inlet, Single and Double Mountable Catch Basins.)

The structures shall be built conforming to the Standard Plans of the S&WB.

(d) REHABILITATE EXISTING CATCH BASIN: The work consists of reshagging inside, stopping leaks and resealing where required.

(e) REHABILITATE EXISTING MANHOLE: The work consists of reshagging inside, stopping leaks and resealing where required.

(f) TAP-IN TO EXISTING DRAIN LINE: The work consists of breaking out the existing drain line and tapping the new drain line into it, including stub.

(g) ADJUST MANHOLE OR DROP INLET: The work consists of adjusting manholes or drop inlets to grade with brick and mortar where directed.

(h) SIX (6") INCH DRAIN CLEANOUT FOR ROOF DRAIN: The work consists of installing new a cleanout box with casing for roof drain in accordance with plans.

(i) CLEANOUT BOX IN EXISTING CULVERT AND NEW CULVERT: The work consists of installing a new brick cleanout box with casting in accordance with the plans.

C702.03 MEASUREMENT: New and adjusted manholes, catch basins, drop inlets and clean-outs will be measured by the pay unit. New or rehabilitated manholes will be measured by vertical foot height. The height of manholes will be determined by measuring from the invert of the manholes to the top of the cast iron cover. Excavation and backfill shall not be measured for payment.

C702.04 PAYMENT: Payment for the accepted quantities will be made at the contract unit price.

(a) Payment for "standard manhole" shall be made at the contract unit price per foot height, including excavation, granular bedding and backfilling.

(b) Payment for "catch basin adjustment" shall be made at the contract unit price per each, including excavation, granular bedding and backfilling. For type C, the price shall include the risk of breakage and replacement of any casting and the cost of bricking up the front grating where necessary, so as to make such catch basins conform to a No. 1 standard catch basin.

(c) Payment for "catch basin & drop inlet" shall be made at the contract unit price per each, including excavation, granular bedding and backfilling.

(d) Payment for "rehabilitate existing catch basin" shall be made at the contract unit price per each.

(e) Payment for "rehabilitate existing manhole" shall be made at the contract unit price per foot height.

(f) Payment for "tap-in to existing drain line" shall be made at the contract unit price per each.

(g) Payment for "adjust manhole or drop inlet up to six (6") inches with brick and mortar" shall be made at the contract unit price per each, including the base material (Portland cement concrete or asphaltic) to be replaced around the manhole. Payment for "adjust manhole or drop inlet over six (6") inches" shall be made at the contract unit price per foot height, or any fraction of a foot, including the above work.

(h) Payment for "six (6") inch drain cleanout for roof drain" shall be made at the contract unit price per each, including excavation and backfilling.

(i) Payment for "cleanout box in existing culvert" and in "new culvert" shall be made at the contract unit price per each, including excavation and backfilling.

Payment will be made under:

ITEM	PAY ITEM	PAY UNIT
C702(52)(J)	No. 1 Standard Drain Manhole	Foot Height
C702(52)(K)	No. 2 Standard Drain Manhole	Foot Height
C702(52)(L)	No. 3 Standard Drain Manhole	Foot Height
C702(52)(M)	Special Drain Manhole	Each
C702(52)(N)	Special Conflict Manhole	Each
C702(53)(J)	Type A Catch Basins Adjustment	Each
C702(53)(K)	Type B Catch Basins Adjustment	Each
C702(53)(L)	Type C Catch Basins Adjustment	Each
C702(53)(M)	No. 1 Standard Catch Basin	Each
C702(53)(N)	Double No. 1 Catch Basin	Each
C702(53)(O)	No. 2 Standard Catch Basin	Each
C702(53)(P)	No. 3 Standard Catch Basin	Each
C702(53)(Q)	No. 4 Standard Catch Basin	Each
C702(53)(R)	No. 5 Standard Catch Basin	Each
C702(53)(S)	24" X 30" Clear Opening Standard Drop Inlet	Each
C702(53)(T)	Single Mountable Catch Basins	Each
C702(53)(U)	Double Mountable Catch Basins	Each
C702(53)(V)	Rehabilitate Existing Catch Basin	Each
C702(54)(I)	Rehabilitate Existing Manhole	Foot Height
C702(54)(K)	Tap-in to Existing Drain Line	Each
C702(54)(A)(1)	Adjust Manhole or Drop Inlet up to 6" with Brick and Mortar	Each
C702(54)(A)(3)	Adjust Manhole or Drop Inlet over 6" with Brick and Mortar	Foot Height
C702(55)(C)	6" Drain Cleanout for Roof Drains	Each
C702(56)	Clean Out Box Existing Culvert	Each
C702(57)	Clean Out Box New Culvert	Each

SECTION C706
DRIVEWAYS AND SIDEWALKS

C706.01 DRIVEWAYS:

(a) Driveways shall be constructed of such lengths and widths and at such points as shown on the plans or as may be designated by the Director.

(b) Where driveways are to be constructed within the sidewalk area, where lip concrete curb is installed, the details of the driveways shall be as shown on Standard Plans for Standard Mountable Driveway or Heavy Duty Mountable Curb Driveway, as specified in the proposal.

(c) All standard driveways shall be six (6") inches and all heavy duty driveways shall be eight (8") inches in thickness. Driveways shall be constructed of Portland cement concrete having a minimum compressive strength of three thousand (3,000) psi. at twenty-eight (28) days. The minimum cement content shall be five and one-half (5-1/2) bags per cubic yard of concrete. The maximum water content, including free water in the aggregate, shall not be greater than six (6) gallons per bag of cement. The consistency of the concrete shall be such as to have a slump of from two (2") inches to four (4") inches.

(d) Driveways shall be reinforced with 6 X 12 – W7.5 X W6.5 welded wire fabric weighing seventy-seven (77) pounds per hundred (100) square feet.

(e) Expansion joints shall be provided where shown on Standard Plans or as may be otherwise directed.

(f) Weakened planes shall be formed by a jointing tool or other acceptable means. Weakened planes shall extend into concrete for at least 1/4 of the depth and shall be approximately 1/8 inch wide.

A longitudinal weakened plane shall be formed along the centerline of drives more than 16 feet wide, and transverse weakened planes shall be formed at not more than 16-foot intervals.

(g) The subgrade on which the driveways are to rest shall be thoroughly rolled or tamped so as to be uniformly compacted and solidified. The finished grade shall be smooth, even, well-graded and exactly parallel to the finished surface of the driveway.

(h) Immediately after placing and tamping the concrete in place, it will be brought to the established grade by means of a strike board. Finishing shall be completed by use of a soft-haired brush, moved lightly over the surface in the direction of the width of the driveway. Joints are to be straight and square, in good alignment and edges finished by a joiner, so as to avoid sharp corners.

C706.02 SIDEWALKS AND RAMP ACCESSIBILITY:

Sidewalks and ramps shall comply with the most current regulations for Titles II and III of the Americans with Disabilities Act of 1990 (ADA) and applicable accessibility standards published by

the Department of Justice (the 2010 ADA Standards for Accessible Design, “2010 Standards”, or later).

(a) An ADA curb ramp is a short ramp cutting through a curb or built up to it to provide an accessible path of travel.

(1) On a curb ramp, the running slope is the slope in the direction of pedestrian travel on the ramp run and must be 8.33 percent (1:12) or less. Where provided, curb ramp flares shall not be steeper than 1:10.

(2) On a curb ramp, the cross slope is the slope perpendicular to [across] the direction of pedestrian travel on the ramp run and the cross slope of the ramp run itself may not exceed 2 percent (1:50).

(3) The ramp, or ramp run, must be at least 48 inches wide, not including the flared sides. The ramp run must have detectable warnings – i.e., dome-shaped bumps – that extend the full width and depth of the ramp.

(4) Transitions from the ramp to the walkway, gutter, and street must be flush (level) and free of abrupt level changes. The gutter must have a slope of no more than 5 percent (1:20) toward the ramp.

(5) Landings shall be provided at the tops of curb ramps. The minimum landing clear length shall be 48 inches. The landing clear width shall be at least as wide as the curb ramp, excluding flared sides, leading to the landing.

(6) Diagonal or corner type curb ramps with returned curbs or other well-defined edges shall have the edges parallel to the direction of pedestrian flow. The bottom of diagonal curb ramps shall have a clear space of 48 inches minimum outside active traffic lanes of the roadway. Diagonal curb ramps provided at marked crossings shall provide the 48 inches minimum clear space within the markings. Diagonal curb ramps with flared sides shall have a segment of curb 24 inches long minimum, located on each side of the curb ramp and within the marked crossing.

(b) Raised islands in crossings shall be cut through level with the street or have curb ramps at both sides. Each curb ramp shall have a level area 48 inches long minimum by 48 inches wide minimum at the top of the curb ramp in the part of the island intersected by the crossings. Each 48 inch minimum by 48 inch minimum area shall be oriented so that the 48 inch minimum length is in the direction of the running slope of the curb ramp it serves. The 48 inch minimum by 48 inch minimum areas and the accessible route shall be permitted to overlap.

(c) The running slope of sidewalks must be 5 percent (1:20) or less. The cross slope of sidewalks must be 2 percent (1:50) or less. The clear width of sidewalks shall be at least 48 inches and a sidewalk with a clear width of less than 60 inches shall provide passing spaces at intervals of 200 feet maximum. If the longitudinal slope of the sidewalk exceeds 1:20, it is considered a ramp and a level landing must be provided for every 30-inch change in elevation.

C706.03 PORTLAND CEMENT CONCRETE SIDEWALK OR BANQUETTE PAVEMENT:

(a) Portland cement concrete sidewalk or banquette pavement shall be of such widths and fixed at such elevations as may be stipulated in the proposal and Special Specifications, or may be otherwise designated by the Director. They shall consist of a one course Portland cement concrete pavement four (4") inches in thickness.

(1) The concrete shall have a minimum compressive strength of three thousand (3,000) psi. at twenty-eight (28) days. The minimum cement content shall be five and one-half (5-1/2) bags per cubic yard of concrete. The maximum water content, including free water in the aggregate, shall not be greater than six (6) gallons per bag of cement. The consistency of concrete shall be such as to have a slump of from two (2") inches to four (4") inches.

(2) Sidewalks or banquettes shall be reinforced with 6 X 6 – W2.9 X W2.9 wire mesh weighing forty-two (42) pounds per hundred square feet.

(b) In preparing the subgrade on which the Portland cement concrete sidewalk or banquette pavement will be placed, all soft and spongy places shall be removed and all depressions filled with suitable materials which shall be thoroughly compacted in layers not exceeding six (6") inches in thickness. The subgrade shall be thoroughly tamped until it is brought to a firm, unyielding surface. It shall have a slope in conformity with the slope of the finished surface of the Portland cement concrete sidewalk or banquette pavement.

When the Portland cement concrete sidewalk or banquette pavement is to be constructed over an old path composed of gravel or cinder, the old path shall be entirely loosened, the material spread for the full width of the subgrade and compacted as specified.

(c) All fills shall be made in a manner satisfactory to the Director. The use of muck, quicksand, soft clay, spongy or perishable material is prohibited. The top of all fills shall extend at least two (2') feet beyond the sidewalk or banquette pavement on each side and the sides shall have a maximum slope not greater than one (1) vertical to one and one-half (1-1/2) horizontal before any Portland cement concrete sidewalk or banquette pavement will be allowed to be placed thereon.

(d) Concrete shall be of the strength and consistency herein before described. The method of mixing and placing shall be in conformance with the requirements for Subsections C601.20 and C601.21, Portland cement concrete pavement. Concrete that does not flush readily shall be removed immediately from the grade and not re-used, except that the coarse aggregate can be salvaged by washing.

(e) After mixing, the concrete shall be handled rapidly and the successive batches deposited in a continuous operation completing individual sections to the required depth and width. The forms shall be filled and the concrete struck off and tamped. The method of placing the various sections shall be such as to produce a straight clean joint between them so as to make each section an independent unit. If dirt, dust or other foreign substances collect on the surface, they shall be removed before the trowelling is started.

(f) After the concrete has been tamped in accordance with subsection C706.02 (e), it will be brought to the established grade by means of a strike board, and it will then be worked with a wood float in a manner which will thoroughly compact it and provide a surface free from depressions or irregularities of any kind. Excessive working shall be avoided. In no case shall dry cement and sand be sprinkled on the surface. The surface edges of all slabs shall be rounded to a radius of one-half (1/2") inch.

(g) Portland cement concrete sidewalk or banquette pavement shall be divided into blocks of such dimensions, by means of a joiner or grooves, as shown on the Standard Plans or as the Director may designate. Weakened planes shall be formed by a jointing tool or other acceptable means. Weakened planes shall extend into concrete for at least one-quarter (1/4") inch of the depth and shall be approximately one-eighth (1/8") inch wide. Spacing of weakened planes shall be equal to the width of the sidewalk. Transverse expansion joints shall be made at intervals of about ninety (90') feet and constructed in accordance with the standard plans.

All expansion joints shall be carefully made so as to be truly perpendicular to the surface of the sidewalk or banquette pavement and at right angles to the edge of same. The surface of the concrete adjacent to expansion joints shall be finished with a wood float, which is divided through the center and which will permit finishing on both sides of the joint at the same time. An expansion joint shall also be provided adjacent to solid walls of masonry, behind curbs, at intersections and at footlaps. Where posts or poles fall within the limit of the sidewalk or banquette pavement, an expansion joint not less than one-half (1/2") inch in width shall be placed around said posts or poles and filled with joint filler. In the case of expansion joints adjacent to masonry walls, at footlaps and around posts or poles, the joint filler shall not extend above the surfaces of the sidewalk or banquette pavement and any excess filler that so protrudes shall be cut off and made flush with the sidewalk or banquette pavement.

(h) As soon as the finished work has hardened sufficiently to prevent damage, the surface of the walk shall be covered with curing compound. The freshly finished work shall be protected from hot sun and drying winds until it can be covered as above specified. Curing by application of chemicals or some other method of curing may be used upon the approval of the Director. The concrete surface must not be damaged or pitted by raindrops and the Contractor shall provide and use, where necessary, sufficient tarpaulins to completely cover all sections that have been placed within the preceding twelve (12) hours. The Contractor shall erect and maintain suitable barriers to protect the walk from traffic, and any section damaged from traffic or other causes, shall be repaired or replaced by the Contractor at his own expense, in a manner satisfactory to the Director. The walk shall not be opened to traffic until the prescribed curing period has expired.

(i) Portland cement concrete sidewalk or banquette pavement at intersections, including ramps for the handicapped, shall be six (6") inches thick and placed as above specified.

C706.04 BRICK SIDEWALK OR BANQUETTE PAVEMENT:

(a) Brick sidewalk or banquette pavement shall be of such width, grades or elevations as shown on plans or as may be designated by the Director and laid in the manner herein described and as shown on the standard plan.

(b) The surface of the earth upon which the brick sidewalk or banquette pavement will rest shall be first graded and tamped and otherwise prepared as specified for Portland cement concrete sidewalk or banquette pavement.

(c) Five (5") inches of reinforced concrete foundation having a compressive strength of not less than three thousand (3,000) psi. in twenty-eight (28) days shall be poured and tamped. The brick shall be laid on a prepared subgrade, a minimum of a three-eighths (3/8") inch setting bed which is composed of one (1) part cement to three (3) parts sand. Bricks shall be in close contact with each other and thoroughly tamped. After tamping, they shall be thoroughly sprinkled and all joints shall at once be completely filled with grout formed of one (1) part Portland cement concrete to three (3) parts sand. Thereafter, clean, sharp sand shall be evenly spread on the surface to a thickness of approximately one-half (1/2") inch. When the grout has been in place for seventy-two (72) hours or longer, this sand shall be removed and may be re-used at the option of the Contractor.

(d) After completion, the brick sidewalk or banquette pavement shall be closed to traffic and not opened until so directed by the Director. The Contractor will be required to barricade and protect the walk in every way as prescribed and required for Portland cement concrete sidewalk or banquette pavement.

(e) Brick sidewalk or banquette pavement will be paid for by the square yard, at the price bid in the proposal for that item, which price shall include grading and all the materials, reinforced concrete foundation, labor, tools, equipment and service employees used in completing the brick sidewalk or banquette pavement in place as herein described.

C706.05 RELAYING SIDEWALK OR BANQUETTE PAVEMENT:

(a) All sidewalk or banquette pavement relaid shall conform to the requirements herein fixed for new sidewalk or banquette pavement. Where old bricks are not suitable for relaying, they shall be replaced by new brick.

(b) When Portland cement concrete sidewalk or banquette pavement is unavoidably disturbed in executing the work embraced by the specifications, the limits of the area proposed to be disturbed or removed shall be sharply defined by the Contractor with concrete saw made lines and then carefully removed along said lines. Should the surface fracture along irregular lines, a straight line shall be struck and the edge made true. When other sidewalk or banquette pavement is unavoidably disturbed, they shall be restored by the Contractor to the same conditions in which they were before they disturbed them, and for such work, he shall be compensated at the prices bid in the proposal for relaying sidewalk or banquette pavement; no compensation shall be allowed for relaying sidewalk or banquette pavement that has been unnecessarily disturbed.

(c) Relaying sidewalk or banquette pavement shall be paid for by the square yard at the price bid in the proposal for those items, which price shall include all materials, labor, tools, equipment and services employed in taking up the sidewalk or banquette pavement and restoring them to the same condition in which they were before being disturbed, including the grouting of old brick. Exception is made in the case of Portland cement concrete sidewalk or banquette pavement, which price shall include all material, labor, tools, equipment and services employed in taking up and relaying them.

C706.06 MINIMUM SIDEWALK OR BANQUETTE TREATMENT WITHIN THE DOWNTOWN DEVELOPMENT DISTRICT:

This will be in accordance with Section 146-193 of the City Code.

C706.07 MINIMUM SIDEWALK OR BANQUETTE TREATMENT WITHIN THE VIEUX CARRE:

This will be in accordance with Section 146-194 of the City Code.

C706.08 TILE STREET NAMES:

(a) LETTERS OR NUMBERS FOR TILE STREET NAMES: Letters or numbers for tile street names shall be hard, tough, durable, porcelain tile or other material satisfactory to the Director. The letters or numbers shall be block type on tile not less than five and one-half (5-1/2") inches, nor greater than six (6") inches high. The letters or numbers shall not be less than five (5") inches high, of blue or willow green in color, on a white background. Letter or numbers for tile street names shall be installed and oriented so that they may be read by pedestrians approaching the intersection where they are located.

(b) RESETTING TILE STREET NAMES: Existing tile street names shall be salvaged intact by saw-cutting the name out of the concrete in which the tiles are imbedded. The saw-cut shall be located two (2") inches away from the name's perimeter and will extend through the depth of the concrete, usually four (4") inches. The salvaged street name tile shall be reset in the fresh concrete of the sidewalk intersection, flush with the level of the sidewalk and clean of any cement residue.

C706.09 MEASUREMENT: The area of driveways will be determined by surface measurements and no extra allowance will be made for shoulders.

Sidewalk pavements will be paid for by surface measurements and no deduction will be made for subsurface structures occupying less than five (5) square feet of area. Areas under structures encroaching on public property not paved will not be included in the surface measurement.

C706.10 PAYMENT: Payment for concrete driveways, sidewalks or banquette pavement will be made at the contract price per square yard, which includes excavation, installation of expansion joint and welded wire fabric. Granular material for adjustment and removal of existing driveways, sidewalk or banquette pavement shall be paid for in other items.

Payment for "letters or numbers for Tile street names" will be per each tile at the contract unit price.

Payment for "Resetting Tile Street Name" will be per name at the contract unit price.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C706(51)	Concrete Sidewalk (___" Thick)	Square Yard
C706(52)	Concrete Driveway (___" Thick)	Square Yard
C706(54)	Sidewalk at Intersection Including Handicapped Ramps (___" Thick)	Square Yard
C706(55)	Sidewalk in Median Including Handicapped Ramps	Square Yard
C706(56)	Handicapped Ramp (Specify Concrete Brick or Stone)	Square Yard
C706(57)	Brick Sidewalk	Square Yard
C706(58)	Relaying Brick Sidewalk	Square Yard
C706(59)	Stone Sidewalk	Square Yard
C706(60)	Relaying Stone Sidewalk	Square Yard
C706(61)	Letter or Number for Tile Street Name	Each
C706(62)	Resetting Tile Street Name	Each

SECTION C707
CURBS AND GUTTERS

C707.01 INTEGRAL CONCRETE CURB, STRAIGHT OR CIRCULAR: Integral concrete curb shall be either mountable or barrier curb. Concrete curb and barrier curb shall be constructed monolithically with the same materials, having the same compressive strength and placed and cured in the same manner as the concrete in the roadway slab. The dimensions shall be as shown on standard plans. The overall depth shall be determined by the curb exposure, depth of gutterbottom and roadway slab.

(a) The curb forms shall provide for the dimensions specified and must be set to the established grades.

(b) Premoulded joint filler shall be placed and extended through the entire curb section, at those points where joint filler is used in the roadway slab.

C707.02 COMBINED CONCRETE CURB AND GUTTERBOTTOM AND/OR CONCRETE CURB, STRAIGHT OR CIRCULAR:

(a) Combined concrete curb and gutterbottom shall be either combined mountable concrete curb and gutterbottom or barrier concrete curb and gutterbottom. Concrete curb shall be either mountable or barrier. The type of concrete curb or concrete curb and gutterbottom to be provided shall be as shown on plans. The forms to be used shall conform to the requirements of these specifications on "FORMS".

(1) The concrete used shall be mixed with the same materials, having the same compressive strength and shall be cured in the same manner as specified for "Reinforced Concrete Roadway Pavements".

(2) Where it is required to construct concrete curb and gutterbottom, the curb and gutterbottom must be poured monolithically.

(3) Undowelled contraction joints shall be placed through the entire width of the concrete curb or curb and gutterbottom, at no greater than fifteen (15') foot intervals. Contraction joints shall be formed by a jointing tool or other acceptable means, having a 2" depth and 1/4" width and filled with silicone sealant or an approved joint sealant.

Dowelled expansion joints shall be placed at intersections, not to exceed three hundred (300') foot intervals, and/or as indicated on the plans.

Pre-moulded joint filler shall be placed through the entire section of the concrete curb or curb and gutterbottom. The concrete curb and gutterbottom shall be reinforced in accordance with the standard plans.

(4) The forms shall provide for the dimensions specified and must be set to the established grades. After placing, concrete shall be worked with a float, in a manner that will thoroughly compact it and provide a surface free from depressions or irregularities of any kind.

C707.03 CONCRETE GUTTER:

(a) Where the concrete gutter is constructed as a part of combined curb and gutterbottom, it shall conform to the requirements of combined curb and gutterbottom. Jointing shall conform to subsections C601.06(a) and C601.06(b).

(b) Where the concrete gutter is constructed in conjunction with roadway pavement, it shall, unless otherwise specified or directed, be poured monolithically with, become part of, be laid at the same time, in the same manner and have the same compressive strength as concrete roadway foundation, for such roadway pavements. It shall be of the same width indicated on the plans and of such depth as will be equal to the combined thickness of the roadway foundation and the roadway pavement wearing surface.

(c) The subgrade shall meet the requirements for roadway pavement sub-grade.

(d) Immediately after the concrete has been placed, it shall be tamped, struck off and worked with a wood float in a manner to provide a surface free from irregularities and depressions, bringing the mortar to the top. The surface shall then be broomed or brushed with a soft hand broom in the direction of the flow line of the gutter. Surface joints shall be made by a steel joining tool and premoulded joint filler shall be placed and extended through the entire gutter section at those joints where filler is used in the roadway slab or curb.

(e) Curing the gutter shall be similar to that provided for roadway pavement.

C707.04 STONE CURB:

(a) Stone curb shall either be old stone curb or new stone curb as herein specified.

(b) Old stone curb shall be of suitable quality with well-defined face and top, of the depth not less than prescribed for new curb and not less than three (3') feet in length.

(c) New stone curb shall be best North River Blue Stone or Cabin Creek Blue Stone or Granite or similar stone acceptable to the Director, and shall measure five (5") inches in thickness for the remainder of depth, and in lengths of not less than five (5') feet except for closures. It shall be of such depth as may be indicated on the plans or otherwise specified. The top of the curb shall be peen-hammer dressed, and the face for ten (10") inches below the top pointed, so that there will be no protrusions or depressions measuring more than one-half (1/2") inch from a straightedge laid in any direction parallel to the general surface. All ends shall be squared so as to form close-fitting joints. No drill holes will be permitted to show on any exposed surface. All edges shall be well-defined.

(d) Closures shall not be less than two and one-half (2-1/2') feet in length and must not be placed adjacent to catch basins or over fresh excavations or adjacent to one another. No more than three (3) such closures will be allowed between any two fixed points such as circular curb for corners, circular curb for driveways or catch basins.

C707.05 SETTING AND RESETTING STONE CURBS:

(a) Stone curb shall be set to lines and grades indicated on plans, or as may be otherwise directed. The subgrade on which the curb base is to be placed shall be excavated and thoroughly tampered by means of a pneumatic tamper.

(b) After the curb has been set to proper line and grade as above, the Contractor shall place under each curb joint, or as close thereto as may be practical, a concrete pier. These piers and concrete base shall be constructed in accordance with dimensions shown on the detail plans, care being taken that the excavation therefore made prior to the pouring of the concrete is evenly cut and as nearly true to the plans as the character of the excavation materials will permit. Care should be taken also, that all loose material is removed from the finished subgrade of the roadway prior to pouring concrete.

(c) One pier shall be provided under each curb joint except in cases where it is impractical to construct one at said point, as where a drain sewer or gas service is directly under the joint and is sufficiently high to prevent the pier being built to the dimensions shown on the plans. In this case, two (2) piers shall be constructed, one (1) on each side of the curb joint and as close thereto as practical.

(d) After setting curb, the excavated area behind same shall be backfilled by tamping and this filling shall be brought to the top of the back of the curb.

(e) Old stone curb of proper quality and dimensions will be relined and reset at its present location when required by the proposal or special specfications, or it shall be removed to other points within the limits of the project, as may be designated by the Director, and there reset.

(f) The ends of all curb, whether new or old, shall be neatly squared so as to form close-fitting joints. Joint filler one-half (1/2") inch in thickness shall be placed adjacent to catch basins and circular curbs when setting stone curbs. All joints in stone curb shall be thoroughly and neatly pointed with mortar. The joints in the precast concrete curbs shall be neatly filled with a joint filler, one-eighth (1/8") inch thick. This joint filler material shall be finished flush with the top and roadway face of the curb.

(g) When stipulated in the Uniform Bid Form and Special Specifications, that curb shall be set in a recess in the concrete foundation of the pavement, then this shall be done only after the concrete has become thoroughly hardened. The recess shall be cleared of all foreign matter and on its bottom surface there shall be placed a bed of stiff mortar, varying from one-quarter (1/4") inch to three quarter (3/4") inch in thickness and averaging one-half (1/2") inch in thickness depending on the irregularities in the bottom of the stone curb, or the concrete roadway foundation. When the curb stones have been so set, the recess on both sides of the curb shall be filled from top to bottom with liquid mortar. Compensation for providing the recess and for filling same with mortar after the curb has been set shall be included in the price per linear foot bid in the proposal for curb.

(h) Cuts of proper dimensions, executed in a neat and workmanlike manner shall be made where directed and where required in both new and old curb for drain pipe or gas pipe where required under the curb for connections. No additional compensation shall be made for such cuts.

(i) No extra compensation will be allowed for removing obstructions, gallery or shed posts, etc. that may be encountered in setting new or old curb, nor will any extra compensation be allowed for shoring or reinforcing sheds or galleries that may be necessary.

C707.06 CIRCULAR STONE CURB:

(a) Circular stone curb shall be granite, free of stratification and excess of mica, flint and feldspar. The entire top shall be peen-hammer dressed, and the face of eight (8") inches from the top and the back for four (4") inches from the top of the curb shall be neatly pointed. All edges shall be well defined. The stone shall have squared and neatly finished ends, so as to form close-fitting joints.

(b) Circular stone curb shall be of the radius indicated on plans or as otherwise specified. When the radius is two (2') feet or less, the circular curb shall be in one (1) piece; where the radius is more than two (2') feet, and not more than four (4') feet, the circular curb shall be in two (2) pieces; where the radius is more than four (4') feet, and not more than six (6') feet, the circular curb shall be in three (3) pieces; where the radius is more than six (6') feet, and not more than eight (8') feet, the circular curb shall be in four (4) pieces; where the radius is more than eight (8) feet, and not more than ten (10') feet, the circular curb shall be in five (5) pieces; and where the radius is more than ten (10') feet, and not more than twelve (12') feet, the circular curb shall be in six (6) pieces.

(c) Circular stone curb shall be twelve (12") inches in depth, five (5") inches in width at both ends, and of such widths intermediate to the ends as shown on plans.

C707.07 SETTING CIRCULAR STONE CURB:

(a) Circular curb shall be of the quality and dimensions hereinbefore prescribed for circular curb.

(b) All joints in circular stone curb shall be thoroughly and neatly jointed with mortar and such amount of lamp black added as may be necessary to make the color of the mortar correspond with the color of the stone immediately after it has been set and while it is to correct line and grade.

(c) Circular curb shall be placed on a concrete foundation four (4") inches in thickness mixed in proportion of one (1) part cement to three (3) parts fine aggregate to six (6) parts coarse aggregate.

C707.08 TIMBER CURB:

(a) Timber curb shall be placed on the lines and at the grades as shown on the drawings or as furnished by the Director, and shall be of the dimensions indicated on the plans and herein described.

(b) The face of curbs shall be set either barrier or with a batter as may be designated.

(c) Timber curb shall be formed of either creosoted No. 1 Common Pine, twelve (12 lb.) pound treatment, or treated No. 1 Common Pine .6 lb/cf of CCA, anchors, braces, sills and boards as shown on plans and herein described.

(d) Posts shall measure four (4") inches by four (4") inches and generally the length shall be three (3) times the depth of the finished curb measured on its surface. Posts shall generally be spaced six (6') foot centers apart.

(e) Boards shall be three (3") inches thick and not less than eight (8") inches wide and generally not less than sixteen (16') feet long. They shall be laid horizontal with close-fitting sides and end joints. Joints shall be broken so that boards alongside of each other shall not break joints on the same posts.

(f) At such points as may be designated, cuts of proper dimensions, executed in a neat and workmanlike manner shall be made for drain pipe connections and for the proper construction of foot bridges. No direct compensation shall be made for such cuts.

C707.09 ASPHALTIC CURB: Asphaltic curb shall be placed by an approved extruding machine. Prior to placing curb, the Contractor shall apply asphaltic tack coat conforming to Section C504.

C707.10 MEASUREMENT: The length of curb, gutter, and curb and gutterbottom will be established by measurements of the actual curb, gutter and curb and gutterbottom in place and no allowance will be made for waste due to closures or other causes.

Circular curb shall be measured at the top outer face.

Timber curb will be measured by the number of board feet (MFBM) including board and posts.

Joint materials, rebars, concrete base and piers for stone curb or resetting existing curb shall not be measured for payment.

Excavation for reconstruction of curb and gutter bottom only, and excavation for setting and resetting stone curbs in rehabilitating projects shall not be measured for payment.

C707.11 PAYMENT: Payment for curbs, gutters, and curbs and gutterbottoms shall be made at the contract unit price per linear foot including curb transitions or depressions or after hand-forming curbs and curb and gutterbottom as directed by the Director, subject to the payment adjustment

provisions of Section C501 for asphaltic concrete mixtures and Section C601 for Portland cement concrete.

Payment for wood curb shall be made at the contract unit price per Thousand Board Feet (MFBM).

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C707(54)	Asphaltic Curb	Linear Foot
C707(55)	Concrete Mountable Curb with or Without Dowels (Straight, Circular or Depressed)	Linear Foot
C707(56)	6" Concrete Barrier Curb with or Without Dowels (Straight, Circular or Depressed)	Linear Foot
C707(57)	8" Concrete Barrier Curb with or Without Dowels (Straight, Circular or Depressed)	Linear Foot
C707(58)	Concrete Gutterbottom or Rolling Strip	Linear Foot
C707(59)	Concrete Mountable Curb and Gutterbottom	Linear Foot
C707(60)	6" Concrete Barrier Curb & Gutterbottom or Rolling Strip	Linear Foot
C707(61)	8" Concrete Barrier Curb & Gutterbottom or Rolling Strip	Linear Foot
C707(62)	Stone Curb Including Base (Straight, Circular or Depressed)	Linear Foot
C707(63)	Reset Existing Curb (Precast Concrete, Stone, etc.) Including Base	Linear Foot
C707(64)	Timber Curb	Thousand Board Feet (MFBM)

SECTION C713
TEMPORARY SIGNS, BARRICADES AND PAVEMENT MARKINGS

C713.01 MAINTENANCE OF TRAFFIC:

(a) Reasonable provisions for local traffic throughout the length of the project and the life of the contract must be made by the Contractor during construction without direct compensation.

(b) When specified, the Contractor may also be required to provide for through traffic over the entire project, or designated portions thereof.

(c) The Contractor shall keep the portion of the project being used by public traffic, whether through or local traffic, in such condition that traffic (including garbage collection and mail delivery) will be adequately accommodated. He shall furnish, erect and maintain barricades, warning signs and delineators, and shall provide flagmen and pilot cars in accordance with the plans and the MUTCD. He shall also provide and maintain, in a safe condition, all required temporary approaches or crossings, intersections with roads, streets, business parking lots, residences and garages.

C713.02 PAVING SEQUENCES:

(a) When asphaltic concrete pavement layers are placed in two (2") inch thickness or less, the Contractor will be permitted to pave in one lane for a full day; the adjacent lane may be paved the following workday. When pavement layers are greater than two (2") inch thickness, the Contractor shall place approximately one half (1/2) of each day's production in one (1) lane and the remainder in the adjacent lane. At the end of each day's overlay operation, temporary pavement markings shall be placed and proper signs and barricades displayed. During the period that all lanes are open to traffic, the Contractor shall neither store material nor park equipment on roadway shoulders.

(b) The Contractor shall be responsible for supplying, maintaining and moving, when necessary, adequate barricades, warning signs and lights to safely inform the traveling public as to the location of the work at all times.

C713.03 DETOUR PLAN:

(a) The Contractor shall adhere to the detour plan as shown in the plans. Any changes requested by the Contractor must be approved by the Director before implementation.

Where no detour plan is shown, but is required by the Director to maintain the safe and efficient flow of traffic or efficiency of the Contractor's operation, it shall be developed by the Contractor and approved by the Director.

(b) The Contractor is to provide and maintain construction fences, temporary barricades and sidewalks as required by the Department of Public Works or other authorities in providing security to the premises during the construction period. The Contractor shall provide all necessary items to

insure accessible pedestrian access to properties during construction. When required, the Contractor shall maintain sidewalk barricades, fences and lighting with flashing lights or steady burn lights at locations required by local authorities.

(c) Hauling of material or equipment. Any material or equipment hauled to or from the construction site will be by a route approved or designated by the Department of Public Works Traffic Engineering Division prior to start of construction.

C713.04 TEMPORARY SIGNS, BARRICADES, AND PAVEMENT MARKINGS: Temporary signs, Barricades and Pavement Markings shall conform to Section 713 of the LaDOTD Louisiana Standard Specifications for Road and Bridges, the latest Edition.

C713.05 MEASUREMENT: The furnishing, erecting, maintaining and subsequent removing of temporary construction signs, barricades, pavement markings & markers and related devices will be measured on a lump sum basis.

C713.06 PAYMENT: Payment for temporary construction signs, barricades and related devices will be at the contract lump sum price in accordance with the following schedule:

% of Total Contract Amount Earned	**Allowable % Lump Sum Price for Temporary Signs and Barricades**
Initial Erection	20
25	40
50	60
75	80
100	100

Payment will be made under:

ITEM NO.	**PAY ITEM**	**PAY UNIT**
C713(51)	Temporary Signs, Barricades, Pavement Markings	Lump Sum

HORTICULTURAL REQUIREMENTS

SECTION C714
SODDING

C714.01 DESCRIPTION: This work consists of furnishing, hauling, planting, rolling, watering and maintaining live grass sod at locations shown on the plans or as directed. Sodding shall be in compliance with the Department of Parks and Parkways Section 02485 “Seeding and Sodding” which shall take precedence in any conflict.

C714.02 MATERIALS: Approved sod shall be either field grown grass or nursery grown grass.

Field grown grass sod shall be Bermuda grass or other approved grass native to the sodded area.

Nursery grown grass sod shall be Tiffway Bermuda, Common Bermuda or St. Augustine grass. If Common Bermuda sod is laid between September 15 and March 31, the Contractor shall overseed the sod with Fescue seed as otherwise indicated in the Seeding Section (C717).

Fertilizer shall be Agriform CRF 16-7-12 (+ iron) or equal approved by the Department of Parks and Parkways.

Sod shall be free from noxious weeds or other vegetation.

Water may be obtained from any source. Brackish, chemically contaminated, or oily water shall not be used.

C714.03 GENERAL CONSTRUCTION REQUIREMENTS: Sod shall be Grade A and cut with approved sod cutters. The designated area shall be mowed when necessary. Sod shall be cut to a minimum soil depth three quarter (3/4”) inch to one (1”) inch for field grown grass and one (1") inch for nursery grown grass, and to a uniform width and in convenient lengths for handling. Soil shall be retained on roots of sod during excavating, hauling and planting. Only common Bermuda slab sod shall be used within thirty (30') feet of the outer edges of paved shoulders. Sod cut more than 48 hours before placing shall not be used unless authorized. Sod taken from areas that may produce inferior growth will not be accepted.

C714.04 HANDLING SOD: Sod shall be placed flat, grass side up on boards of convenient lengths and hauled to planting site with soil intact. Only one layer of sod shall be placed on each board. Boards shall be of sufficient thickness to prevent excessive bending and of sufficient width to prevent sod from hanging over the edges.

Stacked sod shall be kept moist and satisfactorily protected from the elements.

C714.05 PLANTING: Areas to receive sod shall be pulverized to a depth of at least four (4") inches, graded and cleared of weeds, grass, stones and other debris. If an item for agricultural lime is included in the contract, liming shall be done when the area is being pulverized. When an

item for fertilizer is included in the contract, approximately ninety (90%) percent shall be broadcast over the area to receive sodding, and the remaining ten (10%) percent shall be broadcast over sod after placing and rolling. Upon delivery to the planting site, sod shall be transferred onto the surface soil. Areas to be sodded shall be watered as directed. Sod shall be placed with minimum space between slabs. Slabs which do not fit closely shall be pulled together with suitable tools and pegged when necessary. When directed, sod surface will be top dressed with sand to smooth-out uneven spots. Sod should have alternating seams (joints).

C714.06 ROLLING: Sod shall be rolled after planting with smooth drum steel rollers or cultipackers. Where rolling is impractical, sod shall be tamped by approved hand methods. Sod shall be installed to cover all exposed bare areas, with tight even seams. Sod shall be rolled after installation to ensure complete contact with the soil.

C714.07 WATERING: Sodding shall be watered as directed. Water sod immediately after installation. Watering shall be done in a manner to prevent erosion of soil or sod. Sod shall be kept moist for thirty (30) days after sodding.

C714.08 MAINTENANCE AND PROTECTION:

(a) Rainfall is usually not adequate to keep newly seeded or sodded turf grasses alive and healthy, supplemental watering is required.

(b) Refill, resod, and refertilize all bare areas as necessary to achieve complete coverage with a satisfactory stand of grass with no gaps larger than four inches (4") square.

(c) At least three (3) mowings shall be completed before the turf will be accepted. At the time of the first cutting, mower blades should be set at 2-1/2" high. Mow prior to the grass growing taller than 3.75". Inform the Parkway and Park Commission Landscape Architect at time of each mowing.

(d) The sodded areas shall be protected against traffic by placing warning signs, protective fencing, or other means as may be required until turf is established and accepted by the Parkway and Park Commission

C714.09 MEASUREMENT: Sodding shall be measured by the square yard along the surface of the completed sodding.

C714.10 PAYMENT: Payment for sodding shall be made at the contract unit price, which includes water and fertilizer.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C714(51)	Sodding	Square Yard

SECTION C717
SEEDING

C717.01 All areas of public greenspace where turf grass has been damaged during construction shall be reseeded by the Contractor. The plans shall designate the limits of seeding and fertilizing.

C717.02 Materials to be used shall include:

(a) Soil: Soil required for preparation of seed bed shall be Mississippi River Batture Sand.

(b) Seed: Grass seed (March through September) shall be hulled Bermuda Grass with minimum 82% by weight of pure live seed and maximum 1% by weight weed seed.

Grass seed (September through March) shall be 50% Turf Type Tall Fescue (variety "Jaguar") and 50% non-hulled Bermuda Seed. Fescue shall have minimum 82% by weight pure live seed have minimum 82% by weight pure live seed and maximum 1% by weight weed seed.

(c) Fertilizer: Fertilizer shall be a complete fertilizer with an analysis of 8-8-8, 13-13-13, or equal approved by the Parkway and Park Commission.

C717.03 PREPARATION AND INSTALLATION:

(a) Prior to seeding, the bed shall be prepared by breaking, disking, harrowing, blading, dragging or other approved methods. The soil shall be thoroughly pulverized to a minimum depth of four (4") inches and smoothed by means of raking or other approved method. This requirement may be waived if 3" to 4" of Mississippi River Batture sand is used for dressing. Each area then shall be rolled with a light roller and then finely raked. The finished surface shall be smooth, finely textured and free from sticks and debris.

(b) Fertilizer shall be distributed evenly, by mechanical spreader, over all areas to be seeded. The rate of application shall be twenty (20) pounds per 1,000 square feet, as per manufacturer's specifications.

(c) Grass seed shall be applied at the rate of ten (10) pounds each of the specified seed types per 1,000 square feet of seed bed by means of an approved mechanical seed spreader which will provide a depth of 1/8" to 1/4", or rake seed into soil.

(d) Water seed immediately after installation. Watering shall be done in a manner to prevent erosion of soil or seed.

C717.04 MAINTENANCE AND PROTECTION:

(a) Rainfall is usually not adequate to keep newly seeded or sodded turf grasses alive and healthy, supplemental watering is required.

(b) Refill, reseed and refertilize, all bare areas as necessary to achieve complete coverage with a satisfactory stand of grass no gaps larger than four inches (4") square.

(c) At least three (3) mowings shall be completed before the turf will be accepted. At the time of the first cutting, mower blades should be set at 2-1/2" high. Inform the Parkway and Park Commission Landscape Architect at time of each mowing.

(d) The seeded areas shall be protected against traffic by placing warning signs, protective fencing, or other means as may be required until turf is established and accepted by the Parkway and Park Commission.

C717.05 MEASUREMENT: Seeding will be measured by Lump Sum.

C717.06 PAYMENT: Payment for seeding, including fertilizer and water will be made at the contract unit price under:

ITEM NO.	PAY ITEM	PAY UNIT
C717(51)	Seeding	Lump Sum

SECTION C719
LANDSCAPING

C719.01 TREE PROTECTION: At the field plan-in-hand meeting of each project, the Department of Public Works and the Department of Parks and Parkways will prepare a list which will state the location of each tree by station and distance off the survey base line and what work is required at each tree location. The list will be enclosed in the project specifications. Tree protection shall be in compliance with the Department of Parks and Parkways Section 02480 "Landscape Protection During Construction".

(a) The Contractor shall be responsible for damage to any City tree within the construction area and liable to the City for compensation of damage.

(b) The Contractor must notify the Department of Parks and Parkways, Tree Department at least ten (10) working days prior to the beginning of construction.

(c) The Contractor shall provide a Louisiana Licensed Arborist to perform the necessary tree trimming, root pruning, or removal of any tree or stump on City property. A non-exclusive list of licensed previously approved arborists may be obtained from:

Department of Parks and Parkways
Tree Department
2829 Gentilly Blvd.
New Orleans, LA 70122
Ph. (504) 658-3201
Fax. (504) 658-3227
ParksandParkways@nola.gov

(d) The Licensed Arborist must obtain a permit from the Department of Parks and Parkways, Tree Department prior to working on any City Trees.

(e) The Critical Root Zone (CRZ) of a tree is established on the basis of the trunk diameter. The CRZ is a circular area which extends from the trunk in a radius of 12 inches to every inch diameter of trunk taken at 4.5 feet above grade, or to the outer edge of the dripline, whichever distance is furthest.

(f) Prior to beginning construction, the Contractor must complete trimming trees requiring clearance for all new construction.

(g) The attachment of signs, barricades, equipment or materials in any manner to any tree is prohibited.

(h) Excavation within the CRZ of any City tree is permitted only under existing roadbeds. All other excavation (i.e. street widening, neutral grounds, or sidewalks) within the dripline of any City trees will be inspected by the Department of Parks and Parkways, Tree Department prior to beginning construction.

(i) Trenching within the CRZ of any City tree is not permitted. Boring or hydraulic jacking is acceptable within the dripline if performed according to the following specifications. The boring or jacking must be at minimum depth of thirty inches (30") and begin ten (10') feet from the dripline of the tree. Placement of boring pits and direction of the boring must be approved by the Director prior to beginning construction. Under unusual conditions, the Director may approve alternative methods. Boring or jacking shall be in compliance with Section C728 "jacked or bored pipe."

(j) Where tree roots interfere with placement of new curbs, delete the typical one (1') foot excavation for placement of new curbs within the driplines of any City-owned tree. Hand forming curbs within the dripline of City trees may be required at no direct pay.

(k) Where tree roots interfere with placement of new sidewalk, wherever possible ramp over roots using a minimum four (4") inch gravel bed and filter cloth between the gravel bed and the new concrete. If ramping is not an option, an on site inspection by the Department of Public Works, Department of Parks and Parkways, the Contractor, and the Contractor's licensed arborist will be required prior to excavating for the new sidewalk to determine the extent of root pruning necessary for construction clearance. Do not place expansion joints over roots, only use control joints.

(l) No more than two (2") inches of cut or fill is permitted within the CRZ of any City-owned tree except under existing roadbeds.

(m) Storage is never permitted within the CRZ of any tree. The use of neutral grounds and other City property for the storage of materials, supplies, equipment, or vehicles is permitted only with specific written authorization from the Department of Parks and Parkways Director.

(n) The erection of barricades around the perimeter of tree CRZ may be required. The Contractor is responsible for maintaining the temporary barricades until completion of the project. The tree protection fencing and posts shall be removed upon Substantial Completion and become the property of the Contractor. The minimum barricade requirements shall be the following:

Wooden or rigid chain link barricade of at least five (5') feet in height.

(o) Tree trimming is defined as the cutting of tree branches. The Parkway and Park Commission Urban Forester will consult the Contractor and the licensed arborist to determine the extent of trimming allowable. Tree trimming will only be performed on tree branches conflicting with construction. No trimming will be allowed that will alter the natural form of a tree.

(p) Root pruning is defined as the cutting or grinding of roots. The Parkway and Park Commission Urban Forester will consult with the Contractor and the licensed arborist to determine the extent of root pruning allowable.

(q) Root trenching is defined as cutting of roots using a trenching machine. The Parkway and Park Commission Urban Forester will consult with the Contractor and the licensed arborist to determine the extent of root trenching allowable.

(r) Root pruning and root trenching will be at No Direct Payment for trees with less than four (4") inch caliper measured six (6") inches off the existing ground.

C719.02 MAINTENANCE OF NEUTRAL GROUNDS:

(a) The Contractor is responsible for restoring the neutral ground to a like or better condition than existed prior to construction. All areas disturbed during construction shall be regraded to a smooth even surface, eliminating ruts and holes. All obstructions such as bricks, concrete, wire, cable, wood, metal, shell, gravel, and other debris must be removed. Pump Sand may be used to backfill low areas to complete grading. Restoration of turf grass is covered in Section C717.

(b) The Contractor is responsible for the maintenance of turf grass and other plant material on neutral grounds within the limits of the entire construction area defined by the project limits on the construction plans and specifications for the duration of the project.

(c) Maintenance shall commence when construction begins or when any supplies, equipment, signs, barricades, or other materials related to the construction are placed on the neutral ground, whichever occurs first; and continue until Final Acceptance.

(d) Maintenance shall primarily include mowing with grass to be maintained no higher than six (6") inches at any time. Intervals between mowing shall not extend beyond three (3) weeks.

(e) Under certain rare circumstances, if newly planted trees or shrubs or other existing plantings requiring maintenance during construction, are inaccessible to Parkway and Park Commission maintenance personnel and equipment for watering, weeding, trimming or other maintenance, the Contractor may be required to perform such maintenance during construction at no Direct Pay.

(f) The Contractor shall be responsible for damage to any City-owned tree, groundcover, or shrub on the neutral ground or other greenspace within the construction area and liable to the City for compensation of damage.

(g) No tree, groundcover, or shrub may be removed from public greenspace without the approval of the Director.

C719.03 INSTALLATION OF NEW AND RELOCATED TREES AND SHRUBS:

(a) Removal from the construction site of trees or shrubs to be relocated shall be accomplished by the use of an appropriately sized tree spade. For trees, the tree spade must be adequate to obtain a minimum of one (1') foot of root ball diameter for each one (1") inch of tree caliper measured one (1') foot off the ground.

(b) The Contractor must contact the Department of Parks and Parkways Landscape Architect at least ten (10) working days prior to the installation of new or relocated trees and shrubs. The Department of Parks and Parkways Landscape Architect will determine and identify the planting sites for new or relocated trees and shrubs.

(c) The Contractor is responsible for ensuring that all trees and shrubs are planted according to locally accepted horticultural practices, including planning hole preparation, soil backfill, fertilizer, mulch, watering, staking, and guying (See Standard Plans). Planting shall be in compliance with the Department of Parks and Parkways Section 02481 “Installation of New Plant Materials”.

(d) The Contractor is responsible for maintenance of any new or relocated trees and shrubs from the time of planting until one year from the date of Final Acceptance of the project.

(e) Maintenance shall include all necessary watering, fertilizing, weeding, pruning, disease and insect control, straightening and adjustment, replacement of dead or unhealthy plants, and other procedures consistent with good horticultural practices which are necessary to insure normal, vigorous and healthy growth of the plant material.

C719.04 MEASUREMENT:

(a) Gravel bed and filter cloth over tree roots shall be measured by square yard.
(b) Tree protection shall be measured per the linear foot.
(c) Tree removal shall be measured per each.
(d) Tree replacement shall be measured per each.
(e) Tree relocation shall be measured per each.
(f) Tree trimming shall be measured per the lump sum.
(g) Root pruning shall be measured per each.
(h) Root trenching shall be measured per each.

C719.05 PAYMENT:

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C719(55)	Gravel Bed and Filter Cloth over Tree Roots	Square Yard
C719(56)	Tree Protection	Linear Foot
C719(57)	Tree Removal (dbh Size, Type)	Each
C719(58)	Tree Replacement (dbh Size, Type)	Each
C719(59)	Tree Relocation (dbh Size, Type)	Each
C719(60)	Tree Trimming	Lump Sum
C719(61)	Root Pruning	Each
C719(62)	Root Trenching	Each

INCIDENTAL CONSTRUCTION II

SECTION C723
GRANULAR MATERIAL

C723.01 DESCRIPTION: This work consists of furnishing and placing batture sand for dressing behind the curb and granular material for other adjustments, in accordance with these Specifications and in conformity with the lines, grades and typical sections shown on the plans and as directed.

C723.02 MATERIALS: Batture sand shall be used for dressing behind the curb. When the cross slope is steep and construction takes place during the rainy season, batture sand shall be replaced by silt clay soil at no additional cost as directed by the Director. For other adjustments, granular material shall be used and conform to subsection 1003.07.

C723.03 MEASUREMENT: Soil dressing behind the curb and granular material shall be measured by the cubic yard, truck measure.

C723.04 PAYMENT: Payment for soil dressing behind the curb and granular material for other adjustments will be made at the contract unit price, including compaction.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C723(52)	Batture Sand for Dressing, Granular Material for other Adjustments	Cubic Yard, Truck Measure

SECTION C724
PAVEMENT REPAIR, JOINT REPAIR, AND CRACK REPAIR

C724.01 DESCRIPTION: This work consists of pavement repair, joint repair and crack repair of existing pavements in accordance with applicable sections of the City Code and these specifications and in conformity with the lines, grades and typical sections shown on the plans or as directed.

C724.02 MATERIALS:

Portland cement concrete shall conform to Section C601.
Asphaltic concrete shall be any type mixture listed in Section C501 or Section C502.
Asphaltic tack coat shall conform to Section C504.
Mix for joint repair shall be Type 3 Wearing Course conforming to Section C501.

C724.03 EQUIPMENT: Equipment furnished shall meet the specification requirements for the types of material used.

C724.04 GENERAL CONSTRUCTION REQUIREMENTS: The Contractor shall remove existing surfacing and base materials and perform all required excavation for pavement repair, joint repair and crack repair. When through traffic is maintained, the Contractor shall complete the replacing of pavement, place the widening material, or fill and compact open areas or trenches, at the end of each day's operation.

Excavation and compaction of the subgrade shall be in accordance with the plans or as directed by the Director. The subgrade shall be compacted uniformly.

Existing surfacing and excess excavation shall be disposed of beyond the right-of-way in accordance with Section C202.

C724.05 SCOPE: The scope of the roadway pavement repair and restoration required is based on the extent of pavement repair required, type of pavement, condition/age of the pavement, and type of street. For purposes of roadway pavement repair scoping the following definitions apply:

Concrete panel - A panel is defined as a homogenous section bound by full original construction joints on each side.

Condition of the pavement – the condition of the roadway pavement on a specific block as reflected by its Pavement Condition as determined using ASTM D6433 - 11: Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys. Pavement Conditions include Excellent, Good, Fair, Poor, Very Poor, and Failure.

Pothole – a contiguous area in the roadway of less than 12 square feet where the pavement exhibits distress and/or is beginning to fail, or has failed, but the base course underneath the pavement has not begun to fail. Potholes shall be repaired in accordance with Section C724.11.

Utility Service Cut – an intentional cut into the roadway surface as part of an excavation that extends through the pavement and is a feature of work for the repair, replacement, installation or other related work on one or more underground utility lines.

(a) Restoration of concrete pavements and pavements with a bituminous wearing surface and concrete foundation. In the case of concrete pavements and pavements with a bituminous wearing surface and concrete foundation, the following shall be required when restoring utility service and other repair cuts regardless of size:

(1) The concrete for restoration of service cuts shall have a compressive strength of at least 4,500 pounds per square inch at 72 hours. On streets with a concrete base or full depth concrete paving, dowelling into the existing concrete pavement shall be employed.

(2) The pavement must be restored by replacement of the full concrete panel in which the cut or part of the cut is made, unless otherwise approved/directed by the DPW Director or his designee.

(3) The concrete and any wearing surface on top of the concrete base shall be saw cut and remove, to a depth equal to that of the pavement to be restored, unless otherwise directed by the DPW Director. Cutouts outside of the trench lines must be normal or parallel to the trench line. Pavement edges shall have vertical face and be neatly aligned with the center.

(4) If the extent of the cut(s) and subsequent pavement restoration is seventy-five percent (75%) or more of the pavement surface area of the street block in which the cut was made, the entire street block from intersection to intersection shall be repaved, unless otherwise approved/directed by the DPW Director.

(b) Restoration of asphaltic concrete pavements. In the case of full depth asphalt roadways, the following shall be required when restoring utility service and other repair cuts regardless of size:

(1) The existing pavement shall be saw cut and removed in a manner that does not damage the base that is to remain in place, for a distance of at least 12 inches on each side of the width of the trench and 12 inches at each end thereof.

(2) In addition to the full-depth restoration of the cut, the street's wearing surface to a minimum depth of 2-1/2 inches shall be removed and replaced on the entire street block, as measured from beginning of intersection to the beginning of intersection, as part of the pavement restoration, unless otherwise approved/directed by the DPW Director, if:

a) The roadway pavement and one or more major utility lines (water, sewer, drainage) have been constructed or reconstructed within the last 5 years (3 years, if the roadway was only resurfaced) and the service cut and subsequent pavement restoration runs

for more than 100 linear feet along the length of the block or covers 25% or more of the pavement surface area of the block; or

b) The service cut and subsequent pavement restoration runs for more than 150 linear feet along the length of the block or covers 50% or more of the pavement surface area of the block, regardless of the age of the pavement.

For purposes of this determination, the restoration of more than one separate cut made within a 12-month period shall be considered as one combined restoration effort.

The Director may grant exceptions to these roadway pavement repair and restoration requirements on a case-by case basis upon written request, subject to applicable City Code requirements.

If the roadway pavement damages/repairs extend into the area of the roadway or curb and no Americans with Disabilities Act (ADA) compliant is present, then an ADA-complaint ramp is required to be installed as part of the repair and restoration work on that corner, except as directed by the Director and except in cases where routine maintenance such as pothole repairs (C724.11), joint resealing (724.09), and crack repairs (C724.08 or C724.10), is being completed.

C724.06 ASPHALTIC CONCRETE REPAIR:

(a) Where a section of an existing asphaltic concrete roadway has deteriorated and needs to be replaced, it shall be completely removed and replaced with full depth asphaltic concrete.

(b) On streets having a bituminous wearing surface, such surfaces shall be removed for a distance of 9 inches on each side of the width of the trench and 9 inches at each end thereof.

(c) If the bituminous surface is on concrete base, the concrete shall be undercut for nine inches to form a keyway having a depth equal to that of the pavement to be restored.

(d) When the bituminous surfacing is on a base other than concrete, it will then be required to cut back the base for nine inches in each horizontal direction.

(e) Unstable pavement shall be removed over cave-ins, areas of contiguous subsidence, overbreaks and small floating sections and is to be treated the same as the main trench.

(f) Cutouts outside of the trench lines must be normal or parallel to the trench line. Pavement edges shall have vertical face and be neatly aligned with the center.

(g) The Director will designate the area of pavement to be removed. A minimum of 2 inches saw cut into the pavement shall be required to ensure a square break of the pavement to be removed.

(h) All pavement within the designated area shall be removed and the subgrade area prepared to receive an eight (8") inch compacted base course. Compacted pumped sand as required shall be used to replace unsuitable subgrade or to fill voids as directed.

(i) Just prior to placing the new asphaltic concrete, the vertical faces of the old asphaltic pavement shall be coated with asphaltic tack coat, and an asphaltic coat shall be applied on the base course. Tack coat **and** prime coat shall conform to all requirements of Sections C504 and C505.

C724.07 CONCRETE PAVEMENT REPAIR:

(a) Where expansion has caused a buckling of the roadway base pavement resulting in a ramp effect in the roadway or where sections of roadway pavement have deteriorated and need to be replaced, sections of roadway pavement are to be completely removed and replaced with High Early Strength Concrete Pavement and subsequent asphalt surfacing as required.

(b) The Director will designate the areas of pavement to be removed. Asphalt surfacing, if any, shall be removed to permit a minimum of two (2") inches saw cut into the concrete base pavement is required to ensure a square break of the pavement to be removed.

(c) The breaking out shall be done with hydraulic or pneumatic equipment only. No free fall equipment shall be allowed. When breaking the concrete pavement, every attempt shall be made to save a minimum twelve (12) inches of the existing welded wire fabric on each side. In the event that the welded wire fabric cannot be saved, or where none exists, tie bars shall be drilled and epoxy grouted into the existing pavement to allow for a proper tie-in.

(d) All concrete pavement within the designated area is to be removed and the subgrade area prepared to receive an eight (8") inch compacted base course. Compacted pumped sand as required shall be used to bring subgrade to the required elevation. It shall also be used to replace unsuitable subgrade or to fill voids as directed.

(e) Just prior to placing the new concrete, the vertical faces of the old concrete pavement are to be coated with an approved concrete epoxy per A.S.T.M. C 881 Type II. The new roadway pavement shall consist of four thousand (4,000) psi. at three (3) days, High Early Strength Concrete reinforced with 6 X 12 - W 7.5 X W 6.5 welded wire fabric, seventy-seven (77) pounds per one hundred (100) square feet. The new mesh shall be tied to the existing mesh where possible.

(f) Wherever a joint (any type) or a part thereof falls within the affected area, the same shall be reestablished in kind and shall be incidental to the work included as Concrete pavement repair.

(g) After all roadway pavement repairs have been completed at a location, Bituminous Wearing Course material, if required, shall be placed in a continuous operation.

C724.08 CONCRETE JOINT REPAIR:

(a) Where a roadway pavement contraction joint or expansion joint has failed, the roadway pavement and defective joint shall be removed and replaced with a new expansion joint and High Early Strength Concrete Pavement.

(b) The Director shall designate the areas of pavement and joints to be removed. Asphalt surfacing, if any, shall be removed to permit a minimum of two (2") inches saw cut into the concrete base pavement is required to ensure a square break of the pavement to be removed.

(c) The breaking out shall be done with hydraulic or pneumatic equipment only, no free fall equipment shall be allowed. When breaking the concrete pavement, every attempt shall be made to save a minimum twelve (12") inches of existing welded wire fabric on each side. In the event that the welded wire fabric cannot be saved or where none exists, tie bars shall be drilled and epoxy grouted into the existing pavement to allow for a proper tie in.

(d) All concrete pavement within the designated area shall be removed and the subgrade area prepared to receive an eight (8") inch compacted base course. Compacted pumped sand as required shall be used to bring subgrade to the required elevation. It shall also be used to replace unsuitable subgrade or to fill voids as directed.

(e) Just prior to placing the new concrete, the vertical faces of the old concrete pavement are to be coated with an approved concrete epoxy per A.S.T.M. C 881 Type II. The new roadway pavement shall consist of four thousand (4,000) psi. at three (3) days, High Early Strength concrete reinforced with 6 X 12 - W 7.5 X W 6.5 welded wire fabric, seventy-seven (77 lbs.) pounds per one hundred (100) square feet. An expansion joint is to be constructed.

(f) After all pavement and joint repairs have been completed at a location, bituminous wearing course material, if required, shall be placed in a continuous operation.

C724.09 JOINT RESEALING:

(a) This work shall apply for all type of joints requiring sealing.

(b) Clean all joints of contaminants, impurities and old sealants and backer rods, if any, by grinding, saw-cutting or blast cleaning.

(c) Blow out dust, loose particles and other debris from joints with oil-free compressed air.

(d) Install an approved backer rod in joints as required.

(e) Apply an approved joint sealant in a continuous operation to properly fill and seal the joint width.

C724.10 CRACK REPAIR:

(a) Cracks between three-eighth (3/8") and one (1") inch:

(1) A groove about one-half (1/2") inch wide and three-fourths (3/4") inches deep should be made along the crack by sawing or grooving. The equipment must be capable of following closely the path of the crack.

(2) Clean the crack with compressed air. The crack must be free of dust, dirt and other material that might prevent bonding of the seal.

(3) Seal the crack, using hot poured asphaltic-type sealant as specified in subsection C601.04(g)(2).

(b) Cracks greater than one (1") inch:

(1) Clean all cracks of contaminants, impurities and old sealants to the depth required by blast-cleaning.

(2) Coat vertical faces of the cracks with an asphaltic tack coat.

(3) Apply an approved asphaltic sand mix in a continuous operation to properly fill.

C724.11 POTHOLE REPAIR ON ACCESS ROUTES: The work consists of cutting the pavement around the pothole in a rectangular shape, lining with the tack coat, filling with hot mix asphalt wearing course and compacting. Location of repair sites shall be as specified by the Director and shall encompass sufficient work to require a minimum of one (1) ton of asphalt per repair operation.

C724.12 MEASUREMENT:

(a) Pavement repair and joint repair. Pavement repair and joint repair will be measured by the square yard of existing pavement designated to be removed and replaced.

(b) Joint resealing, and crack repair. Joint resealing and crack repair will be measured by the linear foot.

(c) Pothole repair on access routes. Pothole repair on access routes, will be measured by the ton of asphalt.

C724.13 PAYMENT: Payment will be made at the contract unit price.

(a) Asphaltic concrete repair: Payment for asphaltic concrete repair will be made at the contract unit price per square yard, including saw cutting, removal of existing pavement, base preparation excavation, base course, tack coat, prime coat and asphaltic concrete. The cost of pumped sand as mentioned in Subsection C724.05(c) will be paid for by bid item No. C203(58).

(b) Concrete pavement repair. Payment for concrete pavement repair will be made at the contract unit price per square yard, including saw cutting, removal of existing pavement, excavation, base preparation, base course, Portland Cement concrete and welded wire fabric. The cost of pumped sand as mentioned in Subsection C724.06(d) will be paid for by bid item No. C203(58).

(c) Concrete joint repair. Payment for concrete joint repair will be made at the contract unit price per square yard, including the work mentioned in Subsection C724.12(b) and installation of new joint assembly.

(d) Joint resealing. Payment for joint resealing will be made at the contract unit price per linear foot including the works described in Subsection C724.08.

(e) Crack repair. Payment for crack repair will be made at the contract unit price per linear foot, including the works described in Subsection C724.09.

(f) Pothole repair on access routes. Payment for pothole repair on access routes will be made at the contract unit price per the ton including the works mentioned in Subsection C724.10.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C724(51)(A)	Asphaltic Concrete Repair	Square Yard
C724(51)(B)	Concrete Foundation Repair with Asphalt Overlay	Square Yard
C724(51)(C)	Concrete Pavement Repair	Square Yard
C724(53)(A)	Concrete Joint Repair	Square Yard
C724(53)(B)	Joint Resealing	Linear Foot
C724(54)(A)	Crack Repair Between 1/8" and 1/2" Wide	Linear Foot
C724(54)(B)	Crack Repair Greater than 1" Wide	Linear Foot
C724(55)	Pothole Repair on Access Routes	Ton

SECTION C727
MOBILIZATION

C727.01 DESCRIPTION: This work consists of preparatory work and operations, including those necessary for movement of personnel, equipment, supplies and incidental to the project site; the establishment of offices, buildings and other facilities necessary for work on the project; the cost of bonds and any required insurance; and other preconstruction expenses necessary for start of the work excluding the cost of construction materials.

C727.02 PAYMENTS:

(a) When the contract does not include a pay item for mobilization, no direct payment will be made for mobilization.

(b) When the contract contains a pay item for mobilization, payment will be made at the contract lump sum price, subject to the following provisions:

Partial payments for mobilization will be made in accordance with the following schedule up to a maximum of ten (10%) per cent of the original contract amount, including this item, and payment of any remaining amount will be made upon completion of all work under the contract.

Percent of Total Contract Amount Earned		Allowable Percent of the Lump Sum Price For the Item
1st Partial Estimate	up to	25 **%**
10 **%**	up to	50 **%**
25 **%**	up to	75 **%**
50 **%**	up to	100 **%**

No payment adjustments will be made for this item due to changes in the work. Additional Mobilization cost occasioned, by a plan change, if approved, will be paid for within the Plan Change.

Nothing herein shall be construed to limit or preclude partial payments otherwise provided by the contract.

Payment will be made under:

ITEM NO.	**PAY ITEM**	**PAY UNIT**
C727(51)	Mobilization	Lump Sum

SECTION C728
JACKED OR BORED PIPE

C728.01 DESCRIPTION: This work consists of furnishing and installing pipe in embankments at the locations shown on the plans by jacking or boring in accordance with these specifications.

C728.02 MATERIALS: Pipe and joint materials shall conform to Section C701 for drain lines, C741 for water mains and C742 for sewer lines.

C728.03 CONSTRUCTION REQUIREMENTS: In general, pipes 30 inches diameter and greater shall be jacked, and pipes less than 30 inches diameter shall be bored.

The work shall begin at the outfall end of pipe when possible. When the grade at the jacking or boring end is below ground surface, suitable pits or trenches shall be excavated for conducting operations and placing joints of pipe. Adequate sheeting and bracing shall be provided to prevent earth caving.

For pipe with bell joints, if the outside diameter of pipe bell exceeds the outside diameter of pipe barrel by more than 1 inch, pipe shall be either cased or pressure grouted its full length. The casing shall be an approved type and size, and shall be furnished and installed by the Contractor in accordance with these specifications. Pressure grouting shall be performed with approved materials placed by approved methods.

The method used shall be such as not to weaken or damage the embankment. The Contractor shall furnish to the Director for approval a plan showing the proposed procedure, including backstop or jacking frame arrangement, pipe guides, position of jacks and jacking head. Approval of this plan shall not relieve the Contractor from responsibility to obtain the desired result.

(a) Jacking: Heavy duty jacks suitable for forcing pipe through the embankment shall be provided. Even pressure shall be applied to all jacks and shall be transmitted to the pipe end through a jacking head. The jacking head shall be designed so that pressure is uniformly applied around the ring of the pipe. Backstop or jacking frame shall be adequate to resist pressure of the jacks under load. Pipe shall be set on guides properly fastened together to support the pipe in the proper direction at correct grade. Suitable cushioning material, such as plywood, shall be provided between sections of concrete pipe.

Material shall be excavated ahead of the pipe and shall be removed through the pipe. Excavation shall not extend more than 2 feet beyond the forward end of pipe. When the character of embankment material dictates, the distance shall be reduced to prevent the embankment from being damaged. Excavated material shall be disposed of in accordance with Subsection C202.02.

Excavation on the underside of pipe, for at least 1/3 the circumference of pipe, shall conform to the contour and grade of the pipe. A clearance of not more than 2 inches may be provided for the upper half of pipe, tapered to zero at the point where excavation conforms to contour of pipe.
A steel cutting edge may be used around the forward end of pipe, constructed so that it will transmit pressures uniformly around the ring of the pipe.

Jacking shall continue without interruption, to prevent pipe from becoming firmly set in the embankment.

Pipe shall not vary horizontally or vertically by more than 1 inch in 10 feet from established line and grade. Any variation shall be regular, and no abrupt changes in direction will be permitted. Any pipe damaged or misaligned in jacking operations shall be removed and replaced by the Contractor at no direct pay.

(b) Boring: Boring shall be done mechanically, using a pilot hole approximately 2 inches in diameter. The pilot hole shall extend through the embankment and shall be checked for line and grade before boring begins. Variations from line and grade shall not exceed those specified for jacking. The pilot hole shall serve as centerline of the larger diameter hole to be bored.

The use of water and other fluids with boring operations will be permitted only to lubricate cuttings. Jetting will not be permitted.

In unconsolidated soil formations, a gel-forming colloidal drilling fluid consisting of at least ten (10%) percent high-grade, bentonite may be used to consolidate cuttings of the bit, seal walls of the hole, and furnish lubrication for subsequent removal of cuttings and installation of pipe.

Overcutting in excess of 1 inch shall be remedied by pressure grouting the entire length of the installation.

Pipe shall be joined as specified in Section C701 for drain lines, C741 for water mains and C742 for sewer lines.

C728.04 MEASUREMENT: Quantities of jacked or bored pipe for payment will be the design lengths as specified on the plans and adjustments thereto. Design quantities will be adjusted if the Director makes changes to adjust to field conditions, if plan errors are proven, or if design changes are made. Required excavation, sheeting, bracing, falsework, casing, joint materials and grouting will not be measured for payment.

C728.05 PAYMENT: Payment for jacked or bored pipe will be made at the contract unit price per linear foot under:

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C728(51)	Jacked or Bored Pipe (Size, Type, Class or Thickness)	Linear Foot

SECTION C729
TRAFFIC SIGNS AND DEVICES

C729.01 DESCRIPTION: The Contractor shall furnish and install traffic signs (street edge signs), street name signs and project signs with accessories and posts of specified materials, sizes, shapes, weights and designs.

In general, the work and materials shall conform to the MUTCD as modified by these specifications or as shown on the plans.

Signs shall be fabricated in an approved plant. The fabrication Contractor shall show evidence of successful experience in fabrication and erection of quality reflectorized signs.

The term legend shall mean border strip, letters, numerals and symbols which convey the message on signs.

C729.02 MATERIALS: Materials shall be new stock conforming to the following:

(a) Sign and Marker Sheeting: Sheeting material for sign panels, delineators and markers shall conform to LaDOTD Section 1015. Reflective sheeting material shall be either ASTM Type I, ASTM Type II or ASTM Type III, as specified. When not specified, either ASTM Type I, Type II or Type III may be furnished.

(b) Ferrous Metal: Ferrous metals shall conform to LaDOTD Subsection 1015.02(a). Ferrous metal shall be galvanized in accordance with LaDOTD Section 811.

(c) Aluminum: Aluminum sign panels shall conform to LaDOTD Subsection 1015.04(a).

(d) Fittings: Structural bolts, nuts, washers and miscellaneous hardware shall conform to LaDOTD Subsection 1015.02.

(e) Flexible Sign Posts: Flexible posts for small signs, markers and delineators shall conform to LaDOTD Subsection 1015.03.

C729.03 GENERAL REQUIREMENTS: The Contractor has the option of furnishing either steel or aluminum posts. Sign panels shall be aluminum. Before beginning work, the Contractor shall notify the Director in writing as to the combination of signing materials he proposes to furnish. The same combination of signing materials shall be used throughout the project.

C729.04 FABRICATION OF SIGNS AND MARKERS:

(a) General: The completed product shall have a surface free of cracks, blisters, blemishes and wrinkles.

Metal fabrication including shearing, cutting and punching of holes shall be completed prior to surface treatment of metal and application of sheeting. Metal panels shall be cut to size and shape and shall be free of buckles, warps, dents, cockles, burrs and defects resulting from fabrication. Surface of sign panels shall be flat.

Splice plates joining sign panels shall not extend behind horizontal sills. Aluminum panels shall be a nominal 0.080 inch thick.

(b) Surface Treatment: Surface treatment shall be in accordance with approved recommendations of the reflective sheeting manufacturer.

(c) Sheeting Application: Application of sign face and legend sheeting shall be in accordance with approved recommendations of the reflective sheeting manufacturer. Unless otherwise approved in writing, reflective sheeting shall be applied to panels in such a manner that there are no horizontal splices.

Legend shall be of the shape, size, dimension and stroke specified in the MUTCD and sign face shop drawings. Legend shall be applied in accordance with LaDOTD Subsection 1015.05.

(d) Object Markers and Delineators:

(1) Object Markers: Object markers shall be yellow reflectorized material conforming to LaDOTD Subsection 1015.05 and low gloss black nonreflectorized material conforming to LaDOTD Subsection 1015.06 or 1015.07, mounted on nominal 0.080 inch thick aluminum panels.

(2) Delineators: Delineators shall be ASTM Type III reflective sheeting (silver, red or yellow, as specified) conforming to LaDOTD Subsection 1015.05 applied to properly treated base panels, punched or sheared to specified dimensions for rigid steel posts or applied directly to flexible posts.

(e) Packaging: Before being packed, signs shall be allowed to stand for at least 12 hours after completion of screening. Signs shall be slipsheeted and packed in such manner as to ensure their arrival at their destination in an undamaged condition. Packaged signs shall not be permitted to become wet during storage or shipment.

C729.05 STREET NAME SIGNS: The Contractor shall supply erect street name signs complete, in place, according to the provisions below:

(1) Sign Dimensions:

8" High or 12” High, as specified by the Director.

24", 30" or 36" Long.
No faces longer than 36".

(2) Sign Material: Aluminum plate, 0.080 inch thick with all corners rounded on approximately 3/4" radius. All holes 7/32".

(3) Sign Legend and Border: See standard plans.

(4) Color: See standard plans.

(5) Sign Post: Galvanized steel, two (2 lb/ft) pounds per foot, U-channel. The sign post must be installed with seven (7') foot vertical clearance and three (3') feet of post underground.

(6) Bracket and Hardware: Bracket (if needed) and hardware in galvanized steel, approved by the Department of Public Works.

(7) Sign Locations: The number and location of street name signs shall be approved by the Traffic Engineer of the Department of Public Works. In principle, all existing vertical street name signs shall be replaced with new horizontal street name signs. All old signs, damaged or illegible, shall be replaced.

C729.06 PROJECT SIGNS: The Contractor shall supply erect project signs, complete in place according to the provisions, as detailed in the project specifications.

C729.07 CONSTRUCTION REQUIREMENTS: When removal of existing signs is required, the Contractor's sign removal operations shall be coordinated as directed with new sign construction to provide for adequate signing to be in place at all times.

(a) Sign Locations: Sign support locations shall be as shown on the plans or as directed. Locations which are obviously improper because of topography, existing appurtenances or other conflicting conditions will be adjusted to the closest desirable location. The Contractor shall determine elevations for post length determinations at the established sign support location.

(b) Sign Positioning:

(1) Traffic Signs: Traffic signs shall be constructed with sign faces vertical. Sign faces, other than parking regulations, located less than 30' from the edge of the travel lane shall be placed at a 93^{o} angle from the center of the travel lane. Sign faces located 30' or more from the edge of the travel lane shall be placed at an 87^{o} angle from the center of the travel lane. Parking signs shall be placed at a 45 degree angle from the center of the travel lane. Where the lanes divide or on curves or grades, sign faces shall be oriented to be most effective both day and night and avoid specular reflection.

(2) Delineator, Object Marker and Milepost Assemblies: These assemblies shall be placed at least 2' beyond the outer edge of roadway shoulder, 2' beyond the face of curb, or in the line of guard rail.

(3) Vertical and Horizontal Clearances: The bottom of the sign shall be a minimum of 7' above the existing terrain.

Minimum horizontal clearance from edge of roadway to any ground sign shall be as shown on the plans or as directed.

(c) After erection, sign faces shall be cleaned to allow adequate visibility of the sign.

C729.08 ACCEPTANCE OF SIGNS: After installation of signs is complete, the Traffic Engineer of the Department of Public Works will inspect the signs, sign faces, mounts, installations, hardware and matters relating to the requirements of this Section for conformance to applicable plans, standards and project specifications.

Color match, uniformity and spacing of legend, specular glare and, sign type and design will be inspected for conformance to plans and specifications. When specular reflection is apparent on any sign, its positioning shall be adjusted by the Contractor to eliminate this condition. Signs shall be clean at the time of inspection. Reflective sheeting shall be free of cuts, scratches, breaks or other defects which might allow moisture to infiltrate and damage reflective cells. Nonstandard or otherwise unacceptable signs and traffic control devices shall be replaced or repaired as directed by the Director. The Contractor will be required to correct damage that is discovered at the time of the sign inspection.

C729.09 MEASUREMENT: Traffic signs, street name signs, project signs, delineators and object marker assemblies shall be measured per each.

Concrete footing for securing sign posts will not be measured for payment.

C729.10 PAYMENT: Payment for installation of traffic signs, project signs, delineators and object marker assemblies shall be made at the contract unit price per each, including signs, posts and footing to complete the item in place.

Payment for installation of street name signs shall be made at the contract unit price per each, including four signs at each post, brackets, hardware, posts and footing to complete the item in place.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C729(51)	Traffic Sign	Each
C729(54)	Delineator Assembly	Each
C729(66)	Object Marker Assembly	Each
C729(71)(A)	Street Name Sign on Existing Post	Each
C729(71)(B)	Street Name Sign on New Post	Each
C729(72)	Project Sign	Each

SECTION C731
RAISED PAVEMENT MARKERS

C731.01 DESCRIPTION: This work consists of furnishing and placing raised pavement markers in accordance with plan details.

C731.02 MATERIALS:

(a) Markers: Markers shall conform to LaDOTD Subsection 1015.09. The same product shall be used throughout the project. Markers shall be the specified class, type, color, size and shape.

(b) Adhesive: Markers shall be placed with bituminous adhesive on asphaltic surfaces and epoxy adhesive on portland cement concrete surfaces.

(1) Bituminous Adhesive: Bituminous adhesive shall conform to LaDOTD Subsection 1015.09(c)(2).

(2) Epoxy Adhesive: Epoxy adhesive shall be Type V epoxy resin system conforming to LaDOTD Subsection 1017.02. Epoxy components shall be mixed in equal parts by volume. Adhesive shall be mechanically mixed and dispensed, unless hand methods are permitted.

C731.03 CONSTRUCTION REQUIREMENTS:

(a) Weather Limitations: Markers shall not be applied when there is moisture on the surface.

(1) Epoxy Adhesive: When a normal set adhesive is used, application of markers will not be permitted at ambient air temperatures less than 50^{o}F. When a rapid set adhesive is used, application of markers will be permitted at ambient air temperatures between 35^{o}F and 50^{o}F, provided adhesive is adequately heated to obtain proper viscosity for mixing and application, and provided adhesive is identified as a rapid set type on container labels and Certificates of Delivery.

(2) Bituminous Adhesive: Markers shall be applied when the ambient air temperature is 50^{o}F or greater.

(b) Cleaning of Surfaces: Surfaces on which markers are to be applied shall be cleaned of all materials that may reduce the bond of adhesive. Surfaces shall be cleaned by blast cleaning or other approved methods which do not damage the surface; however, blast cleaning equipment shall be provided with positive cutoff controls. Surfaces shall be maintained in a clean dry condition until placement of markers.

(c) Application of Markers: Surfaces on which markers are to be placed shall be blown dry immediately prior to marker placement. Markers shall be applied to surfaces with adhesive in accordance with the manufacturer's recommendations.

(1) Epoxy Adhesive: Voids in a cured undisturbed sample approximately 1/16 inch thick from the extrusion nozzle shall not exceed 4 percent by volume. Machine mixer and applicator shall be capable of accurately and uniformly proportioning the two components in a 1 to 1 ratio within five (5%) percent by volume of each component (i.e., within 47.5 to 52.5 percent for each component). Periodic checks of proportioning equipment shall be made to determine the actual ratio of components. This shall be done by placing containers in front of the mixing chamber and measuring the actual volume of each component. Equipment shall be arranged so it is possible to bypass the mixer to perform these periodic checks. Temperature of adhesive shall be maintained between 70°F and 110°F before mixing. The temperature shall be adjusted to prevent excessive flow of epoxy from the marker when installed. The area of the epoxy adhesive bed shall be equal to the bottom area of marker. Adhesive shall be applied in sufficient quantity to cause excess adhesive to be forced out around the perimeter of the marker. Voids in markers with an open grid pattern on bottom shall be filled with adhesive immediately prior to placement.

(2) Bituminous Adhesive: The adhesive shall be heated and melted in either thermostatically controlled double boiler type units utilizing heat transfer oil or thermostatically controlled electric heating pots. The melter/applicator unit shall be suited for both melting and pumping application through heated applicator hoses. The adhesive shall be heated to between 375°F and 425°F and applied directly to the pavement surface from the melter/applicator by either pumping or pouring. The area of the bituminous adhesive bed shall be a minimum of 6 inches in diameter. Markers shall be applied to the adhesive within 10 seconds. The marker shall be placed in the adhesive bed by applying downward pressure until the marker is firmly seated. Adhesive on exposed surfaces of markers shall be immediately removed with soft rags moistened with mineral spirits or kerosene. Markers shall be protected against impact until the adhesive has hardened. The adhesive may be reheated and reused; however, the pot life at application temperatures shall not be exceeded.

C731.04 MEASUREMENT: Reflectorized raised pavement markers will be measured by counting the number of markers furnished, placed and accepted.

C731.05 PAYMENT: Payment for reflectorized raised pavement markers will be made at the contract unit price under:

ITEM NO.	PAY ITEM	PAY UNIT
C731(52)	Reflectorized Raised Pavement Markers	Each

SECTION C732
PLASTIC PAVEMENT MARKINGS

C732.01 DESCRIPTION: This work consists of furnishing and placing reflective pavement markings of hot applied thermoplastic at the locations shown on the plans or as directed, in conformance with the MUTCD, plan details and these specifications.

C732.02 MATERIALS: Thermoplastic marking material shall be a plastic compound reflectorized by internal and external application of glass beads, conforming to LaDOTD Subsections 1015.10 and Subsection 1015.13, respectively. Width and color of markings shall be as specified.

Thermoplastic material shall be delivered in containers of sufficient strength to permit normal handling during shipment and transportation without loss of material. Approved heat-degradable containers that can be placed in heating kettles along with the plastic material will be permitted. Each container shall be clearly marked to indicate color of material, process batch number, name of manufacturer and date of manufacture. Glass beads used in drop-on application to molten plastic shall be shipped in sacks of multi-ply paper or burlap, both with a polyethylene liner. The sacks shall be strong enough to permit handling without damage, and have a capacity of 50 pounds of beads. Sacks shall be sufficiently water-resistant so that beads will not become wet or caked in transit.

C732.03 CONSTRUCTION REQUIREMENTS:

(a) Equipment for Thermoplastic Markings: Material shall be applied to pavement by either spray or extrusion methods. Equipment shall provide continuous mixing and agitation of material. Conveying parts of equipment between main material reservoir and discharge mechanism shall prevent accumulation and clogging. Parts of equipment which come in contact with the material shall be easily accessible for cleaning and maintaining. Mixing and conveying parts shall maintain material at the application temperature. Equipment shall be capable of producing continuous uniformity in dimensions of stripes. Equipment shall be capable of producing various widths of traffic markings. Glass beads shall be applied to the molten surface of completed stripes by an automatic bead dispenser attached to the striping machine in such a manner that beads are dispensed simultaneously with the thermoplastic material at a controlled rate of flow on installed lines. The glass bead dispenser shall be equipped with an automatic cutoff control synchronized with cutoff of thermoplastic material. Kettles to hold a minimum of 1,000 pounds of material shall be provided for melting and heating thermoplastic material. Kettles shall be equipped with automatic temperature control devices so that heating can be done by controlled heat transfer liquid rather than direct flame, to provide positive temperature control and prevent overheating of material. Applicators and kettles shall be equipped and arranged to comply with requirements of the National Board of Fire Underwriters. Applicators shall be maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. Applicator equipment shall consist of a motorized mobile unit capable of installing traffic stripes either left or right of applicating unit so that only one lane for traffic will be occupied during installation.
Applicators shall produce sharply defined lines and provide means for cleanly cutting off stripe ends and applying broken lines. The applicator unit shall have a tachometer or other approved device to

insure uniform application at the required rate. It shall be adjustable for applying 1, 2, or 3 adjacent lines simultaneously at the specified spacing. The ribbon extrusion die or shaping die shall not be more than 2 inches above the roadway surface during application.

(b) Weather Limitations: Application of markings will not be permitted when there is excessive pavement moisture or when the surface temperature or ambient temperature is below 50^{o}F. The pavement shall be considered excessively moist when it is visibly wet or when a 1 square foot piece of polyethylene film condenses moisture after being placed on the pavement surface for 15 minutes.

(c) Cleaning of Surfaces: Surfaces on which markings are to applied shall be cleaned of materials that may reduce adhesion of the thermoplastic marking materials to the pavement. Cleaning shall be done by blast cleaning or grinding. Surfaces shall be kept clean until placement of markings.

Existing thermoplastic markings on the roadway that are not flaking or peeling do not require removal prior to placement of new thermoplastic markings. When thermoplastic markings will replace the existing painted markings, the existing painted markings do not require removal prior to applying new thermoplastic markings, provided the existing painted markings are not flaking or peeling.

Existing lane line pavement markings on bridges shall be removed prior to applying new markings.

When preformed plastic markings will replace any of the existing markings, the existing markings shall be removed prior to applying the preformed plastic markings.

Removal shall be accomplished by methods which will not damage the pavement or bridge deck. Removal shall be to such extent that 75% of the pavement surface or bridge deck under the markings is exposed. At the end of each day's operations, temporary pavement markings conforming to Section C713 shall be placed in areas where existing markings have been removed and new markings not placed. Temporary pavement markings shall be satisfactorily removed prior to resuming plastic striping operations.

(d) Application of Markings: Material shall be installed in specified widths from 4 inches to 24 inches. Finish lines shall have well defined edges and be free of waviness. Measurements shall be taken as an average through any 36-inch section of line. Longitudinal lines shall be offset approximately 2 inches from longitudinal joints. A tolerance of +1/2 inch and -1/8 inch from the specified width will be allowed, provided the variation is gradual. Segments shall square off at each end without mist or drip. Transverse variations from the control device up to 1 inch will be allowed provided the variation does not increase or decrease at the rate of more than 1/2 inch in 25 feet. Lines not meeting these tolerances shall be removed and replaced at no direct pay.

Thickness of material, not including drop-on beads, shall be not less than 90 mils for lane lines, edge lines and gore markings and not less than 125 mils for crosswalks, stop lines and word and symbol markings. A binder sealer material recommended by the thermoplastic marking manufacturer shall be applied to the pavement surface or bridge deck prior to application of the

thermoplastic markings. Thermoplastic material shall be applied either by extrusion at 390°F to 450°F or by spray at 410°F to 450°F. Immediately after application of the markings, glass beads shall be applied at a minimum rate of 300 pounds per mile. Material shall not scorch or discolor when kept at this temperature range for four hours.

C732.04 MEASUREMENT:

(a) Plastic Pavement Striping: Plastic striping will be measured by the linear foot of striping, exclusive of gaps.

(b) Plastic Pavement Legends and Symbols: Plastic legends and symbols will be measured by lump sum. Symbols shall include all letters, lines, bars or markings necessary to convey the message at each location.

C732.05 PAYMENT: Payment for plastic pavement markings and removal of existing markings will be made at the contract unit prices.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C732(52)	Plastic Pavement Striping (Solid Line)(____" Width)	Linear Foot
C732(53)	Plastic Pavement Striping (Broken Line)(____" Width)	Linear Foot
C732(54)	Plastic Pavement Legends and Symbols	Each
C732(55)	Plastic Pavement Striping Removal	Linear Foot

SECTION C736
RESTORATION OF TRAFFIC SIGNAL LOOP DETECTORS IN CONNECTION WITH ROADWAY REHABILITATION

C736.01 GENERAL: Vehicle Loop detectors shall detect the presence or passage of every vehicle which passes over the interconnected loop embedded in the surface roadway. Loops shall be of the size and shape indicated in the plans. Loop construction shall be in conformance with the details in the plans and these specifications.

C736.02 TESTING: Each Loop shall be tested for continuity, resistance, inductance and insulation leakage. For the latter, a 600-volt Megohmeter shall be used to measure resistance between one end of lead-in wire and the nearest reliable electrical ground. Resistance to ground shall be greater than 10 megohms. Inductance shall be checked with an approved Loop Tester supplied by the Contractor.

This test shall be made with no vehicle over the Loop. The Contractor shall perform these tests in the presence of the authorized representative of the Department of Public Works unless written authorization is given by the authorized representative for permission to do otherwise. Tests shall be made from the pullbox where the Loop wires tie into the lead-in, and at the controller cabinet where the lead-in cable is terminated. The Contractor shall record the location, data and readings taken, noting satisfactory results have been obtained. Any Loop failing to pass these tests shall be recut at the Contractor`s expense.

C736.03 SAW CUT: Loop wire shall be installed in saw cuts in the roadway made by a diamond or abrasive power saw. The slot width and depth shall be as indicated on the plans; however, in all cases, the slot shall be between 1/4" to 3/8" wide and 1-1/2" to 2-1/2" deep.

The saw cuts shall be overlapped so that the slot has full depth at all corners. All corners where Loop wires turn shall be diagonally cut so that there are no jagged edges or protrusions which may damage the wire. Prior to installation of the wire, the saw cuts shall be cleaned and dried. There shall be no cutting dust, grit, oil, moisture or other contaminants in the saw cut.

C736.04 LOOP WIRE: Loop wire and lead-in to the pull or aerial junction box shall be AWG #14 stranded Type XHHW gasoline and oil resistant single conductor insulated for 600 volts. XHHW wire shall meet the requirements of the latest edition of NEMA Standard WC-7 and Section 310 of the N.E.C. and IMSA 51-3, 1984. The Loop wire shall not have any cuts, nicks, abrasions or breaks in the insulation before or after installation in the slot. Any wire having defects in the insulation shall be replaced at no additional cost to the City.

Loop wire and lead-in to the pullbox or Loop detector shall be one continuous length of wire with no splices.

Loop lead-in from the curb or edge of pavement to the pullbox or conduit shall be installed in one inch conduit as indicated on the plans. The Loop lead-in for each loop shall be run in separate saw cuts from the loop to the pullbox.

The two loop lead-in wires shall be twisted two to five turns per foot from the loop to the point of termination.

The wire shall be placed in the bottom of the slot so that there are no kinks, curls, straining or stretching of the insulation. Subsequent turns of the loop shall be placed to assure vertical stacking of the wires.

Special care shall be taken in seating the wires so that the insulation will not be broken or abraded. No sharp tools such as screwdriver or metal object shall be used for this operation.

Loop location and configuration shall be as shown on the plans unless otherwise directed.

C736.05 LOOP SEALANT: All saw cuts with the wire installed shall be inspected and approved by the authorized representative of the Department of Public Works, unless written authorization is given by the authorized representative for permission to do otherwise, before the sealer is installed.

The sealant shall be encapsulant one-part urethane elastomeric compound requiring no mixing, measuring or application of heat prior to or during its installation. The sealant encapsulant shall be designed specifically for sealing detector loops in concrete or asphalt and have flow characteristics which insure complete encapsulation of the wires.

The encapsulant loop sealant shall have the ability to enable vehicular traffic to pass over the properly filled saw cut immediately after installation without stringing of the material. The encapsulant shall form a surface skin within 60 minutes at 75^{o}F at 50% Relative Humidity (RH).

The cured sealant encapsulant shall exhibit resistance to effects of weather, vehicular abrasion, motor oil, gasoline, antifreeze solution, brake fluid, deicing chemicals and salt normally encountered, in such a manner that the performance of the vehicle detector loop wire is not adversely affected. The sealant shall maintain its protective characteristics throughout the ambient temperature ranges experienced within the continental United States.

The Contractor shall install the sealer in strict adherence to the manufacturer's recommendations and these specifications.

The sealant shall be designed for roadway installation when the surface temperature is between 40^{o}F and 100^{o}F. No sealer shall be installed during inclement weather or under any condition which might introduce moisture into the saw slots.

A minimum of 75% of the sealant weight shall remain solid with no volume shrinkage after all solvent has evaporated. The sealant shall have an installation viscosity range of 5,000 to 85,000 cps.

The tack-free drying time shall be a maximum of 24 hours. The cure time of 1/8" thick film shall be a maximum of 30 hours. However, the under filling of the saw cut from 1/8" to 1/4" shall permit opening of the intersection immediately after the work has been completed.

The sealant shall have an elongation at break point property between the range of 400% to 700%. The tensile strength of the sealant shall be a minimum of 800 psi.

C736.06 SHIELDED CABLE: Shielded cable shall conform to IMSA Specification 50-2, AWG #14.

Shielded cable shall be installed continuous from the loop wire splice in the curbside pullbox to the cabinet mounted terminal strip allocated for detector lead-in cable termination. No splices shall be allowed between these points. The Contractor shall take adequate measures to protect cable from damage during handling and installation.

All splices in pullboxes must be carefully made to insure constant low resistance and must be insulated by means of a plastic casting splice kit to render a waterproof joint. Connections shall be soldered. The shielded drain wire in the pullbox shall be cut off flush and waterproofed so as not to come in contact with the pullbox or ground. The shielded drain wire shall be terminated with a ground wire and solidly grounded at the amplifier.

C736.07 MEASUREMENT: Loop detectors will be measured by the Linear Foot of sawed lot. Measurement will include sawing, installed wire, shielded cable and sealing. Measurement will be made from the curbside pull box and once around each loop perimeter.

C736.08 PAYMENT: Payment for loop detector will be made at the contract unit price under:

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C736(59)	Loop Detector	Linear Foot

SECTION C740
CONSTRUCTION LAYOUT

C740.01 DESCRIPTION: This section sets forth requirements for all construction layouts. The work consists of establishing lines and grades, taking all cross sections, and staking out the construction work in accordance with these specifications, plan details, and as directed. This work also includes but is not limited to, the layout of pavement striping and raised pavement markers, setting of line and grade for construction of super elevated curves or other applicable work items, and providing assistance in the coordination of utility relocation activities to ensure that the placement of relocated facilities will not conflict with required construction.

C740.02 CONSTRUCTION REQUIREMENTS: The Contractor shall establish all lines and grades and stake out all work on this project, including sufficient vertical and horizontal points for utility relocations for use by the Department and others.

The project survey control and horizontal alignment are based on NAVD 88 and the Louisiana State Plane Coordinate System (NAD-83--92), as determined by GPS observation. The construction plans and/or right-of-way map depicts the coordinates of sufficient survey control points to establish or re-establish horizontal control throughout the length of the project. The Contractor shall employ such methods as approved by the Director for the location of the project alignment and other necessary survey control points in accordance with currently acceptable surveying standards and practices. The Contractor shall verify the values of any intermediate bench marks shown on the plans, by checking against these bench marks.
The Contractor shall employ qualified engineering and surveying personnel experienced in layout and construction of highways and bridges to correctly establish and keep complete and comprehensive notebook records (field books) of all lines and grades necessary from initial layout to final acceptance.

The Contractor shall provide sufficient qualified staff, of at least one employee, on site during utility relocation periods. The Contractor shall provide any necessary survey work to ensure there are no utility conflicts with required construction. The Contractor shall provide daily documentation of utility relocation activities for incorporation into the project diaries.

The Contractor shall be liable for the accuracy of the initial layout and all subsequent alignment and elevations and shall, at no additional pay, rebuild, repair or make good any portion of the work found to be incorrectly positioned either horizontally or vertically at any time before final acceptance.

The Contractor shall notify the Director immediately of any apparent errors in the plans. The Contractor shall compute and provide template grades to the Director. In order to obtain pipe order lengths, the appropriate grades shall be provided to the Director two weeks in advance of the work.

Computer generated printouts will be allowed when approved. Stationing for overlay projects shall be set using an approved measuring device that is accurate to 0.1 percent. Stakes shall be placed every 100 linear feet and maintained by the Contractor throughout construction.

Layout of striping, raised pavement markers, and signs shall be done by methods approved by the Director prior to placement.

C740.03 MEASUREMENT: Measurements for determination of pay quantities will be made by the Department. Construction layout and utility oversight and coordination will be measured per lump sum, which will include all labor, materials and incidentals required to complete the work. No changes in the lump sum contract price will be made for minor additions or deletions to the scope of work.

C740.04 PAYMENT: Payment for construction layout, and utility oversight and coordination will be made at the contract lump sum price in accordance with Table 740-1.

Payment shall be made under:

Table C740-1

Construction Layout Payment Schedule

Percent of Total Contract Amount Earned	Allowable Percent of Lump Sum Price for Construction Layout
Staffed	25
25	50
50	80
75	95
100	100

ITEM NO.	PAY ITEM	PAY UNIT
C740(51)	Construction Layout	Lump Sum

SECTION C741
WATER MAINS

Water mains shall conform to all of the requirements of the General Specifications and Standard Plans of the Sewerage & Water Board (S&WB) of New Orleans (the latest revision), except as noted.

C741.01 GENERAL:

(a) The Contractor shall furnish all labor, supervision, materials and equipment required for the replacement of existing water mains with new mains, including house connections, valves, manholes, hydrants, and making necessary offsets, as required.

(b) All workmanship and materials shall conform with section F of the General Specifications of the S&WB and Dwg. No. 7260-W except as noted herein.

(c) The Contractor shall notify the Chief of Network Engineering of the Sewerage & Water Board in writing a minimum of three working days and not more than ten working days in advance of starting the job.

(d) All tie-ins to the existing water mains shall be made by the Contractor. The S&WB Forces shall close all valves and witnessing the tests and chlorination of the mains. Contractors shall not operate S&WB valves. Prior to making tie-ins, the Contractor shall notify residents at least 48 hours in advance of interruption of service.

(e) The existing utilities shown are approximate. The Contractor shall verify the location of utilities in the field and shall protect them from damage.

(f) Water and sewer services damaged by the Contractor shall be repaired by the S&WB at the Contractor's expense. The Contractor will be furnished a list of the locations of water and sewer house connections. This listing is from S&WB records and the listed locations could vary from the actual locations. It is the Contractor's responsibility to verify the location of these services and to protect them from damage. Furnishing this information should not be construed as a waiver of the Contractor's liability, but rather an attempt on the part of the S&WB to minimize the Contractor's hazards

C741.02.1 MATERIALS:

(a) All new water mains 4-inch through 12-inch, unless otherwise noted, shall be solid wall DR 18 Polyvinyl Chloride (PVC) pipe manufactured in accordance with AWWA C900, latest edition, and shall be U.L. listed. New water mains 16-inch through 30-inch, unless otherwise noted, shall be solid wall DR 18 PVC pipe manufactured in accordance with AWWA C905, latest edition, and shall be U.L. listed. Pipe shall be furnished in standard lengths (min. 16 feet) with integral cast bells or couplings using elastomeric gaskets conforming to the AWWA C900 or AWWA C905 specification.

(b) Ductile iron pipe, unless otherwise noted, shall be Special Thickness Class 52. All ductile

iron pipe shall be furnished with an asphaltic outside coating in accordance with AWWA C151 and a cement-mortar lining and seal coating, where applicable, in accordance with AWWA C104.

(c) Ductile iron fittings for water mains shall be mechanical joint restrained with external restraints such as Megalug as manufactured by EBAA Iron, Inc., or approved equal in accordance with the applicable requirements of AWWA C110 or C153 with rubber gasket joints conforming to AWWA C111. All fittings shall be furnished with an asphaltic outside coating in accordance with AWWA C151 and a cement-mortar lining and seal coating, in accordance with AWWA C104. All fittings, bends, tees, etc. shall have restrained joints in accordance with and for the length recommended by the manufacturer. All nuts, bolts and washers shall be manufactured of stainless steel conforming to the requirements of ASTM A276, Grade 316.

(d) Joint restraint devices shall be Megalug as manufactured by EBAA Iron, Inc., or approved equal. Restrained joints for pipe, valves and fittings shall be designed for a working pressure of 350 psi unless otherwise specified. Joints shall be capable of being deflected 4 degrees, after assembly.

(e) All buried ductile iron pipe and fittings shall be wrapped with 8 mils polyethylene wrap in accordance with AWWA C105. This polyethylene wrap shall cover all buried ductile iron pipe and fittings, including joints, and shall be overlapped a minimum of twelve inches between sections and sealed with black polyethylene tape.

C741.02.2 INSTALLATION

(a) The installation of the new water main shall conform to the manufacturer's recommendations, and all the applicable requirements of Section F of the S&WB General Specifications.

(b) Bedding and backfill for water mains and all appurtenances shall be pumped Mississippi River Sand, free of roots, wood, clay lumps, or any other foreign matter and shall meet the requirements of LaDOTD Louisiana Standard Specifications for Roads and Bridges (LSSRB) Section 1003.07, latest edition.

(c) The trench bottom shall be smooth and free from roots, rocks, etc. The pipe shall be laid on a smooth bed of pumped Mississippi River sand six inches in depth for the full width of the trench and extending to the top of the pipe.

(d) Special care should be given in placing and consolidating the sand under the pipe haunches to provide adequate side support to the pipe while avoiding displacement and misalignment. The remainder of the trench shall be spread in loose lifts not to exceed twelve (12) inches and shall be compacted by mechanical vibrating equipment to at least 95 percent laboratory maximum density (dry) as determined by ASTM D 1557 at a moisture content within the limits of plus five (5) percent to minus three (3) percent of optimum. Density tests shall be one (1) per lift per one hundred (100) feet of trench. Field density in-place tests will be performed in accordance with ASTM D 2922.

(e) The Contractor shall prevent foreign material from entering the water main and contaminating it during storage and construction. The Contractor will be responsible for the cleanliness of the main at all times. At the end of each work day or stoppage of work, the Contractor must provide

a temporary water tight plug at each open end. When the work is resumed, the trench must be free of water and dirt before the plug is removed.

(f) At points of tie-ins, valves, offsets and other locations where the use of ductile iron pipe is required, the Contractor shall furnish AWWA C150, Special Thickness Class 52 ductile iron pipe with rubber gasket joints. All ductile iron pipe and fittings shall have cement mortar lining in accordance with AWWA C104 and shall be wrapped with 8 mils polyethylene wrapped in accordance with AWWA C105. This tubular wrap shall cover all ductile iron pipe and fittings, including joints, and shall be overlapped a minimum of twelve inches between sections and sealed with black polyethylene tape.

(g) Offsets in water mains shall be made by the Contractor with ductile iron bends or ductile offset fittings. All ductile iron fittings and bends shall be mechanical-joint with retainer glands and shall have stainless steel nuts and bolts. Bends shall be 22.5 degree or 45 degree and no bends greater than 45 degrees are allowed unless specifically called out in the Plans.

(h) Water main offsets in the new main that are indicated on the drawings are considered main line fittings and payment is included in the price of the new water main. Water line offsets not indicated on the drawings are to be paid at the bid price for water line offsets.

(i) Where called for in the Plans, the water main shall be installed by horizontal directional drilling. PVC pipe shall meet the requirements of Section C741.02.1. Pipe material shall be submitted to Director for approval prior to installation. The directional drilling equipment is to consist of a directional drilling rig of sufficient capacity to perform the bore and pull back the pipe, a drilling, fluid mixing, delivery and recovery system of sufficient capacity to successfully complete the installation, a drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be reused (if required), a Magnetic Guidance System (MGS) or "walkover" system to accurately guide boring operations, a vacuum truck of sufficient capacity to handle the drilling fluid volume, and trained and competent personnel to operate the system. All equipment must be in good, safe condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project. The Contractor shall be responsible for appropriate disposal of any drilling fluid used in the process.

C741.02.3 LUBRICANT FOR GASKETED PIPE AND FITTINGS

(a) Lubricant shall be suitable for potable water systems and shall conform to and be certified by both of the following standards:

ANSI/NSF 14: Plastic Piping System Components and Related Materials
ANSI/NSF 61: Drinking Water System Components – Health Effects

(b) Lubricant shall be nontoxic and suitable for potable water systems, non-corrosive and be non-flammable. Lubricant shall be an emulsified polymer based product, specifically formulated to be water-soluble without causing turbidity. Lubricant shall not transfer taste and/or odor to the new water main installations. Lubricant shall not promote bacterial growth and be safe for use on all metal and plastic pipes. Lubricant shall be easily flushed from the line and be non-reactive to chlorinated water. Lubricant should work easily on both wet and dry surfaces.

The use of oleate-based lubricants is not permitted for new water main installations due to odor and taste transfer problems.

C741.02.4 VALVES, VALVE BOXES, AND VALVE MANHOLES

(a) Valves shall be procured by the Contractor. Valves 4 in. to 12 in. shall be S&WB R.D. Wood Gate valves as shown in S&WB Dwg. 11897-W-62 or American RD Rotating Gate Disc Valve C-500 with adjustable packing. Valves 16 in. and larger shall be American RD gate valves. Valves shall have raised pattern letters "SEWERAGE & WATER BOARD" on the body of the valve. Valves must turn clockwise to open.

(b) Valves 4" to 12" shall be installed as shown on S&WB Drawing 6179-F-2.

(c) Existing valves that are replaced or no longer needed shall be removed and delivered to S&WB Central Yard, 2900 Peoples Avenue, at no direct pay.

(d) Valve Manholes for valves up to and including 12" shall be brick and installed as shown on S&WB Drawing No. 6179-F-2. Water manhole casting and covers shall conform to S&WB Drawing No. 3143-E-1.

(e) Valve Manholes for valves 16" and larger shall be as shown in the details included in the plans.

(f) Existing manholes that are replaced or no longer needed shall be abandoned in accordance with S&WB Drawing No. 8180-SD, at no direct pay.

(g) Existing manhole castings and covers that are replaced or no longer needed shall be removed and delivered to S&WB Central Yard, 2900 Peoples Avenue, at no direct pay.

(h) Valve boxes shall be installed as shown in S&WB Drawing 6179-F-2.

C741.02.5 FIRE HYDRANTS

(a) Fire Hydrants shall conform to at least one of the following: (1) 5 in. Breakaway Fire Hydrant Bronze Trim, as detailed in S&WB Dwg. No. 11825-W-62 or, (2) 5½ in. American-Darling Co.'s B-62-B or, (3) S&WB Mueller Hydrant A473 as detailed in Mueller Dwg. No. FH285 or (4) 5 in. New Orleans HYBRID-2 as detailed in Kennedy Valve Dwg. No. 81661-HYBRID-2. For details of setting hydrants, see S&WB Dwg. No. 6179-F-2.

(b) New fire hydrant leads shall be 6" solid wall DR 18 PVC pipe manufactured in accordance with AWWA C900, and shall be included in the water main unit price per linear foot. All hydrant lead joints shall be restrained.

(c) Existing hydrants that are removed shall be delivered to the S&WB Central Yard, 2900 Peoples Avenue, at no direct pay.

(d) Any fire hydrants existing or new and not in service must be covered, firmly secured and identified as being "Not in Service" at no direct pay.

C741.03 SERVICE CONNECTIONS:

(a) No direct tapping of the new water main will be permitted for making house service connections. Service saddles suitable to use with PVC pipe shall be used; i.e., Clow No. 3407 (all bronze) or JCM 407 Series with 2 bolts, or J. Jones J-966 (all bronze), or approved equal. The Contractor shall use only shell type hole cutter that will retain the coupon or chips and is designed to accommodate walls equal to pressure class 200.

(b) The Contractor shall replace all existing house water connections from the new main to the meter. There shall be no splicing allowed of new or existing water service connections. Existing services shall be tied into new mains using a service saddle and corporation cock.

(c) Existing 5/8", 3/4" and 1" water house connections to be replaced shall be replaced with 1" Polyethylene (PE) tubing from the main to the meter (see S&WB Dwg. Nos. 7134-W and 7134A-W). All other existing water house connections shall be replaced with the same size as the existing connection, unless otherwise noted

(d) All Polyethylene (PE) tubing through 2" shall be PE 3406, DR9, conforming to ASTM D2737.

(e) All Bronze/Brass fittings, connectors, corporation stops and appurtenances used in conjunction with PE tubing shall be of domestic manufacture, SHALL BE MADE OF LEAD FREE BRONZE/BRASS, and meet all requirements of AWWA, ASTM, and ANSI for use in the potable water distribution systems.

(f) Existing 4" through 8" water house connections to be replaced shall be replaced with solid wall DR 18 Polyvinyl Chloride (PVC) pipe manufactured in accordance with AWWA C900, from the main to the meter.

C741.04 INSPECTION:

(a) After the award of the Contract, the Contractor's representative, in the company of representatives of the Department of Public Works and the Sewerage & Water Board will inspect all meter boxes and list the condition of each and what corrective action is required.

(b) It is the Contractor's responsibility to schedule the meter box inspection prior to the start of construction. If no pre-construction inspection is performed, it will be assumed that all meter boxes were in good condition prior to the start of construction. Any required repairs will be at the Contractor's expense.

(c) Prior to final acceptance, all meter boxes located within the limits of this project shall be in good repair, at proper grade, properly aligned and cleaned of mud and debris. The types of repair as specified in the bid items and noted in the pre-construction inspection will be paid per each at the price bid in the proposal. The Contractor shall be paid for one bid item only for each meter box. Required repairs which were not noted at the pre-construction inspection will be assumed to be the result of the Contractor's negligence and will be repaired at his expense.

(d) All inspection of the water main and related appurtenances will be performed under the inspection of, and to the satisfaction of, the S&WB. Final acceptance of the water system is subject to a one-year maintenance period following the substantial completion date of the contract accepted by the S&WB.

C741.05.1 HYDROSTATIC TESTING:

(a) The Contractor shall provide and install all materials in accordance with S&WB Dwg. Nos. 7004-W and 7005-W, latest revision. The test plugs are to be caps or plugs as required and shall be secured to the pipe ends. The test plugs become the Contractor's property after their use. Prior to commencement of the hydrostatic testing, all pipes to be tested should be filled with water a minimum of twenty-four hours prior to testing in order to minimize absorption of water by the inner surface.

(b) The Contractor shall make a hydrostatic test of the main when the entire main has been laid, including service connections, valves and hydrant leads, and all apparent defects in the main, coating, joints, etc., have been repaired as described in Paragraph F-15 of the S&WB General Specifications. Testing of only a portion of the main will be done only with the approval of the S&WB. The Contractor shall provide all the equipment and all the labor required for filling and emptying the main and measuring the pressure and leakage. The Contractor's test setup shall include provisions for the Sewerage & Water Board to install their own pressure gage so that the Contractor's pressure readings can be verified.

(c) All valves in the system shall be wide open so that pressure will come on the flanges and the test plugs which close the ends of the main and its branches, and not on the valve discs.

(d) The main shall be filled from the nearest hydrant, or from other sources of supply where hydrants are not available, to the flange outlet in the test plug. When the main is completely filled with water to the satisfaction of the Director, the Contractor shall close the air cocks. He shall apply a hydrostatic pressure of 100 psi on the water main system, including fire hydrants, fire hydrant leads, valves, and service connections and shall maintain this pressure for a minimum period of (2) two hours with no pressure loss.

(e) If leakage develops, the Contractor shall locate the leaks and repair them, working only from outside the main and using only such methods as approved in advance by the S&WB's Engineer.

(f) It is the intent of these specifications and of the contract based thereon, that all pipe joints be water tight under all service conditions. Any and all leaks from improperly laid or defective joints which are discovered during the leakage test or tests, or at any time prior to the elapse of one year following the final acceptance by the S&WB of the entire work, will be repaired by and at the expense of the Contractor.

(g) Hydrostatic testing shall be performed by the Contractor under the direct supervision of and to the satisfaction of the S&WB Engineer, at no direct pay.

C741.05.2 CHLORINATION:

(a) The Contractor shall not proceed with the chlorination process until successfully passing the

hydrostatic pressure test and given authorization to proceed by the S&WB Engineer.

(b) The Contractor shall use the continuous feed method of chlorination as described in AWWA Standard C651. The tablet method and the slug method are not acceptable.

(c) The Contractor shall use either sodium hypochlorite or calcium hypochlorite to provide the disinfectant for the chlorination process. If calcium hypochlorite is used, the Contractor shall pre-mix the calcium hypochlorite into solution before application. All hypochlorite raw materials must be certified as suitable for the treatment of drinking water by an accredited certification organization in accordance with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals – Health Effects.

(d) The Contractor shall flush the mains prior to the chlorination. Flushing shall be done at flow rates sufficient to provide a velocity in the water main of at least 2.5 feet per second to remove particulate debris prior to disinfection. During this flushing process, the Contractor shall make sure there are no air pockets present within the system.

(e) The Contractor shall follow AWWA Standard C651, latest revision, these Special Specifications and shall meet the requirements of the Louisiana Department of Health and Hospitals (LA-DHH) for installation and disinfection of potable water mains. Transporting, storage, and handling of all disinfection products, utilized for chlorination, shall be performed in accordance with all applicable Federal, State, Local Laws and Regulations.

(f) The Contractor shall chlorinate the new water main system, including fire hydrants, fire hydrant leads, valves, and service connections, under the direct supervision of the S&WB, such that the minimum chlorine concentration throughout the system is 50 mg/l. The chlorinated water shall be retained in the pipe for 24 hours for water mains less than 30 inches in diameter, and for 48 hours for water mains greater than or equal to 30 inches in diameter. After the required retention time, the chlorinated residual shall be at least 5 mg/l free chlorine, as measured by the S&WB. If the residual is less than 5 mg/l at any point in the system, the initial flushing and disinfection procedure shall be repeated by the Contractor until a 5 mg/l free chlorine residual is obtained. The Contractor shall contact the S&WB Water Purification Department (504) 865-0572, a minimum of 48 hours prior to chlorinating the new main to schedule the sample collection.

(g) The maximum length of water piping that can be chlorinated at one time is 2,000 (two thousand) linear feet.

(h) The Contractor shall flush the chlorinated water from the new main using potable water. Disposal of chlorinated water shall be in accordance with AWWA Standard C651 and all federal, state, and local requirements. The Contractor's chlorination and flushing setup shall include provisions for the S&WB to collect a sample, via a ¾" faucet without hose bib threads, on the inlet and each discharge stand pipe.

(i) The S&WB shall collect and analyze samples for coliform bacteria, chlorine residual, and turbidity from all pipe extremities and from representative points. All samples must be free from contamination by coliform bacteria and have acceptable turbidity levels as determined by the S&WB. The Contractor shall be responsible for final flushing and coordinating sample collection

by the S&WB.

(j) Chlorination and flushing of water mains shall be performed by the Contractor, at no direct pay. Also, no additional payment will be allowed for providing taps for chlorine injection and/or flushing if necessary.

(k) In the event that a new water main tests positive for coliform bacteria following chlorination, the Contractor will be responsible for reflushing the main and coordinating resampling for coliform analysis. If the second set of coliform samples test positive, the Contractor shall be required to repeat the chlorination procedure. A fee may be imposed on the Contractor for the additional supervision, sampling, and analysis required of S&WB employees as the result of the necessity of resampling and/or re-chlorination.

C741.05.3 TIE-INS

(a) The Contractor shall tie-in the new water main within 72 hours of receiving notification of acceptable laboratory test results from the S&WB. If the Contractor fails to complete the tie-in within 72 hours, additional flushing and re-testing for coliform bacteria by S&WB shall be required. Under no circumstances will the Contractor be allowed to make a tie-in to the existing water distribution system until acceptable laboratory test results have been obtained by the S&WB. All tie-ins shall be performed under the direct supervision, and to the satisfaction, of the S&WB. A fee may be imposed on the Contractor for the additional supervision, sampling, and analysis required of S&WB employees as a result of the necessity of resampling and/or re-chlorination.

(b) The tie-in shall be configured in such a manner to require 16 linear feet of pipe or less. The S&WB does not allow installation of pipe runs greater than 16 linear feet without hydrostatic pressure testing and chlorination. All pipe used in the tie-in shall be thoroughly cleaned and swabbed with a 1-5 percent hypochlorite disinfecting solution just prior to being installed, as recommended by AWWA C651.

(c) The S&WB forces shall be responsible for the closure of all water valves. Contractors shall not operate S&WB valves. The S&WB cannot guarantee a water-tight closure. The Contractor must work continuously and without interruption until the new piping is tied into the existing system and services are restored.

(d) Before the water service is interrupted, the Contractor shall:

1. Expose the existing water main at the tie-in location and verify the type, size, location, and elevation of the existing facilities.

2. Have sufficient materials, equipment and manpower available at the job site.

3. Verify materials on hand will meet the job needs after uncovering the existing mains.

4. Request a water test closure through the S&WB Networks Department (942-3891) a minimum of seven (7) working days in advance of the scheduled tie-ins.

5. Have notified all residents and the New Orleans Fire Department a minimum of forty-eight (48) hours in advance of interruption of service.

(e) After the tie-in is completed, the new line will be refilled under normal S&WB water main pressure (approximately 60 pounds per square inch). Tie-in piping will then be visually inspected for leaks and if any leaks are discovered shall be repaired by the Contractor using only such methods as approved by the S&WB, at the Contractors expense.

(f) The Contractor shall perform a final flush on the newly installed water main under the supervision of the S&WB Engineer to flush out the remaining free chlorine residual and fill the line with water representative of the quality in the distribution system prior to hydraulically connecting the new main to the distribution system

(g) All tie-ins shall be made by the Contractor, at no direct pay.

C741.06 AS-BUILT DRAWINGS: Prior to final inspection and testing of the system, the Contractor shall submit to the S&WB "as-built" drawings, at no direct pay, showing any change in line or grade from the original drawings, location of house service connections.

C741.07 PAYMENT: Payment for the accepted quantities will be made at the contract unit price.

(a) Payment for furnishing and installing New Water Mains shall be made at the contract unit price per linear foot, including main line fittings (bends, tees, etc.), fire hydrant leads, tie-ins, excavation, removal of existing pipe (if any), pumping as necessary to prevent contaminating the existing system, bedding, complete shoring, backfilling material, hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for plugging and abandoning existing manholes and filling with flowable material (sand/cement mixture).

(b) Payment for furnishing and installing 1-inch through 2-inch Polyethylene Pipe for water house connections (adjustment/replacement) shall be made at the contract unit price per each, including excavation, backfilling, service saddles, corporation cock and removal of existing pipe (if any) and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for tie-ins to the main or meter. Minimum size of water house connections shall be 1”.

(c) Payment for furnishing and installing 4-inch through 8-inch PVC pipe for water house connections shall be made at the contract unit price per each, including, excavation, backfilling, and removal of existing pipe (if any) and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for tie-ins to the main or meter. PVC pipe for house connections shall meet the requirements of Section C741.02.01.

(d) Payment for furnishing and installing New Fire Hydrant shall be made at the contract unit price per each. including, excavation, backfilling, and removal of existing pipe (if any), and any other related or incidental items required to complete this item of work for which separate payment is

not provided for under other items in the Uniform Bid Form.

(e) Payment for furnishing and Installing Water Valves up to and including 12-inch shall be made at the contract unit price per each. Payment for the installation of valves shall include furnishing and installing all ductile iron pipe, mechanical joint retainer glands, gaskets, including stainless steel tee bolts and nuts, etc. for a complete installation and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. The cost for valve boxes indicated on the plans shall be included in the bid price of the valves.

(f) Payment for furnishing and Installing Water Valves 16-inch and larger shall be made at the contract unit price per each. Payment for the installation of valves shall include furnishing and installing all ductile iron pipe, mechanical joint retainer glands, gaskets, including stainless steel tee bolts and nuts, etc. for a complete installation and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.

(g) Payment for furnishing and installing Water Main Offset shall be for offsets consisting of four (4) mechanical joint bends complete with retainer glands, stainless steel nuts and bolts and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form, and shall be made at the contract unit price per each. Water line offsets consisting of only two (2) bends will be paid for at one-half (1/2) the unit price bid. Offsets are paid when not indicated on the plans. There is no direct pay for offsets shown on the plans.

(h) Payment for Plug Existing Water Main and Fill With Flowable Material (sand/cement mixture) shall be made at the contract unit price per linear foot, shall include all necessary equipment to completely fill the abandon main with sand/cement and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.

(i) Payment for Construction of New Water Valve Manholes for 4-inch through 12-inch valves shall be made at the contract unit price per each, including excavation, granular bedding, foundation slab, manhole casting and cover and backfilling and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for plugging and abandoning existing manholes and filling with sand.

(j) Payment for Construction of New Water Valve Manholes for valves 16-inch and larger shall be made at the contract unit price per each, including excavation, granular bedding, foundation slab, manhole casting and cover, valve box, and backfilling and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for plugging and abandoning existing manholes and filling with sand.

(k) Payment for Remove Mud and Debris from Inside of Water Meter Box shall consist of the removal of all mud or debris within a meter box that does not need adjustment or replacement, and shall be made at the contract unit price per each.

(l) Payment for Adjust Complete Water Meter Box to Grade shall consist of adjusting the meter box to grade by placing bricks, slate, or similar material under the meter box pan, and shall be made at the contract unit price per each. There shall be no separation between the upper barrel and the lower meter box pan. Any mud or debris within the box shall be removed before the upper barrel and lower pan have been adjusted. There will be no additional payment for removal of mud and debris under another item. Meter boxes shall be adjusted to grade in areas where the grade of the curbs and/or sidewalks is changed or as directed by the Director. If the water house connection needs to be replaced from the meter to the property line in order to adjust the meter box, the new water house connection shall be paid under the item, “Remove and replace water house connection (from meter to property line) (all sizes)”.

(m) Payment for Replace Broken Water Meter Box (5/8” to 1”) shall be made at the contract unit price per each, shall include any meter box replacement or any new meter box required and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. Installation shall be as shown on S&WB Drawing. No. 7134-W.

(n) There shall be no direct payment for salvaging existing valves, fire hydrants, manhole castings and covers, etc.

(o) All other items of work necessary to the performance of the project, for which no specific unit price and/or lump sum pay item is established, shall be considered and designated part of the construction, and the existing pay items shall be full compensation. Items including but not limited to, trench safety, traffic control, contract closeout, shop drawings, submittals, and office support shall be merged into the prices bid.

(p) There will be no direct payment for temporary water mains, temporary water service connections, and any related work including temporary tie-ins, removal of temporary work after installation of permanent work, and other incidentals. The cost of all work shall be included in the unit bid prices of water mains and house connections.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C741(51)(B)	6” New Water Main with Main Line Fittings	Linear Foot
C741(51)(C)(1)	8” PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(C)(2)	8” Ductile Iron New Water Main w/ Main Line Fittings	Linear Foot
C741(51)(C)(3)	8” PVC New Water Main with Main Line Fittings by Directional Drilling	Linear Foot
C741(51)(E)(1)	12" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(E)(2)	12” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(51)(F)(1)	16" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(F)(2)	16” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(51)(H)(1)	20" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(H)(2)	20” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(51)(I)(1)	24" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(I)(2)	24” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(51)(J)(1)	30" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(J)(2)	30” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(52)(A)	New 4" Valve	Each
C741(52)(B)	New 6" Valve	Each
C741(52)(C)	New 8" Valve	Each
C741(52)(E)	New 12" Valve	Each
C741(52)(F)	New 16" Valve	Each
C741(52)(H)	New 20" Valve	Each
C741(52)(I)	New 24" Valve	Each
C741(52)(J)	New 30" Valve	Each
C741(53)	Tapping Sleeve & Valve Assembly (Size)	Each
C741(54)	New Fire Hydrant	Each
C741(55)(A)	Replace 5/8’ to 1” Water House Connection with 1” Water House Connection (from Main to Meter)	Each
C741(55)(B)	Replace 1-1/2" Water House Connection (from Main to Meter)	Each
C741(55)(C)	Replace 2” Water House Connection (from Main to Meter)	Each
C741(55)(D)	Replace 4” Water House Connection (from Main to Meter)	Each
C741(55)(E)	Replace 6” Water House Connection (from Main to Meter)	Each
C741(55)(F)	Replace 8” Water House Connection (from Main to Meter)	Each
C741(55)(G)	Replace Water House Connection from meter to property line 5/8” to 1”	Each
C741(56)	Relocation of Fire Hydrant (In Existing Main)	Each
C741(70)	Additional Ductile Iron Fittings	Ton
C741(71)(B-01)	6” Water Line Offset up to 24”	Each
C741(71)(C-01)	8” Water Line Offset up to 24”	Each
C741(71)(C-02)	8” Water Line Offset over 24”	Each
C741(71)(E-01)	12” Water Line Offset up to 24”	Each
C741(72)(B-02)	6” Water Line Offset over 24”	Each
C741(72)(E-02)	12” Water Line Offset over 24”	Each
C741(73)	Adjust Water Valve Box	Each

C741(74)(A)	New Water Valve Manhole (4” through 12" Valves)	Each
C741(74)(B)	New Water Valve Manhole (16” through 20” Valves)	Each
C741(74)(C)	New Water Valve Manhole (24” through 30” Valves)	Each
C741(75)	Remove Mud and Debris from Inside Water Meter Box	Each
C741(76)	Adjust Complete Water Meter Box to Grade	Each
C741(77)	Replace Broken Water Meter Box (5/8”) to (1”)	Each
C741(78)(A)	Plug Existing Water Main 4” through 12” and Fill with Flowable Material (Sand/Cement Mixture)	Linear Foot
C741(78)(B)	Plug Existing Water Main greater than 12” and Fill with Flowable Material (Sand/Cement Mixture)	Linear Foot

SECTION C742
SEWER LINES

C742.01 SEWERAGE CONSTRUCTION: The work shall be in accordance with the Sewerage & Water Board Specifications and Standard Plans except as noted.

C742.02 GENERAL:

(a) The Contractor shall furnish all labor, materials, equipment and supervision required for:

- Restoration of existing sewer mains by point repair.
- Replacement of existing sewer mains between manholes including tie-in into existing system.
- Relocation of existing sewer mains because of conflicts.
- Installation of new sewer mains, sewer house connections and manholes.
- Replacement of damaged sewer house connections and manholes.
- Installation/rehabilitation of manholes and cleaning of new replaced or restored mains and manholes.

All work to be done on Sewerage Systems will be as shown on the plans and as directed by the Director. All workmanship, materials and tests shall conform with Section D of the General Specifications of the Sewerage & Water Board and Sewerage & Water Board Standard Drawing No. 7260-S, except as noted hereinafter. The Contractor shall notify the Chief of Network Engineering of the Sewerage & Water Board in writing not less than three or more than ten working days in advance of starting the job, in order to allow for scheduling the inspection of the work. Failure to do so prior to starting work will result in the Contractor being required to expose the bedding on all pipe previously installed without Sewerage & Water Board inspection.

(b) All workmanship and materials required to perform this work, shall conform to the current General Specifications of the Sewerage & Water Board and the Department of Public Works except as noted hereinafter.

(c) The Contractor performing work covered in this section shall be required to coordinate his operations with the Sewerage & Water Board (Chief of Network Engineering) and other utilities prior to making any excavation so that the location of their services can be identified. The Contractor shall exercise caution in making excavations to avoid damage to these services and other utilities.

(d) The Contractor will be furnished with a list of the locations of water and sewer house connections from the Sewerage & Water Board. It will be the Contractor's responsibility to verify the location of these so as to avoid damage. Furnishing this information should not be construed as a waiver of the Contractor's liability, but rather an attempt on the part of the S&WB to minimize the Contractor's hazard. The existing house connections submitted in the lists are from S&WB records and could vary from the actual location. Any damage to the existing water, sewer and drain connections resulting from negligence will be repaired by the S&WB at the expense of the Contractor. The Contractor is also responsible for damage to other utilities and the property of others.

(e) Sewer house connections shall be tied into the new mains and replaced with new connections where needed.

C742.03 INSTALLATION AND REHABILITATION OF SEWER MAINS:

(a) GENERAL: Work under this section shall consist of furnishing all labor and materials for the replacement, relocation and/or installation of sewer mains, installing new house connections, point repairs and performing all operations required for improving the sewer system. The Contractor shall provide the necessary dewatering and by-passing required during execution of this work at no direct pay.

(b) MATERIALS AND METHODS: Pipe material for sewer mains shall be solid wall polyvinyl chloride (PVC) pipe. The solid wall PVC pipe 6" through 15"shall be manufactured in accordance with ASTM D-3034 specifications for a special gravity sewer pipe dimensions ratio (SDR) of 26. The fittings (tees, wyes, etc.) and bell stock for truss and solid wall PVC pipe shall have a thickness not less than that of the SDR-35 solid wall PVC pipe of the same inside diameter. PVC Sewer Mains sizes 18" through 27" shall be solid wall, PVC pipe conforming to ASTM F-679, Class T-1. PVC pipe shall be type PSM Vinyl Chloride (PVC) standard lengths with integral cast bells and elastomeric gaskets as recommended by the manufacturer and ASTM D-3212.The Sewerage & Water Board reserves the right to approve the type of material.

The maximum allowed deflection for installed PVC sewer pipe is per the manufacturer recommendations. Newly installed pipe that exceeds this allowable deflection shall be removed and replaced with new pipe and reinstalled as per the above specifications at the Contractor's expense. The S&WB reserves the right to mandrel any and/or newly installed PVC sewer pipe. The Contractor will install the pull lines and pass the mandrel through the mains selected by the S&WB. The S&WB will provide the mandrels for all tests. The mandreling tests will occur after compacted backfill of the trenches. The Contractor shall bear the cost of mandreling re-testing if required and will be assessed $100.00 for each occurrence in each section between manholes. In addition, cleaning and TV/video of the new PVC sewer lines (either in-service or not) will occur during final inspection after all paving is completed to verify the absence of construction debris. The Contractor shall bear all costs of cleaning and TV/video test or re-testing. It is required that a S&WB representative and the Contractor witness the actual mandreling test(s) and witness the real-time cleaning and TV/video test(s). The S&WB does not desire a copy of the videotape.
Bedding and foundation for mains shall conform with S&WB Drawing No. 4697-E5-A except as noted below. Backfill and drainage fabric for mains shall be as noted below. Standard sheeting and bracing shall comply with DWG. 4697-E5A of the S&WB General Specifications. The same type and size pipe material must be installed between manholes.

Installation of the solid wall PVC pipe shall conform to Section D of the Sewerage & Water Board General Specifications, "The Construction of Sewer" and the Plastic Pipe Association Specification UNI-B 78, "Recommended Practice for the Installation of Polyvinyl Chloride (PVC) Sewer Pipe." The trench bottom shall be relatively smooth and free from rocks, roots, etc. After the sheeting and/or foundation lumber is placed, the pipe shall be laid on a smooth bed of approved bedding

material mentioned below, compacted to a density of not less than 95% relative density, six inches deep for the full width of the trench.

The bedding material shall be extended to six inches above the top of the pipe, well compacted (hand or mechanical) in six inch layers to not less than 95% relative density, as shown on the Standard Plans of the Department of Public Works. The bedding material shall be placed and consolidated under the pipe haunches to provide maximum side support to the pipe while avoiding displacement and misalignment of the pipe.

Bedding material shall be 100% crushed aggregate listed on Qualified Product of the Louisiana Department of Transportation and Development and conforming to ASTM D2321, class 1A Angular Material (1/4" to 1 ½") and ASTM No. 57. The Sewerage & Water Board reserves the right to approve the type of bedding material.

Backfill material shall be pumped sand and shall be placed at or near optimum moisture content and compacted according to one of the following procedures:

1. Backfill material shall be placed in layers not to exceed 12 inches. Each layer shall be compacted to a minimum of 95% of maximum density using approved mechanical compaction equipment. Or,

2. Backfill material may be placed in layers not exceeding 12 inches by thoroughly compacting each layer to 95% maximum density at or near optimum moisture content using approved mechanical compaction equipment, prior to placing a subsequent layer.

The above backfill material and the compaction procedures shall be applied also for any service connections, and point repairs.

Drainage fabric shall be installed around the bedding and under the sand backfill according to the Standard Plans. Fabric shall extend a minimum of twelve (12") inches on each side of the trench and shall be secured to each side in a manner acceptable to the Director.

The Contractor shall provide the Director a sample of the fabric to be used on the project along with a copy of the manufacturer's minimum requirement specifications prior to the start of construction.

The drainage fabric shall be installed around the bedding and under the sand backfill according to the Standard plans.

(c) REPLACEMENT AND RELOCATION OF EXISTING SEWER MAINS, INSTALLATION OF NEW SEWER MAINS BETWEEN MANHOLES: The Contractor shall furnish all materials, equipment and labor to remove the existing deteriorated main, (if any) install mains and fittings (wyes, tees, etc.), including appurtenances such as tie-ins to existing system, lumber foundation, bedding, backfilling, necessary dewatering and by-passing, during the execution of this work.

Where the sewer main is relocated, the existing abandoned main must be filled and plugged where shown on the plans. Sand shall be filled into the sewer line to avoid caving in of the sewer line.

All workmanship, materials and tests shall conform to Section D of the General Specifications of the S&WB, except as noted otherwise. The Contractor may use more than one crew in performing work in various sections of a system at a given time, provided he has the approval of the Director.

The new sewer mains and house connections shall be installed at the elevations and locations indicated on the plans, unless changed by the S&WB. The Contractor shall schedule his work so that the sewer mains and house service connections between two manholes are completed before moving to another location (this will minimize the spillage of raw sewage into an open trench). The Contractor shall isolate the block where the work is in progress by plugging the upstream and downstream manholes. Should the sewerage build up to within three feet of the upstream manhole, or if directed by the S&WB, the Contractor shall pump the sewer liquid to the downstream manhole through by-pass pumping. No mains or lines shall be left open overnight; a temporary tie-in shall be made between the end of the new main and the existing, and plugs at manholes shall be removed so as to allow flow to continue until work is resumed.

Where it is necessary to connect the sewers to existing manholes, the existing short bell pieces remaining in the wall of the manhole shall be broken out. A new short bell piece shall be inserted to the full thickness of the walls and permanently grouted in place (see S&WB Dwg. 6178-B6). The new short bell piece shall be a sand impregnated PVC stub grouted with a type three, high early strength cement, or quick setting EMBECO or similar material.

If a PVC pipe is to be connected to a manhole or other concrete or brick structure, the Contractor shall use a sand impregnated PVC stub, grouted with cement grout as specified above, for the manhole connection.

(d) POINT REPAIRS OF EXISTING SEWER MAINS: The Contractor shall make point repairs to the lines at specific locations shown on the drawings and as listed in the proposal.

Point repairs shall be made by either wet or dry type and shall conform to Section XII of NASSCO (National Association of Sewer Service Companies). The Contractor shall make an excavation to expose a base "ten (10') linear feet" of main, per point repair. Any additional footage of repair beyond the ten foot minimum for each point repair shall be approved by the Director.

The Contractor is required to have all materials and equipment on hand prior to the start of excavation so that there will be a minimum of inconvenience to the residents. All trenches must be backfilled at the end of the day.

(e) SEWER HOUSE CONNECTIONS: New or replacement sewer house connections, where required, shall be six inch pipe extended from the main to the back of curb or to a point directed by the Director. Bedding and foundations required under sewer mains are not required under six (6") inch sewer house connections.

The use of saddles to connect the house service to the main will not be permitted; all such connections shall be made using wye to tee fittings.

The need for replacing these house services beyond the wye or tee connection will be determined by the Director. If the pipe beyond the wye or tee is in good condition, a tie in will be made at the fitting (wyes, tees, etc.). If the pipe beyond the wye or tee is in poor condition, a new house service will be installed from the main to the back of curb or to a point directed by the Director and tied into the existing house service at the point. All pipe and fittings shall be of the same material as the main, unless approved by the S&WB. The connection of any two dissimilar materials shall be accomplished by the installation of a "No-Hub" coupling, consisting of a neoprene sleeve and bushing adaptor and two stainless steel bands with STAINLESS STEEL SCREWS. The coupling shall be manufactured in strict accordance with Cast Iron Soil Pipe Institute Specifications C-301, latest revision, as manufactured by Tyler Pipe Company, Mission Clay Products Corps., Fernco, or approved equal.

Where existing or proposed subsurface facilities conflict with existing sewer house connections, these same connections shall be adjusted to provide for adequate clearance in accordance with the S&WB Standard Specifications. No syphons will be permitted. Adjustment of sewer house connections shall comply with the above specifications for replacement of sewer house connections.

(f) SANITARY SEWER MANHOLE: New sanitary sewer manholes required when installing new sewer mains or relocating existing sewer mains shall be constructed in accordance with the applicable sections of the S&WB General Specifications and S&WB Standard Drawings No. 6178-B6, No. 6178-B-6A, and 3143-E-1.

(g) INSPECTION: At the completion of the point repair or installation of mains between manholes, and prior to final acceptance, the S&WB may inspect the mains with a remote control television unit. The Contractor shall assist by notifying the residents to refrain from use of these services during the inspection. The Contractor will be required to repair at his expense and in an approved manner, all defects in his workmanship disclosed by these tests and inspections before final acceptance.

C742.04 MEASUREMENT: Sewer mains will be measured in place and the length determined by measuring from center to center of manholes or other subsurface structures of which they form a part.

Depth of sewer mains for payment purposes shall be determined by measurement from the invert to the top of casting at original existing grades of connecting manholes. Depth of manholes shall be measured from invert to the top of casting.

C742.05 PAYMENT:

(a) Payment for relocation, replacement and restoration of existing sewer mains or installation of new sewer mains shall be made at the contract unit price per linear foot of the size and depth, which includes excavation, pumping, as necessary, complete shoring, foundation lumber, bedding, installation of new main, including fittings, backfill, drainage fabric and tie-ins. If the existing sewer main is to be replaced, the cost shall include removal of the existing sewer main.

(b) Payment for "install sewer manhole" shall be made at the contract unit price per foot high, including excavation, granular bedding and backfilling. If the existing manhole is to be replaced, the cost shall include removal of the existing sewer manhole.

(c) Payment for "replacing manhole casting and cover" shall be made at the contract unit price per each including removal of the existing sewer manhole casting, installing the new casting at the specified grade and backfilling the excavation with approved backfill material. Adjustment to grade of the manhole casting shall be included in the cost of replacement.

(d) Payment for "point repair of existing sewer mains" shall be made at the contract unit price per each of the size and depth specified, including excavation, foundation lumber, bedding, drainage fabric, backfill, complete shoring, pumping as necessary and tie-ins. Payment for point repair beyond ten (10') feet shall be made at the contract unit price per the linear foot, including the above works.

(e) Payment for "new sewer house connection from main to back of curb" shall be made at the contract unit price per each of the size specified including installation of a wye or tee in the main, PVC pipes, fittings, a cap behind the curb, excavation and backfill.

(f) Payment for "replacing existing sewer house connection from existing main to back of curb" shall be made at the contract unit price per each including the installation of PVC pipe, fittings, excavation, backfill, and tie-ins from the existing wye or tee to the existing sewer house connection back of curb.

(g) Payment for "reconnecting existing sewer house connection to new main" shall be made at the contract unit price per each including installation of a new tee or wye into the main, removal and rep1xcement of up to three feet of the existing, excavation and backfill.

(h) Payment for "reconnecting existing sewer house connection to new main and extend to back of curb" shall be made at the contract unit price per each including the installation of PVC pipe, fittings, excavation, backfill, tie-in, and installation of a new wye or tee in the new main, from the new wye or tee to the existing sewer house connection back of curb.

(i) "Replacing existing sewer house connection beyond back of curb." If directed by the Director to replace the sewer house connections in (f) or (h) beyond back of curb, payment for this item shall be made at the contract unit price per linear foot per any additional footage beyond back of curb.

(j) "Adjust Sewer House Connections" includes removing and replacing up to 15 feet of existing sewer house connection where required to avoid conflict with new water, drain, or other utility line, including tie-ins at both ends, fittings, excavation, installation, backfill, no siphon permitted. Payment for this item shall be made at the contract unit price per each.

(k) Payment for "pipe lining" shall be made at the contract unit price per linear foot of the size and method specified to; (1) clean and inspect the existing pipe to be sure that the liner can be properly installed, (2) install the liner in accordance with Special Specifications; and (3) clean up and restore any damage caused by the lining process.

(l) Payment for "cut liner to restore existing service connections" shall be made at the contract unit price per each of the size and the method specified. If the lining method for restoring service connections requires excavation, the price shall include all excavation, backfill and surface restoration.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C742(51)	Install Sewer Mains (Size & Depth)	Linear Foot
C742(55)	Install Sewer Manhole	Foot High
C742(56)	Replace Sewer Manhole Casting	Each
C742(57)	Sewer Point Repair up to Ten Feet (Size & Depth)	Linear Foot
C742(58)	Sewer Point Repair beyond Ten Feet (Size & Depth)	Linear Foot
C742(59)	New Sewer House Connections from Main to Back of Curb (Size)	Each
C742(60)	Replace Existing Sewer House Connection from Existing Main to Back of Curb	Each
C742(61)	Re-connect Existing Sewer House Connection to New Main up to Three Feet	Each
C742(62)	Re-connect Existing Sewer House Connection to New Main and Extend to back of Curb	Each
C742(63)	Replace Existing Sewer House Connection Beyond back of Curb	Linear Foot
C742(64)	Adjust Sewer House Connection	Each
C742(65)	Pipe Lining (Size & Method)	Linear Foot
C742(66)	Cut Liner to Restore Existing Sewer House Connection (Size & Method)	Each

SECTION C743
TESTING LABORATORY SERVICES

C743.01 GENERAL:

(a) An independent accredited testing laboratory shall be retained by the City of New Orleans for the purpose of sampling and testing materials or performing inspections on a given project.

(b) Cooperation of the Contractor: The Contractor shall cooperate with the designated testing laboratory and shall:

(1) Make available without cost, samples of all materials to be tested in accordance with applicable standard specifications.

(2) Furnish such nominal labor and sheltered working space as is necessary for designated testing laboratory to obtain samples at the project site.

(3) Advise the designated testing laboratory of the identity of material sources and instruct the suppliers to allow tests or inspections by the designated testing laboratory.

(4) Notify the designated testing laboratory sufficiently in advance of operations to allow for completion of initial tests and assignment of inspection personnel.

(5) Notify the designated testing laboratory sufficiently in advance of cancellation of required testing operations. The Contractor shall be responsible to the Director for charges due to failure to notify, if requirements for testing are cancelled. The Contractor shall also be responsible to the Director for charges due to failed tests. The Director can withhold payment to cover the cost of these charges.

(6) Provide curing facilities for initial curing of concrete cylinders at the job site in accordance with the requirements ASTMC-94.

(c) Test Methods: Tests and inspections shall be conducted in accordance with the latest applicable A.S.T.M., A.C.I., A.A.S.H.T.O., or La. D.O.T.D. requirements, or the requirements of other recognized authorities.

(d) Authority and Responsibility of the Testing Laboratory: The designated testing laboratory does not have the authority to accept or reject work for the Director. It is their duty to inform the Contractor and the Consulting Engineer's representative (CER) at the job site of any tests or conditions that do not meet the project specification requirements. The CER has the authority and duty to reject materials and/or workmanship that do not comply and to so notify the Director.

(e) Test Reports: The designated testing laboratory shall promptly submit written reports of each test and inspection made to the Director, Contractor and to such other parties that the Director may specify.

C743.02 PORTLAND CEMENT CONCRETE: Tests and Inspections:

(a) Mix Design:

(1) The designated testing laboratory shall review the contract mix design submitted for compliance within the General Specification requests and ACI 318-94, Chapter 5 or latest revision.

(2) Regardless of what method is employed, the following tests are required prior to use on a given project:

A.S.T.M. Sieve Analysis for Fine & Coarse Aggregates

(3) Certificates of Delivery which include test results shall be submitted by the concrete producer for cement, fly ash and additives to the designated testing laboratory for review. These certificates must certify that the material conforms to the specifications.

(b) Batch Plant:

(1) Prior to initial start-up of pavement operations for the project, the designated testing laboratory shall make themselves familiar with the concrete suppliers batch plant to determine if the operation substantially conforms to the requirements of A.S.T.M. C94. Any substandard conditions observed shall be immediately reported to the Director and the Contractor.

(2) Plant inspector is not required to be present at the plant during production. However, the Director may require an inspector be provided periodically at his discretion.

(3) The plant must be approved prior to beginning production for a given project. This approval will be given by the Director and/or his representative. The testing laboratory shall be responsible to inform the Director of any reasons or conditions that would adversely affect the plant's approval. Conditions for approval shall include but not be limited to the following:

(i) Ability to comply with A.S.T.M. C-94 (latest revision) Standard Specifications for Ready Mixed Concrete.

(ii) Whenever fly ash is used, the plant shall have a separate silo or bin to store the fly ash.

(iii) Whenever ground granulated blast-furnace GGBF slags are used, the plant shall have a separate silo or bin to store the slag.

(4) Prior to and periodically during construction, the designated testing laboratory shall sample and test aggregates proposed for use in concrete to determine their compliance with these specifications.

(c) Roadway Inspection:

(1) The designated testing laboratory shall provide a roadway technician at the job site during all times concrete is being placed. This roadway technician shall be responsible to perform the required field tests and promptly notify the Contractor and the CER of any sub-standard materials, workmanship or code violations being incorporated in the work.

(2) Samples of fresh concrete shall be gathered in accordance with A.S.T.M. C-172 (latest revision).

(3) Tests for slump - A.S.T.M. C-143 (latest revision) and air content - A.S.T.M. C-173 or C-231 (latest revisions) if applicable, must be performed whenever test cylinders are taken, and more frequently, when deemed necessary.

(4) The concrete temperature shall be measured and recorded when each set of cylinders are molded.

(5) Test cylinders shall be cast in accordance with A.S.T.M. C-31 (latest revision) as follows:

(i) Pavements: One set consisting of four (4) cylinders shall be cast for each one hundred (100) cubic yards or fraction thereof. An additional two (2) cylinders per set shall be cast for early strength determination.

(ii) Curbs, Driveways, and Sidewalks: One set of four (4) cylinders shall be cast in the a.m. (morning) and one set shall be cast in the p.m. (afternoon). A minimum of four (4) cylinders shall be cast per visit.

(iii) Combination Curb & Gutters: One set of four (4) cylinders shall be cast for each fifty (50) cubic yards or any fraction thereof. A minimum of four (4) cylinders shall be cast per visit.

(6) Test cylinders are to be tested in accordance with A.S.T.M. C-39 (latest revision) as follows:

2 @ 7 days of age.
2 @ 28 days of age.
1 @ 3 days of age (for verification of High Early Strength concrete).
1 @ 5 days of age (for verification of High Early Strength concrete).

(7) During production, if any truck of ready-mixed concrete fails to conform to specifications, the designated testing laboratory will immediately notify the Director and the Contractor and this material shall not be incorporated in the work.

(8) Re-tempering of concrete is not permitted.

(d) Cores for Thickness Verification:

(1) Cores shall be taken by the designated testing laboratory in accordance with Subsections C501.10 and C601.12 no later than fourteen (14) days after the conclusion of paving operations.

(2) Final locations of the cores shall be reported in a manner that is acceptable to the Director or his representative.

C743.03 ASPHALTIC CONCRETE MIXTURES:

(a) Tests and Inspections:

(1) The Contractor will be required to design the mixtures for optimum asphalt content and comply with all requirements of La. D.O.T.D. designation TR 303, Method A, however, Method B may be used when approved by the Director. Mixes which have been previously approved and are current within six (6) months may be submitted for approval subject to the same criteria as required by TR 303, Method A.

(2) The job mix formula shall be submitted for review by the designated testing laboratory and the Director supported by appropriate design data. No mixture shall be produced for the job until the Contractor's job mix formula has been approved by the Director. Approval or rejection of job mix formula shall be accomplished within seven (7) calendar days of submittal.

(b) Preliminary Tests: Prior to starting plant operations, the following materials will be sampled and/or tested by the designated testing laboratory:

(1) Obtain La. D.O.T.D. Certificates of Delivery covering asphalt cement in working tank. (Also to be obtained on a daily basis during production.)

(2) Obtain the refinery test report covering chemical and physical properties of the asphalt cement.

(3) Verify that the Anti-Stripping agent is included in the La. D.O.T.D. Qualified Products List.

(4) Other admixtures - La. D.O.T.D. Qualfied Products List.

(5) Aggregates - Verify that the source of aggregates to be used are included in the La. D.O.T.D. Qualified Products List.

(6) Sample the Contractor's fine sand. Test in accordance with A.A.S.H.T.O. T-90 to determine if plasticity index is four (4) or less. Visually inspect Contractor's stockpile to verify absence of clay balls and excessive clay coating.

(c) Tests Conducted at the Asphalt Plant: Tests to be conducted on the hot mix material at the asphalt plant will be conducted by the designated testing laboratory's plant technician. All tests will be conducted in accordance with La. D.O.T.D. specifications. Test results shall conform to the properties in Section 42. A sampling plan will be utilized such that samples are taken and tested as follows:

(1) 0 to 200 tons - Full sample is taken upon which the following tests are to be conducted:

Temperature - read to the nearest 5 degrees.

Extraction	
Extracted Gradation	TR 309
Per cent Extracted Asphalt Cement	TR 308
Per cent Crushed	TR 306
Marshall Stability & Flow	
(2 briquettes are made.)	TR 305
Unit Weight, Voids & Per cent	
V.F.A.	TR 304

Record Anti-strip content from meters and scales

(2) 201 to 400 tons - smaller sample is taken:

Temperature - read to the nearest 5 degrees.

Marshall Stability & Flow	
(1 briquette is made.)	TR 305

(3) 401 to 600 tons - Full sample is taken. Conduct tests as described for 0 to 200 tons.

(4) In excess of 600 tons - Smaller sample is taken. Conduct tests as described for 201 to 400 tons.

Mix temperatures at the time of molding the briquettes shall be within $15^{o}F$ of the mix temperature at the time of sampling.

In addition to the above, the temperature of the mix is to be taken at least once per hour, when the mix has been loaded into haul trucks and is ready to leave the plant.
If the test results during the production of a lot are outside the limits given in Table 1 of Section C501, the representative of the designated testing laboratory shall immediately notify the Contractor's qualified asphaltic concrete plant technician.

If the Contractor refuses to take appropriate corrective action, the designated testing laboratory representative shall recommend to the Director to discontinue the operation of the plant immediately and shall notify the Contractor of his action. The plant may resume production of mix

for the project only after the Contractor's qualified asphaltic concrete plant technician produces evidence to the designated testing laboratory representative that the problem has been corrected.

When an individual test or the average of tests representing the lot is outside acceptance limits shown in Table 1 of Section C501, an adjustment in unit price for the lot will be made in accordance with Table 2 of Section C501.

(d) Pavement Samples: The Contractor shall furnish samples at locations determined by the designated testing laboratory's roadway technician. These operations shall be witnessed by the designated testing laboratory's roadway technician.

(e) Pavement Density: Refer to subsection Table 2 of Section C501.

(f) Roadway Inspection.

(g) Inspection of roadway asphaltic concrete work at the job site shall be performed by the roadway technician furnished by the designated testing laboratory. His duties will include, but not be limited to, the following:

(1) Record locations, tonnage, type of mix, lot number, and other pertinent data in his daily report.

(2) Temperatures will be checked and recorded in accordance with these specifications during the production of each lot.

(3) Observe the general operations of the Contractor to assure compliance with all requirements.

(4) Observe and record the tack and prime coat operations. (Square yards covered number of gallons used.)

(5) Determine the location of cores to be taken by the Contractor for thickness and density.

(6) Witness the drilling or cutting of the roadway samples and deliver same to designated testing laboratory for further testing.

(7) Witness the surface finish testing performed by the Contractor and report the findings of such testing.

(8) Inspect all mix hauled to the roadway for any obvious deficiencies which may include uncoated aggregate, segregated mixtures, mixtures with lumps, mix which is not of the proper temperature, excessive moisture, color and general appearance of the mixtures. Any loads found deficient shall be brought to the attention of the Contractor and rejected by the Director. Also, no trucks will be accepted without a haul ticket.

(9) Observe weather conditions and advise the Contractor of weather limitations when they apply.

C743.04 ROADWAY BASE & SUB-BASE COURSES:

(a) Soil materials, whether from required excavation or borrow excavation, which are to be incorporated in the project as fill or backfill, shall have been tested and classified by the Testing Laboratory prior to their use. Tests shall be conducted in accordance with the latest applicable standards of A.S.T.M., A.A.S.H.T.O., or La. D.O.T.D., and shall comply with the requirements of Section C302.

(b) Tests.

(1) Obtain a composite sample of base and sub-base material at source in accordance with A.S.T.M. D75 or A.A.S.H.T.O. T2.

(2) Perform Laboratory tests as follows:

A.S.T.M. C136 Sieve analysis of fine and coarse aggregates.
A.S.T.M. D4318 Test for liquid limit and plasticity index of soils.
A.S.T.M. D698, D1557, A.A.S.H.T.O. T99, T180, La. D.O.T.D. TR-418E, TR 418G Moisture-Density relations of soils and soil-aggregate mixtures (Proctor).
A.S.T.M. D2922, D1556, A.A.S.H.T.O. T191, T238 Density of soils and soil aggregate mixtures in place by nuclear or sand-cone methods.

(c) Field density tests shall be made on the completed base or sub-base courses and the depth of test recorded.

Frequency for Soil tests shall be as follows:

Trenches - 1 per 100 linear feet.

Backfill is to be placed and tested in 12" lifts when sand is compacted with a mechanical device, and in 3 foot lifts when flooding method is used.

Base Course - Six (6) tests per block.

Concrete roadway - 3 per side evenly spaced Asphalt/Conc. Curb - 4 under curb (2/side) and 2 in the roadway (1/side).

Depth - One (1) at each density test

C743.05 PAYMENT: Payment for all testing shall be made at the unit prices as detailed in the testing Contract between the City and the testing laboratory.

SECTION C744
STREETLIGHTS

C744.01 DESCRIPTION: This work consists of providing and installing streetlights and establishing all lines and grades as provided on the plans or as directed. The Contractor shall be responsible for the accuracy of all measurements.

C744.02 REFERENCED SPECIFICATIONS:

Street Lighting Handbook, City of New Orleans
New Orleans Street Light Maps, City of New Orleans
Street Light System, City of New Orleans
Street Light Circuit Schematics, City of New Orleans

C744.03 COORDINATION WITH OTHER CONTRACTORS AND UTILITIES: The Contractor shall conduct his operations to work with other entities on the project site. The Contractor shall not delay, endanger, or avoidably interfere with the activities of others and shall provide access to the site as required by the Director.

C744.04 DAMAGE TO STRUCTURES: The Contractor shall save and hold harmless the City of any damage to structures resulting from activities under this contract. The Contractor shall take reasonable precautions (e.g. maintaining vibrations within state mandated limits) to reduce seismic stresses on building structures.

C744.05 SALVAGABLE MATERIALS: The City reserves the right to retain any demolished items that the Director deems salvageable prior to the Contractor removing any items from the site. The Contractor shall deliver all salvaged materials, at the Contractor's expense, to an approved City location.

C744.06 INSTALLING/REPLACING LUMINAIRES: The Contractor shall install Light Emitting Diodes (LED) fixtures for all new street light installations. If a mercury vapor ballast fails within a NEMA or Cobra Head fixture, the Contractor shall replace the luminaire and convert it to a comparable LED fixture.

C744.07 PAINTING STREET LIGHTS: All painting operations shall be conducted in accordance with the requirements of Section 811 of the LA DOTD Standard Specifications for Roads and Bridges, latest edition.

The Contractor shall be responsible for preparing and finishing all metal parts, fittings, pedestals, mast arms, and luminaires.

Type of Paint:

Primers:
Exterior rust inhibitive ferrous-metal primer for ferrous metal,
Exterior galvanized metal primer for zinc-coated metal,
Exterior aluminum primer under alkyd finishes for aluminum.

Finish Coat: Exterior full-gloss alkyd enamel. Gloss refers to high sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

Standard colors are Bronze, Black, and “Jungle Green” FSTT-C-595, Color No. 14036.

Substitute products must be equal to specified paints for all qualitative requirements applicable to their use and must be approved by the Director.

Application: The preparation for finishing of new equipment shall be as follows:

Remove any hardware that is not to be painted. If removal is impractical or impossible, provide surface applied protection before surface preparation and painting.

Before applying paint, clean and prepare surfaces to manufacturer’s written instructions for each particular substrate condition as specified. Remove grease, oil, mill scale, and loose and flaking paint back to solid substrate.

Provide barrier coats over incompatible primers or remove and reprime.

Standards and posts shall have at least one coat of primer (the greater of 2.0 mils minimum or as recommended by the manufacturer) and two finish coats (the greater of 2.0 mils per coat, or as recommended by the manufacturer). Sand standards and posts lightly between each succeeding enamel coat.

If a prime coat has been applied by the supplier, prime coat shall not be required.

Factory enameled equipment and materials shall be examined for damaged paint after installation, and such damaged surfaces shall be repainted to the satisfaction of the Director. Factory-applied enamel finish in good condition and of appropriate color will be acceptable.

Do not paint concealed surfaces, finished metal surfaces, operating parts, and labels. Finished metal surfaces include the following:

Anodized aluminum
Stainless steel
Chromium plate

At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from work area.

Provide Wet Paint signs to protect newly painted finishes.

Apply paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.

Do not apply paint in rain, fog, or mist; or when relative humidity exceeds 85 percent, or at a temperature less than 5 deg F above the dew point; or to a damp or wet surface. Painting may

continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

Provide primer and finish coat materials that are compatible with one another and with the substrates.

C744.08 TREE TRIMMING AROUND STREET LIGHTS: Tree trimmers shall be licensed arborists, authorized to perform tree trimming by the Department of Parks and Parkways. Tree trimming shall consist of pruning the foliage of one or more trees that restricts visible light of the luminaire. The upper branches shall be pruned a distance of three (3) feet from the top and sides of the luminaire. Branches and foliage below the luminaire shall be pruned below a 150-degree cone (75 degrees each side of a vertical line). No tree trimming shall be performed that will permanently damage the tree. All costs will be provided under C719(60) Tree Trimming.

PART VIII - STRUCTURES

This part shall conform to Part VIII of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, latest edition. In case of conflict, the City Specifications shall govern.

PART IX - PORTLAND CEMENT CONCRETE

This part shall conform to Part IX of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, latest edition. In case of conflict, the City Specifications shall govern.

PART X - MATERIALS

Unless otherwise stated and covered in previous sections and the following sections C1002, C1003 and C1018 of the Department of Public Works, City of New Orleans specifications, this part shall conform to Part X of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, latest edition.
In case of conflict, the City specifications shall govern**.**

SECTION C1002
ASPHALTIC MATERIALS AND ADDITIVES

C1002.01 GENERAL: Asphalt shall be prepared by the refining of petroleum. Asphalt shall be uniform in character, free from water, and shall not foam when heated to 350^{o}F. Asphalt shall be from an approved source listed in the LaDOTD QPL 41.

Refinery or supplier storage tanks, piping, retorts, booster tanks and other equipment used in delivering, storing or handling asphaltic materials shall be kept clean and in good operating condition and shall be operated so as to avoid contamination of the contents with foreign materials.

Final test results for asphaltic materials will be applied to the proper table in this Section for conformance to specifications. Any deviation from the specifications will result in a payment adjustment as specified.

Samples taken at the refinery or supplier shall conform to specification requirements. When the refinery or supplier sample fails to meet these requirements, the material will be rejected and shall not be shipped to the jobsite.

When asphaltic materials sampled at the point of delivery do not conform to requirements for 100 percent pay, and in the opinion of the Director have resulted in an unsatisfactory product, the materials shall be removed and replaced or otherwise corrected at no direct pay. The adjustment in pay for asphaltic materials shall be applied only to samples taken at the point of delivery. When test results are such that a payment adjustment would result from more than one test value, the payment adjustment for the greatest reduction shall apply.

C1002.02 ASPHALTIC MATERIAL ADDITIVES:

(a) Anti-Strip: Anti-strip additives for asphaltic materials shall be approved products listed in QPL 57 and will be tested in accordance with DOTD TR 317.

(b) Silicone: Silicone additives for asphaltic materials shall be approved products listed in QPL 22.

SECTION C1003
AGGREGATES

C1003.01 GENERAL: Aggregates shall be from an approved source. For a source to be approved, each sample shall conform to the requirements specified and in the appropriate subsection. In addition to the test methods given in each subsection, the following methods shall be used in testing aggregates.

Property	Test Method
Deleterious materials	DOTD TR 119
Foreign Matter in Shell	DOTD TR 109
Unit Weight	AASHTO T 19
Sp1xific Gravity & Absorption of Fine Aggregate	AASHTO T 84
Specific Gravity & Absorption of Coarse Aggregate	AASHTO T 85
Polish Value	AASHTO T 278
Amount of Material Finer than the No. 200 Sieve	DOTD TR 112
Sieve Analysis (Gradation)	DOTD TR 113
Specific Gravity of Aggregate for Asphaltic Mixtures	DOTD TR 300
Liquid Limit and Plasticity Index	DOTD TR 428

When the No. 200 sieve is included in the gradation requirements, the results obtained by washing in accordance with DOTD TR 112 shall be added to that obtained by dry sieving in accordance with DOTD TR 113, unless otherwise specified.

(a) Source Approval:

(1) Soundness: The soundness loss of recycled portland cement concrete and aggregates listed in LaDOTD QPL 2 shall not exceed 15 percent when subjected to 5 cycles of the magnesium sulfate soundness test in accordance with AASHTO T 104.

(2) Abrasion: Coarse aggregate listed in LaDOTD QPL 2, and recycled portland cement concrete, except lightweight aggregate shall show an abrasion loss of not more than 40 percent when tested in accordance with AASHTO T 96.

Lightweight aggregate shall be expanded clay or expanded shale and shall show an abrasion loss of not more than 40 percent when tested in accordance with DOTD TR 111.

(3) Recycled portland cement concrete shall be approved in dedicated stockpiles and shall be free of asphaltic concrete overlay material, reinforcing steel, joint material and other debris. After processing, recycled portland cement concrete shall conform to the requirements specified in the appropriate Subsections. When a stockpile has been approved no other material shall be added without prior approval.

(4) Reclaimed asphaltic pavement shall be cold planed in accordance with Section C509 or crushed. Reclaimed asphaltic concrete shall be approved either at the time of removal from the roadway or in stockpiles. Stockpiled materials shall be uniform and reasonably free of lightweight aggregate, asphaltic concrete friction course, debris, soil, and other foreign matter.

(5) During source approval, aggregates for use in portland cement concrete will be tested in accordance with ASTM C 33 Appendix XI for alkali reactivity properties. Aggregates found to be potentially reactive with cement alkalies will be restricted for use with cement or a combination of cement and fly ash containing 0.6 percent or less alkalies (sodium oxide equivalent).

Fine aggregate for portland cement concrete that produces a color darker than the Organic Color No. 3 when tested in accordance with AASHTO T 21, will be subjected to the mortar strength test in accordance with AASHTO T 71. The minimum compressive strength shall be at least 95 percent of the reference mortar compressive strength.

(b) Acceptance Testing: Acceptance of aggregates shall be based on consistent conformation to the requirements for source approval in Heading (a).

C1003.02 AGGREGATES FOR ASPHALTIC MIXTURES: Aggregates for asphaltic mixtures shall conform to the requirements of Subsection C1003.01 except that reclaimed asphaltic pavement, recycled portland cement concrete, crushed shell, sand gravel and fine sand are not required to be from sources listed on LaDOTD QPL 2 but shall be from approved sources.

(1) Gravel, Stone and Crushed Slag: These aggregates shall conform to Subsection C1003.05 for deleterious substances.

These aggregates shall be assigned a Friction Rating as follows:

FRICTION RATING	DESCRIPTION
I	Aggregates that have a Polish Value of greater than 37 and demonstrate the ability to retain acceptable friction numbers for the life of the pavement.
II	Aggregates that have a Polish Value of 35 to 37 and demonstrate the ability to retain acceptable friction numbers for the life of the pavement.
III	Aggregates that have a Polish value of 30 to 34 and demonstrate that ability to retain acceptable friction numbers for the life of the pavement.
IV	Aggregates with a Polish Value of 20 to 29.

(2) Coarse Sand: Coarse sand shall be natural occurring sand processed to meet asphaltic mixture requirements, shall be graded from coarse to fine, and shall be free from vegetative and other foreign matter.

(3) Fine Sand: Fine sand shall be natural occurring sand processed to meet asphaltic mixture requirements, and shall be free from vegetative and other foreign matter.

The fine sand shall be non plastic and no clay balls or clay lumps shall be incorporated into the asphaltic mixture. The gradation shall have a maximum of 35 percent passing the No. 200 sieve. Clay lumps shall not exceed 1.00 percent by weight when sampled from the stockpile and tested in accordance with DOTD TR 119.

(4) Natural Sand: Natural sand shall be coarse sand or a combination of coarse sand and fine sand which is used in the asphaltic concrete mixture. Natural sand shall consist of clean, hard, durable, siliceous grains graded from coarse to fine and shall be reasonably free from vegetative matter or other deleterious materials.

The sand equivalent of the fraction passing the No. 4 sieve of the natural sand in the asphaltic concrete mixture shall be less than 35 when tested in accordance with DOTD TR 120.

(5) Crushed Shell: Shell material shall consist of clam or reef shell. Foreign matter (DOTD TR 109) such as silt and clay shall not exceed 5 percent, and such material shall be dispersed throughout the mass.

(6) Screenings: Screenings, when used, shall be made by crushing aggregates which conformed to the requirements for coarse aggregates in Subsection C1003.01. Screenings shall meet the following gradation requirements.

U.S. Sieve	**Percent Passing**
3/8"	100
No. 4	80 - 100

(7) Pit Run Sand-Gravel: Pit run sand gravel may be used in Type 5 mixes provided the material is separated into 2 sizes prior to final mixing. The separation shall be done by using a No. 4 screen or other approved sizes. For batch plants the screening process shall be adequate to satisfy this requirement. Pit run sand-gravel shall be non-plastic. No clay balls or clay lumps shall be incorporated into the asphaltic mixture. Clay lumps shall not exceed 1.00 percent by weight when tested in accordance with DOTD TR 119.

(8) Recycled Portland Cement Concrete: Recycled portland cement concrete source shall meet the requirements of Subsection C1003.02(b)(4). The maximum amount of deleterious materials shall conform to Subsection C1003.05.

(9) Reclaimed Asphaltic Pavement (RAP): Reclaimed asphaltic material shall conform to Subsection C1003.01.

(10) Mineral Filler: Mineral filler shall be an approved product listed on LaDOTD QPL 10 and shall consist of limestone dust, pulverized hydrated lime, shell dust, portland cement, or cement stack dust. Mineral dust collected in bag houses or by other dust collectors at asphaltic concrete plants is not classified as mineral filler. Cement stack dust shall consist of material collected form waste rotary kiln gases discharged through a collector of a cement plant. Mineral filler shall conform to the following gradation:

U.S. Sieve	**Percent Passing**
No. 30	100
No. 80	95 - 100
No. 200	70 - 100
No. 270	60 - 100

Mixtures of aggregate, filler and asphalt, in proportions to meet the requirements of mixes being used, shall have an index of retained Marshall Stability (DOTD TR 313) of at least 85 percent, and a maximum of 1.0 percent volumetric swell (DOTD TR 313).

SECTION C1018
MISCELLANEOUS MATERIALS

C1018.01: Lime shall be hydrated lime or quicklime from an approved source listed in QPL 34.

(a) Hydrated Lime shall conform to ASTM C 207, Type S, except that maximum free moisture shall be 1.5 percent.

(b) Quicklime shall conform to the following chemical requirements:

Minimum CaO + MgO: 90 percent by weight of total material.
Maximum MaO: 8 percent by weight of total material.

Quicklime shall be protected from contact with moisture prior to testing, shall be free flowing and graded so that 100 percent will pass a 3/8 inch sieve. When the quicklime is to be used in a slurry, the gradation shall be a minimum of 95 percent passing the 3/4 inch sieve.

C1018.02 FORM RELEASE AGENT: Form release agent for concrete shall be an approved product listed in QPL 29.

PART XI - SYSTEMS OF MEASUREMENT (FOR FUTURE USE)

PART XII - STANDARD BID ITEMS

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
	SECTION C201 CLEARING AND GRUBBING		
C201(01)	CLEARING AND GRUBBING .	LUMP SUM	0
	SECTION C202 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS		
C202(52)(C)	REMOVAL AND DISPOSAL OF EXISTING .... PORTLAND CEMENT CONCRETE PAVEMENT	SQUARE YARD	1
C202(52)(D)	REMOVAL AND DISPOSAL OF EXISTING .... SIDEWALK DRIVEWAY, FOOT LAP (CONCRETE, BRICK, ASPHALT, ETC.)	SQUARE YARD	1
C202(52)(E)	REMOVAL AND DISPOSAL OF EXISTING .... CURB (CONCRETE,ASPHALT,BRICK,ETC.)	LINEAR FOOT	1
C202(52)(F)	REMOVAL OF EXISTING CURB AND .... GUTTER BOTTOM	LINEAR FOOT	1
C202(52)(G)	REMOVAL AND DISPOSAL OE EXISTING .... GUTTER BOTTOM OR ROLLING STRIP	LINEAR FOOT	1
C202(52)(I)	REMOVAL AND DISPOSAL OF EXISTING .... ASPHALTIC CONCRETE PAVEMENT	SQUARE YARD	1
C202(53)(C)	REMOVAL AND DISPOSAL OF EXISTING .... CONCRETE BUS PAD	SQUARE YARD	1
C202(54)(A)	REMOVAL AND DISPOSAL OF CONCRETE. OR STONE HEADERS	LINEAR FOOT	1
C202(54)(B)	REMOVAL AND SALVAGE OF STONE.. HEADERS	LINEAR FOOT	1
C202(55)	SAW CUT CONCRETE CURB, PAVEMENT, . SIDEWALK, DRIVEWAY, ETC. ACCORDING TO PLANS ("DEPTH)	LINEAR FOOT	0
C202(56)	SAW CUT, WHEEL CUT OR SPADE CUT..... EXISTING ASPHALT, ACCORDING TO PLANS	LINEAR FOOT	0
	SECTION C203 - PREPARATION OF ROADWAY PAVEMENT SUBGRADE		
C203(51)	ROADWAY EXCAVATION	CUBIC YARD (THEO. SECT.)	0
C203(53)	SHAPE DITCHES.....	LINEAR FOOT	0
C203(58)	UNSUITABLE SUBGRADE & EXCAVATION.. & FILLING	CUBIC YARD (TRUCK MEA.)	0
C203(59)	GEOTEXTILE FABRIC FOR STABILIZATION	SQUARE YARD	0
C203(60)	GEOGRID	SQUARE YARD	0
C204(01)	TEMPORARY SANDBAGGING.....	CUBIC YARD	0
C204(02)	TEMPORARY HAY OR STRAW BAILES	EACH	0
C204(03)	TEMPORARY SLOPE DRAINS.....	LINEAR FOOT	0
C204(04)	TEMPORARY SEDIMENT BASINS.....	EACH	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
C204(05)	TEMPORARY SEDIMENT CHECK DAMS	EACH	0
C204(06)	TEMPORARY SILT FENCING	LINEAR FOOT	0
C204(07)	TEMPORARY STONE CONSTRUCTION ENTRANCE	CUBIC YARD	0
C204(08)	CURB INLET DRAIN FILTER (9" Diam. X 8 Ft. Long)	EACH	0
C204(09)	CURB INLET DRAIN FILTER (6" Diam. X 6 Ft. Long)	EACH	0
	SECTION C302 - BASE AND SUBBASE COURSE		
C302(51)	BASE COURSE	CUBIC YARD (NET SECT.)	1
C302(53)	SUBBASE COURSE	CUBIC YARD (NET SECT.)	1
	SECTION C306 - SCARIFYING AND COMPACTING ROAD BED		
C306(52)	SCARIFYING AND COMPACTING ROAD BED	SQUARE YARD	0
	SECTION C402 - TRAFFIC MAINTENANCE AGGREGATE		
C402(51)	TRAFFIC MAINTENANCE AGGREGATE	CUBIC YARD (TRUCK MEA.)	0
	SECTION C501 - ASPHALTIC CONCRETE MIXTURES		
C501(51)	ASPHALTIC CONCRETE	TON	1
C501(52)	ASPHALTIC CONCRETE	CUBIC YARD	1
C501(53)	ASPHALTIC CONCRETE (___" THICK)	SQUARE YARD	1
C501(54)	GEOTEXTILE FABRIC FOR PAVING	SQUARE YARD	0
	SECTION C502 – SUPERPAVE ASPHALTIC CONCRETE PAVEMENT		
C502(51)	SUPERPAVE ASPHALTIC CONCRETE	TON	1
C502(52)	SUPERPAVE ASPHALTIC CONCRETE	CUBIC YARD	1
C502(53)	SUPERPAVE ASPHALTIC CONCRETE (___" THICK)	SQUARE YARD	1
	SECTION C506 - POROUS ASPHALTIC PAVEMENT		
C506(51)	POROUS ASPHALTIC CONCRETE	TON	1
C506(52)	POROUS ASPHALTIC CONCRETE	CUBIC YARD	1
C506(53)	POROUS ASPHALTIC CONCRETE (___" THICK)	SQUARE YARD	1
	SECTION C507 - ASPHALTIC BINDERS		
C507(51)	ASPHALTIC BINDER	SQUARE YARD	1
	SECTION C509 - COLD PLANING ASPHALTIC PAVEMENT		
C509(51)	COLD PLANING ASPHALTIC PAVEMENT (___" AVERAGE THICK)	SQUARE YARD	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
	SECTION C601 - PORTLAND CEMENT CONCRETE PAVEMENT		
C601(54)	REINFORCED CONCRETE PAVEMENT (___" THICK)	SQUARE YARD	1
C601(55)	SURCHARGE FOR HIGH EARLY STRENGTH	SQUARE YARD	1
C601(56)	REINFORCED CONCRETE BUS PAD (___" THICK)	SQUARE YARD	1
	SECTION C604 - PERVIOUS CONCRETE PAVEMENT		
C604(54)	PERVIOUS CONCRETE PAVMENT (___" THICK)	SQUARE YARD	1

Letter designations for pavement thickness shall be:

A.....5"	F.....7-1/2"	K..... 10"	P..... 12-1/2"
B.....5-1/2"	G.....8"	L..... 10-1/2"	Q .... 13"
C.....6"	H .....8-1/2"	M .... 11"	R..... 13-1/2"
D.....6-1/2"	I.....9"	N..... 11-1/2"	S..... 14"
E.....7"	J .....9-1/2"	O..... 12"	T..... 14-1/2"

Example:

C601(03)(K) PORTLAND CEMENT CONCRETE 25.4 C.M. THICK (10" THICK)

	SECTION C701 - CULVERTS AND STORM DRAINS		
C701(53)	REINFORCED CONCRETE PIPE (SIZE)	LINEAR FOOT	0
C701(54)	REINFORCED CONCRETE ARCH PIPE (SIZE)	LINEAR FOOT	0
C701(57)	YARD DRAIN SERVICE LINE (SIZE & TYPE)	LINEAR FOOT	0
C701(58)	RESET CULVERT PIPE (SIZE)	LINEAR FOOT	0
C701(59)	REINFORCED CONCRETE WYE OR ARCH . EQUIVALENT - NEW (SIZE)	EACH	0
C701(65)	REINFORCED CONCRETE WYE OR ARCH . EQUIVALENT - EXISTING (SIZE)	EACH	0
C701(66)	CONCRETE TEE (SIZE).	EACH	0
C701(67)	CLEAN AND FLUSH CULVERT	LINEAR FOOT	0
C701(68)	POINT REPAIR OF EXISTING DRAIN LINES UP TO 10 FEET (SIZE)	EACH	0
C701(69)	POINT REPAIR OF EXISTING DRAIN LINES BEYOND 10 FEET	LINEAR FOOT	0
C701(70)	DRAIN HOUSE CONNECTIONS (SIZE & TYPE)	EACH	0
C701(72)	COLLECTOR LINE TO CATCH BASINS FOR DRAIN HOUSE CONNECTIONS (SIZE)	LINEAR FOOT	0
C701(73)	ABANDONING EXISTING DRAINAGE PIPES IN PLACE AND FILL WITH FLOWABLE MATERIAL (SIZE)	LINEAR FOOT	0
C701(74)	REMOVAL AND DISPOSAL OF EXISTING DRAIN LINES NOT IN SAME TRENCH) INCLUDING	LINEAR FOOT	0

BACKFILING WITH RIVER SAND AND COMPATION

Letter Designations shall be used for the various pipe sizes as follows:

Circular Pipe (Inches)	
4....A	60....Q
6....B	66....R
8....C	72....S
10....D	78....T
12....E	84....U
15....F	90 ... V
18....G	96....W
21....H	102....X
24 ... I	108....Y
27....J	114....Z
30....K	120....1
33....L	126....2
36....M	132....3
42....N	138....4
48....O	144....5
54....P	

Arch Pipe (Inches)		
Concrete (RCPA)	**Equivalent Diameter**	**Letter Designation**
18 X 11	15	F
22 X 13	18	G
26 X 15	21	H
28 X 18	24	I
36 X 22	30	K
43 X 26	36	M
51 X 31	42	N
58 X 36	48	O
65 X 40	54	P
73 X 45	60	Q
-	66	R
88 X 54	72	S
-	78	T
102 X 62	84	U
115 X 72	90	V
122 X 77	96	W
-	102	X
138 X 87	108	Y
-	114	Z
154 X 96	120	1

Examples:

C701(54)(Y) Reinforced Concrete Arch Pipe (138 X 87).

C701(57)(C) PVC Yard Drain service line (8").

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
	SECTION C702 - MANHOLES, CATCH BASINS, DROP INLETS AND CLEAN OUTS		
C702(52)(J)	NO. 1 STANDARD DRAIN MANHOLE...	FOOT HEIGHT	1
C702(52)(K)	NO. 1 STANDARD DRAIN MANHOLE...	FOOT HEIGHT	1
C702(52)(L)	NO. 3 STANDARD DRAIN MANHOLE...	FOOT HEIGHT	1
C702(52)(M)	SPECIAL DRAIN MANHOLE	EACH	0
C702(52)(N)	SPECIAL CONFLICT MANHOLE...	EACH	0
C702(52)(J)	TYPE A CATCH BASINS ADJUSTMENT	EACH	0
C702(53)(K)	TYPE B CATCH BASINS ADJUSTMENT	EACH	0
C702(53)(L)	TYPE C CATCH BASINS ADJUSTMENT	EACH	0
C702(53)(M)	NO. 1 STANDARD CATCH BASIN	EACH	0
C702(53)(N)	DOUBLE NO. 1 CATCH BASIN	EACH	0
C702(53)(O)	NO. 2 STANDARD CATCH BASIN	EACH	0
C702(53)(P)	NO. 3 STANDARD CATCH BASIN	EACH	0
C702(53)(Q)	NO. 4 STANDARD CATCH BASIN	EACH	0
C702(53)(R)	NO. 5 STANDARD CATCH BASIN	EACH	0
C702(53)(S)	24" X 30" CLEAR OPENING STANDARD DROP INLET.....	EACH	0
C702(53)(T)	SINGLE MOUNTABLE CATCH BASINS	EACH	0
C702(53)(U)	DOUBLE MOUNTABLE CATCH BASINS	EACH	0
C702(53)(V)	REHABILITATE EXISTING CATCH BASIN	EACH	0
C702(54)(I)	REHABILITATE EXISTING MANHOLE..	FOOT HEIGHT	1
C702(54)(K)	TAP-IN TO EXISTING DRAINLINE	EACH	0
C702(54)(A)(1)	ADJUST MANHOLE OR DROP INLET UP TO 6" WITH BRICK AND MORTAR	EACH	0
C702(54)(A)(2)	ADJUST MANHOLE WITH RINGS UP TO 4"	EACH	0
C702(54)(A)(3)	ADJUST MANHOLE OR DROP INLET OVER 6" WITH BRICK AND MORTAR	EACH	0
C702(55)(C)	6" DRAIN CLEAN OUT FOR ROOF DRAINS.	EACH	0
C702(56)	CLEAN OUT BOX EXISTING CULVERT	EACH	0
C702(57)	CLEAN OUT BOX NEW CULVERT	EACH	0
	SECTION C706 - DRIVEWAYS AND SIDEWALKS		
C706(51)	CONCRETE SIDEWALK (___" THICK)..	SQUARE YARD	1
C706(52)	CONCRETE DRIVEWAY (___" THICK)	SQUARE YARD	1
C706(54)	SIDEWALK AT INTERSECTION INCLUDING HANDICAPPED RAMPS (___" THICK)	SQUARE YARD	1
C706(55)	SIDEWALK IN MEDIAN INCLUDING..... HANDICAPPED RAMPS	SQUARE YARD	1
C706(56)	HANDICAPPED RAMP (SPECIFY CONCRETE BRICK OR STONE)	SQUARE YARD	1
C706(57)	BRICK SIDEWALK.	SQUARE YARD	1
C706(58)	RELAYING BRICK SIDEWALK.....	SQUARE YARD	1
C706(59)	STONE SIDEWALK	SQUARE YARD	1
C706(60)	RELAYING STONE SIDEWALK	SQUARE YARD	1
C706(61)	LETTER OR NUMBER FOR TILE STREET NAME	EACH	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
C706(62)	RESETTING TILE STREET NAME	EACH	0

Letter Designations for various thickness shall be used as follows:

4"...A 7"...D
5"...B 8"...E
6"...C 9"...F

Example: ITEM C706(52)(E) CONCRETE DRIVEWAY 8"

SECTION C707 - CURBS AND GUTTERS

C707(54)	ASPHALTIC CURB	LINEAR FOOT	1
C707(55)	CONCRETE MOUNTABLE CURB WITH OR WITHOUT DOWELS (STRAIGHT, CIRCULAR OR DEPRESSED)	LINEAR FOOT	1
C707(56)	6" CONCRETE BARRIER CURB WITH OR WITHOUT DOWELS (STRAIGHT, CIRCULAR OR DEPRESSED)	LINEAR FOOT	1
C707(57)	8" CONCRETE BARRIER CURB WITH OR WITHOUT DOWELS (STRAIGHT, CIRCULAR OR DEPRESSED)	LINEAR FOOT	1
C707(58)	CONCRETE GUTTER BOTTOM OR ROLLING STRIP	LINEAR FOOT	1
C707(59)	MOUNTABLE CURB AND GUTTER BOTTOM	LINEAR FOOT	1
C707(60)	6" BARRIER CURB & GUTTER BOTTOM OR ROLLING STRIP	LINEAR FOOT	1
C707(61)	8" BARRIER CURB & GUTTER BOTTOM OR ROLLING STRIP	LINEAR FOOT	1
C707(62)	STONE CURB INCLUDING BASE (STRAIGHT, CIRCULAR OR DEPRESSED)	LINEAR FOOT	1
C707(63)	RESET EXISTING CURB (PRECAST CONCRETE, STONE, ETC.) INCLUDING BASE	LINEAR FOOT	1
C707(64)	TIMBER CURB	MBFM	2

SECTION C713 - TEMPORARY SIGNS, BARRICADES AND PAVEMENT MARKINGS

C713(51)	TEMPORARY SIGNS, BARRICADES AND PAVEMENT MARKINGS	LUMP SUM	0

SECTION C714 - SODDING

C714(51)	SODDING	SQUARE YARD	1

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
	SECTION C717 - SEEDING		
C717(51)	SEEDING	LUMP SUM	0
	SECTION C719 - LANDSCAPING		
C719(55)	GRAVEL BED AND FILTER CLOTH OVER TREE ROOTS	SQUARE YARD	1
C719(56)	TREE PROTECTION	LINEAR FOOT	0
C719(57)	TREE REMOVAL (DBH SIZE, TYPE)	EACH	0
C719(58)	TREE REPLACEMENT (DBH SIZE, TYPE)	EACH	0
C719(59)	TREE RELOCATION (DBH SIZE TYPE)	EACH	0
C719(60)	TREE TRIMMING	LUMP SUM	0
C719(61)	ROOT PRUNING	EACH	0
C719(62)	ROOT TRENCHING	EACH	0
	SECTION C723 - GRANULAR MATERIAL		
C723(52)	BATTURE SAND FOR DRESSING, GRANULAR MATERIAL FOR OTHER ADJUSTMENTS	CUBIC YARD (T.M.)	0
	SECTION C724 - PAVEMENT REPAIR, JOINT REPAIR AND CRACK REPAIR		
C724(51)(A)	ASPHALTIC CONCRETE REPAIR	SQUARE YARD	0
C724(51)(B)	CONCRETE FOUNDATION REPAIR WITH ASPHALT OVERLAY	SQUARE YARD	0
C724(51)(C)	CONCRETE PAVEMENT REPAIR	SQUARE YARD	0
C724(53)(A	CONCRETE JOINT REPAIR	SQUARE YARD	0
C724(53)(B)	JOINT RESEALING	LINEAR FOOT	0
C724(54)(A)	CRACK REPAIR BETWEEN 1/8" AND 1/2" WIDE	LINEAR FOOT	0
C724(54)(B)	CRACK REPAIR GREATER THAN 1"	LINEAR FOOT	0
C724(55)	POT HOLE REPAIR ON ACCESS ROUTE	TON	1
	SECTION C727 - MOBILIZATION		
C727(51)	MOBILIZATION	LUMP SUM	0
	SECTION C728 - JACKED AND BORED PIPE		
C728(51)	JACKED OR BORED PIPE (SIZE, TYPE, CLASS OR THICKNESS)	LINEAR FOOT	0
	SECTION C729 - TRAFFIC SIGNS AND DEVICES		
C729(51)	TRAFFIC SIGN	EACH	0
C729(54)	DELINEATOR ASSEMBLY	EACH	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
C729(66)	OBJECT MARKER ASSEMBLY.....	EACH	0
C729(71)(A)	STREET NAME SIGN ON EXISTING POST..	EACH	0
C729(71)(B)	STREET NAME SIGN ON NEW POST..	EACH	0
C729(72)	PROJECT SIGN	EACH	0
	SECTION C731 - RAISED PAVEMENT MARKERS		
C731(52)	REFLECTORIZED RAISED PAVEMENT..... .... MARKERS	EACH	0
	SECTION C732 - PLASTIC PAVEMENT MARKINGS		
C732(52)	PLASTIC PAVEMENT STRIPING (SOLID LINE)	LINEAR FOOT	0
C732(53)	PLASTIC PAVEMENT STRIPING (BROKEN LINE).....	LINEAR FOOT	0
C732(54)	PLASTIC PAVEMENT LEGENDS & SYMBOLS	EACH	0
C732(55)	PLASTIC PAVEMENT STRIPING REMOVAL	LINEAR FOOT	0

Letter designations for various widths shall be used as follows:

4"...A, 6"...B, 8"...C, 12"...D, 24"...E

SECTION C736 - RESTORATION OF TRAFFIC SIGNAL LOOP DETECTORS

C736(59)	LOOP DETECTOR	LINEAR FOOT	0

SECTION C740 – CONSTRUCTION LAYOUT

C740(51)	Construction Layout.....	LUMP SUM	0

SECTION C741 - WATER MAINS UP TO 12" IN DIAMETER

C741(51)	(SIZE) (MATERIAL) NEW WATER MAIN .... WITH MAIN LINE FITTINGS	LINEAR FOOT	0
C741(51)	8” PVC NEW WATER MAIN WITH MAIN LINE .... FITTINGS BY DIRECTIONAL DRILLING	LINEAR FOOT	0
C741(52)	NEW (SIZE)" VALVE.....	EACH	0
C741(53)	TAPPING SLEEVE & VALVE ASSEMBLY TO..... ..... NEW MAIN (SIZE)	EACH	0
C741(54)	NEW FIRE HYDRANT	EACH	0
C741(55)(A)	REPLACE 5/8" TO 1” WATER HOUSE .... WITH 1” WATER HOUSE CONNECTION (FROM MAIN TO METER)	EACH	0
C741(55)	REPLACE (SIZE) WATER HOUSE CONNECTION ..... (FROM MAIN TO METER)	EACH	0
C741(55)(G)	REMOVE AND REPLACE WATER HOUSE . ... CONNECTION FROM METER TO PROPERTY LINE 5/8” TO 1”	EACH	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
C741(56)	RELOCATION OF FIRE HYDRANT (IN EXISTING MAIN)	EACH	0
C741(70)	ADDITIONAL CAST IRON FITTINGS	TON	2
C741(71)(B-01)	6" WATER LINE OFFSET UP TO 24"	EACH	0
C741(71)(C-01)	8" WATER LINE OFFSET UP TO 24"	EACH	0
C741(71)(E-01)	12" WATER LINE OFFSET UP TO 24"	EACH	0
C741(72)(B-02)	6" WATER LINE OFFSET OVER 24"	EACH	0
C741(72)(C-02)	8" WATER LINE OFFSET OVER 24"	EACH	0
C741(72)(E-02)	12" WATER LINE OFFSET OVER 24"	EACH	0
C741(73)	ADJUST WATER VALVE BOX	EACH	0
C741(74)	NEW WATER VALVE MANHOLE (SIZE)	EACH	0
C741(75)	REMOVE MUD AND DEBRIS FROM INSIDE OF WATER METER BOX	EACH	0
C741(76)	ADJUST COMPLETE WATER METER BOX TO GRADE	EACH	0
C741(77)	REPLACE BROKEN WATER METER BOX (5/8") TO (1")	EACH	0
C741(78)	PLUG EXISTING WATER MAIN (SIZE) AND.FILL WITH FLOWABLE MATERIAL (SAND/CEMENT MIXTURE)	LINEAR FOOT	0
C741(79)	(SIZE) WATER MAIN CHLORINATIN	LINEAR FOOT	0

SECTION C742 - SEWER LINES

C742(51)	INSTALL SEWER MAINS (SIZE & DEPTH)	LINEAR FOOT	0
C742(55)	INSTALL SEWER MANHOLE	FOOT HIGH	1
C742(56)	REPLACE SEWER MANHOLE CASTING	EACH	0
C742(57)	SEWER POINT REPAIR UP TO 10 FEET (SIZE & DEPTH)	EACH	0
C742(58)	SEWER POINT REPAIR BEYOND 10 FEET(SIZE & DEPTH)	LINEAR FOOT	0
C742(59)	NEW SEWER HOUSE CONNECTIONS FROM MAIN TO BACK OF CURB (SIZE)	EACH	0
C742(60)	REPLACE EXISTING SEWER HOUSE CONNECTION FROM EXISTING MAIN TO BACK OF CURB	EACH	0
C742(61)	RE-CONNECT EXISTING SEWER HOUSE CONNECTION TO NEW MAIN UP TO 3 FEET	EACH	0
C742(62)	RE-CONNECT EXISTING SEWER HOUSE CONNECTION TO NEW MAIN AND EXTEND TO BACK OF CURB	EACH	0
C742(63)	REPLACE EXISTING SEWER HOUSE CONNECTION BEYOND BACK OF CURB	LINEAR FOOT	0
C742(64)	ADJUST SEWER HOUSE CONNECTION	EACH	0
C742(65)	PIPE LINING (SIZE & METHOD)	LINEAR FOOT	0
C742(66)	CUT LINER TO RESTORE EXISTING SEWER HOUSE CONNECTION (SIZE & METHOD)	EACH	0

Letter designations shall be used for various pipe sizes as follows:

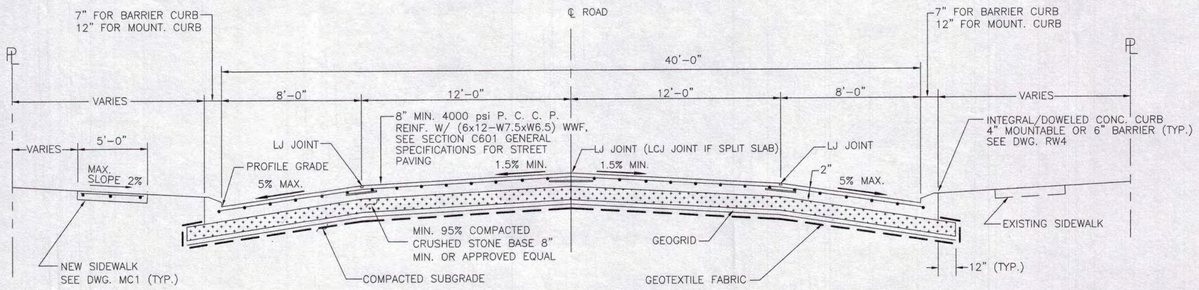
4". .....A	15" .. .. F
6". .....B	18" .. .. G
8". C	21" .. .. H
10".....D	24".....I
12".....E	27" .. .. J

Letter designations shall be used for various depth brackets, as follows:

0' - 6.0' ....A
6.1' - 8.0'..... .....B
8.1' - 10.0'..... C
10.1' - 12.0'..... .....D
12.1' - 14.0'..... .....E
14.1' - 16.0'..... .....F

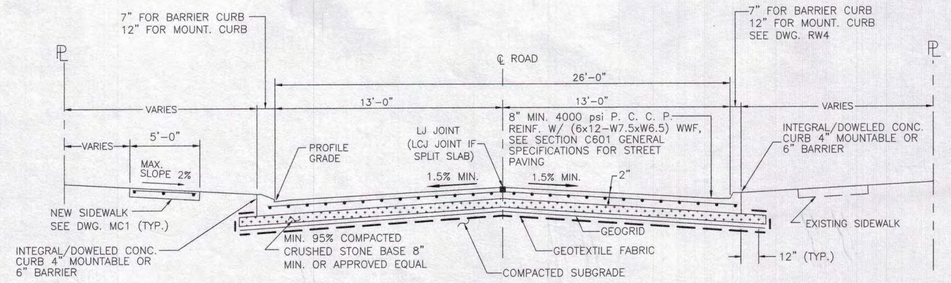
INTENTIONALLY LEFT BLANK

Attachment 3
SECTION 01 300
DPW STANDARD DRAWINGS



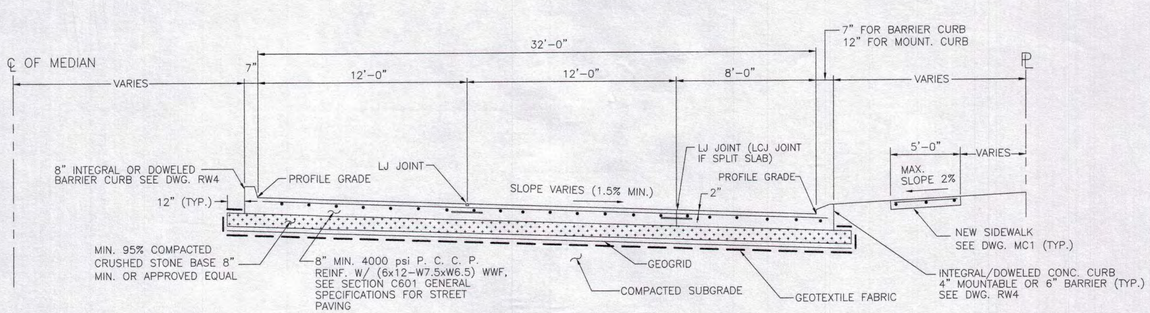
TYPICAL ROADWAY SECTION – 40'-0" RDWY. – P. C. C. P. (REINFORCED)

N.T.S.



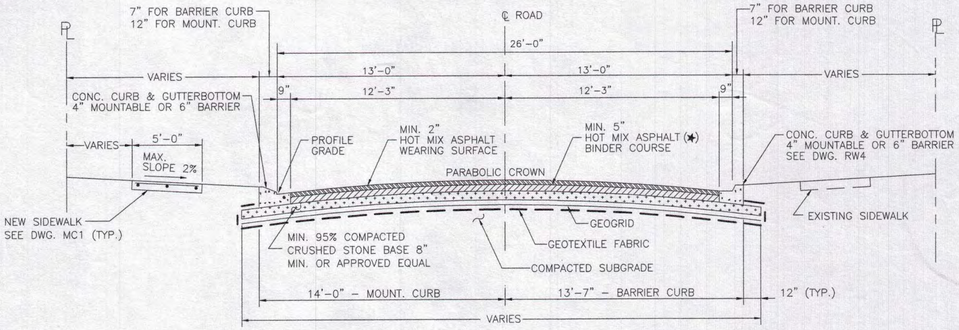
TYPICAL ROADWAY SECTION – 26'-0" RDWY. – P.C.C.P. (REINFORCED)

N.T.S.



TYPICAL HALF SECTION – 32'-0" ROADWAY – P. C. C. P. (REINFORCED)

N.T.S.

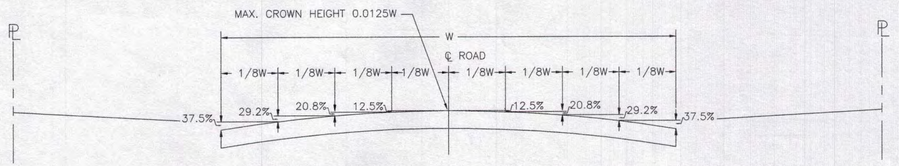


TYPICAL ROADWAY SECTION – 26'-0" RDWY. – ASPHALTIC CONCRETE PAVEMENT

MIN. THICKNESS = 7" TOTAL ASPHALTIC CONCRETE

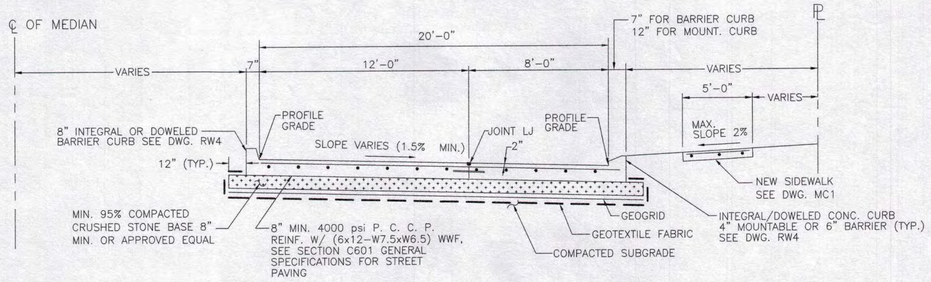
N.T.S.

(*) PROVIDE TACK COAT(S) BETWEEN ASPHALT LAYER(S)



TYPICAL PARABOLIC CROWN – ASPHALTIC CONCRETE PAVEMENT

N.T.S.



TYPICAL HALF SECTION – 20'-0" ROADWAY – P. C. C. P. (REINFORCED)

N.T.S.

GENERAL NOTES:

(1) NEW SIDEWALK SHALL BE 4" REINFORCED PORTLAND CEMENT CONCRETE 3000 PSI. SIDEWALK SHALL BE 6" REINFORCED P.C.C. AT DRIVEWAYS.

(2) NEW CURB AND GUTTERBOTTOM SHALL BE 4000 PSI REINFORCED PORTLAND CEMENT CONCRETE.

(3) SEE DRAWINGS RW2 AND RW3 FOR JOINT DETAILS AND PLACEMENT.

(4) ROADWAY MAXIMUM SLOPE MUST MEET AASHTO STANDARD.

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

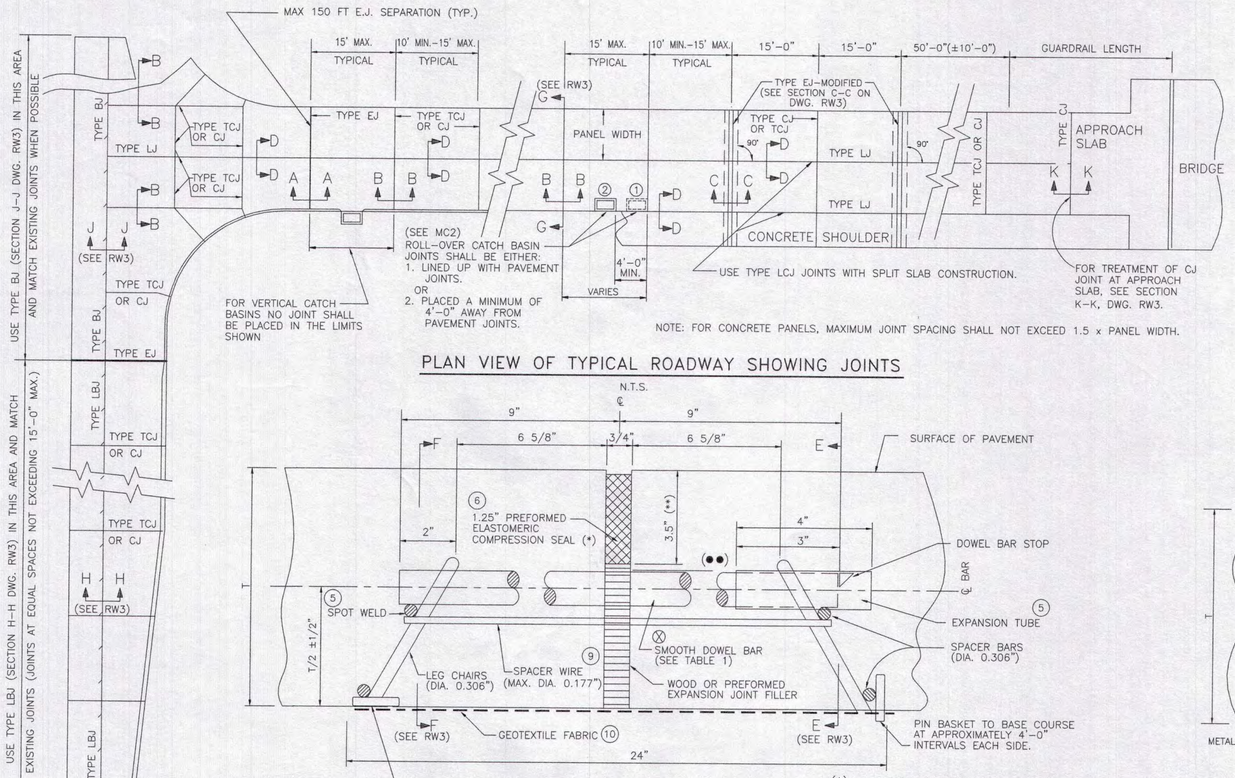
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

TYPICAL ROADWAY SECTIONS FOR STREET CONSTRUCTION

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	M.T. B.V. R.S. B.J. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

RW1



NOTE: FOR CONCRETE PANELS, MAXIMUM JOINT SPACING SHALL NOT EXCEED 1.5 x PANEL WIDTH.

PLAN VIEW OF TYPICAL ROADWAY SHOWING JOINTS

N.T.S.

SECTION A–A
TYPE EJ (12)
(TRANSVERSE EXPANSION JOINT)

N.T.S.

(*) APPROVED SILICONE JOINT SEALANT WITH BACKER MATERIAL IS OPTIONAL.

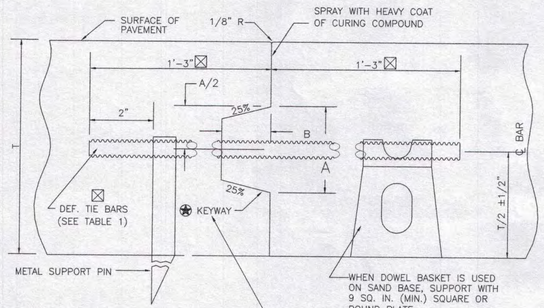
(**) 3" FOR 8" PAVEMENT

(●●) THIS HALF OF DOWEL SHALL BE GREASED.

TABLE 1
(ALL DIMENSIONS IN INCHES)

PAVEMENT THICKNESS T △	SMOOTH DOWEL BARS ⊗ SIZE	SMOOTH DOWEL BARS ⊗ LENGTH	SMOOTH DOWEL BARS ⊗ SPACING	DEF. TIE BARS ⊠ SIZE	DEF. TIE BARS ⊠ LENGTH	DEF. TIE BARS ⊠ SPACING	MINIMUM DEPTH OF JOINT ◪ TCJ & CJ ±1/4"	MINIMUM DEPTH OF JOINT ◪ LJ ±1/4"	KEYWAY ❀ A ±1/4"	KEYWAY ❀ B ±1/4"
7 OR LESS	1	18	12	1/2	24	24	2-1/2	2-1/2	ALLOW 7"	
8	1-1/4	18	12	1/2	24	24	3	3	2-1/2	1-1/4
9	1-1/4	18	12	1/2	24	24	3	3-1/2	2-1/2	1-1/4
10	1-1/2	18	12	1/2	24	24	3-1/2	4	2-1/2	1-1/4
11	1-1/2	18	12	5/8	30	24	3-1/2	4	2-1/2	1-1/4
12	1-1/2	18	12	5/8	30	24	4	4-1/2	3	1-1/2
13	1-1/2	18	12	5/8	30	24	4	4-1/2	3	1-1/2
14	1-1/2	18	12	5/8	30	24	4-1/2	5	3	1-1/2

△ FOR CONC. SHOULDERS, " T " IS THE THICKNESS AT PAVEMENT EDGE.



FOR KEYWAY DIMENSIONS A & B SEE TABLE 1. ❀

KEYWAY UTILIZATION SHALL NOT BE ALLOWED FOR PAVEMENT THICKNESS LESS THAN 8".

IN LIEU OF THE KEYWAY, ONE OF THE FOLLOWING OPTIONS WILL BE ALLOWED (FOR ALL CASES):

A. INSTALL TIE BARS OF THE SIZE SHOWN IN TABLE 1 AT 1/2 OF THE SPACING.

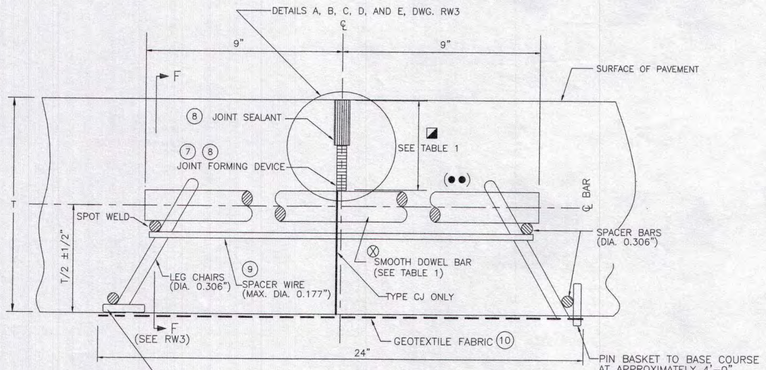
B. INSTALL TIE BARS HAVING DIAMETERS 1/4" LARGER THAN THE DIAMETERS SHOWN IN TABLE 1, AT THE SAME SPACING).

TYPE LCJ
(LONGITUDINAL CONSTRUCTION JOINT)

N.T.S.

GENERAL STREET CONSTRUCTION NOTES:

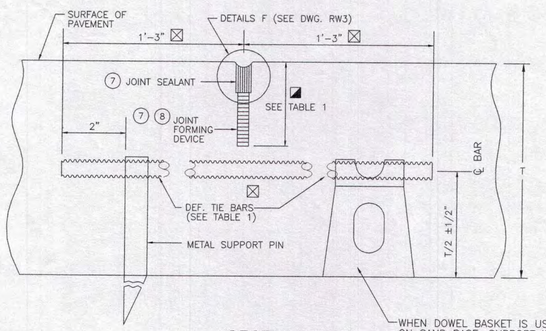
1. PAVEMENT EDGES SHALL BE SLIGHTLY ROUNDED TO APPROXIMATELY 1/4".
2. ASPHALTIC CONCRETE JOINING P.C.C.P. OR ASPHALTIC CONCRETE SHOULDER: THE ASPHALT JOINT SHALL BE SAW CUT AND CONSTRUCTED IN ACCORDANCE WITH SECTION I–I, DRAWING RW3.
3. FOR SECTIONS C–C, E–E, F–F, G–G, H–H, I–I, J–J, AND K–K SEE DRAWING RW3.
4. ALL JOINTS ARE TO BE USED WHERE SHOWN ON THIS SHEET OR AS SHOWN ELSEWHERE IN THE PLANS OR AS OTHERWISE DIRECTED BY THE ENGINEER.
5. ON TYPE EJ JOINTS, SPOT WELD ALTERNATE ENDS OF DOWEL BARS TO DOWEL BASKETS AND PLACE EXPANSION TUBES ON FREE ENDS OF DOWEL BARS, (SECTION A–A).
6. TYPE EJ JOINTS SHALL BE SEALED WITH PREFORMED ELASTOMERIC COMPRESSION JOINT SEALS CONFORMING TO SUBSECTION 1005.03 OF DOTD "LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES", LATEST EDITION. THE SEALS SHALL HAVE A NOMINAL WIDTH OF 1–1/4" BEFORE COMPRESSION. JOINTS SHALL BE CLEANED PRIOR TO SEALING.
7. FOR DESIGN SPEEDS OF 45 MPH OR GREATER:
   - A. TYPE LJ JOINTS SHALL BE SAW CUT AND CONSTRUCTED AS IN DETAIL "F" DRAWING RW3. THE JOINT SHALL BE SAW CUT AND CLEANED PRIOR TO SEALING WITH A JOINT SEALANT CONFORMING TO SUBSECTION 1005.02(b) OR (c) OF THE AFOREMENTIONED DOTD SPECIFICATIONS.
   - B. TYPE TCJ OR CJ SHALL BE SAW CUT AS SHOWN IN DETAIL "C" OR "D" DRAWING RW3 AND TO THE DEPTH SHOWN IN TABLE 1. THE JOINT SHALL BE SAND BLASTED AND CLEANED IMMEDIATELY PRIOR TO SEALING. THE INITIAL CUT SHALL BE MADE WITH 1/8" MINIMUM BLADE. THE SEALANT SHALL BE A PREFORMED ELASTOMERIC SEAL IN ACCORDANCE WITH SUBSECTION 1005.03 OR A SILICONE SEALANT IN ACCORDANCE WITH SUBSECTION 1005.02(c) OF THE AFOREMENTIONED DOTD SPECIFICATIONS.
8. FOR DESIGN SPEEDS OF LESS THAN 45 MPH:
   - A. TYPE LJ JOINTS SHALL BE SAW CUT AS DESCRIBED IN 7(A).
   - B. TYPE TCJ OR CJ SHALL BE CONSTRUCTED AS FOLLOWS:
     - (1) CONSTRUCTED AS DESCRIBED IN 7(B).
     - (2) WITH A REMOVABLE FORMING DEVICE AS SHOWN IN DETAILS "A" AND "B" DRAWING RW3. THE JOINT SHALL BE SAND BLASTED AND CLEANED IMMEDIATELY PRIOR TO SEALING AND MAY REQUIRE SAWING TO ACHIEVE PROPER RESERVOIR DIMENSIONS.
     - (3) WITH A COMBINATION JOINT FORMER/SEALER AS SHOWN IN DETAIL "E" DRAWING RW3. THE SEALER SHALL CONFORM TO SUBSECTION 1005.04 AND BE INSTALLED IN ACCORDANCE WITH SUBSECTION 601.09(c)(3) OF THE AFOREMENTIONED DOTD SPECIFICATIONS AND NO ADDITIONAL SEALANT IS REQUIRED.
9. EXCEPT AS NOTED BELOW, DOWEL BARS & TIE BARS SHALL BE HELD IN PLACE BY SUPPORTS SIMILAR TO THE ONES SHOWN, OR APPROVED EQUALS. APPROVED MECHANICAL PLACEMENT OF DOWEL BARS AND TIE BARS WILL BE ALLOWED WITH ALL PAVING METHODS. WHEN DOWEL BAR BASKETS ARE USED, APPROXIMATELY THE CENTER 7" OF SPACER WIRES, THAT SPANS ACROSS THE JOINT, SHALL BE CLIPPED AND REMOVED AFTER STAKING BASKETS IN PLACE.
10. INSTALL GEOTEXTILE FABRIC UNDER ALL TCJ, CJ, AND EJ JOINTS WHEN CONCRETE PAVEMENT IS PLACED ON UNSTABILIZED OR UNTREATED BASE COURSES OR SUBBASES. WHEN DOWEL BARS ARE MECHANICALLY IMPLANTED, THE GEOTEXTILE FABRIC SHALL BE ANCHORED TO THE BASE COURSE WITH PINS.
11. WHEN CONSTRUCTING CONCRETE CURB AND GUTTER ADJACENT TO NEW P.C.C. PAVEMENT, USE TYPE LCJ JOINT. WHEN ADJACENT TO EXISTING P.C.C. PAVEMENT, USE TYPE LBJ JOINT. THE FIRST LOAD TRANSFER DEVICE SHALL BE INSTALLED 18" FROM THE PAVEMENT EDGE.
12. TRANSVERSE EXPANSION JOINTS SHALL NOT BE USED FOR CONSTRUCTION JOINTS.
13. CONCRETE SHOULDERS:
    - A. CONSTRUCT TCJ JOINTS IN ACCORDANCE WITH SECTION B–B.
    - B. CONSTRUCT LCJ JOINTS IN ACCORDANCE WITH TYPE LCJ DETAIL ON THIS SHEET AND LJ JOINTS IN ACCORDANCE WITH SECTION D–D.
    - C. USE THE MAXIMUM SHOULDER THICKNESS WHEN DETERMINING DOWEL BAR AND TIE BAR SIZES IN TABLE 1.
    - D. WHEN SKEWED JOINTS ARE USED ON MAINLINE PAVING THE SHOULDER TCJ JOINTS MAY BE SKEWED OR CONSTRUCTED AT 90°.
    - E. SHOULDER JOINTS AND JOINT MATERIALS WILL MATCH THE MAINLINE.
    - F. HEIGHT OF DOWEL BASKETS WILL BE BASED ON THE SHOULDER THICKNESS. ALSO VARYING HEIGHT DOWEL BASKETS WILL BE ALLOWED.
14. TIE BARS SHALL NOT BE PLACED WITHIN 18" OF CONTRACTION OR EXPANSION JOINTS.
15. FOR REINFORCED STEEL, SEE DOTD SPECIFICATIONS SECTION 1009



SECTION B–B
TYPE TCJ OR CJ
(TRANSVERSE CONTRACTION JOINT OR TRANSVERSE CONSTRUCTION JOINT)

(●●) ALTERNATE ENDS THAT ARE NOT WELDED SHALL BE GREASED.

N.T.S.



SECTION D–D
TYPE LJ
(LONGITUDINAL JOINT)
(REQUIRED WHEN PAVEMENT WIDTH EXCEEDS 15')
(SEE NOTE 7)

N.T.S.

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

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DEPARTMENT OF PUBLIC WORKS
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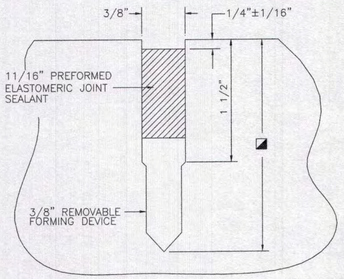
TYPICAL ROADWAY SECTIONS FOR STREET CONSTRUCTION

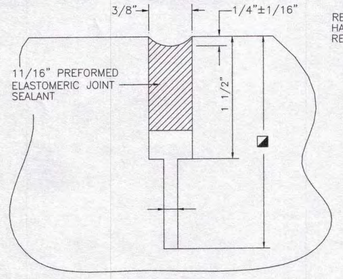
DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	M.T. B.V. R.S. B.J. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK B. JERNIGAN, DIRECTOR

DRAWING No.

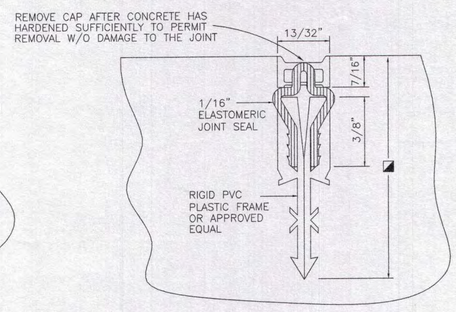
RW2



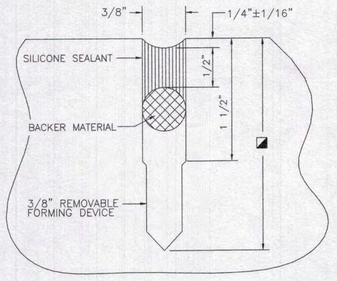
DETAIL "A"



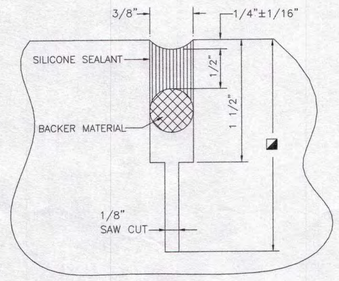
DETAIL "C"



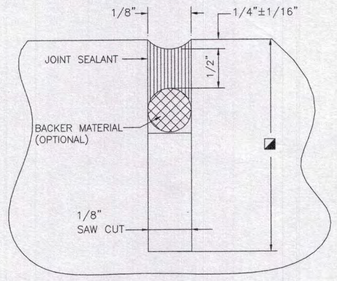
DETAIL "E"



DETAIL "B"



DETAIL "D"



DETAIL "F"

NOTES:

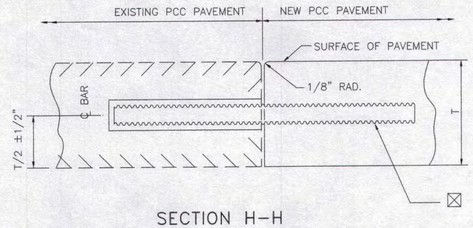
1. USE DETAILS "A" THRU "E" IN CONJUNCTION WITH TYPE TCJ AND CJ JOINTS (SECTION B–B); TYPE BJ JOINTS (SECTION J–J); AND NOTES (7) AND (8) ON DWG. RW2.
2. ◪ SEE TABLE I ON DWG. RW2

DETAILS "A" THRU "F"

N.T.S.

NOTES:

USE DETAIL "F" IN CONJUNCTION WITH TYPE LJ JOINT (SECTION D–D) AND NOTES (7) AND (8) ON DWG. RW2.



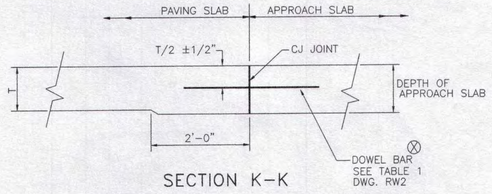
SECTION H–H
TYPE LBJ
(LONGITUDINAL BUTT JOINT)

(DWG. RW2)
N.T.S.

⊠ DEFORMED TIE BARS SHALL BE INSTALLED IN EXISTING PAVEMENT BY DRILLING HOLES 1/8" LARGER, IF EPOXY IS USED OR 1/2" LARGER IF GROUT USED, THAN THE DIAMETER OF THE TIE BAR TO A REQUIRED DEPTH OF 1/2 BAR LENGTH. THE HOLES SHALL BE FILLED WITH AN APPROVED ADHESIVE ANCHOR SYSTEM (QPL 52) OR TYPE I, GRADE C EPOXY RESIN BEFORE INSERTION OF THESE BARS. THE TIE BARS SIZE AND SPACING SHALL BE ONE OF THE FOLLOWING:

A. WHEN TIE BARS OF THE SIZE SHOWN IN TABLE 1, DRAWING RW2, ARE USED, THE BARS SHALL BE PLACED AT 1/2 SPACING.

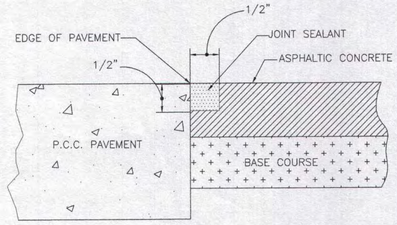
B. WHEN TIE BARS 1/4" LARGER THAN TIE BAR DIAMETER SHOWN IN TABLE 1, ARE USED) THE BARS SHALL BE PLACED AT THE SAME SPACING.



SECTION K–K

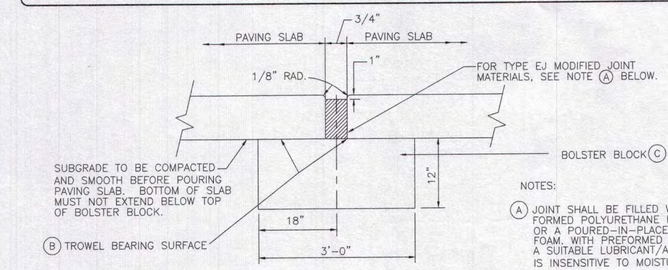
TYPE CJ AT APPROACH SLAB
FOR DETAILS NOT SHOWN SEE TYPE CJ, DWG. RW4
(SECTION B–B AND RELATED DETAILS)

(DWG. RW2)
N.T.S.



SECTION I–I
HOT POURED SEALANT

(DWG. RW2)
N.T.S.



SECTION C–C
(DWG. RW2)
TYPE EJ MODIFIED

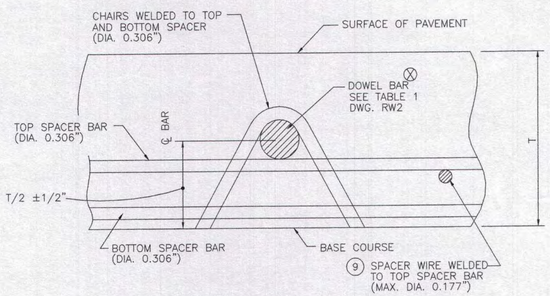
N.T.S.

NOTES:

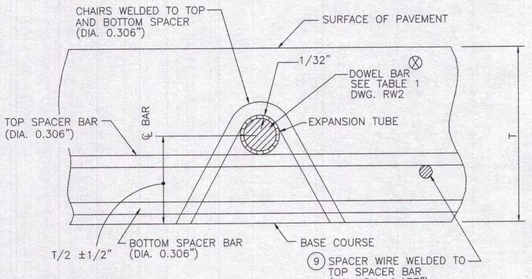
(A) JOINT SHALL BE FILLED WITH A PRE–FORMED POLYURETHANE FOAM TYPE FILLER OR A POURED–IN–PLACE POLYURETHANE FOAM, WITH PREFORMED FILLER, USE A SUITABLE LUBRICANT/ADHESIVE THAT IS INSENSITIVE TO MOISTURE.

(B) ONE LAYER OF 55–LB. TAR PAPER SHALL BE PLACED BETWEEN THE BOLSTER BLOCK AND THE PAVING SLABS.

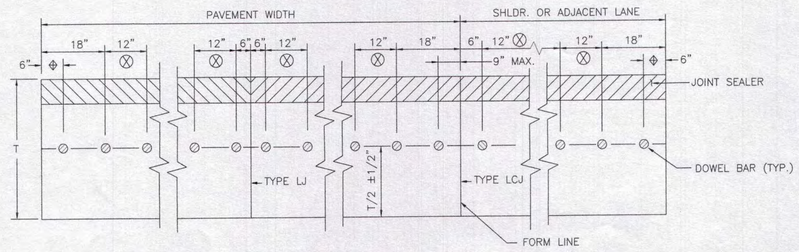
(C) BOLSTER BLOCK SHALL BE CONSTRUCTED OF CLASS "A" OR PAVEMENT TYPE CONCRETE AT NO DIRECT PAY.



SECTION F–F
(DWG. RW2)
N.T.S.



SECTION E–E
(DWG. RW2)
N.T.S.

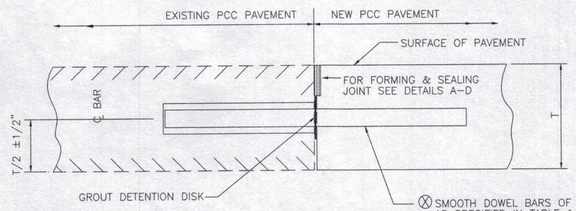


Φ 9" WHEN MECHANICAL PLACEMENT OF DOWEL BARS IS USED WITH FORM PAVING. ALSO SEE NOTE (14) DWG. RW2.

SECTION G–G
DOWEL BAR SPACING FOR TYPE TCJ, CJ, AND EJ JOINTS

(DWG. RW2)
N.T.S.

⊗ SEE TABLE 1 DWG. RW2



SECTION J–J
TYPE BJ
(TRANSVERSE BUTT JOINT)

(DWG. RW2)
N.T.S.

⊗ SMOOTH DOWEL BARS OF THE SIZE & LENGTH AS SPECIFIED IN TABLE 1, DWG. RW2, SHALL BE USED. THE BARS SHALL BE PLACED IN THE EXISTING PAVEMENT BY DRILLING HOLES 1/8" LARGER THAN THE DIA. OF THE DOWEL BAR TO A DEPTH OF 1/2 THE BAR LENGTH AND FILLING THE HOLES WITH APPROVED TYPE I, GRADE C EPOXY RESIN BEFORE INSERTING THE DOWEL BARS. (SEE TABLE 1, DWG. RW2).

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

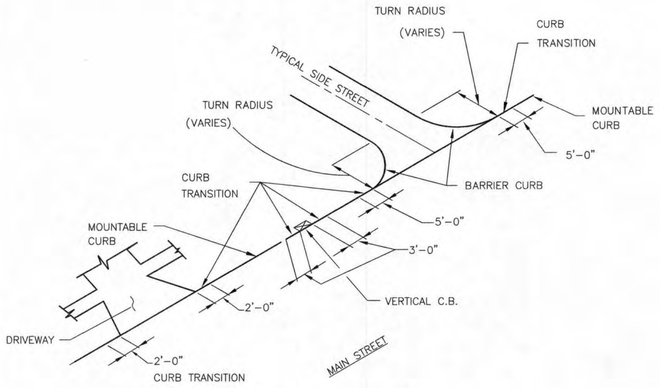
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

TYPICAL ROADWAY SECTIONS FOR STREET CONSTRUCTION

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	M.T. B.V. R.S. B.J. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

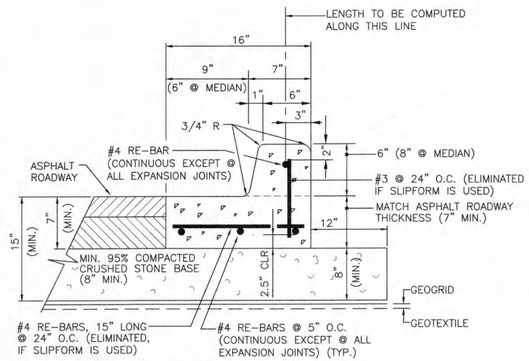
DRAWING No.

RW3



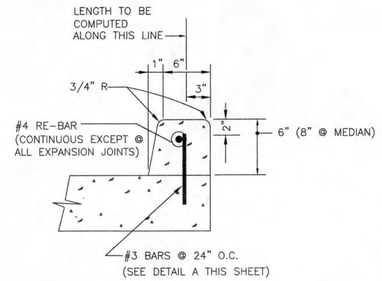
LOCATIONS OF CURB TRANSITION

N.T.S.



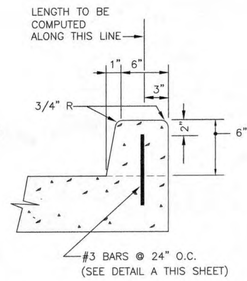
BARRIER CURB & GUTTERBOTTOM

N.T.S.



DOWELED BARRIER CURB

N.T.S.

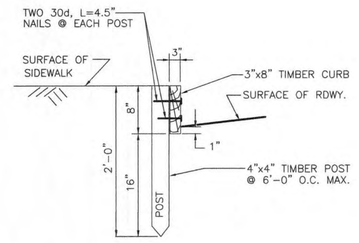


INTEGRAL BARRIER CURB

N.T.S.

NOTES:

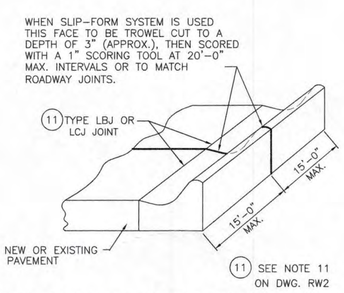
(1) ALL CONCRETE GUTTERBOTTOM AND CURBS TO BE 4000 PSI EXCEPT AS OTHERWISE INDICATED.



NOTE:
TIMBER TO BE TREATED NO. 1 COMMON PINE (12 LbS./Cf.)

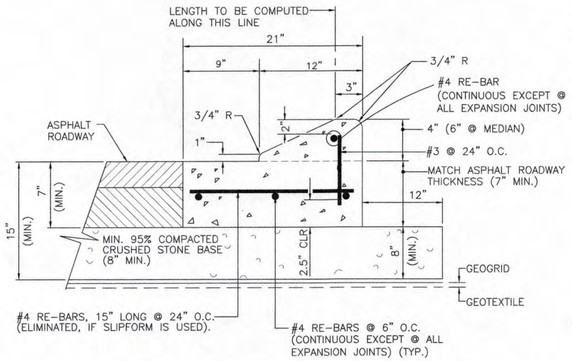
TYPICAL SECTION OF TIMBER CURB

N.T.S.



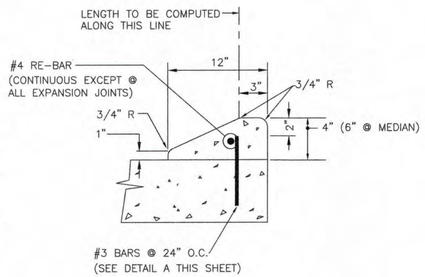
DETAIL SHOWING JOINTS IN CONCRETE CURB AND GUTTER

N.T.S.



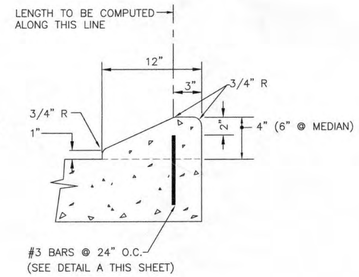
MOUNTABLE CURB & GUTTERBOTTOM

N.T.S.



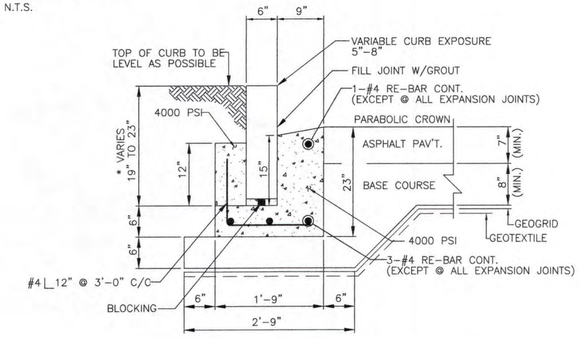
DOWELED MOUNTABLE CURB

N.T.S.



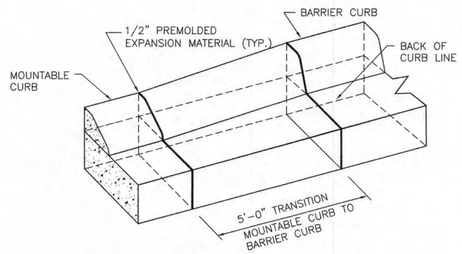
INTEGRAL MOUNTABLE CURB

N.T.S.



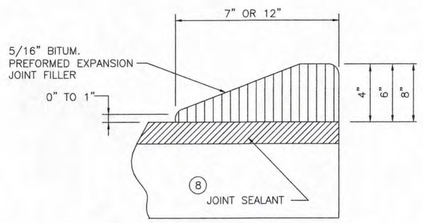
TYPICAL GRANITE BLOCK CURBING

*APPROX. 19" TO 23" (ASSUME EXIST. GRANITE CURB IS 19" HIGH)
N.T.S.



MOUNTABLE-BARRIER CURB TRANSITION

N. T. S.

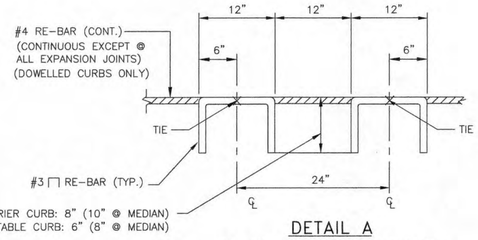


(8) SEE NOTE 8 ON DWG RW2

NOTE:
WHEN CURB IS POURED MONOLITHICALLY WITH PAVEMENT, THE BITUMINOUS PRE-FORMED EXPANSION JOINT FILLER SHALL EXTEND TO BOTTOM OF JOINT INSERT.

JOINT FILLER DETAIL FOR INTEGRAL CONCRETE CURB (MOUNTABLE OR BARRIER TYPE)

(MOUNTABLE CURB IS SHOWN)
N.T.S.



DETAIL A

SHOWING DIMENSIONS AND SPACING OF DEF. REINF. STEEL BARS FOR CONC. CURB
N.T.S.

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DEPARTMENT OF PUBLIC WORKS
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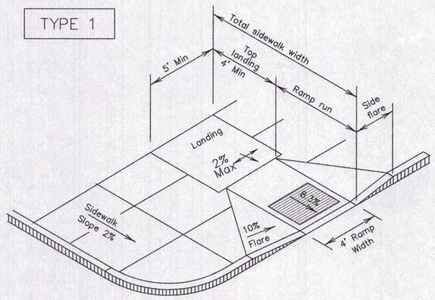
TYPICAL ROADWAY SECTIONS FOR STREET CONSTRUCTION

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	M.T. B.V. R.S. B.J. A.Y.	NGUYEN D. PHAM, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

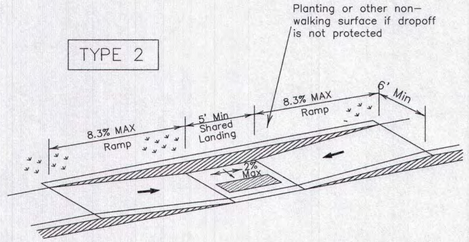
RW4

TYPE 1



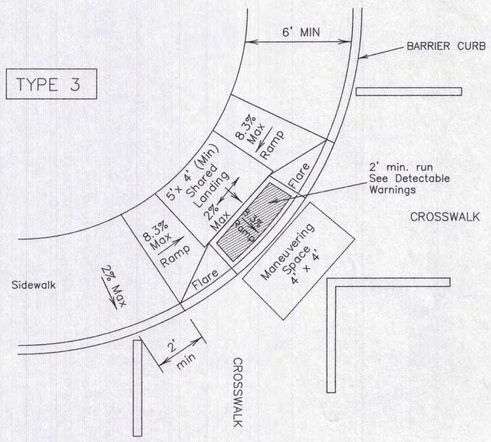
PERPENDICULAR CURB RAMP

TYPE 2



PARALLEL CURB RAMP
(Use only where water will not pond in the landing)

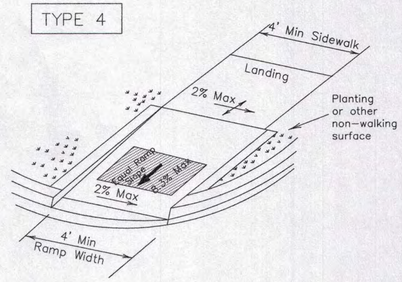
TYPE 3



DIAGONAL COMBINATION CURB RAMP
Perpendicular to the Tangent of the Curb Radius and Contained in Crosswalk

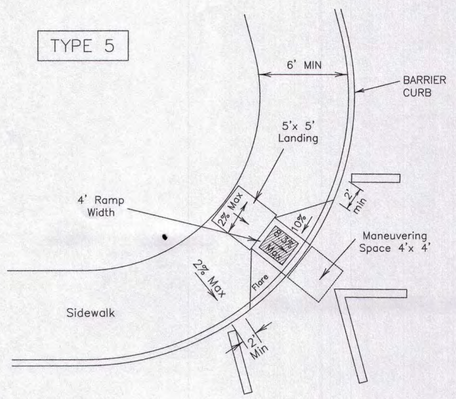
Curb returns shall be outside of the sidewalk width.

TYPE 4



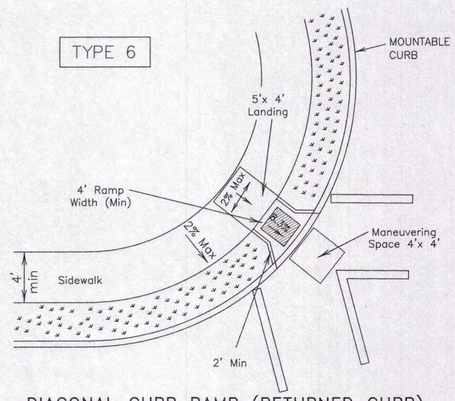
DIRECTIONAL RAMP WITHIN RADIUS
(Sidewalk set back from curb)

TYPE 5



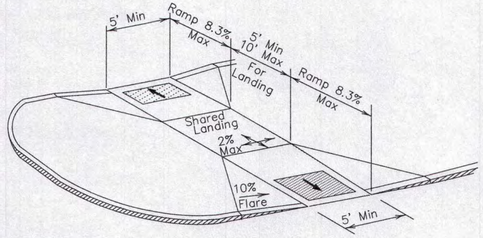
DIAGONAL CURB RAMP (FLARED SIDES)
(PERMISSION FROM CHIEF ENGINEER REQ'D)

TYPE 6

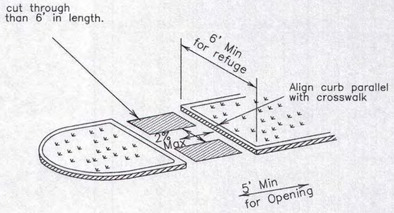


DIAGONAL CURB RAMP (RETURNED CURB)
(PERMISSION FROM CHIEF ENGINEER REQ'D)

TYPE 7



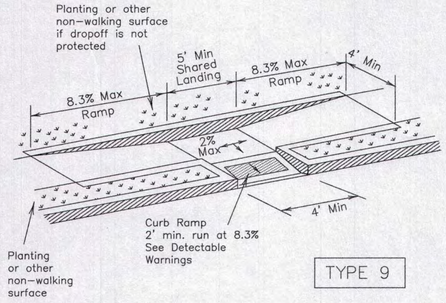
TYPE 8



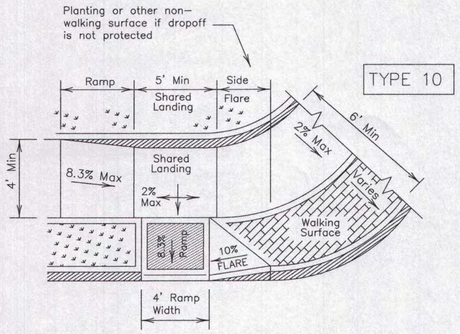
Detectable warning to be located at Face of Curb for Type 8.

CURB RAMPS AT MEDIAN ISLANDS

TYPE 9

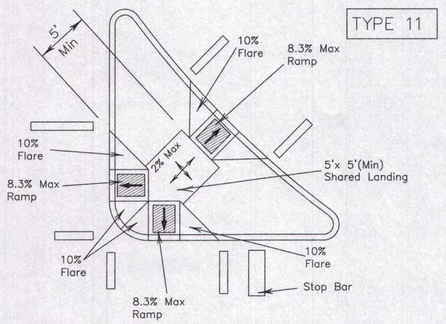


TYPE 10



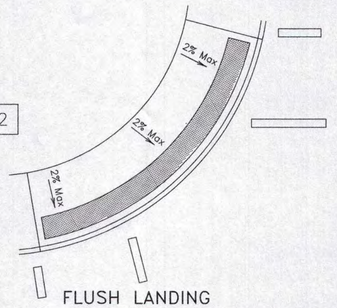
PERPENDICULAR SIDEWALK RAMP
WITH SINGLE FLARE DETAIL

TYPE 11



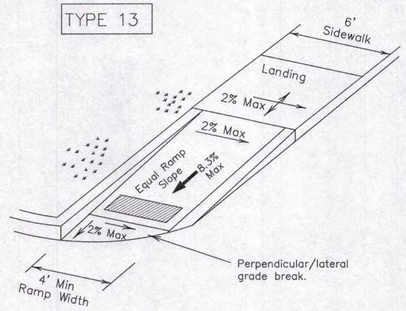
COMBINATION ISLAND RAMPS

TYPE 12



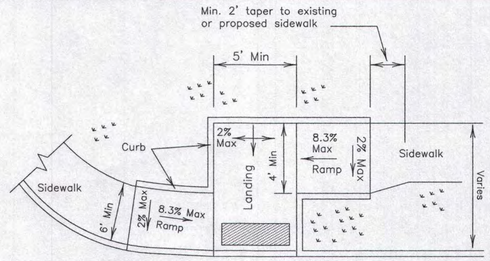
FLUSH LANDING

TYPE 13



DIRECTIONAL RAMP WITHIN RADIUS
(Sidewalk adjacent to curb)

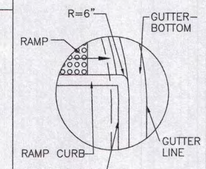
TYPE 14



OFFSET PARALLEL CURB RAMP

NOTES:

1. See General Notes on sheet ADA2 for more information.
2. Cross slope not to exceed 2% on any portion of ramp or transition to street.



CURB RADIUS DETAIL
N.T.S.

Denotes planting or non-walking surface.

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

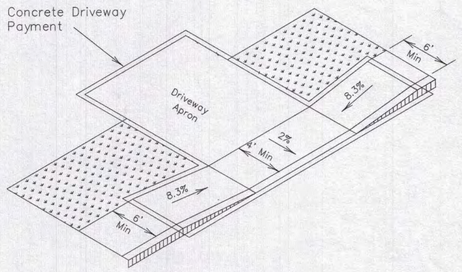
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

CURB RAMPS FOR STREET CONSTRUCTION

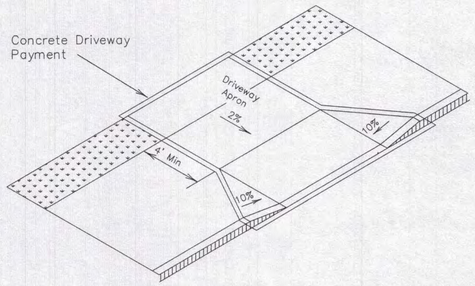
DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
J. LARMEU	A.Y. L.H. N.S.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

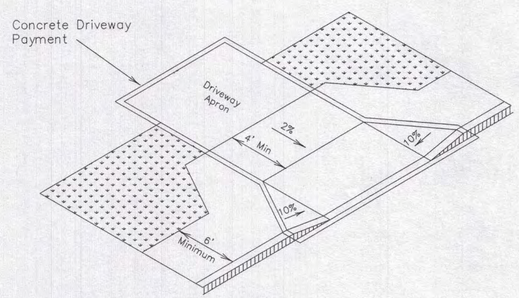
ADA1



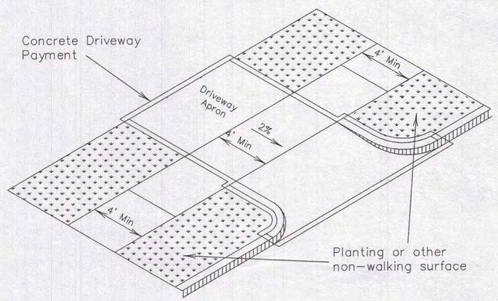
Ramp sidewalk



Wide sidewalk

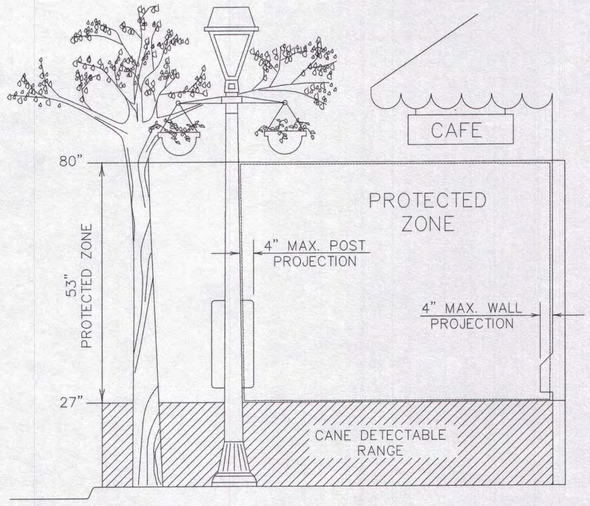


Apron offset sidewalk



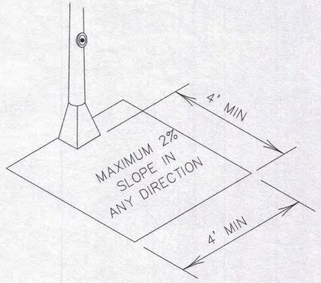
Setback sidewalk

SIDEWALK TREATMENT AT DRIVEWAYS

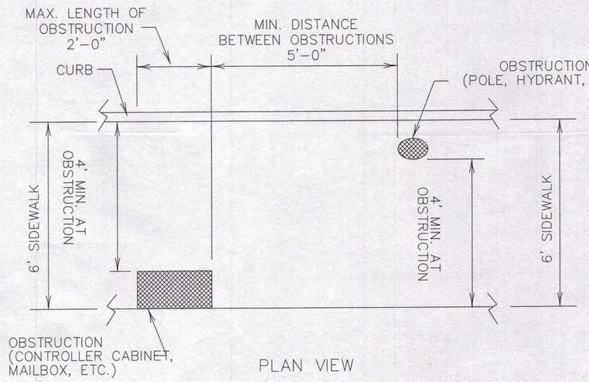


PROTECTED ZONE

In pedestrian circulation area, maximum 4" projection for post or wall mounted objects between 27"and 80" above the surface.



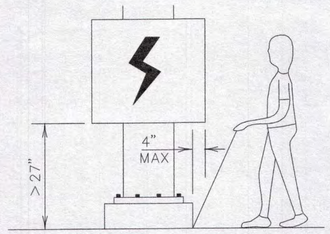
CLEAR GROUND SPACE AT PEDESTRIAN PUSH BUTTON



PLAN VIEW

PLACEMENT OF STREET FIXTURES

(ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' x 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.)



When an obstruction of a height greater than 27" from the surface would create a protrusion of more than 4" into the pedestrian circulation area, construct additional curb or foundation at the bottom to provide a maximum 4" overhang.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Pedestrian Facilities General Notes

1. All slopes shown are maximum allowable. The least possible slope that will still drain properly should be used.
2. The minimum sidewalk width is 4', unless otherwise regulated. Where the sidewalk is adjacent to back of a barrier curb, the sidewalk width shall be 6'. Where a 4' sidewalk cannot be provided due to site constraints, a minimum 3' sidewalk with 5' x 5' passing areas at intervals not to exceed 200 ft is required.
3. Changes in the level of sidewalk should be no more than 1/4". Changes in level greater than 1/4" but equal to or less than 1/2" may be beveled at a 1:2 maximum slope. Any change of level greater than 1/2" requires a ramp.
4. The maximum desirable slope of a curb ramp shall be 8.33% (1:12). Ramp length or grade of approach sidewalks may be adjusted as directed by the Project Engineer. In alterations, curb ramp slope(s) may be 10% for a maximum rise of 6" or 12.5% for a maximum rise of 3". Curb ramps in alterations need not exceed 6' in length.
5. Maneuvering space at the bottom of curb ramps shall be a minimum of 4' x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
6. Maximum allowable cross slope on sidewalk and ramp surfaces is 2%; desired cross slope is 1.5%.
7. The desirable landing dimensions are 5' x 5' with a maximum 2% slope in any direction. If a level landing of at least 3' width cannot be provided, perpendicular curb ramps should not be used.
8. Curb ramps with returned curbs may only be used where pedestrians would not normally walk across the ramp. Otherwise, flared sides shall be provided.
9. All concrete surfaces shall receive a light broom finish unless noted otherwise in the plans.
10. Separate curb ramps and landings from adjacent sidewalk and any other elements with premold or board joint of 3/4" unless otherwise directed by the Project Engineer.
11. Tooled joints are required at all sidewalk ramp or driveway slope break lines.
12. Provide a smooth transition where the curb ramps connect to the street.
13. Ramp textures must include truncated domed surfaces. Textures are required to be detectable underfoot. Surfaces that would allow water to accumulate are prohibited. Shaded areas indicate locations of detectable warnings. (Color: light reflective value and texture contrast)
14. Note that where sidewalks intersect with streets, detectable warning systems are required at all street crossings.
15. Ramps providing access to buildings shall follow the applicable requirements of the Public Right of Way Accessibility Guidelines (PROWAG).
16. To serve as a pedestrian refuge area, raised medians should be a minimum of 6' wide, 10' desirable. Medians should be designed to provide accessible passage over or through them.
17. Small channelization islands, which cannot provide a minimum 5' x 5' landing at the top of ramps, shall be cut through level with the surface of the street.
18. On street parking will not be allowed within 20' of any crosswalks.
19. Drainage structures in close proximity to curb ramps should be located on the upstream side of the ramp.
20. Traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items shall be placed so as not to obstruct the accessible route.
21. Street grades and cross-slopes shall be as shown elsewhere in the plans; however, parabolic crowns may require adjustment in crosswalk areas to limit crosswalk grade to 5%.
22. Where existing driveway is in good condition and meets slope requirements, construct only as much as required for satisfactory connection with new work.
23. Where gravel driveways occur, at least 10' of the driveway behind the sidewalk should be surfaced to prevent tracking of gravel onto the sidewalk.
24. Cross walk dimensions and crosswalk markings shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, ramps shall be aligned with theoretical crosswalks or as directed by the Project Engineer.
25. Where crosswalks occur, a 24" solid white line shall be placed across all approach lanes to indicate the point behind which vehicles are to stop. Stop bars shall be placed at a minimum 4' in advance of a crosswalk.
26. Driveways, sidewalks, and ramps shall be constructed and paid for in accordance with the applicable sections of the Standard Specifications. The limits of payment for handicap ramps shall include but not be limited to curb transition, detectable warning system, gutter, landing and base.
27. Though the least possible grade should be used to maximize accessibility, where it is structurally impractical to achieve ADA compliance, the running slope of sidewalks and crosswalks within the public right-of-way, may follow the grade of the parallel roadway without invoking variances or landings or handrails. Where a continuous grade greater than 5% must be provided, handrails may be desirable on one or both sides of the sidewalk to improve accessibility.

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

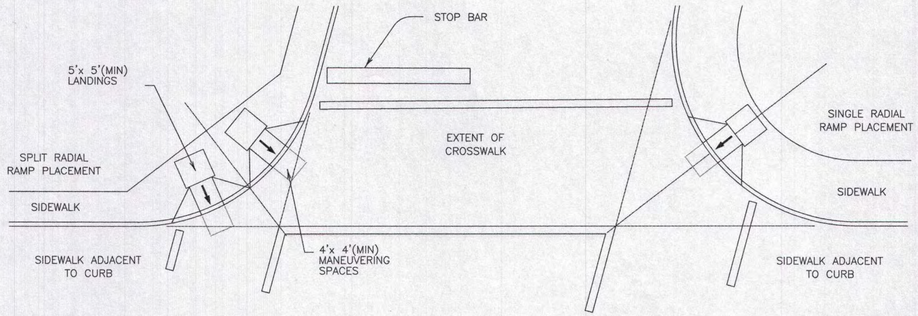
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

CURB RAMPS FOR STREET CONSTRUCTION

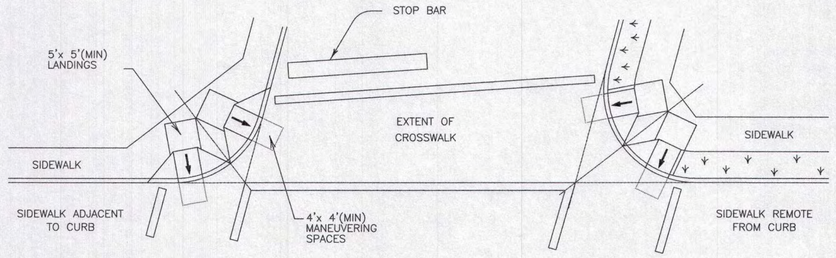
DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
J. LARMEU	A.Y. L.H. N.S.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

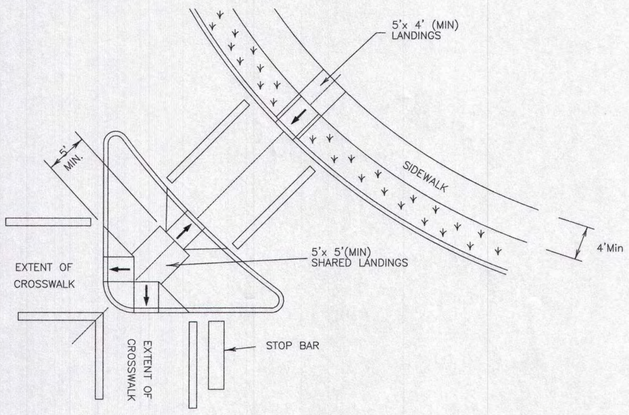
ADA2



SKEWED INTERSECTION WITH "LARGE" RADIUS



SKEWED INTERSECTION WITH "SMALL" RADIUS



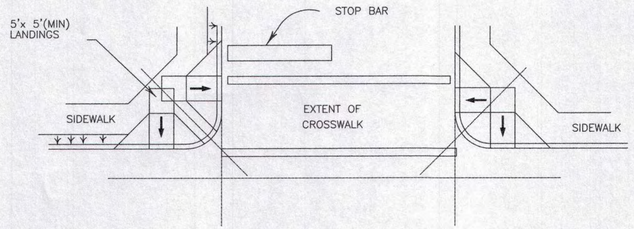
AT INTERSECTION
W/FREE RIGHT TURN & ISLAND

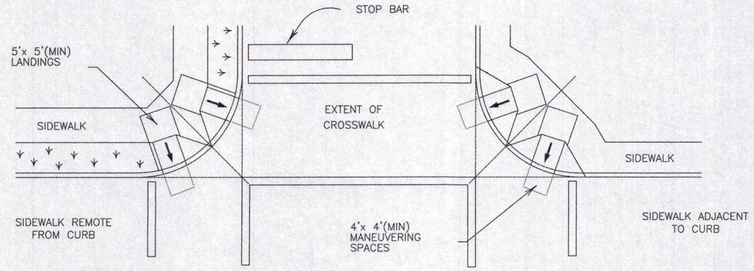
General Note:

Ramps are shown here without detectable warnings for simplicity. Detectable warnings are required at the locations shown on Sheet ADA1 and in accordance with the details shown elsewhere herein below.

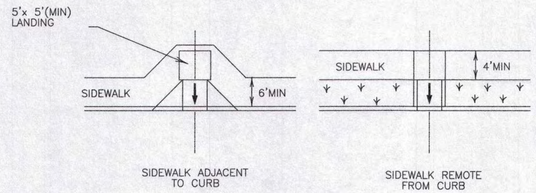
Striping (Crosswalks and stop bars) is shown for reference only.

See PM1 for Striping Layout.





NORMAL INTERSECTION



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

INTERSECTION LAYOUT
FOR
STREET CONSTRUCTION

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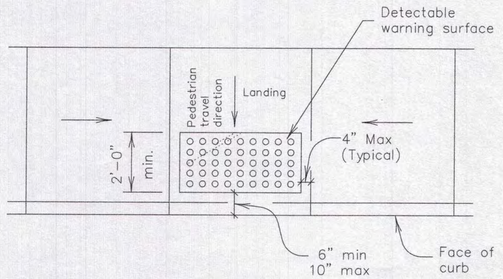
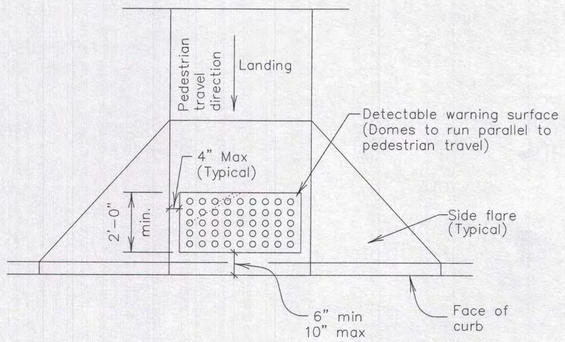
DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
J. LARMEU	A.Y. L.H. N.S.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

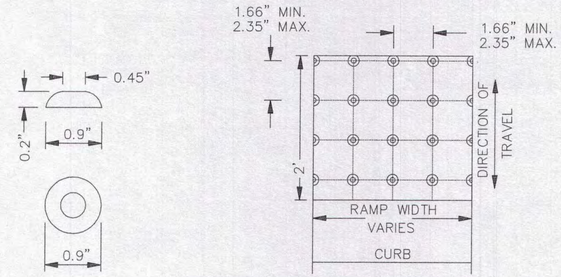
ADA3



Typical placement of detectable warning surface on landing at street edge.



Typical placement of detectable warning surface on sloping ramp run.

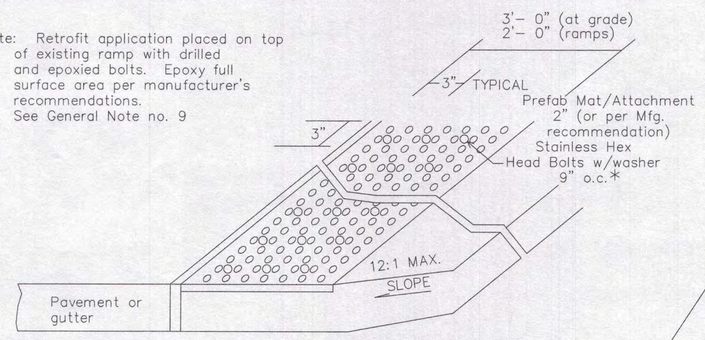


TRUNCATED DOME DETAIL

TRUNCATED DOME TEXTURE PATTERN DETAIL

Note: Place truncated domes detectable warning texture in the lower 2' of throat of ramp only and a 3' wide pattern at "at-grade" sidewalk intersections with roadways. Domes shall be arranged in a square in-line pattern only as shown.

* Note: Retrofit application placed on top of existing ramp with drilled and epoxied bolts. Epoxy full surface area per manufacturer's recommendations. See General Note no. 9



PREFABRICATED MAT OPTION (INLAID)

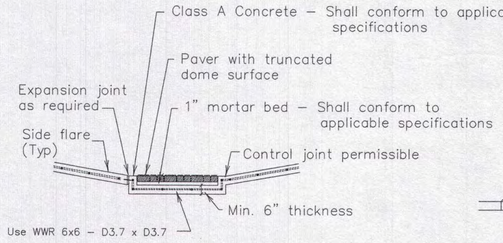
Expansion material
Pavement or gutter

Detectable Warnings General Notes

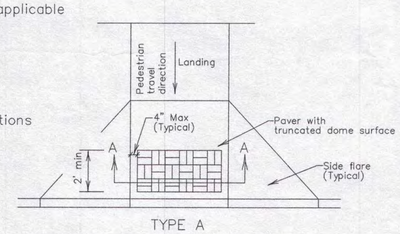
1. For PROWAG compliance, detectable warning surfaces must be provided on all pedestrian curb ramps, medians and pedestrian refuge islands, railroad crossings and at grade sidewalk intersections with roadways.
2. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with ADA guidelines. The surface must contrast visually with adjoining surfaces, including side flares, in accordance with applicable sections of the Standard Specifications. Color for detectable warning surface shall be gray unless otherwise specified in the plans or by the project engineer.
3. Detectable warning surfaces must be slip resistant and not allow water to accumulate.
4. Align truncated domes in the direction of pedestrian travel when entering the street.
5. Detectable warning surfaces shall be a minimum of 24" in depth in the direction of pedestrian travel and extend the full width of the throat of the curb ramp or landing where the pedestrian access route enters the street.
6. Detectable warning surfaces shall be located so that the edge nearest the curb line is a minimum of 6" and maximum of 10" from the extension of the face of curb. Detectable warning surfaces may be curved along the corner radius. On flush median openings or depressed corners, truncated domes to be located along face of curb.
7. Detectable warning surfaces (truncated domes) may be stamped, constructed of brick pavers or inlaid prefabricated mats attached by epoxy adhesive and mechanical attachment.
8. For stamped applications, the detectable warning surface will be stamped and stained in accordance with manufacturer's recommendations. However, the following criteria shall be used for the concrete mix design in the overall construction of handicap ramps:

   - Average compressive strength: 4000 psi
   - Aggregate gradation: Type B pavement gradation
   - Minimum cement content: 600 pounds per cubic yard
   - Maximum water/cement ratio: 0.40
   - Total air content: 5% (+/- 2%)
   - Maximum slump: 6 inches
   - Curing: The exposed plain concrete (non-color stained concrete) surface should have a white pigment curing compound applied in such a manner that the surface and any exposed sides are evenly and uniformly covered to resemble a white sheet of paper. In no case should the application of curing compound be less than 1 gallon per 100 square feet.

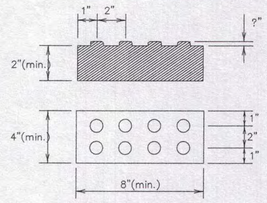
9. Any retrofit application must have beveled edges on the sides with approach pedestrian traffic.
10. Where the ends of the bottom grade break are behind the back of curb and distance from either end of the bottom grade break to the back of curb is more than 5'-0", detectable warning surfaces shall be placed on the lower landing at the back of curb.



Section A-A



TYPE A
Truncated Dome Pattern Curb Ramp



Paver with truncated dome surface

DETECTABLE WARNINGS (Paver Option)

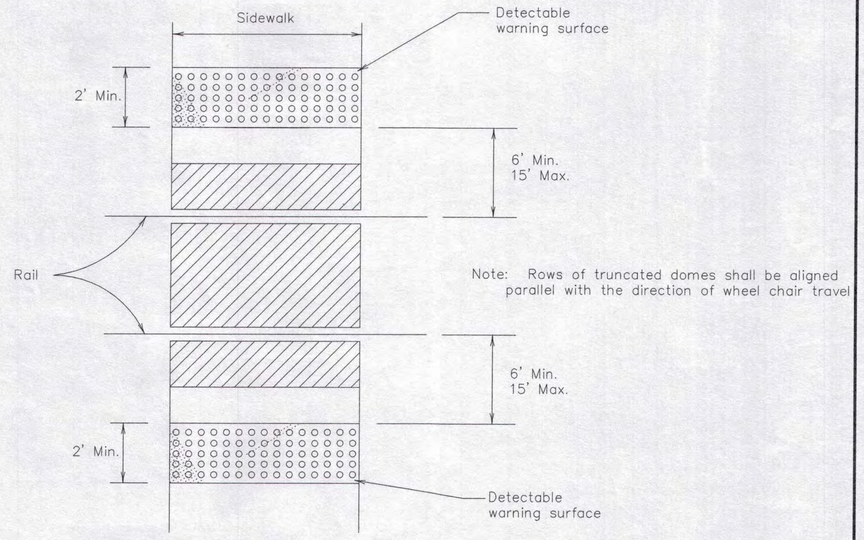
General Notes for Paver Option

Paver units shall meet all requirements of the applicable ASTM standards. Layout pattern shall be appropriate for size paver used. 4" x 8" pavers shall be laid out in a 2 x 2 basket weave pattern. 12" x 12" pavers shall be laid out in a block pattern.

Paver units shall have a truncated dome top surface for detectable warning to pedestrians.

Paver units shall be saw cut only and any cut unit shall not be less than 25 percent of a full unit.

Truncated Dome System shall be paid for in accordance with the applicable sections of the Standard Specifications.



Note: Rows of truncated domes shall be aligned parallel with the direction of wheel chair travel

LOCATION OF DETECTABLE SURFACE AT RAILROAD CROSSINGS

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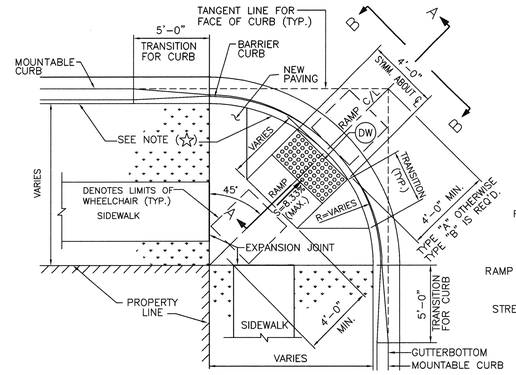
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

CURB RAMPS FOR STREET CONSTRUCTION

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
J. LARMEU	A.Y. L.H. N.S.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

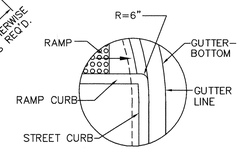
DRAWING No.

ADA4



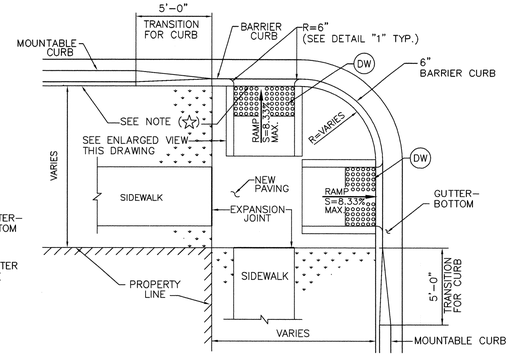
CONCRETE HANDICAPPED RAMP
TYPE "A"

N.T.S.



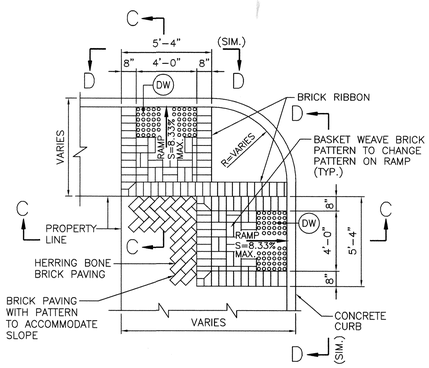
DETAIL "1"

N.T.S.



CONCRETE HANDICAPPED RAMP
TYPE "B"

N.T.S.



BRICK HANDICAPPED RAMP
TYPE "B" SIMILAR EXCEPT AS NOTED

N.T.S.

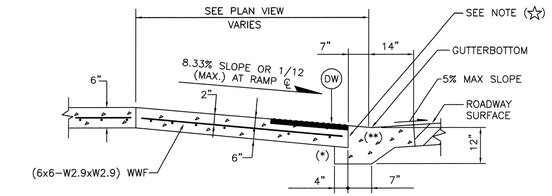
NOTES:

(A) LOCATION
(1) STREET INTERSECTIONS AS SHOWN ON DRAWINGS.
(2) ACTUAL LOCATION OF RAMPS MAY VARY AS DIRECTED. BY THE ENGINEER TO ACCOMMODATE EXISTING SITE CONDITIONS.
(3) THE CONTRACTOR SHALL COORDINATE RAMP LOCATIONS WITH UTILITY POWER POLE RELOCATIONS. RAMP LOCATIONS MAY SHIFT AS DIRECTED BY THE ENGINEER TO AVOID CONFLICT.
(4) ALL HANDICAPED RAMPS SHALL INCLUDE DETECTABLE WARNINGS AND BE CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF PUBLIC WORKS STANDARD PLAN AND THE LATEST ADA REQUIREMENTS.
(5) DETECTABLE WARNINGS, i.e. RAISED TRUNCATED DOMES, SHALL BE USED BETWEEN PEDESTRIAN CIRCULATION AREAS AND VEHICULAR CIRCULATION OR PARKING AREAS FOR COMMERCIAL DRIVEWAYS ONLY.
(6) RAISED TRUNCATED DOMES SHALL BE 0.9 INCHES IN NOMINAL DIAMETER, 0.2 INCHES IN NOMINAL HEIGHT, AND CENTERED 2.35 INCHES APART. THE AREA REQUIRED TO HAVE A DETECTABLE WARNING SHALL VISUALLY CONTRAST IN COLOR AND SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. (ADAAG, 1994 ED.)
(7) RAISED TRUNCATED DOMES SHALL BE 24" x 48" (MIN.) SYSTEMS. THE TILE TYPE, SIZE, SHAPE, INSTALLATION METHODS, ETC., MUST BE APPROVED BY THE D.P.W. BEFORE THE CONTRACTOR ORDERS HIS MATERIALS.

(B) CONSTRUCTION
(1) THE SLOPE OF THE RAMP SHALL NOT EXCEED 8%.
(2) THE SLOPE OF THE SIDEWALK AND SIDEWALK TRANSITION SHALL NOT EXCEED 8%.
(3) THE WIDTH OF THE RAMP SHALL NOT BE LESS THAN 4'-0" BUT MAY EXCEED THIS WHERE NECESSARY.
(4) SURFACE TEXTURE OF THE CONCRETE RAMP SHALL BE COMPLIED WITH ADA, THE LATEST EDITION.
(5) ALL CONCRETE SIDEWALK TO BE MINIMUM 3000 psi EXCEPT AS OTHERWISE INDICATED.

(☆) EXPANSION JOINT IS REQUIRED WHEN THE ENTIRE AREA IS PAVED. DOWEL BARS MAY BE USED AS AN OPTION AT THE DIRECTION OF THE CITY ENGINEER.

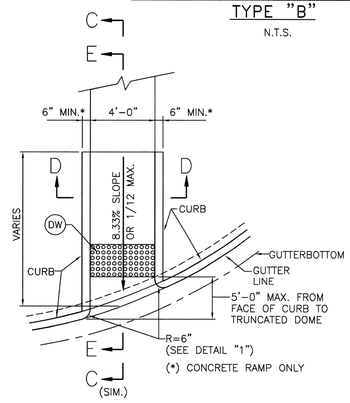
(DW) DETECTABLE WARNINGS MUST MEET 70% CONTRAST LIGHT REFLECTANCE AS REQUIRED BY THE LATEST ADA TRUNCATED DOME TILE (TYP.) SEE NOTES (4) THRU (7).



(*) DOWELED EXPANSION JOINT MAY BE USED AS ALTERNATE OF KEYWAY (SEE SECTION E-E, STD7)

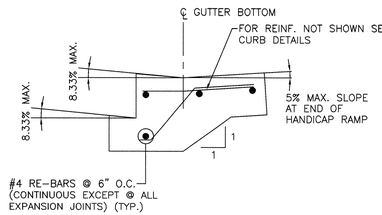
SECTION A-A
(TYPE "A" RAMP)
N.T.S.

(**) SEE DETAIL "2"



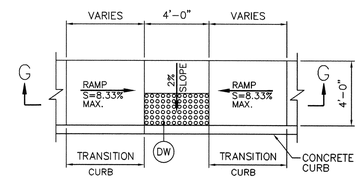
ENLARGED VIEW OF HANDICAPPED RAMP
TYPE "B"

N.T.S.



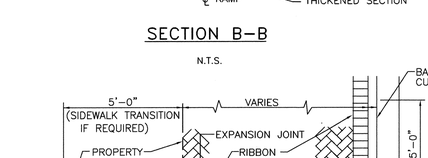
DETAIL "2"

N.T.S.



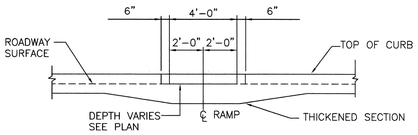
TYPICAL
MIDDLE BLOCK HANDICAPPED RAMP

N.T.S.



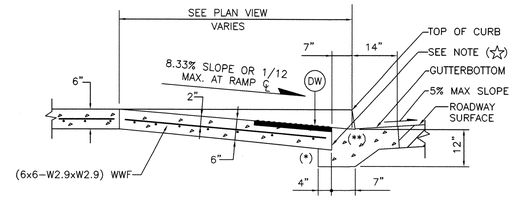
SECTION B-B

N.T.S.



SECTION D-D

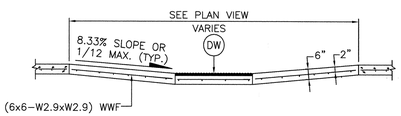
N.T.S.



(*) DOWELED EXPANSION JOINT MAY BE USED AS ALTERNATE OF KEYWAY (SEE SECTION E-E, STD7)

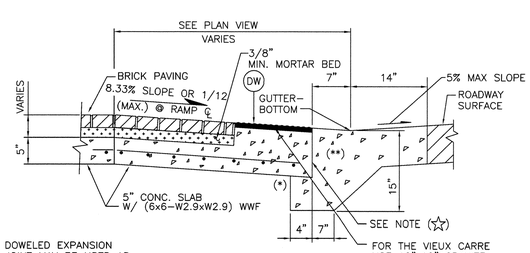
SECTION E-E
(TYPE "B" RAMP)
N.T.S.

(**) SEE DETAIL "2"



SECTION G-G

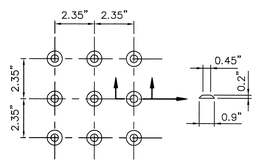
N.T.S.



(*) DOWELED EXPANSION JOINT MAY BE USED AS ALTERNATE OF KEYWAY (SEE SECTION E-E, STD7)

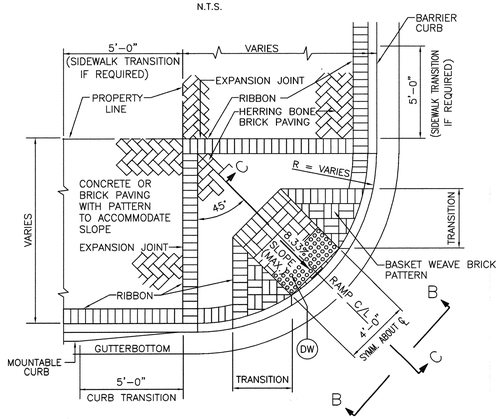
(**) SEE DETAIL "2"

SECTION C-C
(BRICK RAMP)
N.T.S.



TRUNCATED DOME
SQUARE PATTERN

N.T.S.



BRICK HANDICAPPED RAMP
TYPE "A"

N.T.S.

CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

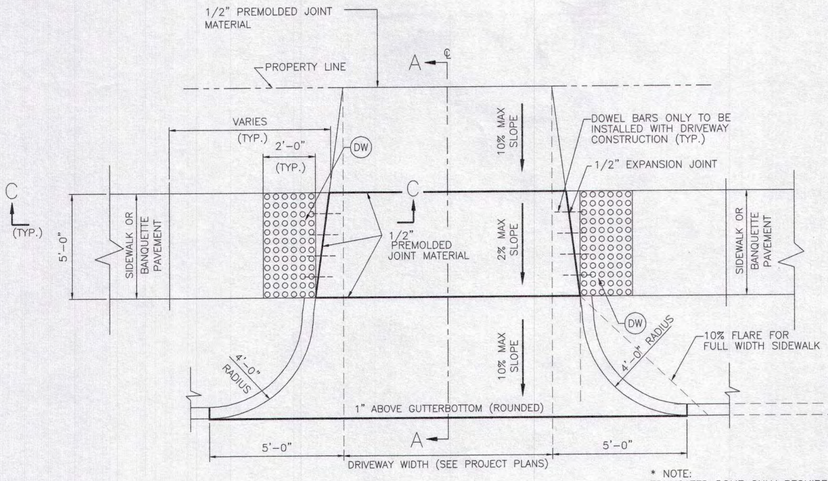
CONCRETE & BRICK HANDICAPPED RAMPS FOR STREET CONSTRUCTION

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
R. FERGUSON	M.T. B.V. R.S. R.H. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 12-16-2009	SCALE: AS NOTED	APPROVED: ROBERT C. MENDOZA, DIRECTOR 12.11.09

DRAWING No.

STD6

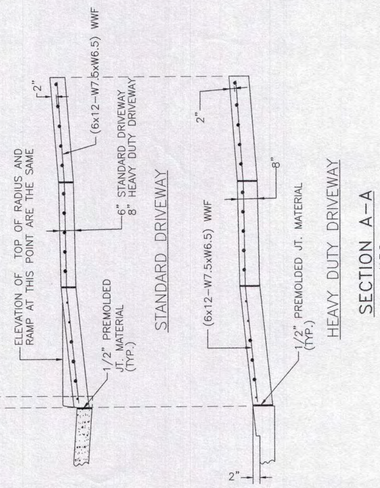


DETAIL OF STANDARD DRIVEWAY
FOR CONCRETE VERTICAL CURB

N.T.S.

* NOTE:
TRUNCATED DOME ONLY REQUIRED AT SIGNALIZED COMMERCIAL DRIVE CROSSING ONLY!

* SEE ADA2 FOR LAYOUT.

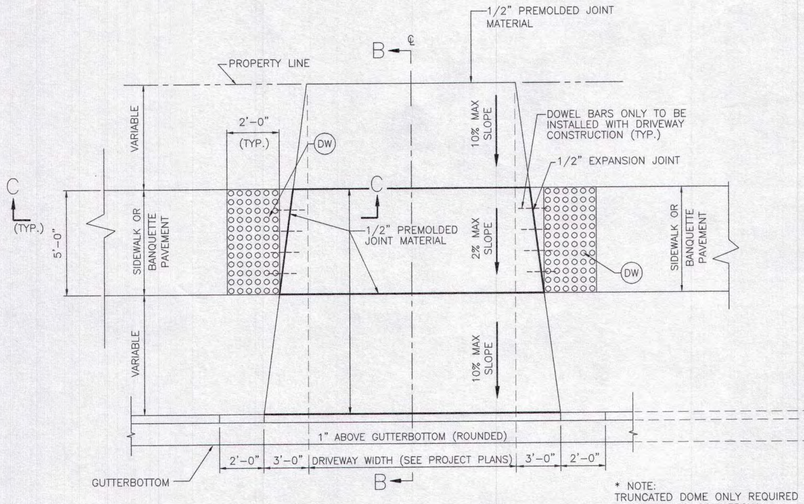


SECTION A-A
N.T.S.

NOTES (*):

(1) FOR STANDARD DRIVEWAYS: DEPRESS ONLY WHEN DIRECTED BY THE FIELD ENGINEER.
(2) FOR HEAVY DUTY DRIVEWAYS: DEPRESS 3" AS SHOWN.
(3) MAXIMUM DRIVEWAY SLOPE IS 10%. ANYTHING EXCEEDING 10% SHOULD BE APPROVED BY THE DEPARTMENT.
(4) DETECTABLE WARNINGS, i.e. RAISED TRUNCATED DOMES SHALL BE USED AT SIGNALIZED COMMERCIAL DRIVEWAYS ONLY.
(5) RAISED TRUNCATED DOMES SHALL BE 0.9 INCHES IN NOMINAL DIAMETER, 0.2 INCHES IN NOMINAL HEIGHT, AND CENTERED 2.35 INCHES APART. THE AREA REQUIRED TO HAVE A DETECTABLE WARNING SHALL VISUALLY CONTRAST IN COLOR AND SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. (PROWAG, LATEST ED.)
(6) RAISED TRUNCATED DOMES SHALL BE 24" x 48" (MIN.) SYSTEMS. THE TILE TYPE, SIZE, SHAPE, INSTALLATION METHODS, ETC., MUST BE APPROVED BY THE D.P.W. BEFORE THE CONTRACTOR ORDERS HIS MATERIALS.
(7) MAINTAIN SIDEWALK ELEVATION THRU DRIVEWAYS.

(DW) DETECTABLE WARNINGS (DARK GREY) (ADA) TRUNCATED DOME TILE (TYP.) AS PER APPROVAL OF D.P.W. SEE NOTES (4) THRU (6).

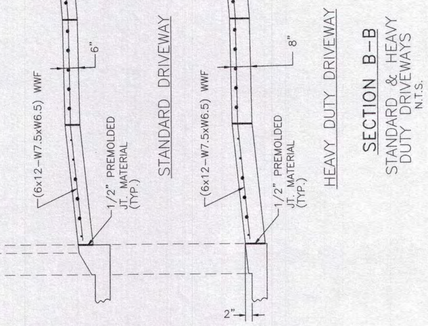


DETAIL OF STANDARD DRIVEWAY
FOR MOUNTABLE CURBS

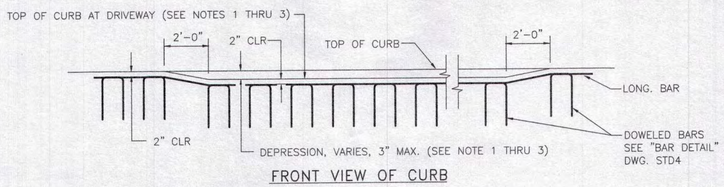
N.T.S.

* NOTE:
TRUNCATED DOME ONLY REQUIRED AT SIGNALIZED COMMERCIAL DRIVE CROSSING ONLY!

* SEE ADA2 FOR LAYOUT.



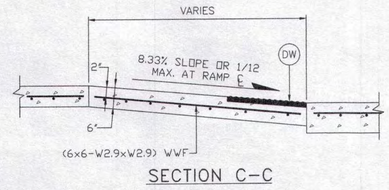
SECTION B-B
STANDARD & HEAVY DUTY DRIVEWAYS
N.T.S.



FRONT VIEW OF CURB

DETAIL OF HEAVY DUTY DRIVEWAYS
FOR MOUNTABLE CONCRETE CURB

N.T.S.



SECTION C-C
N.T.S.

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

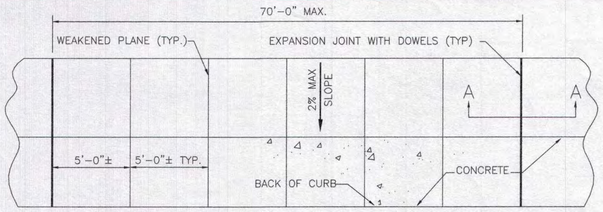
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

STANDARD DRIVEWAYS FOR STREET CONSTRUCTION

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
J. LARMEU	M.T. B.V. R.S. B.J. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

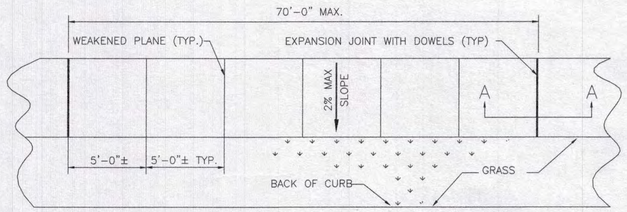
DW1



CROSS SLOPE = 2% MAX

PLAN PORTLAND CEMENT CONCRETE SIDEWALK PAVEMENT (FULL)

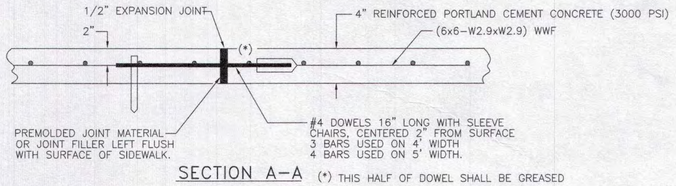
N.T.S.



CROSS SLOPE = 2% MAX

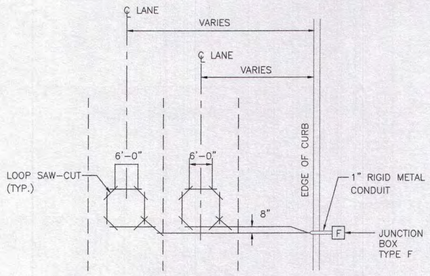
PLAN PORTLAND CEMENT CONCRETE SIDEWALK PAVEMENT (RIBBON)

N.T.S.

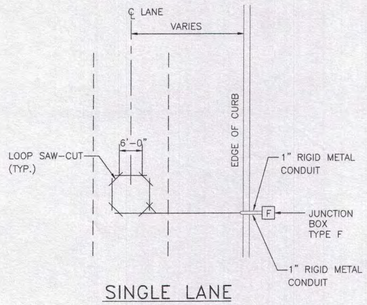


SECTION A-A

(*) THIS HALF OF DOWEL SHALL BE GREASED



DOUBLE LANE

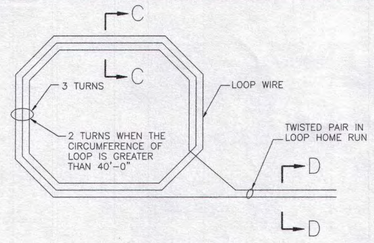


SINGLE LANE

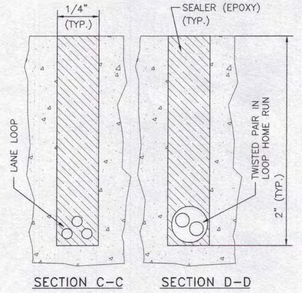
NOTE:

THE CONTRACTOR SHALL PROVIDE ONE INCH CONDUIT FROM JUNCTION BOX OR EQUIPMENT CABINET AND TERMINATE BELOW TOP OF PAVEMENT SO THAT IT DIRECTLY RECEIVES LOOP LEAD-IN WIRE.

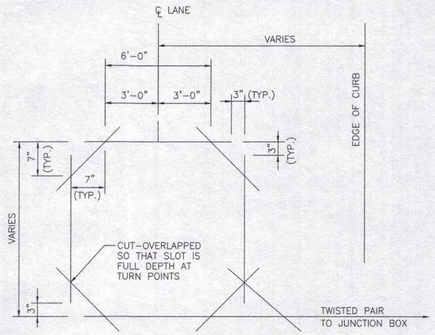
TYPICAL LOOP SAW-CUT LAYOUT



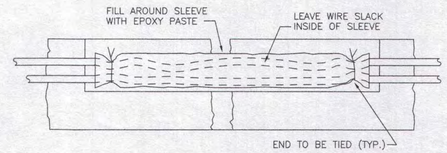
LOOP WIRE INSTALLATION



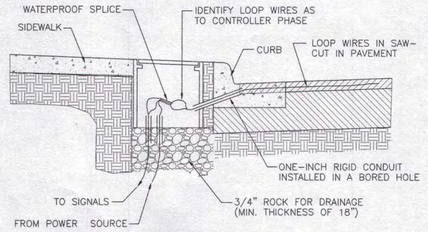
VEHICLE LOOP INSTALLATION



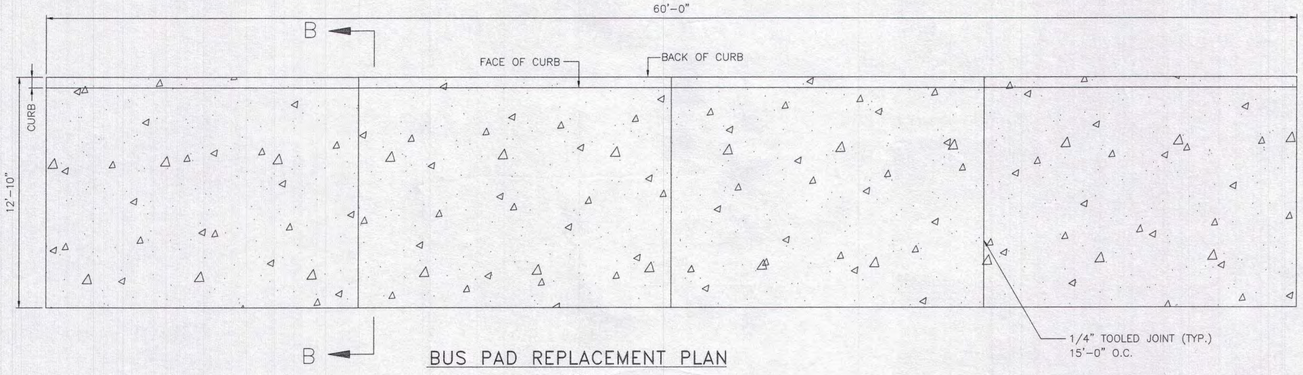
LOOP SAW-CUT CONFIGURATION



SECTION OF PLASTIC SLEEVING AT PAVEMENT JOINTS AND CRACKS

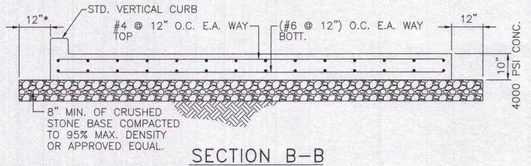


TYPICAL LOOP LEAD-IN INSTALLATION



BUS PAD REPLACEMENT PLAN

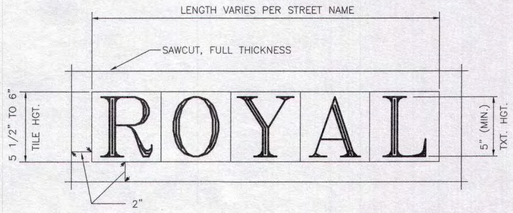
N.T.S.



SECTION B-B

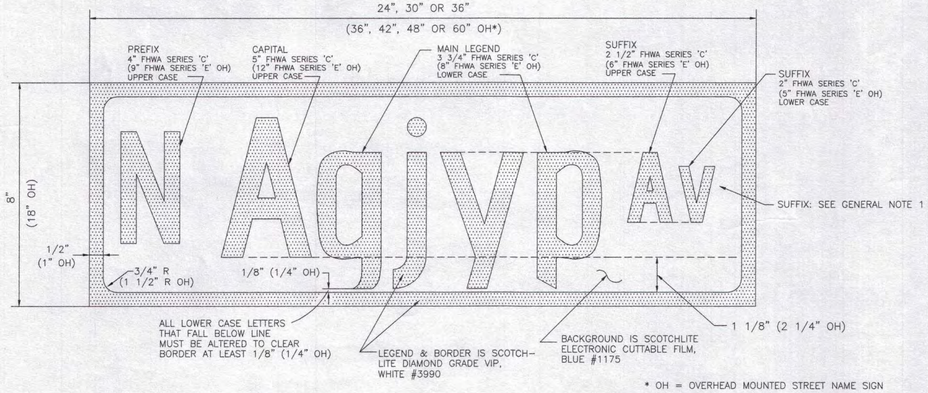
(*) DELETE WITHIN DRIPLINE OF TREES

N.T.S.



STREET NAME TILE

N.T.S.



* OH = OVERHEAD MOUNTED STREET NAME SIGN

STREET NAME SIGN - LEGEND & BORDER

N.T.S.

GENERAL NOTES:

(1) IF STREET NAME SUFFIX IS "STREET", SUFFIX IS OMITTED FROM SIGN.

(2) REPLACEMENT STREET NAME TILES SHALL BE SET IN A 1/4"-1/2" MORTAR BED WITH A 1/4" (MAX. SPACING) BETWEEN LETTERS.

CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

MISCELLANEOUS DETAILS FOR STREET CONSTRUCTION

DRAWING No. MC1

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	M.T. B.V. R.S. A.Y. L.H.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

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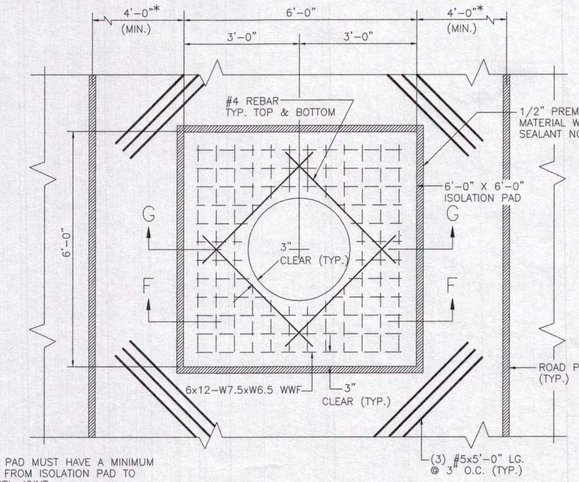
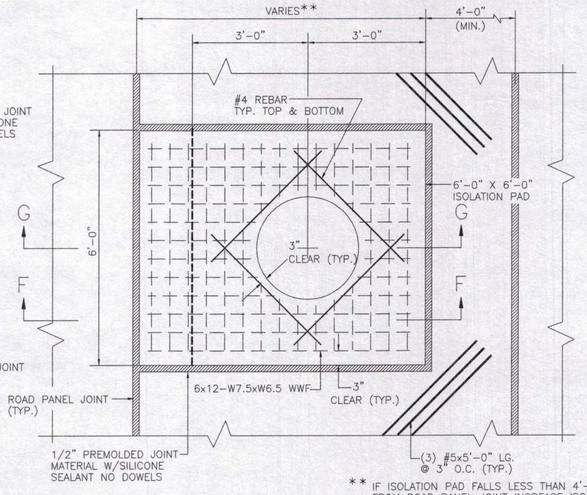


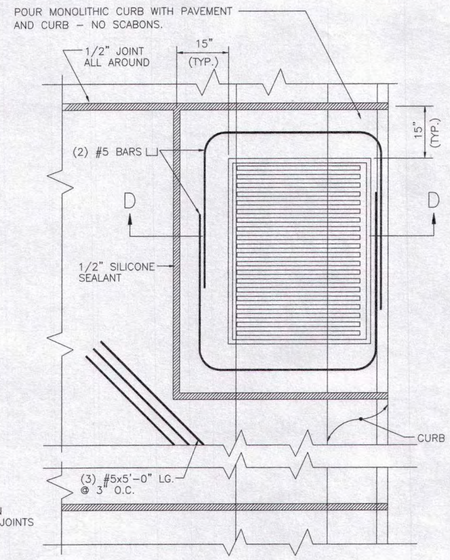
* ISOLATION PAD MUST HAVE A MINIMUM OF 4'-0" FROM ISOLATION PAD TO ROAD PANEL JOINT.

MAN-HOLE CASE (1)
N.T.S.

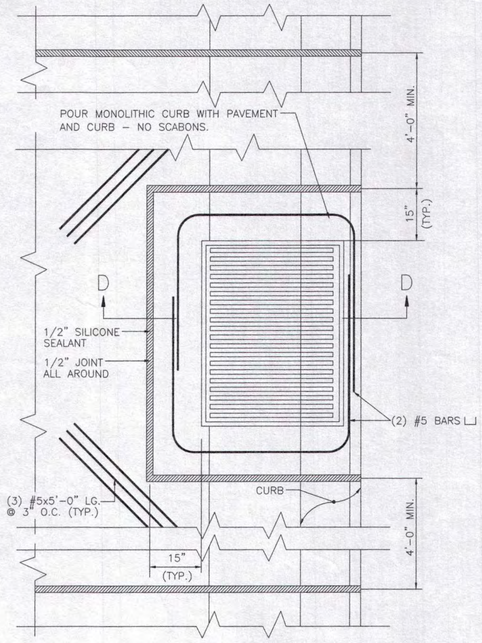


** IF ISOLATION PAD FALLS LESS THAN 4'-0" FROM ROAD PANEL JOINT INCREASE ISOLATION PAD LENGTH AS REQUIRED TO COMBINE THE JOINTS

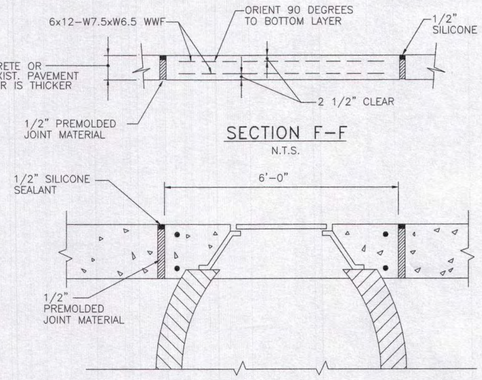
MAN-HOLE CASE (2)
N.T.S.



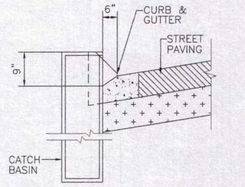
ROLL-OVER CATCH BASIN PLACEMENT CASE (1)
N.T.S.



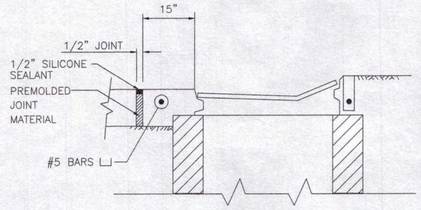
ROLL-OVER CATCH BASIN PLACEMENT CASE (2)
N.T.S.



SECTION F-F
N.T.S.

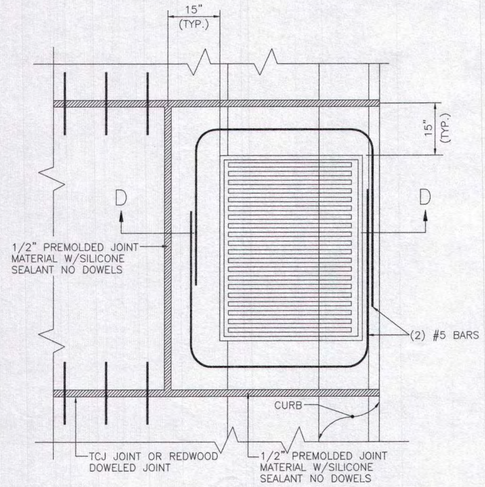


SECTION C-C
N.T.S.

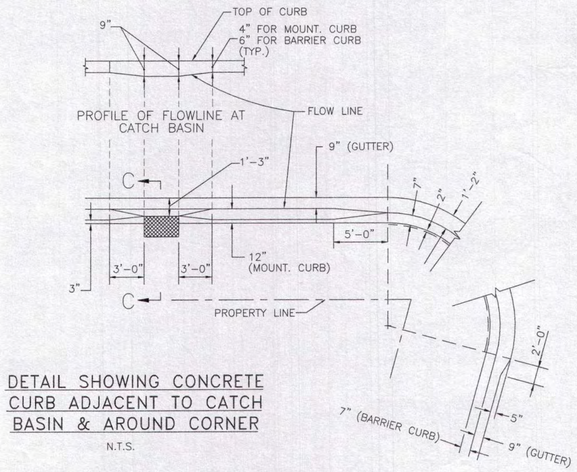


SECTION D-D
JOINT DETAIL AT ROLL-OVER BASIN
N.T.S.

SECTION G-G
MANHOLE ISOLATION PAD
N.T.S.



ROLL-OVER CATCH BASIN PLACEMENT CASE (3)
N.T.S.



DETAIL SHOWING CONCRETE CURB ADJACENT TO CATCH BASIN & AROUND CORNER
N.T.S.

NOTES:

1.) EACH UTILITY STRUCTURE WITHIN THE ROADWAY SHALL HAVE IT'S ISOLATION PAD.

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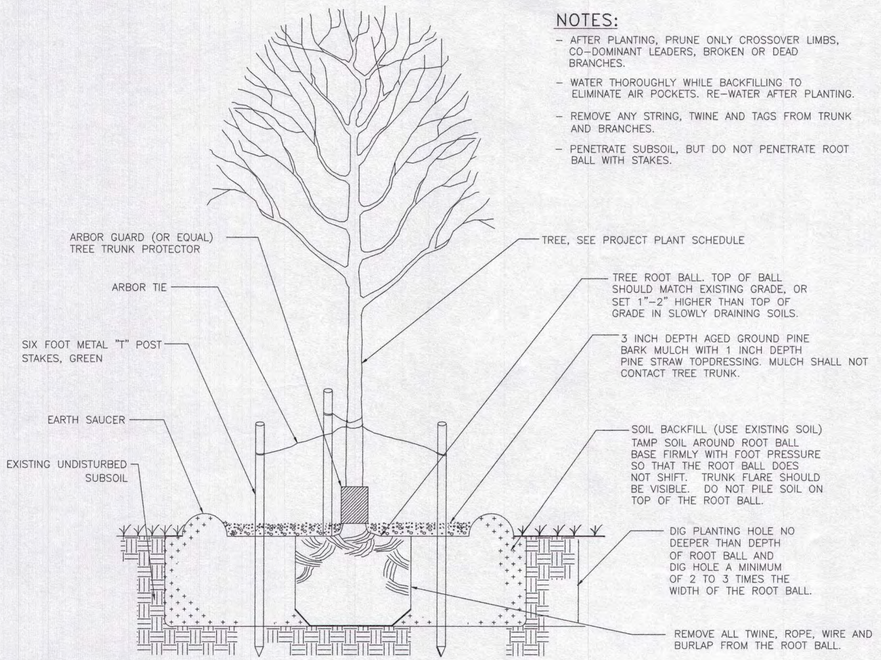
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

MISCELLANEOUS DETAILS FOR CATCH BASIN, MANHOLE & UTILITIES INSTALLATION

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	M.T. B.V. R.S. B.J. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JERNIGAN, DIRECTOR

DRAWING No.

MC2

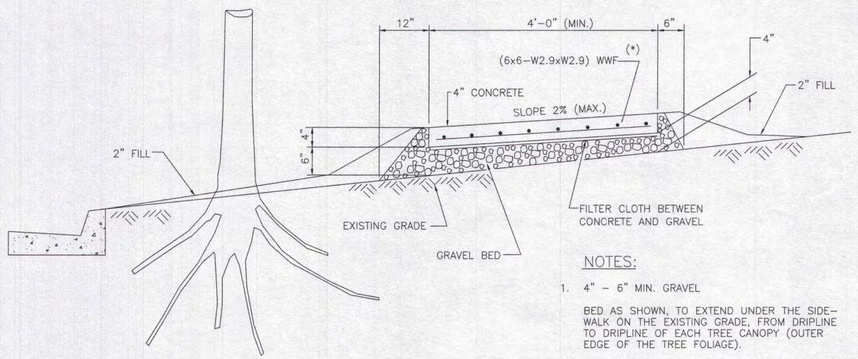


NOTES:

- AFTER PLANTING, PRUNE ONLY CROSSOVER LIMBS, CO–DOMINANT LEADERS, BROKEN OR DEAD BRANCHES.
- WATER THOROUGHLY WHILE BACKFILLING TO ELIMINATE AIR POCKETS. RE–WATER AFTER PLANTING.
- REMOVE ANY STRING, TWINE AND TAGS FROM TRUNK AND BRANCHES.
- PENETRATE SUBSOIL, BUT DO NOT PENETRATE ROOT BALL WITH STAKES.

TREE PLANTING DETAIL

N. T. S.



NOTES:

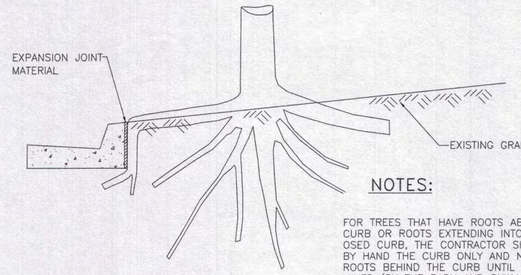
1. 4" – 6" MIN. GRAVEL BED AS SHOWN, TO EXTEND UNDER THE SIDE–WALK ON THE EXISTING GRADE, FROM DRIPLINE TO DRIPLINE OF EACH TREE CANOPY (OUTER EDGE OF THE TREE FOLIAGE).
2. NO MORE THAN 1.5" – 2.0" OF FILL TO BE PLACED UNDER ANY TREE CANOPY.
3. NO EXPANSION JOINTS TO BE PLACED OVER ROOTS. ONLY "WEAKENED PLANES" SHALL BE ALLOWED.

(*) WITH 1.5" – 2.0" COVER

SIDEWALK GRAVEL BED

REQ'D. AT EACH TREE LOCATION

N. T. S.



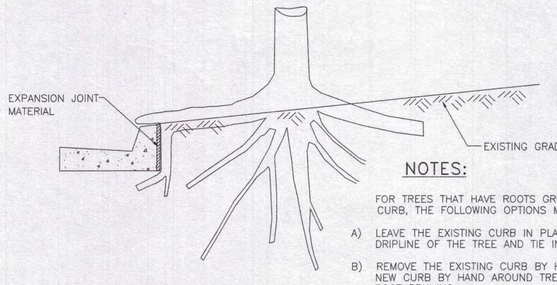
NOTES:

FOR TREES THAT HAVE ROOTS ABUTTING THE CURB OR ROOTS EXTENDING INTO THE PROP–OSED CURB, THE CONTRACTOR SHALL REMOVE BY HAND THE CURB ONLY AND NOT DISTURB TREE ROOTS BEHIND THE CURB UNTIL IT IS DETER–MINED (BY THE PARK AND PKWY. DEPARTMENT) HOW MUCH OF THE ROOTS CAN BE PRUNED. ONCE MARKED, THE ROOTS CAN BE PRUNED BY A LICENSED ARBORIST.
ELIMINATE 12" OF ROADWAY BASE BEHIND NEW CURB WHERE ROOTS ARE ENCOUNTERING THE CURB. (SEE DETAIL "A")

TYPICAL DIAGRAM NO. 1

TREE ROOTS GROWING BEHIND EXISTING OR PROPOSED CURBS

N. T. S.



NOTES:

FOR TREES THAT HAVE ROOTS GROWING OVER THE CURB, THE FOLLOWING OPTIONS MAY BE POSSIBLE:

A) LEAVE THE EXISTING CURB IN PLACE UNDER THE DRIPLINE OF THE TREE AND TIE INTO THE NEW CURB.

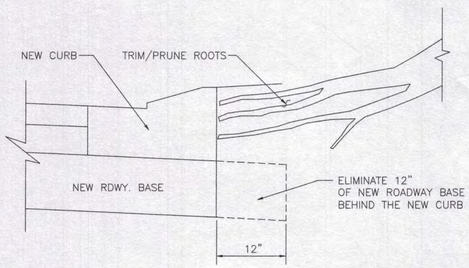
B) REMOVE THE EXISTING CURB BY HAND AND FORM NEW CURB BY HAND AROUND TREE ROOTS WITHOUT ROOT PRUNING.

C) REMOVE THE EXISTING CURB BY HAND, PRUNE ROOTS AS MARKED BY THE DEPARTMENT OF PARKS & PARKWAYS. FORM AND POUR NEW CURB.

TYPICAL DIAGRAM NO. 2

TREE ROOTS GROWING OVER CURB

N. T. S.

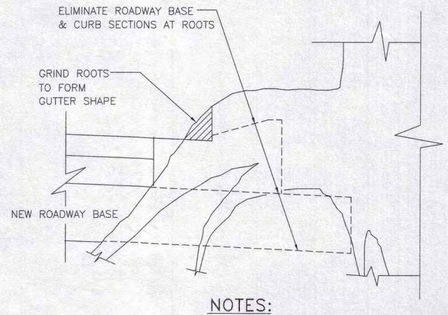


DETAIL "A"

DETAIL FOR ROOT PRUNING AT CURBS

REFER TO "TYPICAL DIAGRAM NO. 1"

N.T.S.



NOTES:

WHERE BIG ROOTS EXTEND INTO ROADWAY SECTION, ELIMINATE ROADWAY BASE AND CURB SECTIONS AT ROOTS, AND GRIND ROOTS TO FORM GUTTER SHAPE MATCHING ADJOINING CONCRETE GUTTERS AS PER DIRECTION OF THE DEPARTMENT OF PARKS & PARKWAYS

TYPICAL DIAGRAM NO. 3

TREE ROOTS EXTENDING INTO PROPOSED ROADWAY SECTION

N. T. S.

GENERAL NOTES:

(1) THE CONTRACTOR IS RESPONSIBLE FOR HIRING A LICENSED ARBORIST TO PRUNE TREE ROOTS ON CITY TREES. ALL TREE ROOTS OF CITY OWNED TREES, DAMAGED DURING REMOVAL OF CURBS, SIDEWALKS AND DRIVEWAYS SHALL BE ROOT PRUNED. ALL TREE ROOTS DAMAGED DURING ANY EXCAVATION OPERATIONS, YARD DRAINS, COLLECTOR LINES, ETC. SHALL BE ROOT PRUNED.

(2) ALL PROJECTS REQUIRE ON–SITE INSPECTION BY THE DEPARTMENT OF PARKS & PARKWAYS AND THE ARBORIST TO DETERMINE THE EXTENT OF ROOT PRUNING THAT WILL BE REQUIRED OR ALLOWED.

(3) FERTILIZATION – ONLY IF SPECIFIED BY DEPARTMENT OF PARKS & PARKWAYS ARBORIST, THE TREE ROOTS PRUNED DUE TO CONSTRUCTION SHALL BE FERTILIZED USING A WATER SOLUBLE FERTILIZER INJECTED INTO THE SOIL. THE MINIMUM ACCEPTABLE N–P–K RATIO SHALL BE 30–5–5. THE NUTRIENT COMPLEX AND RATIO (GAL/SQ. FT.) MUST BE APPROVED BY THE URBAN FORESTER OVERSEEING THE PROJECT.

(4) ONLY IF SPECIFIED BY THE DEPARTMENT OF PARKS & PARKWAYS, MYCOORHIZAL FUNGAL INOCULATE TREATMENT SHALL BE APPLIED TO CONSTRUCTION DAMAGED TREE ROOT ZONES AS APPROVED BY THE URBAN FORESTER FROM THE PARK AND PARKWAYS DEPARTMENT.

(5) TERMITE TREATMENT – ALL TREE ROOTS PRUNED DUE TO CONSTRUCTION SHALL BE TREATED FOR TERMITES WITH A TERMITICIDE APPROVED BY THE URBAN FORESTER.

(6) ALL TREES SHALL BE IRRIGATED AND MULCHED AS INDICATED IN THE SECTION 02480, "LANDSCAPE PROTECTION DURING CONSTRUCTION".

(7) ONLY IF SPECIFIED BY THE DEPARTMENT OF PARKS & PARKWAYS, CAMBISTAT GROWTH REGULATOR OR EQUIVALENT SHALL BE APPLIED TO THE TREES AS PER THE DIRECTION OF THE URBAN FORESTER OVERSEEING THE PROJECT.

THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

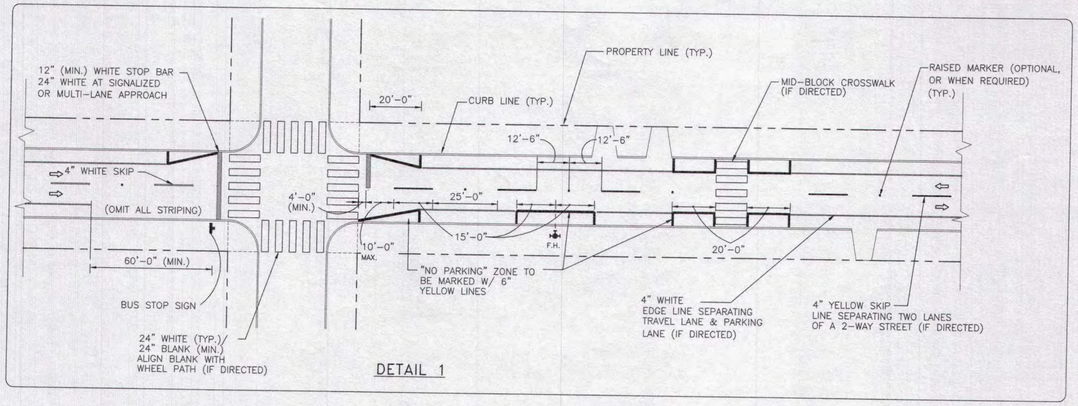
CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

MISCELLANEOUS DETAILS FOR TREE PLANTING & ROOT PRUNING

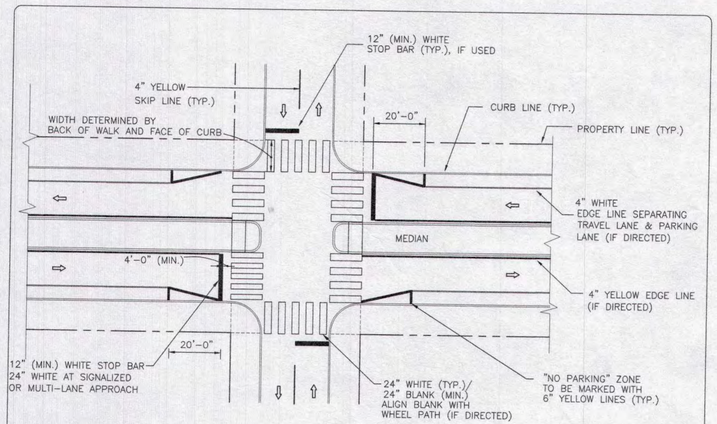
DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	M.T. B.V. R.S. B.J. A.Y.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK D. JENKINS, DIRECTOR

DRAWING No.

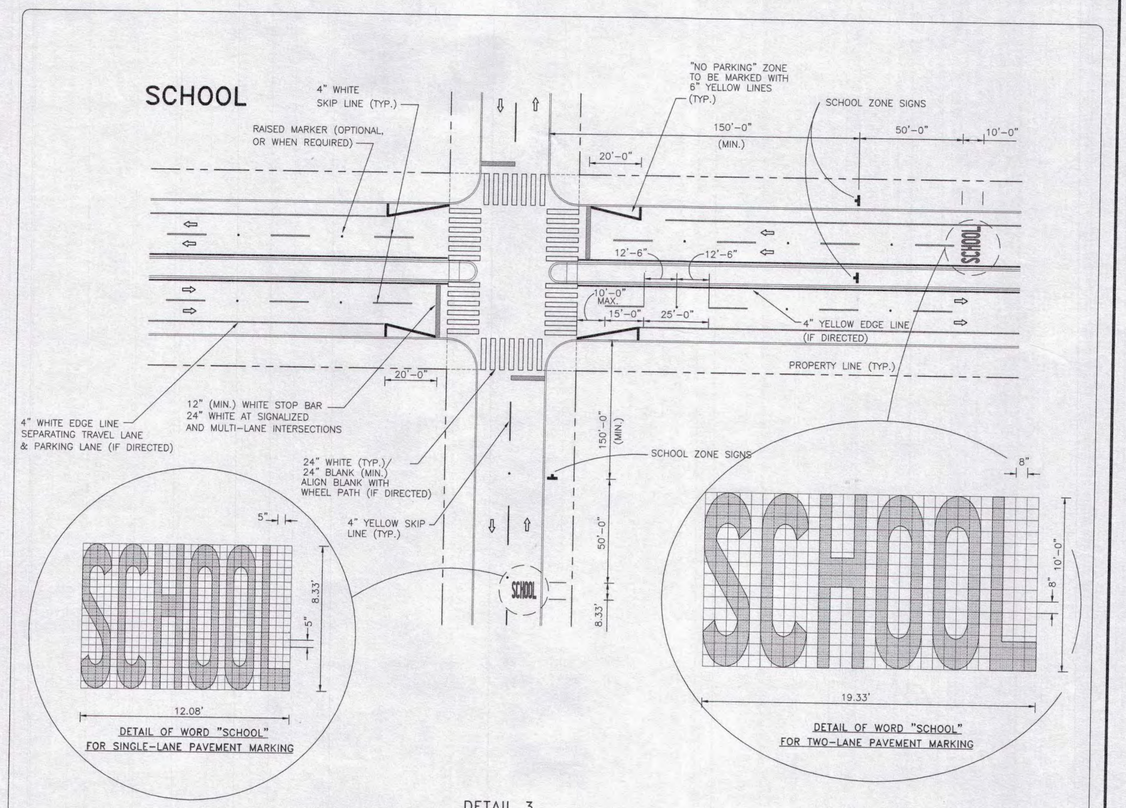
MC3



DETAIL 1

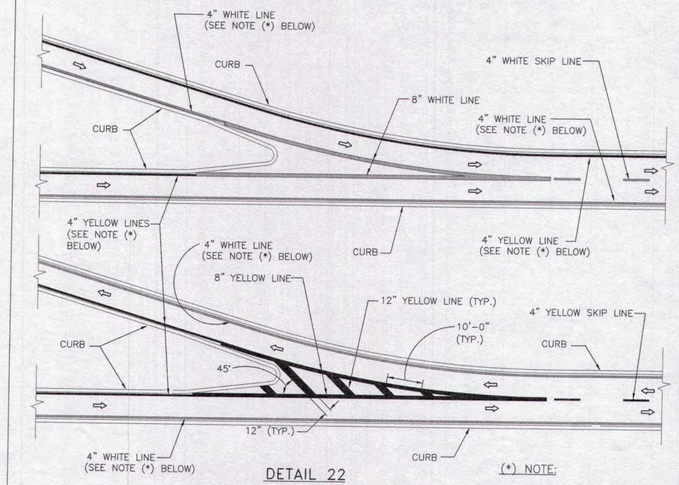


DETAIL 2



DETAIL 3

DESCRIPTION	COLOR	WIDTH	APPLICATION
SINGLE BROKEN	WHITE	4"	SEPARATION OF TRAVEL LANES IN THE SAME DIRECTION; INDICATE THAT IT IS PERMISSIBLE TO CROSS THE LINE TO CHANGE LANES; i. e., LANE LINES ON MULTILANE ROADWAYS.
	YELLOW	4"	SEPARATION OF TRAVEL LANES IN OPPOSITE DIRECTIONS; INDICATE THAT PASSING IS ALLOWED IN BOTH DIRECTIONS; i. e., CENTERLINE ON TWO LANE, TWO WAY ROADWAYS.
SINGLE SOLID	WHITE	4"	SEPARATION OF TRAVEL LANES OR SEPARATION OF TRAVEL LANE AND SHOULDER; INDICATE THAT CROSSING THE LINE IS DISCOURAGED; i. e., LANE LINES AT INTERSECTION APPROACHES OR RIGHT EDGE LINES.
		6"	SEPARATION OF A MOTOR VEHICLE TRAVEL LANE FROM A BIKE TRAVEL LANE.
		8"	DELINEATION OF LOCATION WHICH INDICATES CROSSING IS STRONGLY DISCOURAGED; i. e., SEPARATION OF TURN LANES FROM THROUGH LANES OR GORE AREAS AT RAMP TERMINALS.
	YELLOW	4"	DELINEATION OF LEFT EDGE LINES ON DIVIDED ROADWAYS, ONE-WAY ROADS AND RAMPS.
DOUBLE SOLID	WHITE	4"-4"-4"	SEPARATION OF TRAVEL LANES IN THE SAME DIRECTION; INDICATE THAT IT IS PROHIBITED TO CROSS THE LINES; e. g., PROHIBIT LANE CHANGES ON THE APPROACH TO AN OBSTRUCTION IN THE ROADWAY BETWEEN TWO LANES IN THE SAME DIRECTION
	YELLOW	4"-4"-4"	SEPARATION OF TRAVEL LANES IN OPPOSITE DIRECTIONS, WHICH INDICATE THAT PASSING IS NOT ALLOWED IN EITHER DIRECTION. LEFT TURN MANEUVERS ACROSS THIS MARKING ARE PERMITTED. ALSO USED IN ADVANCE OF OBSTRUCTIONS WHICH MAY BE PASSED ONLY ON THE RIGHT SIDE.
SOLID PLUS BROKEN	YELLOW	4"-2"-4"	SEPARATION OF TRAVEL LANES IN OPPOSITE DIRECTIONS; INDICATE THAT PASSING IS ALLOWED FOR VEHICLES ADJACENT TO THE BROKEN LINE, BUT PROHIBITED FOR VEHICLES ADJACENT TO SOLID LINE. USED ON TWO-WAY ROADWAYS WITH TWO OR THREE LANES. ALSO USED TO DELINEATE EDGES OF A TWO-WAY LEFT TURN LANES (SOLID ON THE OUTSIDE, BROKEN LINES ON THE INSIDE).
DOUBLE BROKEN	YELLOW	4"-4"-4"	DELINEATES THE EDGES OF REVERSIBLE LANES.
SINGLE DOTTED	BOTH	4"	AN EXTENSION OF A LANE LINE OR CENTERLINE THROUGH AN INTERSECTION OR A CURVED DOTTED LINE THROUGH AN INTERSECTION TO HELP GUIDE TURNING VEHICLES AS THEY MOVE THROUGH THEIR TURN. MAY EXTEND AN EDGELINE, ESPECIALLY WHERE THE ROAD WIDENS FOR AN ADDED LANE FOR DECELERATION OR FOR TURNING.
	WHITE	8"	SEPARATION OF THROUGH LANE AND AUXILIARY LANE OR DROPPED LANE.
TRANSVERSE	WHITE	6"	CROSSWALK EDGE LINES AT MINOR INTERSECTIONS, IF DIRECTED
		12"	STOP BARS AT MINOR INTERSECTIONS CROSSWALK EDGE LINES AT MAJOR INTERSECTIONS, IF DIRECTED
		24"	STOP BARS AT MAJOR INTERSECTIONS HIGH-VISIBILITY, LONGITUDINAL CROSSWALK STRIPING
DIAGONAL	WHITE	12"	CROSSHATCH MARKINGS, PLACED AT AN ANGLE OF 45° AT VARYING DISTANCES APART, ON SHOULDERS OR CHANNELIZATION ISLANDS TO ADD EMPHASIS TO THESE ROADWAY FEATURES.

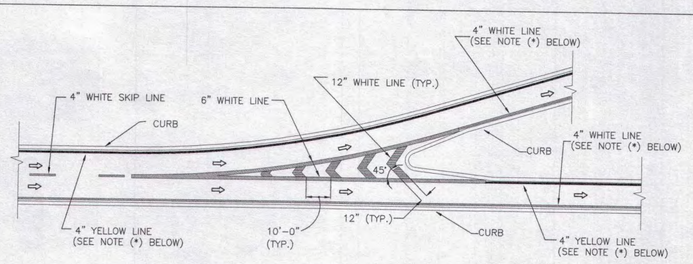


DETAIL 22

TYPICAL GORE MARKINGS
FOR ONE-WAY AND TWO-WAY STREETS

(*) NOTE:

4" WHITE & YELLOW EDGE LINES ARE OPTIONAL FOR CITY'S STREETS



THE SELECTION AND USE OF THESE DETAILS, WHILE DESIGNED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES, IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A LOUISIANA REGISTERED PROFESSIONAL ENGINEER.

CITY OF NEW ORLEANS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

TYPICAL APPLICATION OF PAVEMENT MARKINGS

DRAWN BY:	REVIEWED BY:	RECOMMENDED BY:
N. SCHNEIDER	A.Y. L.H.	NGUYEN D. PHAN, CHIEF ENGINEER
DATE: 2/3/2015	SCALE: AS NOTED	APPROVED: MARK V. JERNIGAN, DIRECTOR

DRAWING No.

PM1

ATTACHMENT 4 – SWB Standard Drawings

PROJECT SIGN

A. This item shall be governed by the requirements of Standard Specification Section C729 except as modified here-in.

B. The CONTRACTOR shall provide one project identification sign in accordance with the Contract Documents at no direct pay.

PROJECT SIGN CONSTRUCTION

B. The sign shall be constructed of 1/2-inch exterior plywood with 4-inch by 4-inch supports and 2-inch by 4-inch cross bracing.

C. The sign face shall be 4-feet vertical by 8-feet horizontal.

C. The sign will be printed in color on 10-mil Coroplast®.

SIGN CONTENT

A. The sign shall include the following information and graphic elements:

1) The City of New Orleans Fleur De Lis Logo at Left as shown on the Sign Example.
2) New Day New Orleans at top center as shown on the Sign Example.
3) The project name or title underneath New Day New Orleans as shown on the Sign Example.
4) Underneath project name: City Agency: Department of Public Works as shown on the Sign Example.
5) Underneath City Agency: Project Engineer: (company name) as shown on the Sign Template.
6) Underneath Project Engineer: Contractor (company name) as shown on the Sign Template.
7) Underneath Contractor, Track our progress at nola.gov, as shown on the Sign Example.
8) The Mayor's name underneath City of New Orleans at right as shown on the Sign Example. Mayor Mitchell J. Landrieu
9) Underneath the Mayors name, the Councilmembers at Large as shown on the Sign Example.
10) Underneath the Councilmembers at Large, Council District members as shown on the Sign Example.

B. The DPW PM shall provide the editable sign file (in full-size PDF format) to the Contractor at the Pre-Construction meeting. Sign template provided may require editing to reflect the Project Name and General Contractor. Contractor shall verify content of template and submit PROOF to the Director for approval of Copy & Placement.

SIGN LOCATION, MAINTENANCE, AND REMOVAL

A. The project sign shall be located on the site as directed by the Director.

B. The sign shall be set 4 feet above the ground, measured from grade to the lower edge of the plywood sheet.

C. The CONTRACTOR shall maintain the sign in excellent condition throughout the duration of the project.

D. The CONTRACTOR shall remove the project sign and restore the area when directed by the owner upon preparation of the Notice of Completion.

SIGN EXAMPLE

SECTION 01 410

SWB STANDARD DRAWINGS

Sewerage and Water Board

of

New Orleans

Standard Drawings

Revised October 25, 2018

INDEX OF STANDARD DRAWINGS

1.	D–870	General section of standard drain brick manhole
2.	D-871	General plan of drain manhole frame & cover
3.	D-873	Detail of standard single vertical catch basin #1, 2 & 3
4.	D-873A	Detail of standard double vertical catch basin
5.	D-1359	Detail of steps for concrete & brick manholes
6.	2445-F-2	Rectangular frame and cover for meter or valve
7.	3143-E-1	Detail of sewer and water manhole castings
8.	D-3264	Detail of standard 24"x 30" clear opening drop inlet catch basin
9.	D-3340	Detail of standard manhole for circular pipe larger than 36"
10.	D-3431-A	Detail of standard single mountable catch basin
11.	D-3431-B	Detail of standard double mountable catch basin
12.	D-3809	Typical sections of concrete pipe bedding from 12" to 42" pipe
13.	D-3810	Typical sections of concrete pipe bedding from 48" to 72" pipe
14.	D-3933	Typical sections of reinforced concrete arch pipe bedding from 22"x13 1/2" to 65"x 40"
15.	D-3934	Typical sections of reinforced concrete arch pipe bedding from 73"x 45" to 122"x 78"
16.	D-3937	Detail of standard manholes for large concrete arch pipe
17.	4697-E5-A	Typical standard and non-standard open trench sections for sewer pipe installation
18.	6178-B-6	Typical sewer brick manhole and drop manhole
19.	6178-B-6A	Typical pre-cast concrete manhole
20.	6179-F-2	Hydrant setting, details of valve box and cover, and valve manhole

21. 6312-E5-A Typical sewer service connection for sewer main less than or equal to 8" deep

22. 6312-E5-B Typical sewer service connection for sewer main greater than 8' deep

23. 7004-W Test connection on new water mains (4" to 16") flushing and chlorination

24. 7005-W Pressure test connection on new water mains (18" and larger), flushing and chlorination

25. 7134A-W Typical water service connection

26. 7134-W Water meter service connection for 5/8" and 1" fixed meter box

27. 7165-D Special fabricated steel cover for canal cleanout manhole

28. 7332-W 2" & 1 1/2" meter service connection

29. 8178-SD Typical sewer and drain siphon detail & pipe/wall connections

30. 8180-SD Manhole adjustment and rehabilitation

31. 8292-D Vertical catch basin two piece grate, frame and cover ductile iron

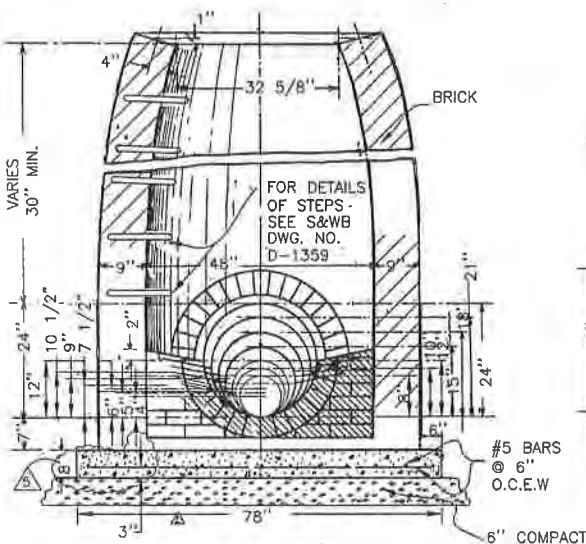
32. 8319-D Single combination catch basin – manhole structure

33. 8353-W1 Above ground assembly-fire and domestic

34. 8353-W2 Above ground assembly-fire only

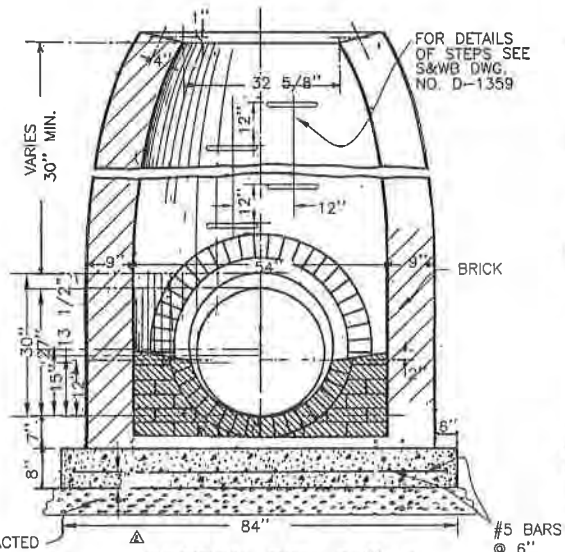
35. 8353-W3 Above ground assembly-domestic only

NO.1 M.H.



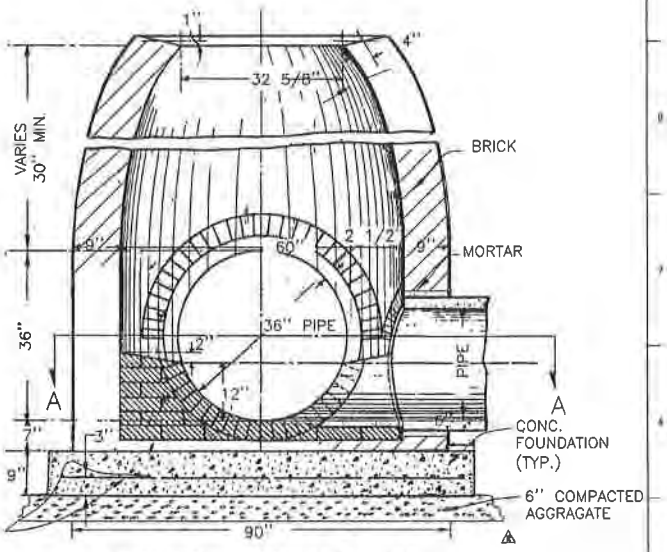
SECTION FOR 8", 10", 12", 15", 18", 21" & 24" PIPE

NO.2 M.H.

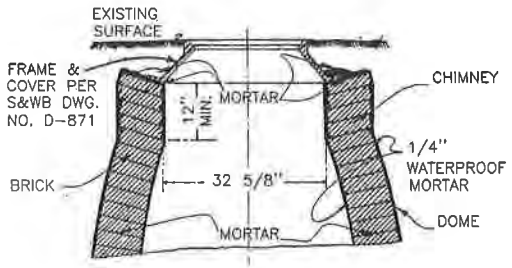


SECTION FOR 27" & 30" PIPE

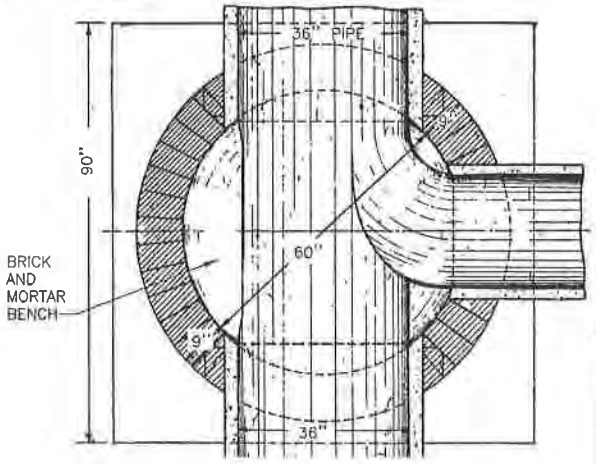
NO.3 M.H.



SECTION FOR 36" PIPE



TYPICAL UPPER MANHOLE SECTION



SECTION A–A

NO.3 M.H. – AS SHOWN
NO.1 & 2 M.H. – SIMILAR

SCALE: N.T.S.

④ NOTES:

1. ALL MANHOLES, FRAMES AND COVERS SHALL BE AS SHOWN ON S&WB DWG. NO. D-871, GENERAL PLAN OF MANHOLE FRAME AND COVER.
2. INSIDE & OUTSIDE BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH WATERPROOFING COMPOUND FOR THICKNESS OF 1/4" IN ACCORDANCE WITH SPECIFICATIONS.
3. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3,000 P.S.I. IN 28 DAYS.
4. SEE S&WB DWG. NO. 6178-B-6 FOR PRE-CAST MANHOLES

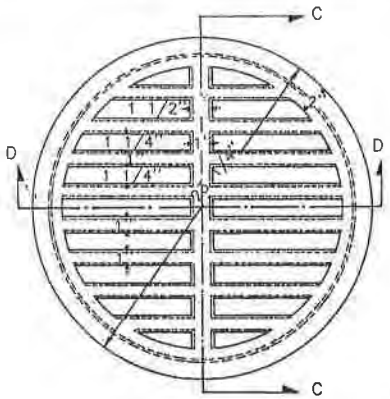
REV.	DATE	DESCRIPTION	BY
⑤	03-09-07	CHANGED COVERING AND CONCRETE FOUNDATION THICKNESS	D.MC.
④	03-08-07	DELETED, REVISED AND ADDED NOTES	D.MC.
3.	7-11-88	GENERAL REVISION	M.L.L
②	2-28-75	REPLACED LUMBER FOUNDATION WITH CONCRETE	P.C.D.
1.	11-5-65	NOTE FOR PLASTERING	R.P.D

SEWERAGE AND WATER BOARD OF NEW ORLEANS

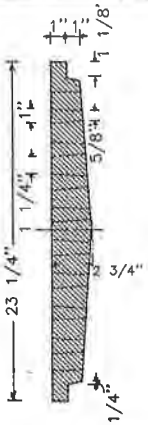
GENERAL SECTION OF STANDARD DRAIN BRICK MANHOLE

DR. DWG.CHECK
TRC
CK. P.H.Q.
AP.
SCALE 1/4"=1'-0"
DATE 7-1-88

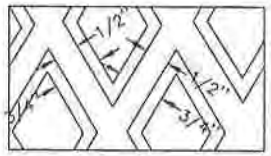
DWG. NO. D-870
SEE NO.
SHEET NO.



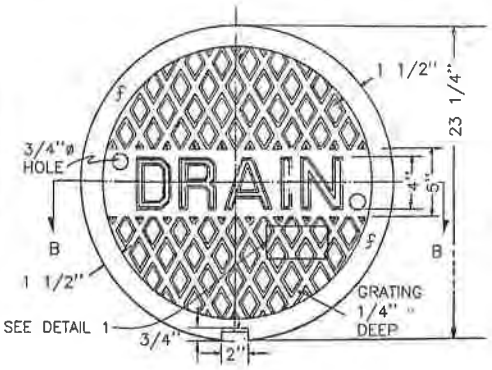
TOP VIEW OF OPEN GRATE MANHOLE COVER



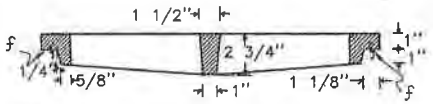
SECTION VIEW C–C



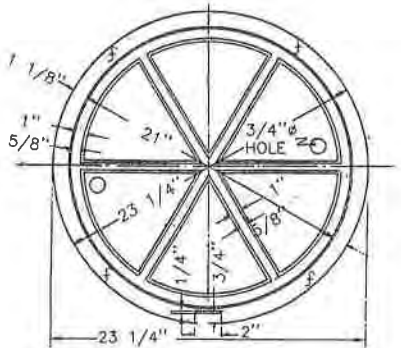
DETAIL 1



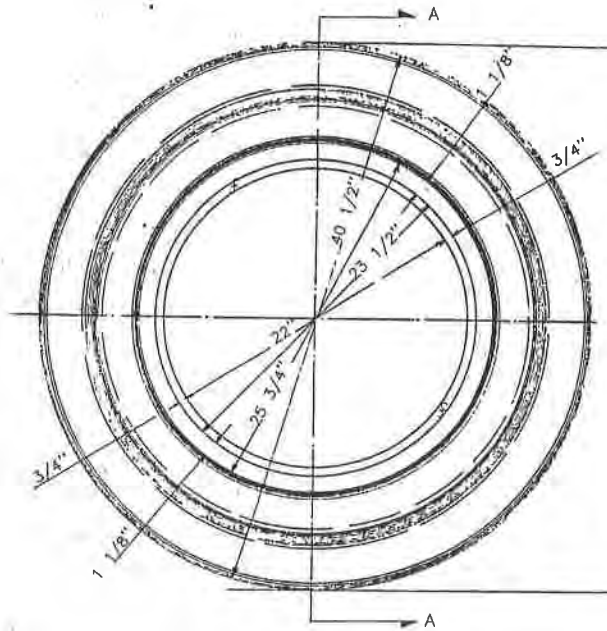
TOP VIEW OF MANHOLE COVER



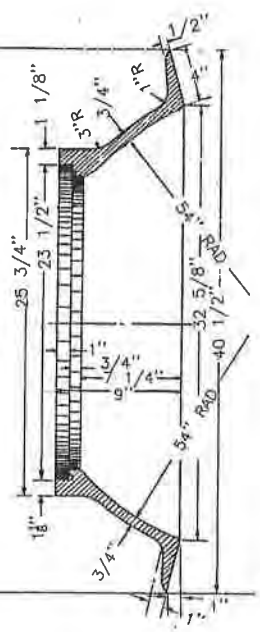
SECTION VIEW D–D



BOTTOM VIEW OF MANHOLE COVER



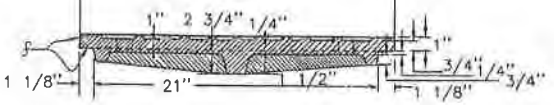
TOP VIEW OF MANHOLE FRAME



SECTION VIEW A–A

⚠3 NOTES:

1. ℱ = MACHINED SURFACE.
2. FRAME & COVER SHALL CONFORM TO EAST JORDAN IRON WORK, INC. V–1501 FRAME & COVER OR APPROVED EQUAL.



SECTION VIEW B–B

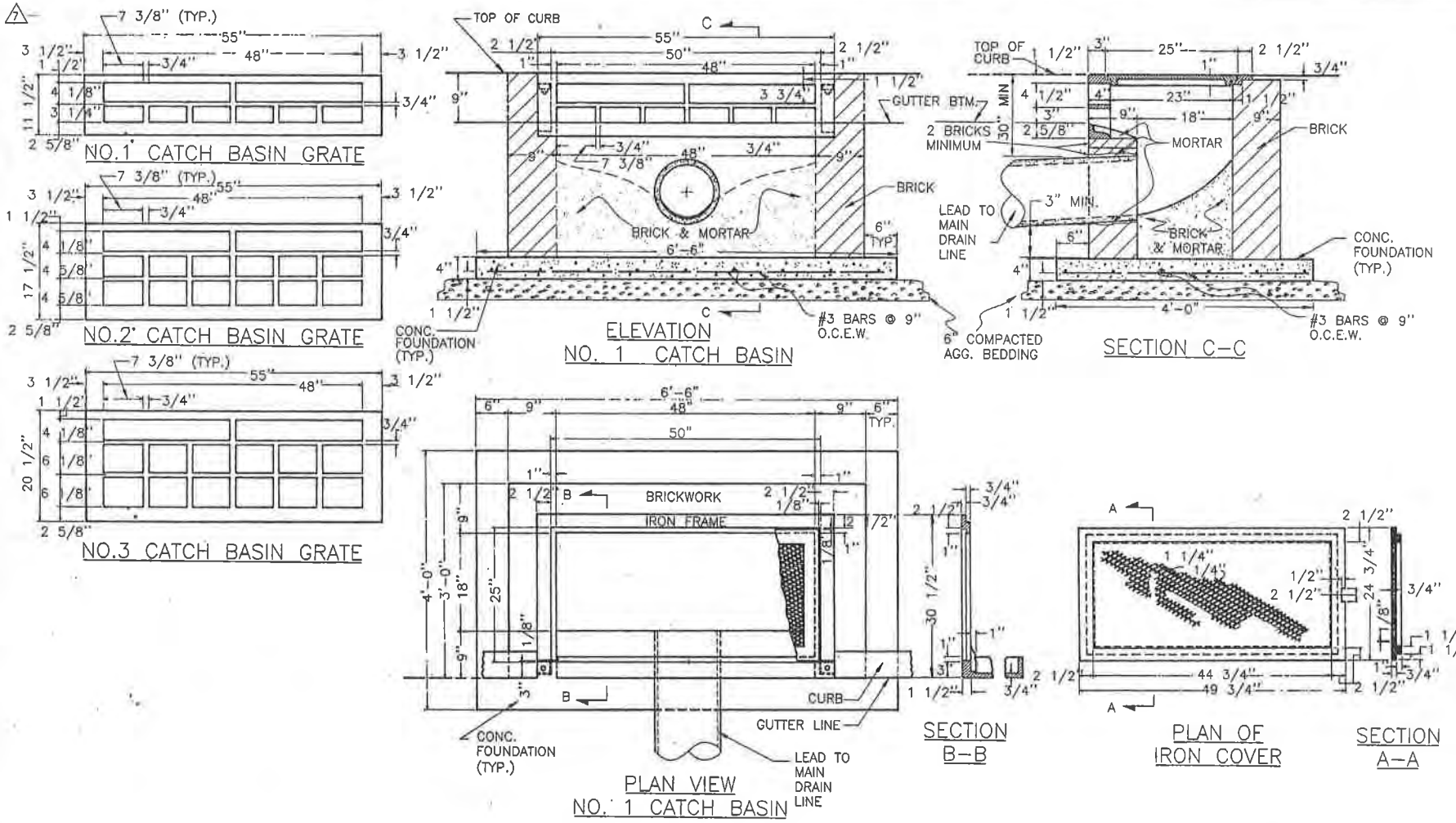
SCALE: N.T.S.

REV.	DATE	DESCRIPTION	BY
3	03-00-07	CHANGE COVER AND FRAME WEIGHTS	D.M.C.
2	2-1-79	REVISED	
1	8-5-68	REVISED CASTINGS WEIGHTS NET	

SEWERAGE AND WATER BOARD OF NEW ORLEANS

GENERAL PLAN
OF DRAIN
MANHOLE FRAME & COVER

DR. and CHK'D BY:
TRC.
CK. P.H.G. & J.P.
AP.
SCALE GRAPHIC
DATE 7-1-68
DWG. NO. D–871 3
SET NO.
SHEET NO.



NOTES:

1. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES & INVERTS, TO BE MORTARED WITH A WATERPROOFING COMPOUND FOR THICKNESS OF 1/4" IN ACCORDANCE WITH SPECIFICATIONS.
2. FRAME & COVER IS THE SAME FOR ALL CATCH BASINS.
3. FOR DOUBLE VERTICAL CATCH BASIN, SEE S&WB DWGS. NO. D-873A.
4. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3,000 P.S.I. IN 28 DAYS.
5. SEE S&WB DWG. NO. D-3264 FOR DROP INLETS.
6. SEE S&WB DWG. NO. D-3431-A & D-3431-B FOR MOUNTABLE CATCH BASINS.
7. FRAME & GRATE SHALL CONFORM TO EAST JORDAN IRON WORKS, V-4310 CURB INLET SERIES.
8. SEE S&WB DWG. NO. D-8292 FOR TWO PIECE GRATE, FRAME AND COVER.
9. MAX. DEPTH OF CATCH BASIN CANNOT EXCEED 5' UNLESS APPROVED BY S&WB ENGINEER.

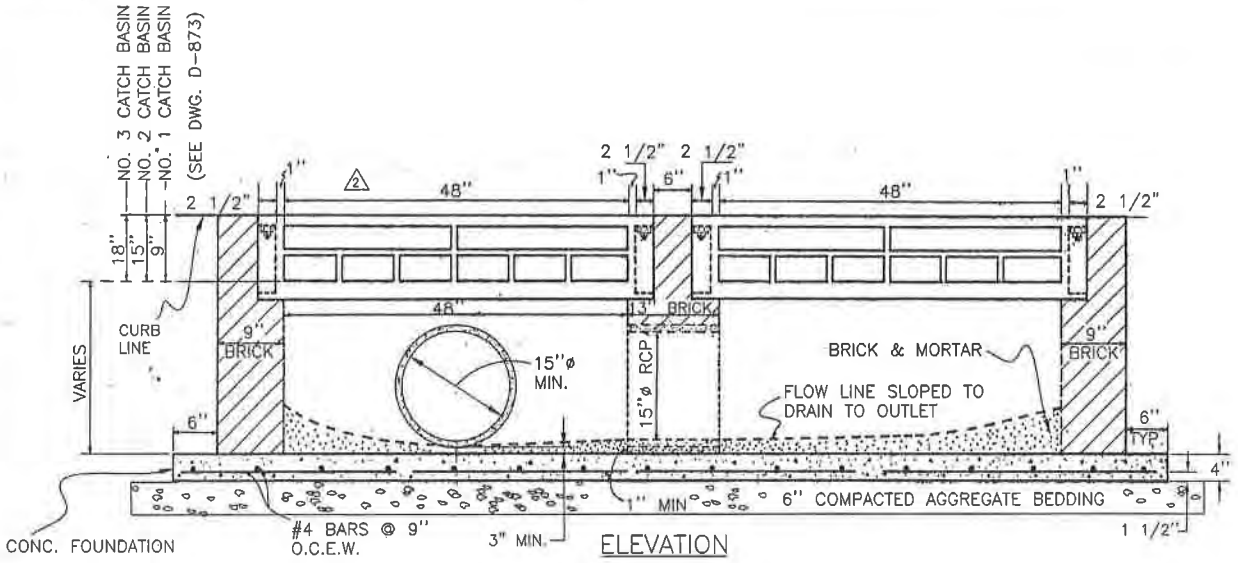
SCALE: N.T.S.

REV.	DATE	DESCRIPTION	BY
6	03-08-07	REVISED FRAME AND GRATES	D.MC.
5	03-08-07	GENERAL REVISIONS	D.MC.
4	1-4-96	REDRAWN	

SEWERAGE AND WATER BOARD OF NEW ORLEANS

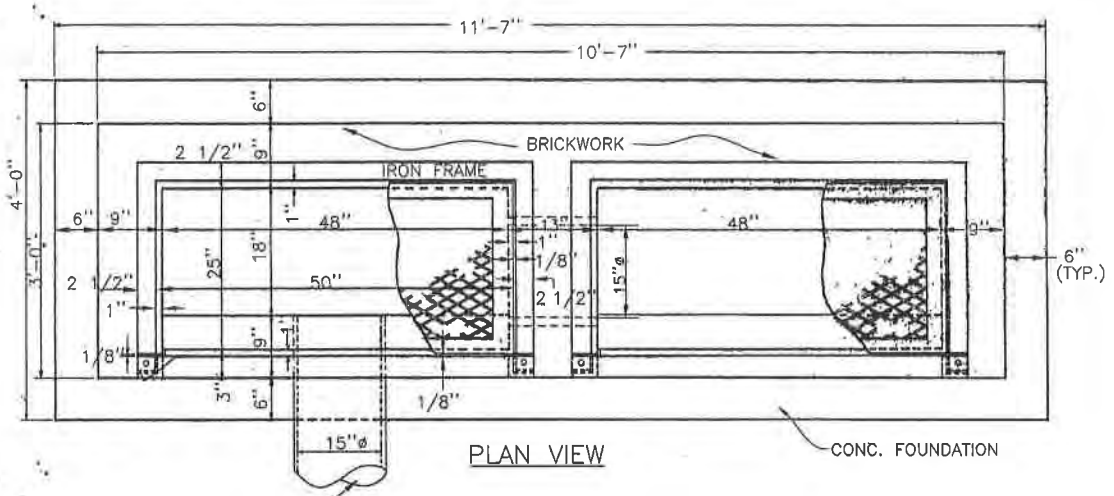
DETAIL OF STANDARD SINGLE VERTICAL CATCH BASIN NUMBERS 1, 2 & 3

DR. TRC. CK. AP. SCALE DATE 1-4-96 | DWG. NO. D-873 6 | SHEET NO.



ELEVATION

(SEE NOTE NO. 1)



PLAN VIEW

THIS LEAD SHALL BE CONNECTED TO MAIN DRAIN. THE LEAD CAN BE INSTALLED ON EITHER SIDE OF THE CATCH BASIN. THE BOTTOM OF CATCH BASIN MUST BE SLOPED TO DRAIN TOWARDS LEAD. CATCH BASIN LEAD MAY BE POSITIONED AT AN ANGLE AS REQUIRED TO ATTACH TO MAIN DRAIN LINE.

⚠1 NOTES:

1. DOUBLE CATCH BASIN SHOWN. SEE S&WB DWG. NO. D-873 FOR SINGLE TYPE CATCH BASIN CASTINGS.
2. SEE S&WB DWG. NO. D-873 FOR SECTIONS & DETAILS OF CATCH BASINS 1, 2 & 3 AND METAL CASTING.
3. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH A WATERPROOFING COMPOUND, THICKNESS OF 1/4" IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
4. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.
5. SEE S&WB DWG. NO. D-3264 FOR DROP INLETS.
6. SEE S&WB DWG. NO. D-3431-A & D-3431-B FOR MOUNTABLE CATCH BASINS.
7. SEE S&WB DWG. NO. D-8292 FOR TWO PIECE GRATE, FRAME AND COVER.
8. MAX. DEPTH OF CATCH BASIN CANNOT EXCEED 5' UNLESS APPROVED BY S&WB ENGINEER.
9. FRAME & GRATE SHALL CONFORM TO EAST JORDAN IRON WORKS, V-4310 CURB INLETS SERIES.

SCALE: N.T.S.

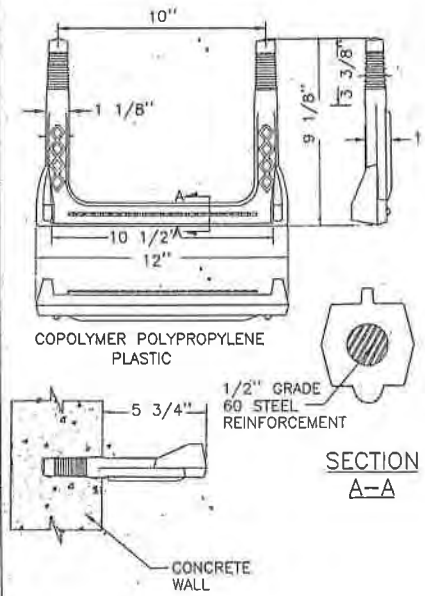
REV.	DATE	DESCRIPTION	BY
⚠	03-09-07	REVISED FRAME & GRATES	D.MC.
⚠	03-09-07	DELETED, REVISED AND ADDED NOTES	D.MC.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

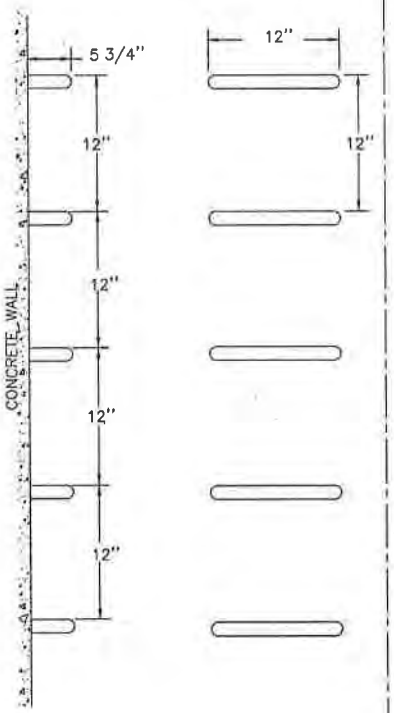
DETAIL OF STD. DOUBLE VERTICAL CATCH BASIN

DR. AB
TRC
CK. YBL
AP. P.F.C.
SCALE AS SHOWN
DATE 8-1-88

DWG. NO. D-873A
SET NO.
SHEET NO.

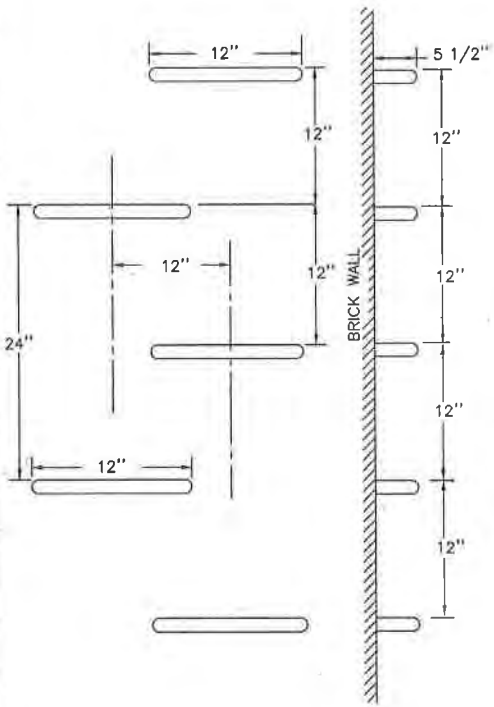


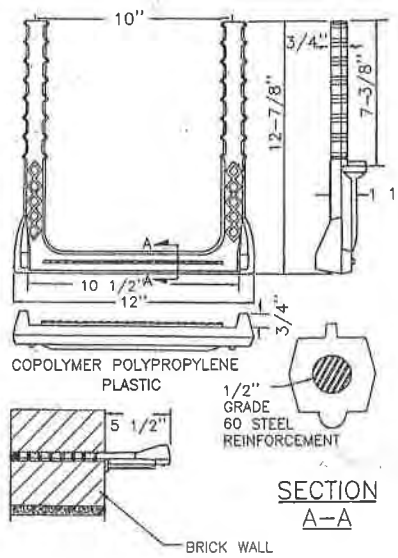
SECTION A–A



STEPS FOR PRE–CAST CONCRETE MANHOLE

N. T. S.





SECTION A–A

STEPS FOR BRICK WALL MANHOLE

N. T. S.

⚠ NOTES:

1. STEP IS A 1/2" GRADE 60 STEEL, REINFORCING ROD ENCAPSULATED WITH A COPOLYMER POLYPROPYLENE COVER. FIBERGLASS OR ALUMINUM STEPS MAY BE CONSIDERED BUT MUST BE APPROVED BY THE S&WB ENGINEER.
2. RELATED A.S.T.M, C–478, D–4101. AND A–615.
3. STEPS ARE NOT PERMITTED IN CATCH BASINS.
4. STEPS ARE STAGGERED FOR CONCRETE BOX CANALS.
5. FOR PRE–CAST STEPS, DRILL STEPS INTO BRICK AND SEAL WITH EPOXY.

REV.	DATE	DESCRIPTION	BY
⚠	03-09-07	DELETED, REVISED AND ADDED NOTES	D.MC.
1	7/11/00	GENERAL REVISION	M.L.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

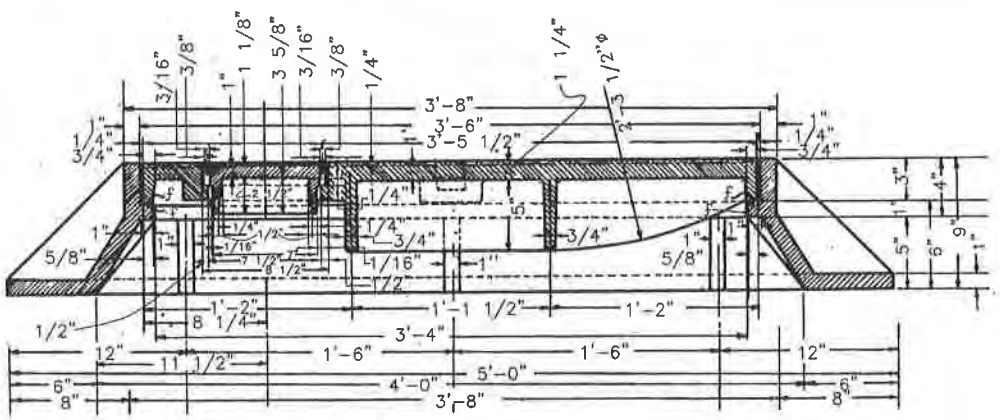
DETAIL OF STEPS FOR CONCRETE & BRICK MANHOLES

DR. BRO. Comm.
TRC
CK. PHG
SUPT.
SCALE NOT TO SCALE
DATE 7-1-00

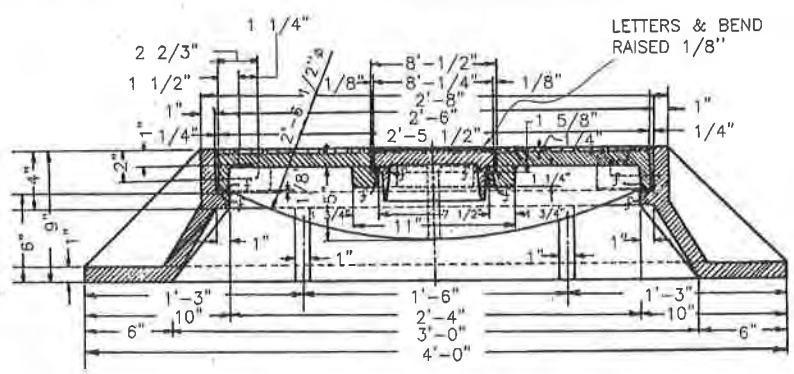
GENERAL SUPERINTENDENT

DWG. NO. D–1359

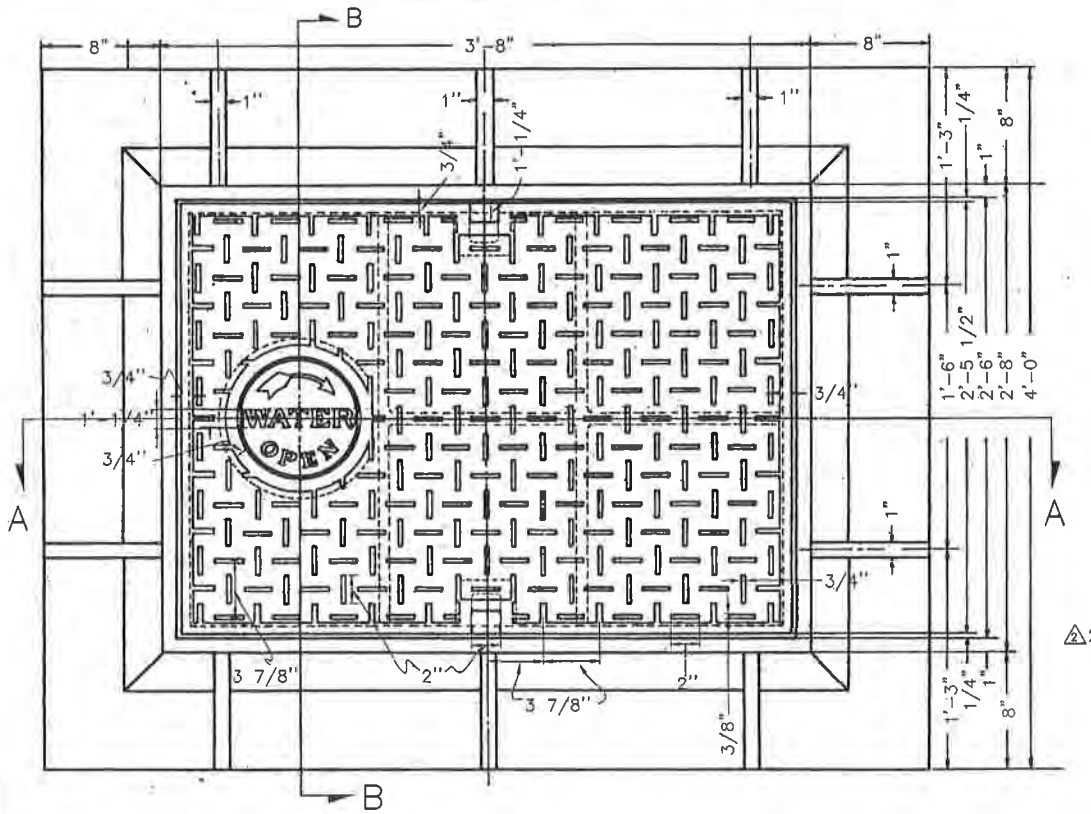
SET NO. | SHEET NO.



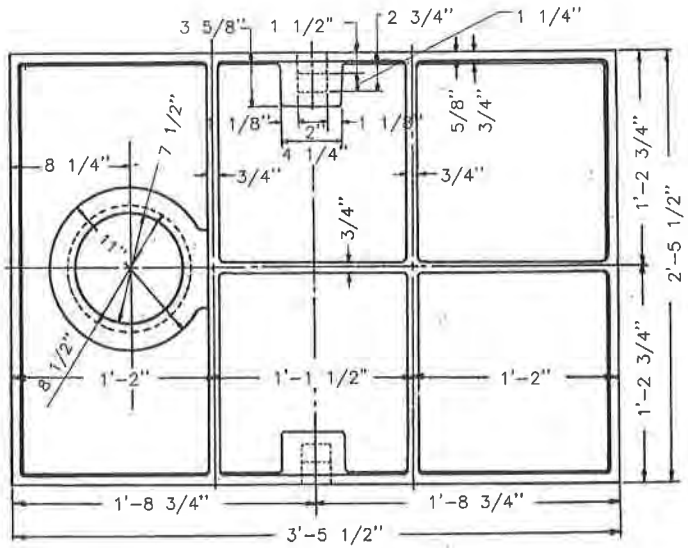
SECTION A–A



SECTION B–B



PLAN OF COVER & FRAME



UNDER SIDE OF COVER

NOTES:

1. f = MACHINED SURFACE
2. FRAME & COVER SHALL CONFORM TO EAST JORDAN IRON WORKS, V-6399 FRAME & GRATE OR APPROVED EQUAL.

THIS COVER TO BE USED FOR SEWER MANHOLES ONLY

SCALE: N. T. S.

REV.	DATE	DESCRIPTION	BY
2	03-09-87	ADDED NOTE	D.MC.
1	1-13-81	ADDED COVER FOR SEWER MANHOLE R.J.M.	

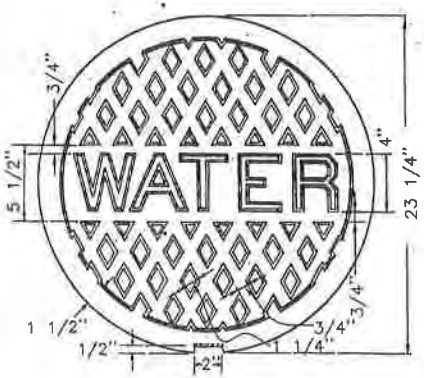
SEWERAGE AND WATER BOARD OF NEW ORLEANS

RECTANGULAR FRAME AND COVER FOR METER OR VALVE

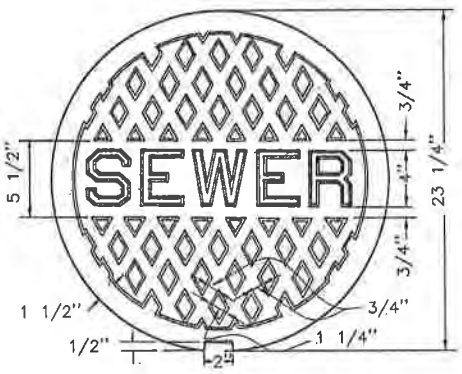
DR. C. HEMBY
TRC.
CK. C. WILLARD
AP. W. Hintz
SCALE
DATE 7/1/58

DWG. NO. 2445-F-2

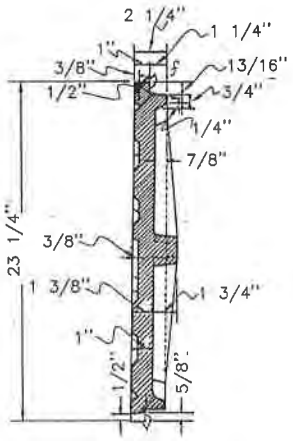
SHEET NO.



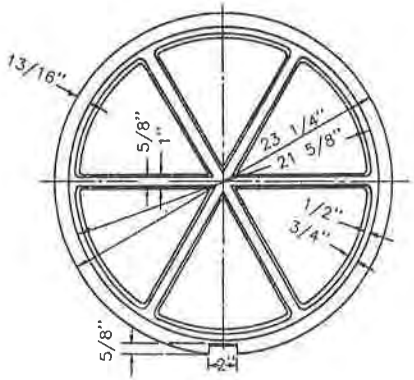
TOP VIEW OF WATER MANHOLE COVER



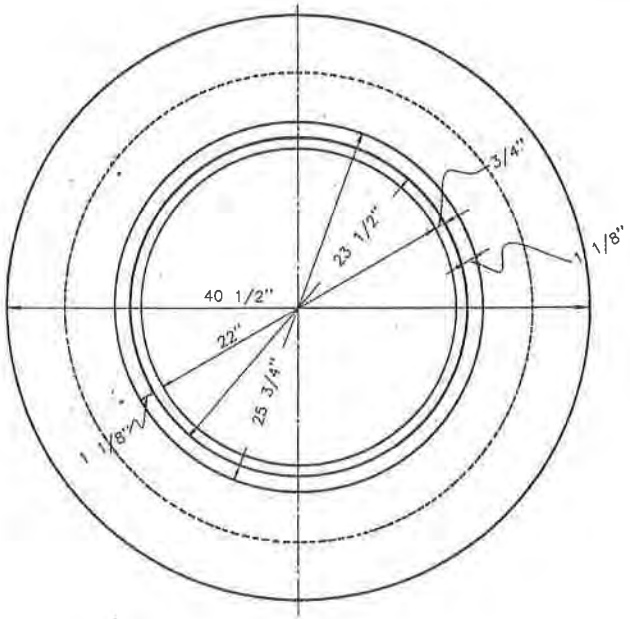
TOP VIEW OF SEWER MANHOLE COVER



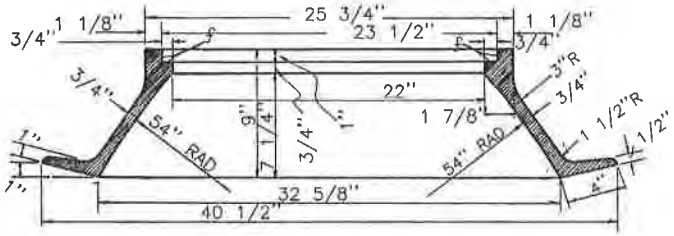
CROSS SECTION OF MANHOLE COVER
(SEWER & WATER)



BOTTOM VIEW OF MANHOLE COVER
(SEWER & WATER)



PLAN OF FLARING FRAME MANHOLE



CROSS SECTION OF FLARING MANHOLE FRAME
(SEWER & WATER)

NOTE:

1. $\mathcal{f}$ = MACHINED SURFACE
2. FRAME & COVER SHALL CONFORM TO EAST JORDAN IRON WORKS, V-1501 FRAME AND COVER.

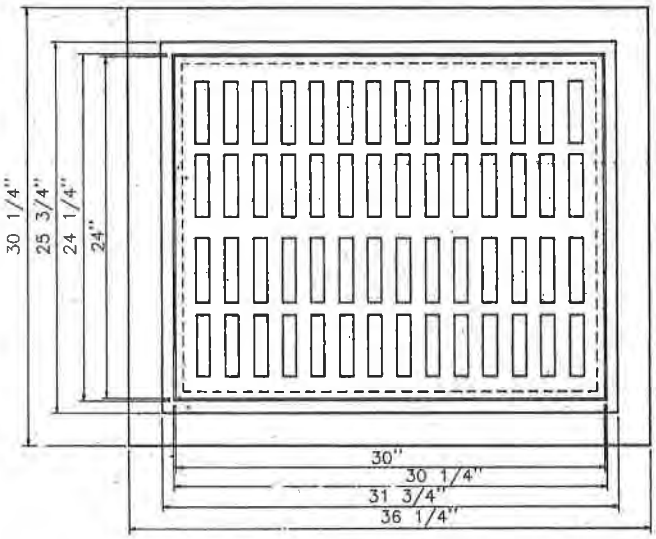
SCALE: N.T.S.

03-09-07	REVISED GRATE SECTION OF STANDARD MANHOLE DRAWING	D.MC.	

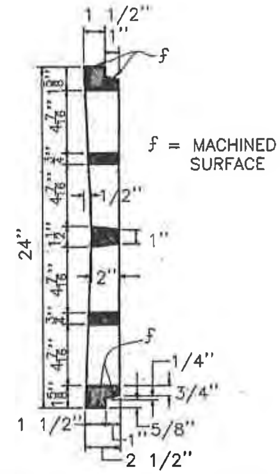
SEWERAGE AND WATER BOARD OF NEW ORLEANS

DETAILS OF SEWER AND WATER MANHOLE CASTINGS

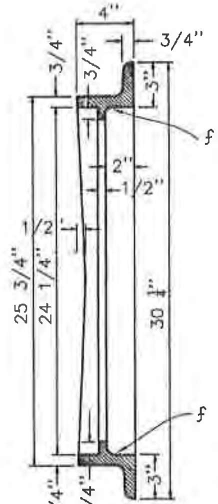
DR. A.P.GENTILE	GENERAL SUPERINTENDENT
TRC.	
CH. C.WIEMERS	
AP.	DWG. NO. 3143-E-1
SCALE	
DATE 1/1/58	SET NO. / SHEET NO.



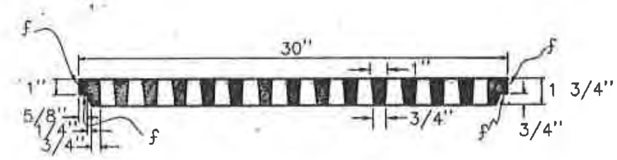
PLAN OF FRAME AND GRATE



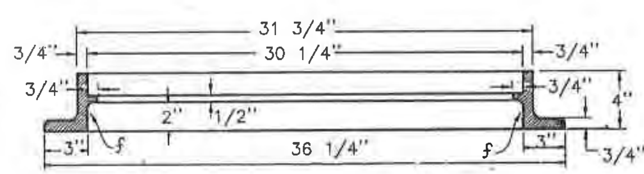
TRANSVERSE SECTION OF GRATE



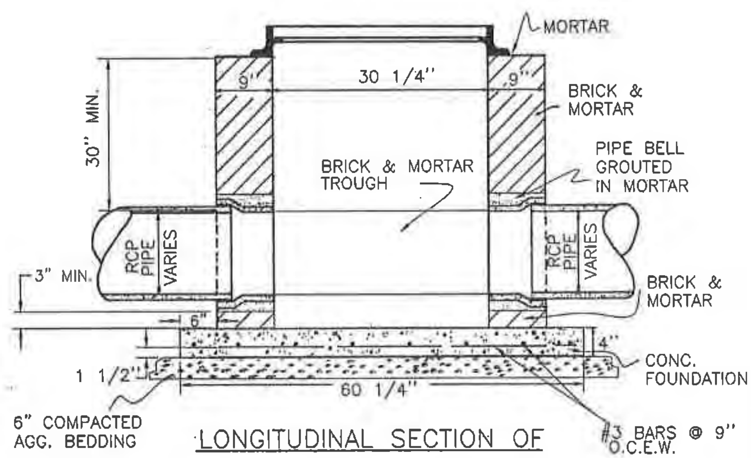
TRANSVERSE SECTION OF FRAME



LONGITUDINAL SECTION OF GRATE



LONGITUDINAL SECTION OF FRAME



LONGITUDINAL SECTION OF DROP INLET MANHOLE

⚠6 NOTES:

1. WEIGHT OF FRAME 154 LBS.
2. WEIGHT OF COVER 278 LBS.
3. ƒ = MACHINED SURFACE
4. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH WATERPROOFING COMPOUND FOR THICKNESS OF 1/4" IN ACCORDANCE WITH SPECIFICATION.
5. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.
6. FRAME & GRATE SHALL CONFORM TO EAST JORDAN WORKS, INC. V-4430 GUTTER INLET OR APPROVED EQUAL.

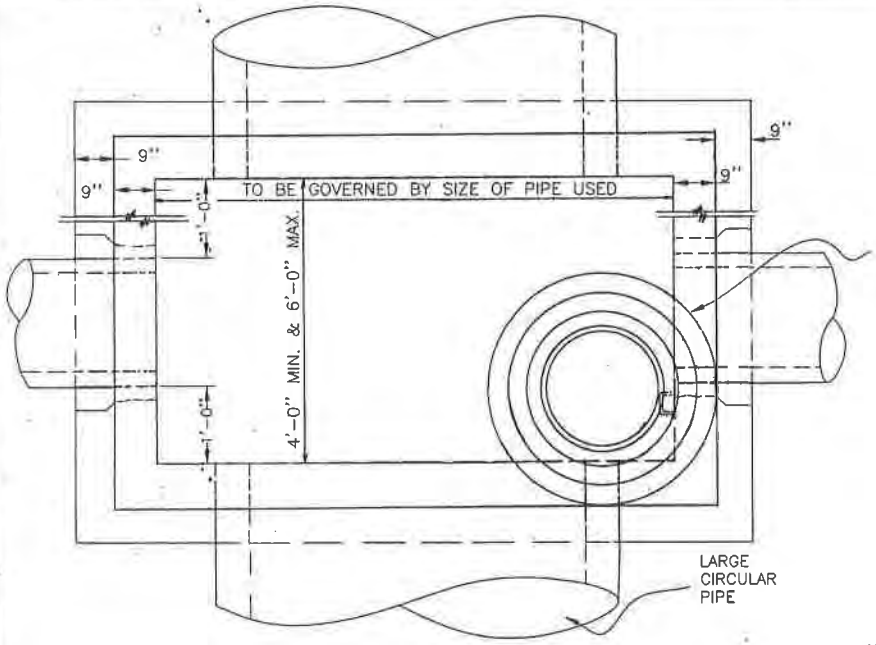
SCALE: N.T.S.

REV.	DATE	DESCRIPTION	BY
6	03-09-07	DELETED, REVISED AND ADDED NOTES	D.M.C.
5	12-1-93	REDRAWN, ADDED BARS TO GRATE	

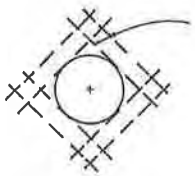
SEWERAGE AND WATER BOARD OF NEW ORLEANS

DETAIL OF STD. 24"X30" CLEAR OPENING DROP INLET CATCH BASIN

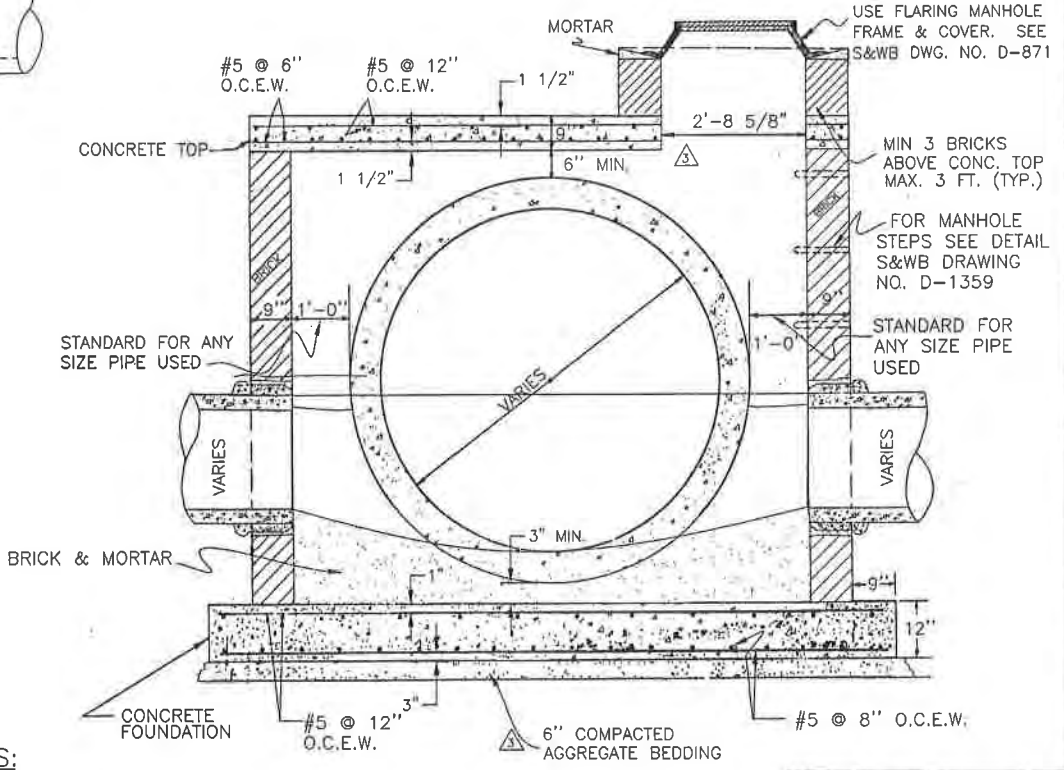
DWG. NO. D-3264 ⚠6



PLAN VIEW



DETAIL-1



SECTION VIEW

⚠ NOTES:

1. INSIDE & OUTSIDE BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH WATERPROOFING COMPOUND FOR THICKNESS OF $\frac{1}{4}$" IN ACCORDANCE WITH SPECIFICATIONS.
2. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.

SCALE: N.T.S.

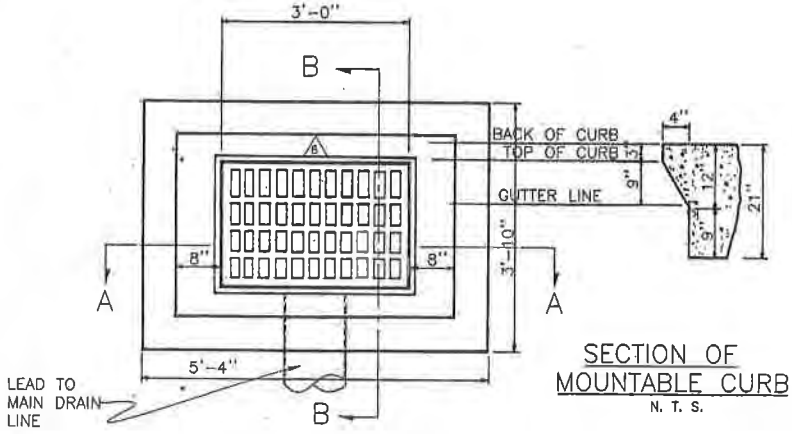
REV.	DATE	DESCRIPTION	BY
⚠ 3	03-08-07	DELETED, REVISED AND ADDED NOTES	D.HC.
2	9-5-67	NEW BOTTOM & STEEL	A.M.
1	11-8-65	NOTE FOR PLASTERING	R.P.D.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

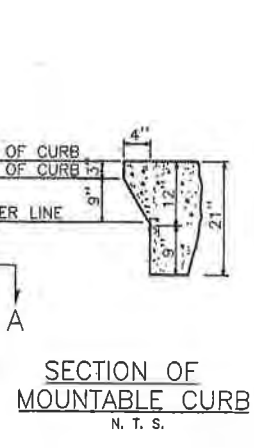
DETAIL OF STANDARD MANHOLE FOR CIRCULAR PIPE GREATER THAN 36"

DR. A.R.E.
TRC.
CK.
AP.
SCALE GRAPHIC
DATE 7-1-58

DWG. NO. D-3340
SET NO.
SHEET NO.

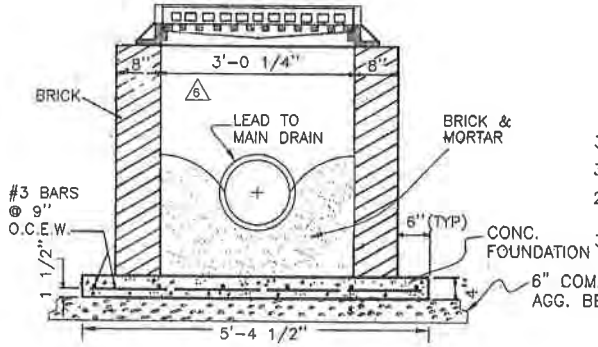


PLAN OF CATCH BASIN
N. T. S.

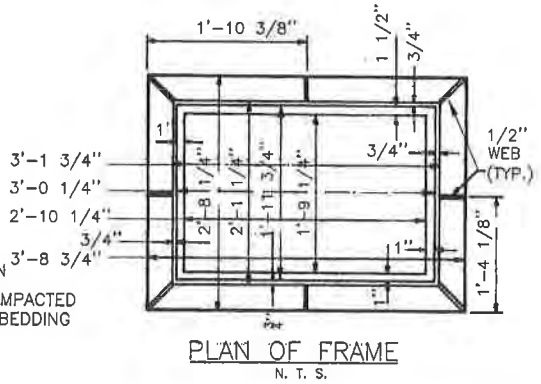


SECTION OF MOUNTABLE CURB
N. T. S.

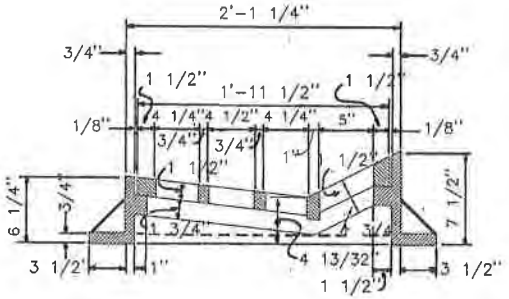
SECTION B–B
N. T. S.



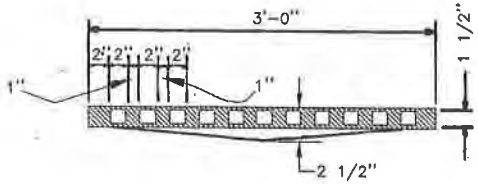
SECTION A–A
N. T. S.



PLAN OF FRAME
N. T. S.



CROSS SECTION OF GRATE FRAME
N. T. S.



LONGITUDINAL SECTION OF GRATE
N. T. S.

⚠ NOTES:

1. INSIDE & OUTSIDE BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH WATERPROOFING COMPOUND FOR THICKNESS OF 1/4" IN ACCORDANCE WITH SPECIFICATION.
2. THIS GRATE IS THE SAME AS THE GRATES ON DOUBLE MOUNTABLE CATCH BASIN SHOWN ON DWG. NO. D-3431-B.
3. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.
4. FRAME & GRATE SHALL CONFORM TO EAST JORDAN IRON WORKS, INC. V-4510 GUTTER INLET OR APPROVED EQUAL.

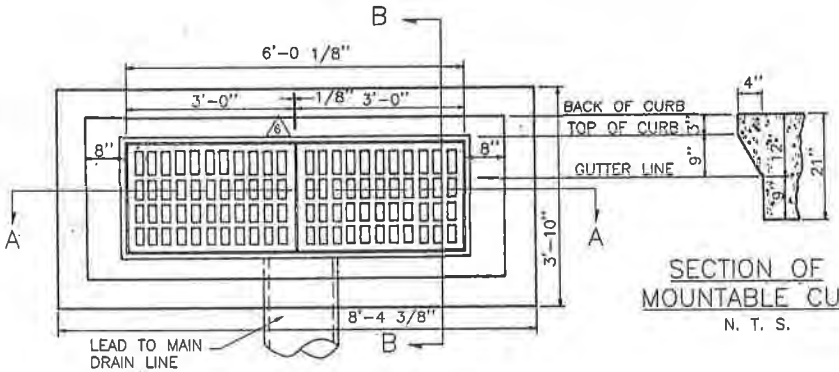
REV.	DATE	DESCRIPTION	BY
⚠	03-08-07	DELETED, REVISED AND ADDED NOTES	D.M.C.
⚠	03-08-07	DELETED REQ. OF 10" STUB	D.M.C.
⚠	11-17-98	REDRAWN, ADDED HORIZONTAL BAR	

SEWERAGE AND WATER BOARD OF NEW ORLEANS

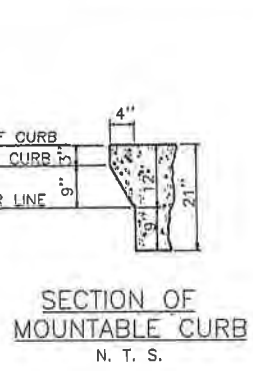
DETAIL OF STANDARD SINGLE MOUNTABLE CATCH BASIN

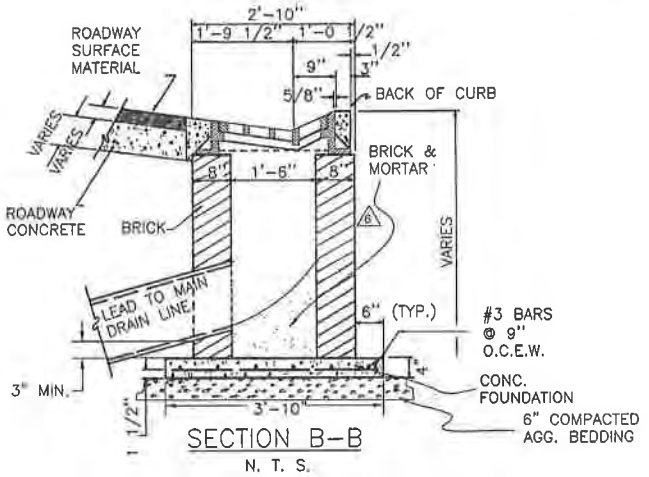
DR. M
TRC.
CK. JB
AP. A. J. C.
SCALE AS SHOWN
DATE 11-17-98

DWG. NO. D-3431-A⚠
SEC. NO.
SHEET NO.

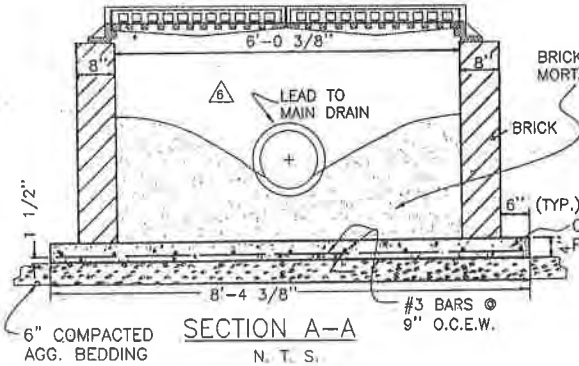


PLAN OF CATCH BASIN
N. T. S.

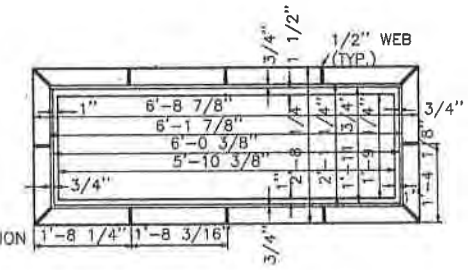




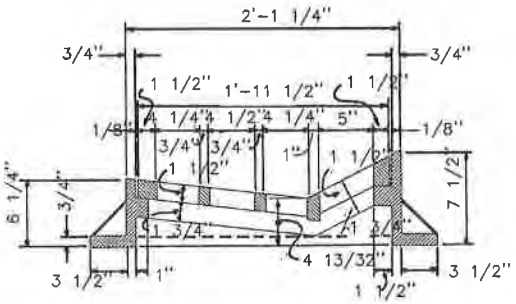
SECTION B–B
N. T. S.



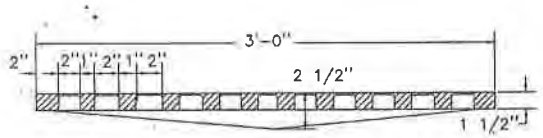
SECTION A–A
N. T. S.



PLAN OF FRAME
N. T. S.



CROSS SECTION OF GRATE FRAME
N. T. S.



LONGITUDINAL SECTION OF GRATE
N. T. S.

⚠ NOTES:

1. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH WATERPROOFING COMPOUND FOR THICKNESS OF 1/4" IN ACCORDANCE WITH SPECIFICATIONS.
2. BOTH GRATES ARE THE SAME AS THE GRATE FOR SINGLE MOUNTABLE CATCH BASIN SHOWN ON DWG. NO. D–3431–A.
3. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGH OF 3000 P.S.I. IN 28 DAYS.
4. FRAME & GRATE SHALL CONFORM TO EAST JORDAN IRON WORKS, INC. V–4510 GUTTER INLET OR APPROVED EQUAL.

REV.	DATE	DESCRIPTION	BY
3	03-09-07	DELETED, REVISED AND ADDED NOTES	D.MC.
2	03-09-07	DELETED REQ. OF 10" STOP	D.MC.
1	8-18-93	REDRAWN, ADDED BARS TO GRATE	

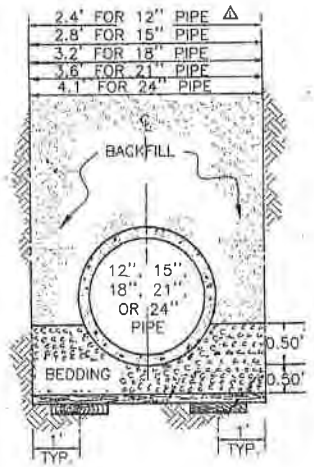
SEWERAGE AND WATER BOARD OF NEW ORLEANS

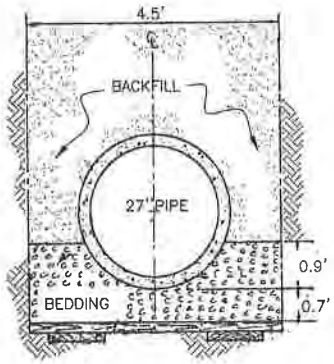
DETAIL OF STANDARD DOUBLE MOUNTABLE CATCH BASIN

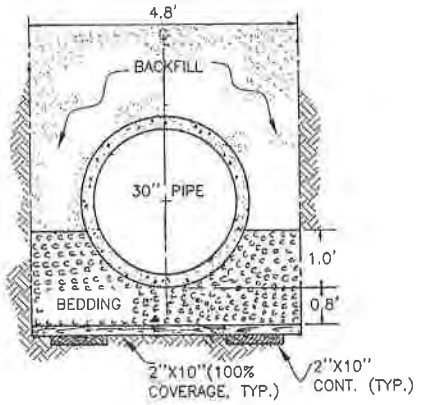
DR. [illegible]
TRC.
DE. J.B.
AP. [illegible]
SCALE AS SHOWN
DATE 8-18-93

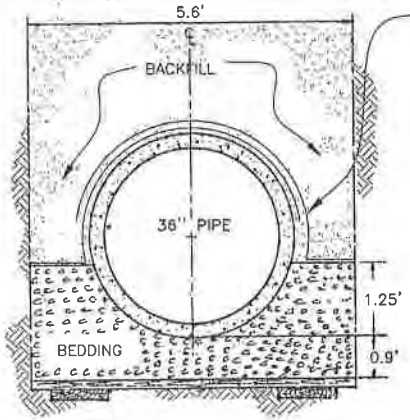
DWG. NO. D–3431–B/6
SET NO. / SHEET NO.

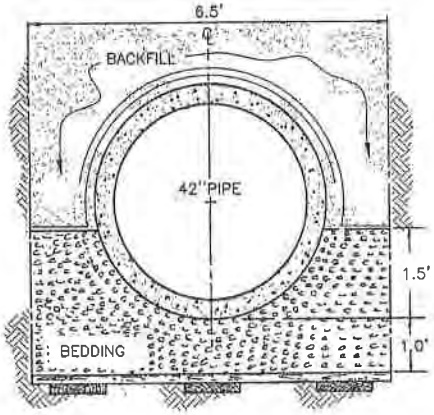
11











CONCRETE PIPE BEDDING SECTIONS FROM 12" TO 42"

SCALE: N.T.S.

⚠2 NOTES:

1. SECTIONS TO BE APPLICABLE FOR SIZE PIPE BEING INSTALLED.
2. FOUNDATION LUMBER SHALL CONSIST OF A CONTINUOUS TRANSVERSE LAYER OF 2" BOARDS (MIN. 8" WIDE) ON 2"X10" SILLS DRIVEN INTO SOIL.
3. BEDDING SHALL BE PUMPED SAND, INSTALLED IN 12" LIFTS AND COMPACTED TO 95% OF MAX. DENSITY FOR PIPES 36" AND GREATER, BEDDING SHALL BE COMPACTED AGGREGATE.
4. BACKFILL MATERIAL TO BE PUMPED SAND INSTALLED IN 12" LIFTS AND COMPACTED TO 95% OF MAX. DENSITY.
5. IF THE WORKING SURFACE OF SOIL BENEATH THE PIPE IS CONSIDERED UNACCEPTABLE BY THE S&WB INSPECTOR, THE SOIL MUST BE REMOVED DOWN TO STABLE AND ACCEPTABLE MATERIAL, AND REPLACED WITH COMPACTED PUMPED SAND.
6. ALL PIPE JOINTS TO BE WRAPPED WITH 2' WIDE FILTER CLOTH WITH 3 FT. MIN. OVERLAP
7. ALL PIPE TO BE RCP CLASS III UNLESS OTHERWISE NOTED.

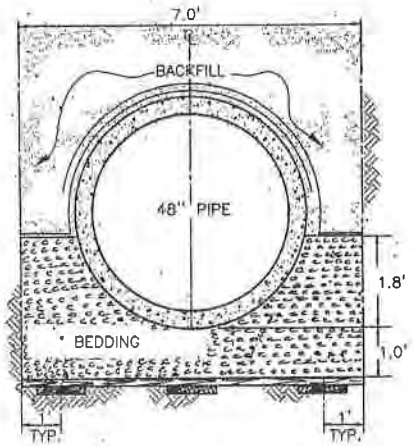
REV.	DATE	DESCRIPTION	BY
⚠2	03-09-07	DELETED, REVISED AND ADDED NOTES	D.M.C.
⚠1	5-4-78	MEASURED AND KEY WATER LOT ADDED KEY PIPE SIZE IN 'A' & 'B' & 3.91 ADDED	A.L.P.

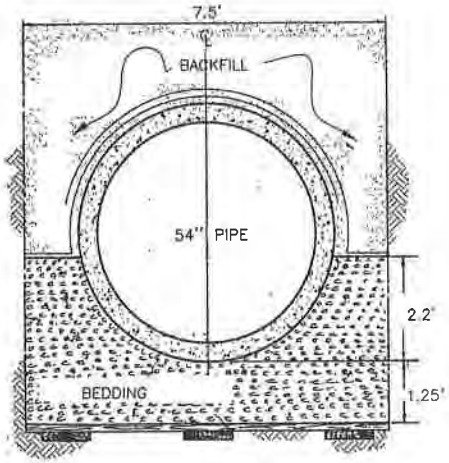
SEWERAGE AND WATER BOARD OF NEW ORLEANS

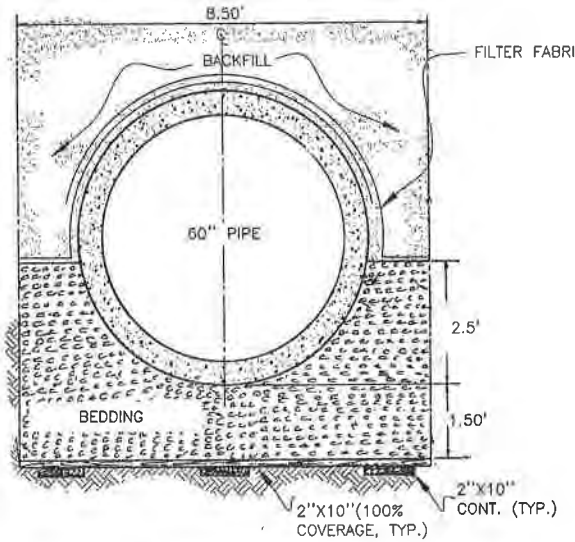
TYPICAL SECTIONS OF CONCRETE PIPE BEDDING FROM 12" TO 42" PIPE

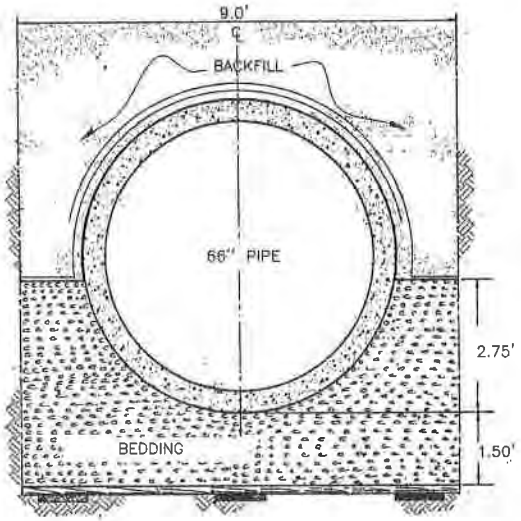
DR. R.P.D
TRC.
CK.
AP.
SCALE GRAPHIC
DATE 11-19-03

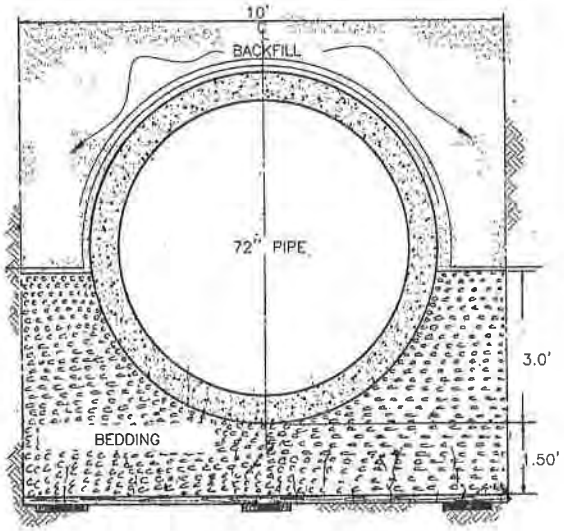
DWG. NO. D-3809
SET NO.
SHEET NO. 1 OF 2











⚠2 NOTE:

1. SECTIONS TO BE APPLICABLE FOR SIZE PIPE BEING INSTALLED.
2. FOUNDATION LUMBER SHALL CONSIST OF A CONTINUOUS TRANSVERSE LAYER OF 2" BOARDS (MIN. 8" WIDE) ON 2"X10" SILLS DRIVEN INTO SOIL.
3. BEDDING SHALL BE COMPACTED AGGREGATE.
4. BACKFILL MATERIAL TO BE PUMPED SAND INSTALLED IN 12" LIFTS AND COMPACTED TO 95% MAX. DENSITY.
5. IF THE WORKING SURFACE OF SOIL BENEATH THE PIPE IS CONSIDERED UNACCEPTABLE BY THE S&WB INSPECTOR, THE SOIL MUST BE REMOVED DOWN TO STABLE AND ACCEPTABLE MATERIAL, AND REPLACED WITH COMPACTED PUMPED SAND.
6. ALL PIPE JOINTS TO BE WRAPPED WITH 2' WIDE FILTER CLOTH WITH 3 FT. MIN. OVERLAP.
7. ALL PIPE TO BE RCP CLASS III UNLESS OTHERWISE NOTED.

CONCRETE PIPE BEDDING SECTIONS FROM 48" TO 72"

SCALE: N.T.S.

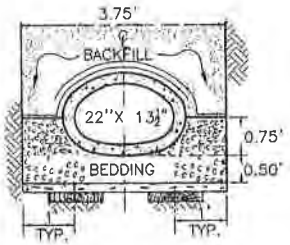
REV.	DATE	DESCRIPTION	BY
2	03-09-07	DELETED, REVISED AND ADDED NOTES	D.MC.
1	2-10-98	DELETED AND REVISED NOTES	K.L.P.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

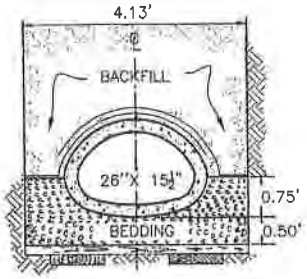
TYPICAL SECTIONS OF CONCRETE PIPE BEDDING FROM 48" TO 72"

DR. R.P.D
TRC.
CK.
AP.
SCALE GRAPHIC
DATE 1-15-82

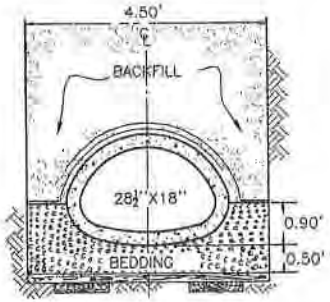
DWG. NO. D-3810
SHEET NO. 2 OF 3



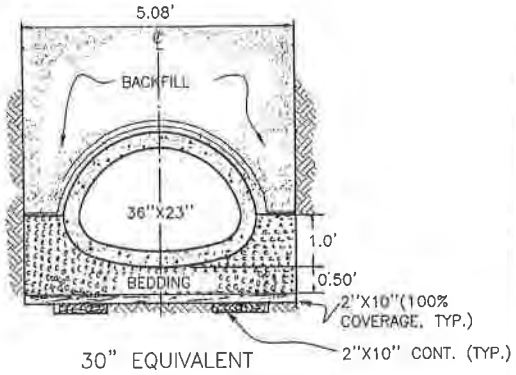
18" EQUIVALENT



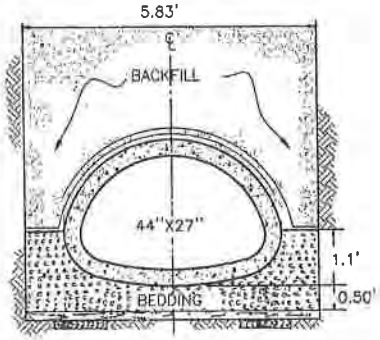
21" EQUIVALENT



24" EQUIVALENT



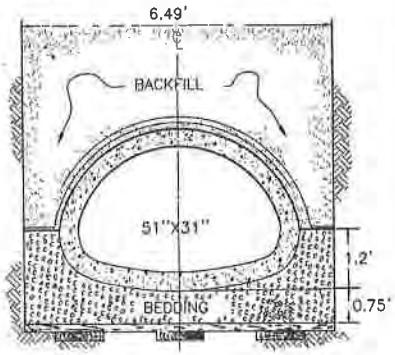
30" EQUIVALENT



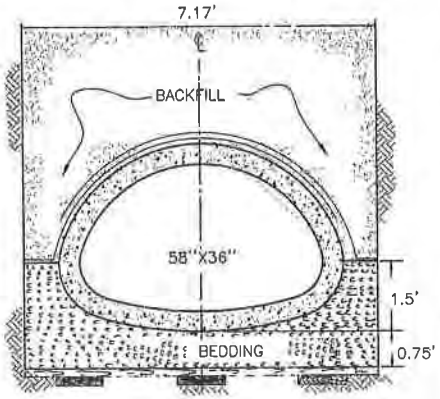
36" EQUIVALENT

⚠2 NOTES:

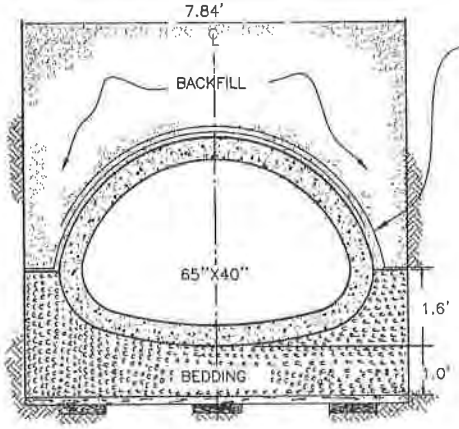
1. SECTIONS TO BE APPLICABLE FOR SIZE PIPE BEING INSTALLED.
2. FOUNDATION LUMBER SHALL CONSIST OF A CONTINUOUS TRANSVERSE LAYER OF 2" BOARDS (MIN. 8" WIDE) ON 2"X10" SILLS DRIVEN INTO SOIL.
3. BEDDING SHALL BE COMPACTED AGGREGATE.
4. BACKFILL MATERIAL TO BE PUMPED SAND INSTALLED IN 12" LIFTS AND COMPACTED TO 95% OF MAX. DENSITY.
5. IF THE WORKING SURFACE OF SOIL BENEATH THE PIPE IS CONSIDERED UNACCEPTABLE BY THE S&WB INSPECTOR, THE SOIL MUST BE REMOVED DOWN TO STABLE AND ACCEPTABLE MATERIAL, AND REPLACED WITH COMPACTED PUMPED SAND.
6. ALL PIPE JOINTS TO BE WRAPPED WITH 2' WIDE FILTER CLOTH WITH 3 FT. MIN OVERLAP.
7. ALL PIPE TO BE RCP CLASS III UNLESS OTHERWISE NOTED.



42" EQUIVALENT



48" EQUIVALENT



54" EQUIVALENT

CONCRETE PIPE BEDDING SECTIONS FROM 22"X13 1/2" TO 65"X40"

SCALE: N.T.S.

REV.	DATE	DESCRIPTION	BY
⚠	03-08-07	DELETED, REVISED AND ADDED NOTES	D.MC.
⚠	8-27-79	DELETED AND ADDED REV. NOTES	A.L.P.

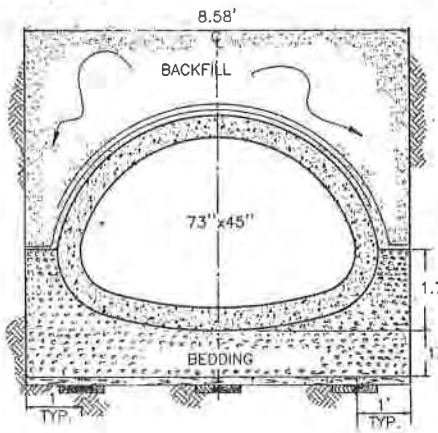
SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SECTIONS OF REINFORCED CONCRETE ARCH PIPE BEDDING FROM 22"X13 1/2" TO 65"X40"

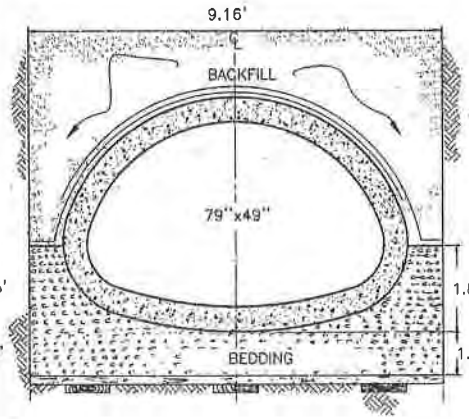
DR.	N.P.D.
TRC.	
CK.	
AP.	
SCALE	AS NOTED
DATE	10-28-68

DWG. NO. D-3933

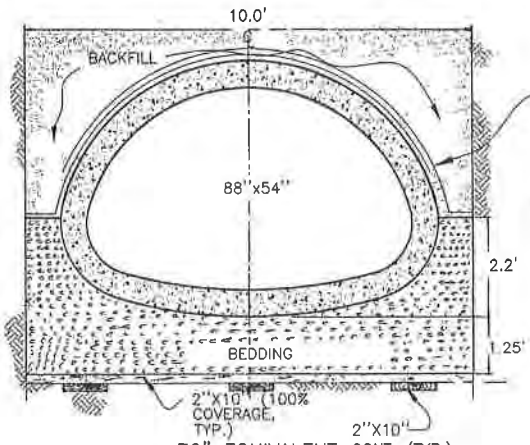
SHEET NO. 1 OF 3



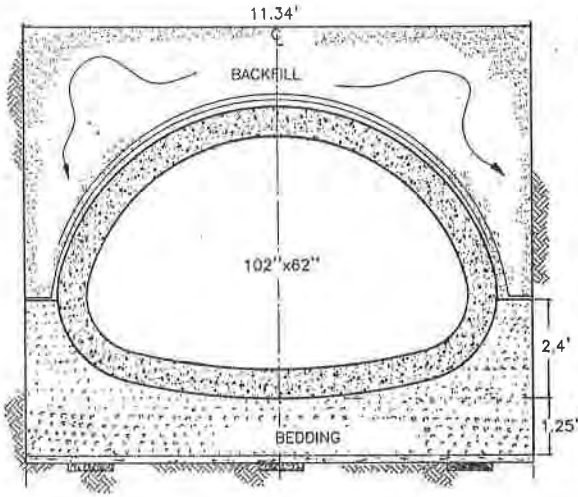
60" EQUIVALENT



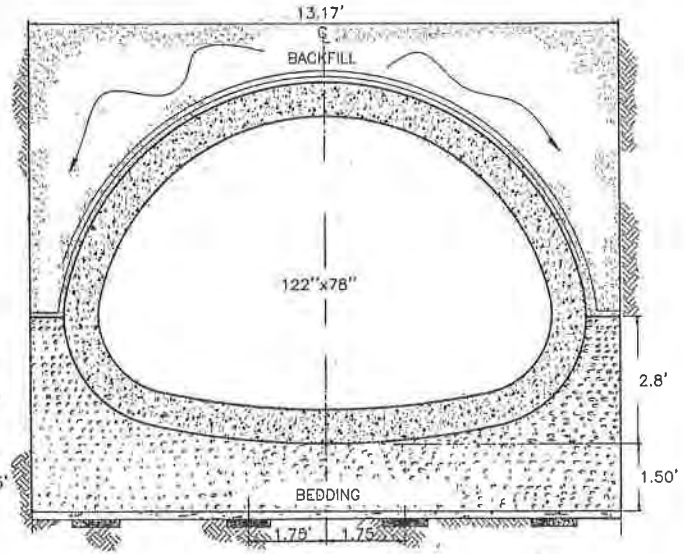
66" EQUIVALENT



72" EQUIVALENT



84" EQUIVALENT



96" EQUIVALENT

CONCRETE PIPE BEDDING SECTIONS FROM 73"X45" TO 122"X78"

SCALE: N.T.S.

⚠2 NOTES:

1. SECTIONS TO BE APPLICABLE FOR SIZE PIPE BEING INSTALLED.
2. FOUNDATION LUMBER SHALL CONSIST OF A CONTINUOUS TRANSVERSE LAYER OF 2" BOARDS (MIN. 8" WIDE) ON 2"X10" SILLS DRIVEN INTO SOIL.
3. BEDDING SHALL BE COMPACTED AGGREGATE.
4. BACKFILL MATERIAL TO BE PUMPED SAND INSTALLED IN 12" LIFTS AND COMPACTED TO 95% OF MAX. DENSITY.
5. IF THE WORKING SURFACE OF SOIL BENEATH THE PIPE IS CONSIDERED UNACCEPTABLE BY THE S&WB INSPECTOR, THE SOIL MUST BE REMOVED DOWN TO STABLE AND ACCEPTABLE MATERIAL, AND REPLACED WITH COMPACTED PUMPED SAND.
6. ALL PIPE JOINTS TO BE WRAPPED WITH 2' WIDE FILTER CLOTH WITH 3 FT. MIN. OVERLAP.
7. ALL PIPE TO BE RCP CLASS III UNLESS OTHERWISE NOTED.

REV.	DATE	DESCRIPTION	BY
⚠3	03-09-97	DELETED, REVISED AND ADDED NOTES	D.MC.
⚠2	8-27-79	DELETED AND ADDED REV NOTES	A.L.P.

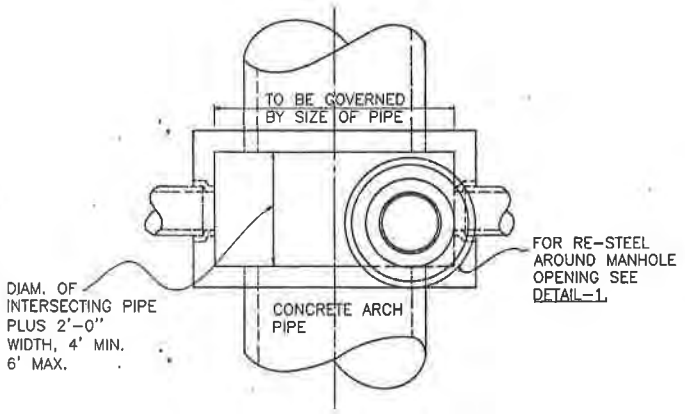
SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SECTIONS OF REINFORCED CONCRETE ARCH PIPE BEDDING (FROM 73" X 45" TO 122" X 78")

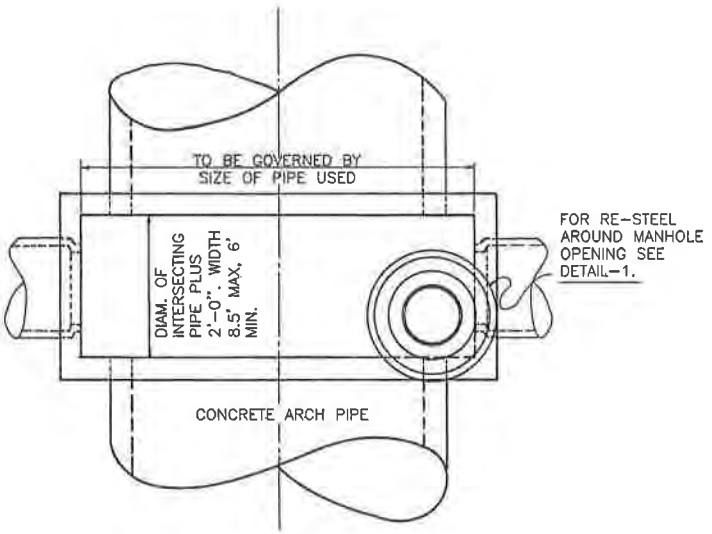
DR. R.P.D.
TR/C.
CK.
AP.
SCALE DRAWING
DATE 10-26-66

DWG. NO. D-3934
SHEET NO. 2 OF 2

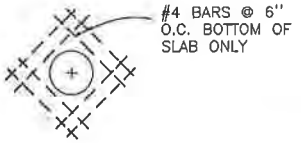
15



PLAN VIEW



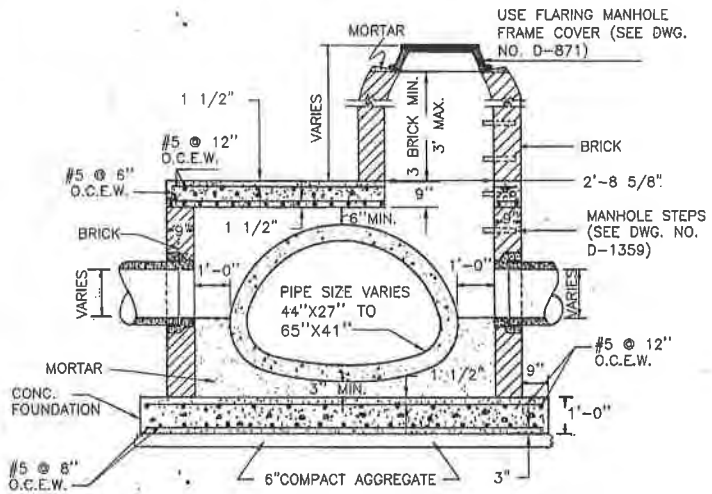
PLAN VIEW



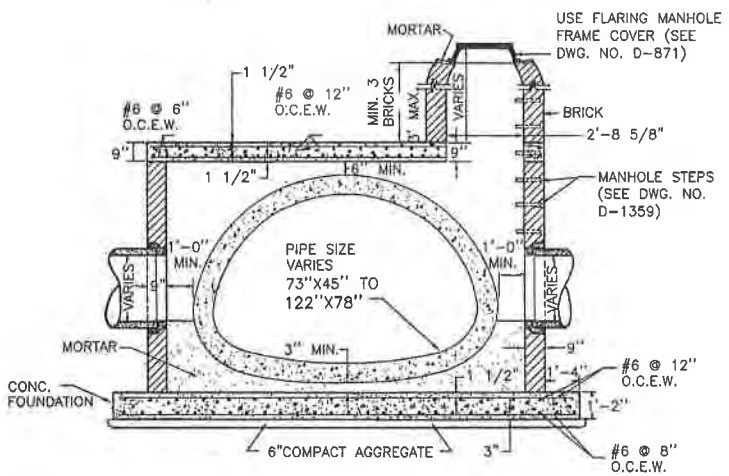
DETAIL-1

⚠NOTES:

1. FOR ARCH PIPE SIZES SMALLER THAN SHOWN ON THIS DRAWING, USE STANDARD ROUND MANHOLE AS INDICATED ON DWG. NO. D-870.
2. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.
3. INSIDE & OUTSIDE BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH WATERPROOFING COMPOUND FOR THICKNESS OF 1/4" IN ACCORDANCE WITH SPECIFICATION.



SECTION VIEW



SECTION VIEW

SCALE: N.T.S.

REV.	DATE	DESCRIPTION	BY
⚠	03-09-07	DELETED, REVISED AND ADDED NOTES	D.M.C.
2	7-11-88	GENERAL REVISION	R.L.L.
1	10-7-76	REV. DET. SMALLER M.H.	J.L.P.

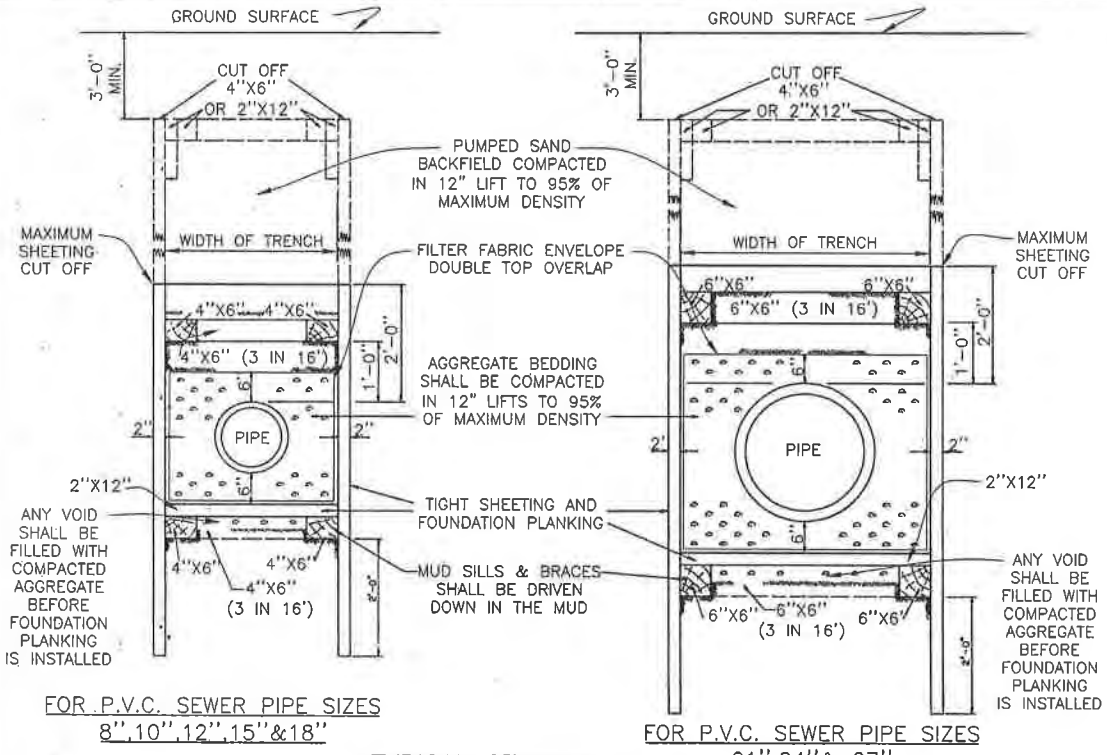
SEWERAGE AND WATER BOARD OF NEW ORLEANS

DETAIL OF STANDARD MANHOLES FOR LARGE CONCRETE ARCH PIPE

DES. R.P.O
THC.
CK.
AP.
SCALE GRAPHIC
DATE 11-10-88

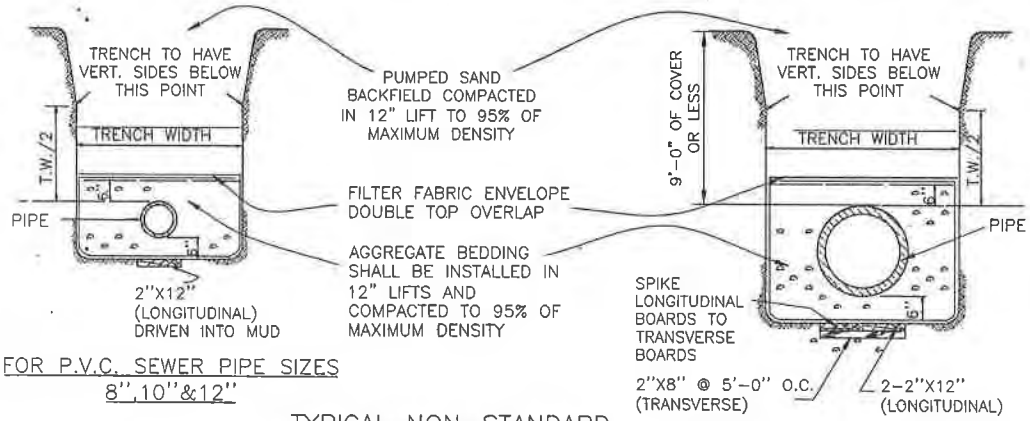
DWG. NO. D-3937
SHEET NO.

16



TYPICAL STANDARD SHEETING TRENCH SECTION

N. T. S.



TYPICAL NON-STANDARD OPEN TRENCH SECTION

N. T. S.

NOTES

1. CONTRACTOR SHALL USE STANDARD SHEETING, BRACING AND FOUNDATION LUMBER AS SHOWN ON THIS DRAWING FOR THE FOLLOWING CONDITIONS:
   a. WHEN THE COVER OVER THE PIPE EXCEEDS NINE (9) FEET.
   b. WHEN IN THE OPINION OF THE S&WB ENGINEER, TRENCH CONDITIONS DICTATE THAT STANDARD SHEETING BRACING AND FOUNDATION LUMBER ARE REQUIRED.
2. WHEN STANDARD SHEETING, BRACING AND FOUNDATION LUMBER ARE NOT REQUIRED, THE NONSTANDARD OPEN TRENCH SECTION SHOWN ON THIS DRAWING SHALL BE USED.
3. ANY SHEETING AND BRACING SHOWN ON THIS DRAWING IS INTENDED FOR PROTECTION OF THE PIPE, AFTER INSTALLATION IS COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR DESIGN AND IMPLEMENTATION FOR ANY SHEETING AND/OR BRACING REQUIRED FOR THE SAFETY OF HIS EMPLOYEES AND TO PROTECT HIS OPERATIONS DURING CONSTRUCTION.
4. ANY ADDITIONAL SHEETING DRIVEN BELOW THE "MAXIMUM SHEETING CUTOFF" SHOWN ON THE DRAWING MUST BE LEFT IN PLACE.
5. STANDARD SHEETING AND BRACING SHALL BE INSTALLED BY FIRST DRIVING THE WOOD SHEETING. THEN THE MUD SILLS SHALL BE DRIVEN INTO THE SOIL, PROPERLY BRACED, AND ALL VOIDS FILLED WITH COMPACTED AGGREGATE BEFORE FOUNDATION LUMBER PLANKING IS INSTALLED. THE STANDARD BOTTOM SHALL NOT BE INSTALLED AS A PREFABRICATED BOX.
6. MAXIMUM TRENCH WIDTH ALLOWED SHALL BE FOUR FEET FOR 8" AND 10" PIPE. FOR LARGER DIAMETER PIPE, THE MAXIMUM TRENCH WIDTH ALLOWED SHALL BE THREE FEET PLUS THE OUTSIDE DIAMETER OF THE PIPE.
7. IF THE WORKING SURFACE OF SOIL BENEATH THE PIPE IS CONSIDERED UNACCEPTABLE, BY THE S&WB ENGINEER, THE SOIL MUST BE REMOVED DOWN TO STABLE AND ACCEPTABLE MATERIAL, AND REPLACED WITH COMPACTED PUMPED SAND.
8. THE CONTRACTOR SHALL NOT USE NAILS OR SPIKES TO HOLD SHEETING OR BRACING BELOW PIPE.

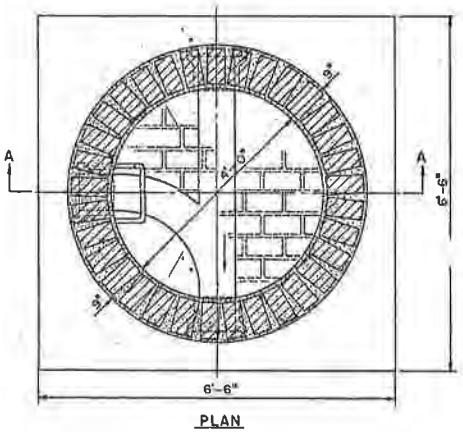
REV.	DATE	DESCRIPTION	BY
A	03-09-07	GENERAL REVISIONS	D.MC.
B	5-15-84	DWG. UPDATED	BHP

SEWERAGE AND WATER BOARD OF NEW ORLEANS

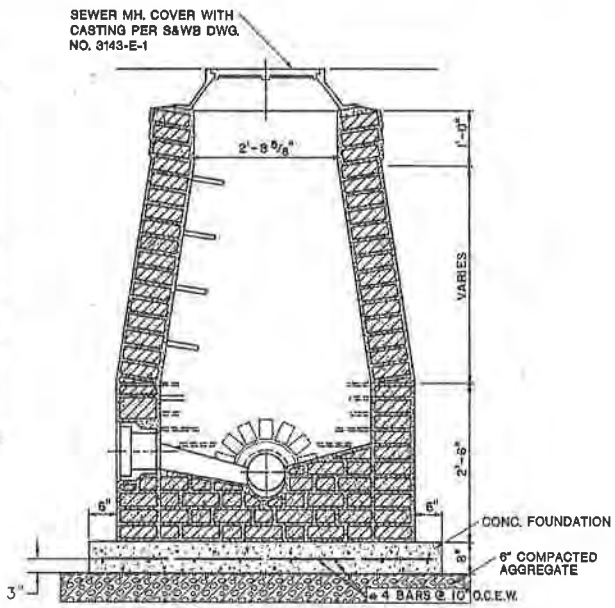
TYPICAL STANDARD AND NON STANDARD SHEETING AND OPEN TRENCH SECTIONS FOR SEWER PIPE INSTALLATION

DR. BHP
TRC
CK.
AP. [illegible]
SCALE NONE
DATE 5-15-84

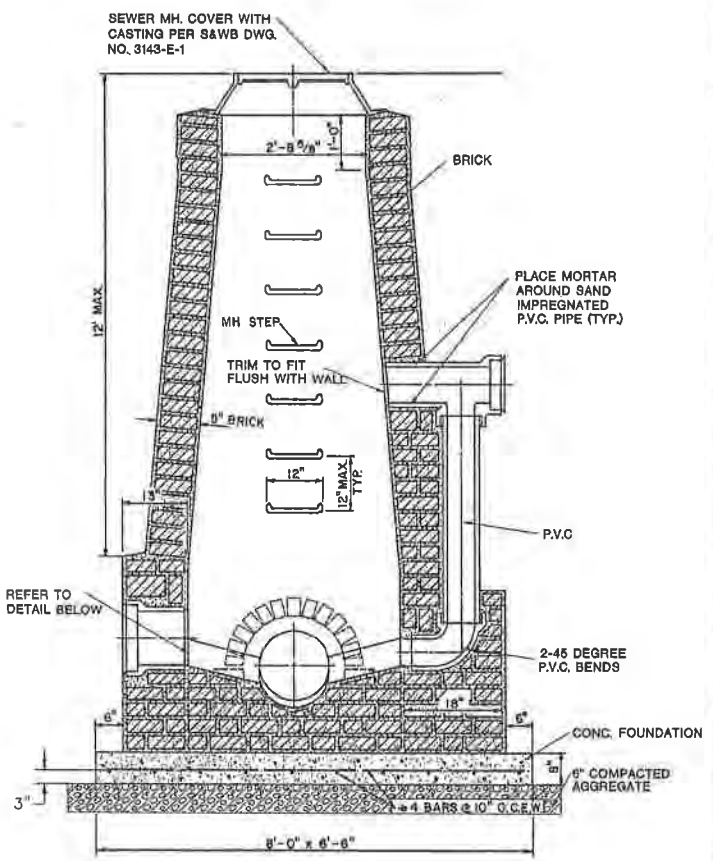
DWG. NO. 4697-E5-A
SET NO.
SHEET NO.



PLAN

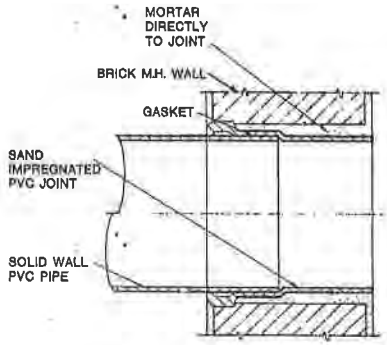


SECTION A-A
TYPICAL



SECTION OF SEWER DROP MANHOLE

N. T. S.



BRICK WALL DETAIL

N. T. S.

NOTES:

1. MANHOLE WALL THICKNESS IS 9" TO A DEPTH OF 12' AND 13" THICK BELOW 12' DEPTH.
2. MANHOLES THAT EXCEED 17' IN DEPTH SHALL USE A 10" CONCRETE SLAB IN LIEU OF AN 8" CONCRETE SLAB.
3. SEWER MANHOLE WALLS SHALL BE MADE ADEQUATELY RESISTANT TO HARSH AGGRESSIVE CHEMICALS BY EITHER AN APPROVED CONCRETE BATCH ADDITIVE OR PROTECTIVE WATERPROOFING COMPOUND.
4. A DROP CONNECTION SHALL BE CONSTRUCTED WHERE THE INFLOW INVERTS ARE 18" OR MORE ABOVE THE OUTFLOW INVERTS.
5. REFERENCE DWG. NO. D-1359 FOR STEPS.
6. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3,000 P.S.I. IN 28 DAYS.

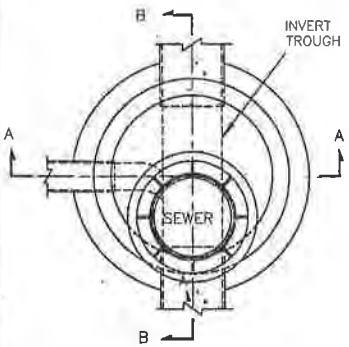
SCALE: N.T.S.

REV.	DATE	DESCRIPTION	BY

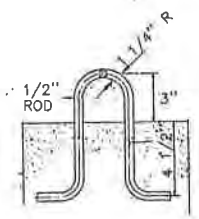
SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SEWER BRICK MANHOLE AND DROP MANHOLE

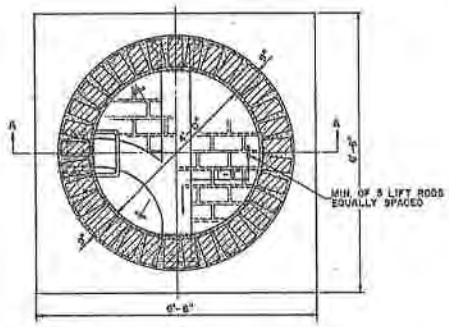
DR. D. McCRAY	GENERAL SUPERINTENDENT
TRC.	
CK. M. JOHNSON	
AP. J. BECKER	DWG. NO. 6178-B-6
SCALE NONE	
DATE 03-09-07	SHEET NO.



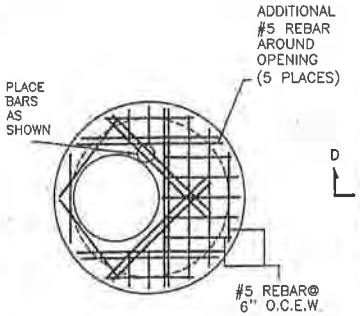
PLAN VIEW



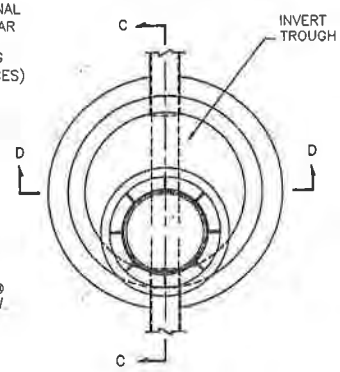
LIFTING EYE DETAIL



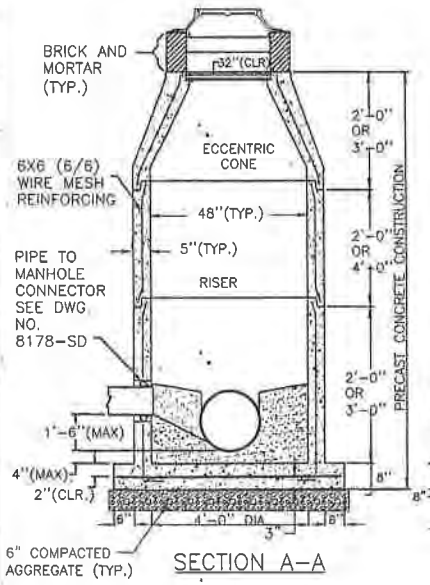
PLAN OF MANHOLE TROUGH



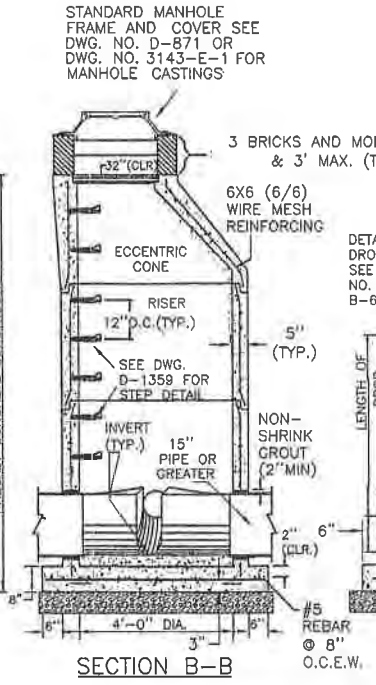
CONCRETE TOP SLAB PLAN



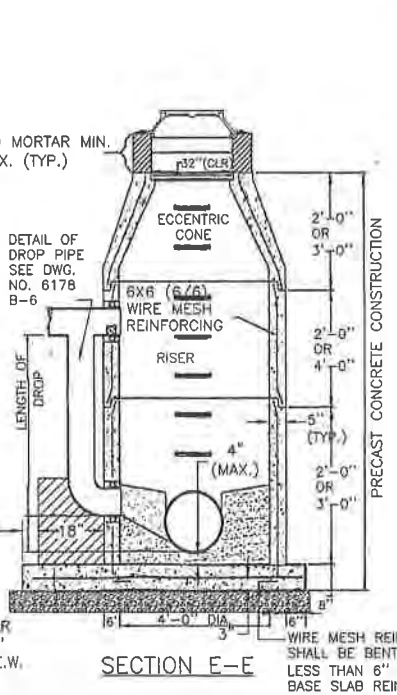
PLAN VIEW



SECTION A-A



SECTION B-B

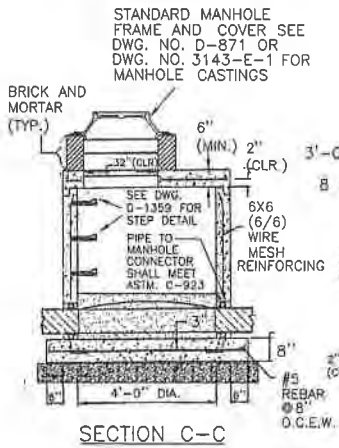


SECTION E-E

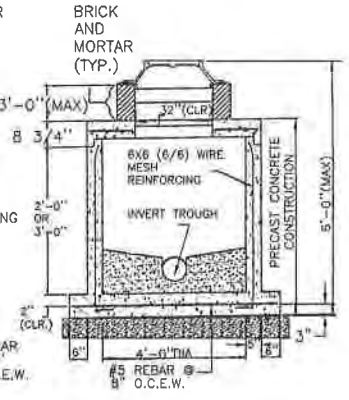
STANDARD MANHOLE DETAIL

STANDARD DROP MANHOLE DETAIL

SCALE: N.T.S.



SECTION C-C



SECTION D-D

NOTES:

1. REINFORCING STEEL TO MEET A.S.T.M. A-615 GRADE 60. CONCRETE TO BE 4000 P.S.I. IN 28 DAYS, TYPE II CEMENT, REINFORCING TO MEET A.A.S.H.O. HD-40.
2. JOINTS BETWEEN PRECAST UNITS WILL BE SEALED WITH A RUBBER GASKET TO MEET A.S.T.M. C-443.
3. PRECAST CONCRETE STRUCTURE TO MEET A.S.T.M. C-478.
4. 6"-15" PIPE, USE RESILIENT BOOT CONNECTOR
5. 16" OR LARGER PIPE, USE MIN. 2" NON-SHRINK GROUT.
6. MANHOLES THAT EXCEED 17' IN DEPTH SHALL USE A 10" THICK BASE IN LIEU OF AN 8" THICK BASE.
7. SEWER MANHOLE WALLS SHALL BE MADE ADEQUATELY RESISTANT TO HARSH AGGRESSIVE CHEMICALS BY EITHER AN APPROVED CONCRETE BATCH ADDITIVE OR PROTECTIVE WATERPROOFING COMPOUND.
8. A DROP CONNECTION SHALL BE CONSTRUCTED WHERE THE INFLOW INVERTS ARE 18" OR MORE ABOVE THE OUTFLOW INVERTS.
9. REFERENCE DWG. NO. D-1359 FOR STEPS.

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

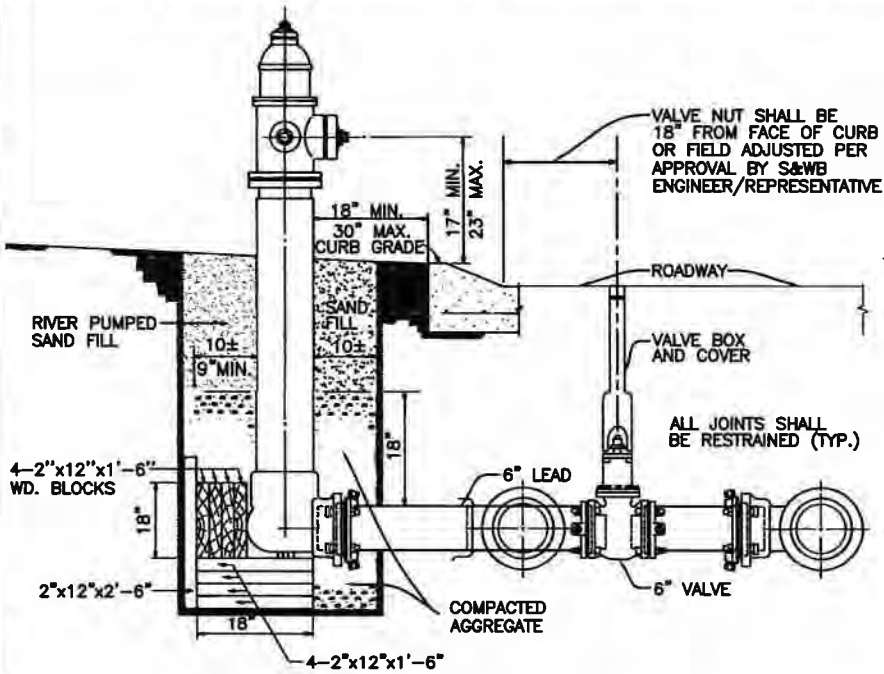
TYPICAL PRE-CAST CONCRETE MANHOLE

DR. D. McCRAY
TRC.
CK. M. JOHNSTON
AP. J. BECKER
SCALE NONE
DATE 03-IN-01

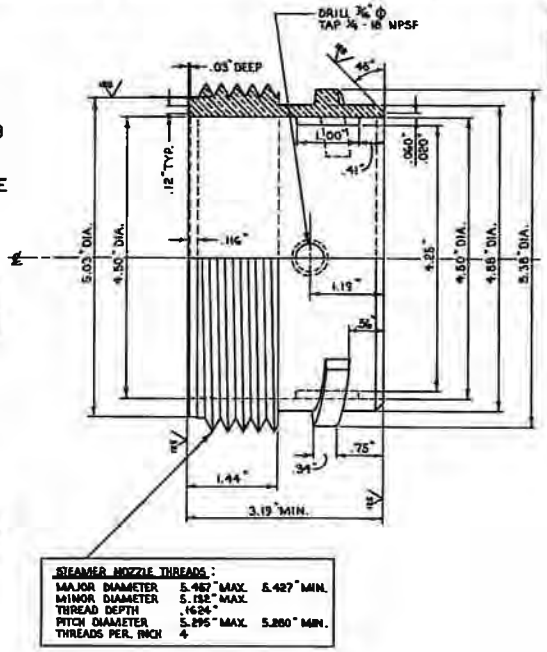
GENERAL SUPERINTENDENT

DWG. NO. 6178-B-6A

SET NO.
SHEET NO.

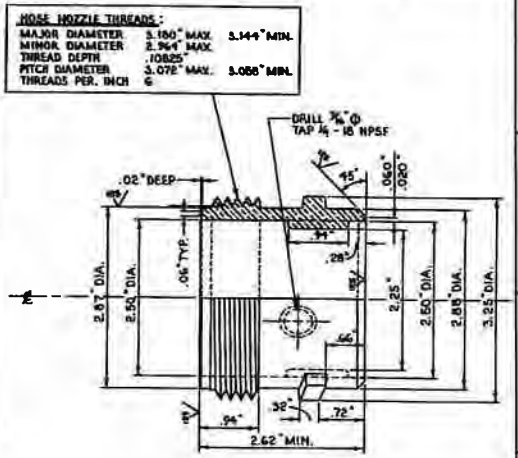


⚠4 TYPICAL HYDRANT SETTING
N. T. S.



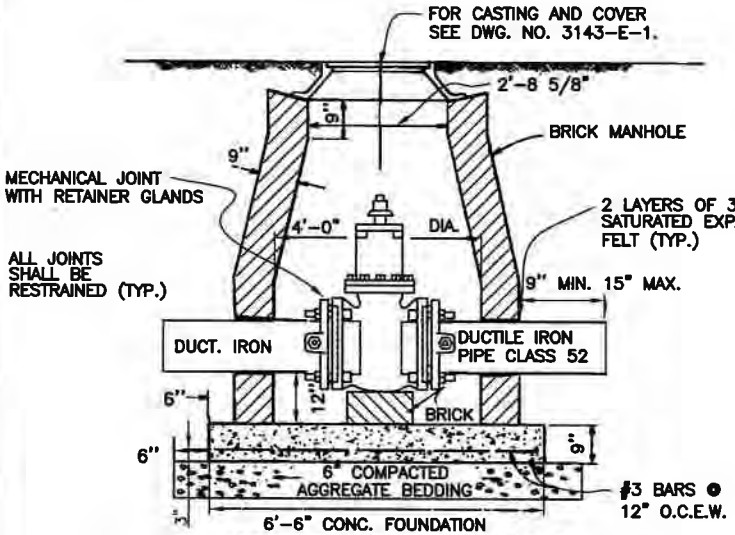
STEAMER NOZZLE THREADS :		
MAJOR DIAMETER	5.487" MAX.	5.427" MIN.
MINOR DIAMETER	5.138" MAX.	
THREAD DEPTH	.1624"	
PITCH DIAMETER	5.295" MAX.	5.280" MIN.
THREADS PER INCH	4	

HOSE NOZZLE THREADS :		
MAJOR DIAMETER	3.180" MAX.	3.144" MIN.
MINOR DIAMETER	2.964" MAX.	
THREAD DEPTH	.10825"	
PITCH DIAMETER	3.078" MAX.	3.058" MIN.
THREADS PER INCH	6	

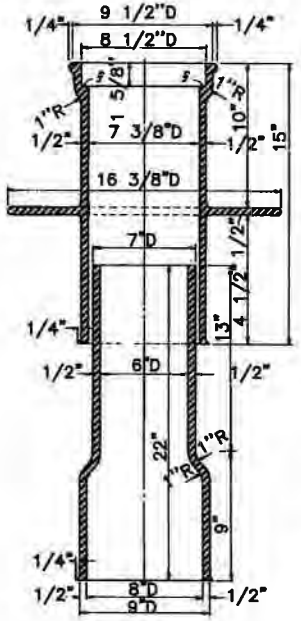


⚠10 NOTES:

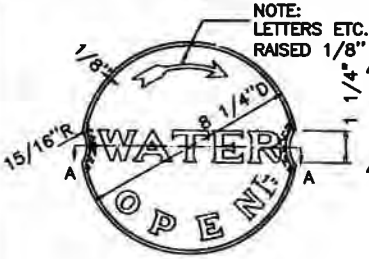
1. $\mathcal{f}$ = MACHINED SURFACE
2. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES & INVERTS TO BE MORTARED WITH WATERPROOFING COMPOUND, THICKNESS OF 1/4" IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
3. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.
4. ⚠3 VALVES 4" TO 12" SHALL BE S&WB R.D. WOOD GATE VALVES (SEE S&WB DWG. NO. 11897-W-62) OR AMERICAN R.D. ROTATING GATE DISC VALVE C 500. VALVES 16" AND LARGER SHALL BE AMERICAN R/D GATE VALVES.
5. ⚠3 HYDRANTS SHALL BE 5" BREAKAWAY FIRE HYDRANT BRONZE TRIM (SEE S&WB DWG. NO. 11825-W-62), 5 1/4" AMERICAN DARLING FIRE HYDRANT B-62-B, S&WB MUELLER HYDRANT A473 OR K81D GUARDIAN HYDRANT: KENNEDY VALVE (DWG NO. 80783 NOLA). ⚠9
6. ALL JOINTS SHALL BE RESTRAINED.
7. VALVE BOX FRAME & COVER SHALL CONFORM TO EAST JORDAN IRON WORKS, INC. V-8451 VALVE BOX FRAME AND COVER OR APPROVED EQUAL.



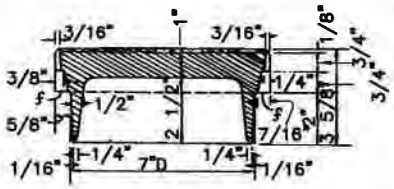
⚠1 WATER VALVE MANHOLE
(FOR SIZES 4" THRU 12")
N. T. S.



SECTION OF VALVE BOX
(FOR USE WITH METER VAULTS ONLY)
N. T. S.



PLAN



SECTION A-A

VALVE BOX COVER
N. T. S.

REV.	DATE	DESCRIPTION	BY
6	10-25-18	REVISION TO NOTE #5	D.M.D.
5	10-25-13	REVISED FIRE HYDRANT	D.M.D.
4	04-16-13	REVISION TO NOTES #4 & #5	D.M.D.
3	03-05-07	DISTANCE OF WATER MANHOLE, CASTING AND LARGE VALVE MANHOLE FRAME & COVER DELETED.	D.M.D.
2	03-05-07	DRAWING UPDATED	D.M.D.
1	03-05-07	DELETED, REVISED AND ADDED NOTES	D.M.D.
0	9-10-52	DRAFTING ATTENTS	A.A.F.

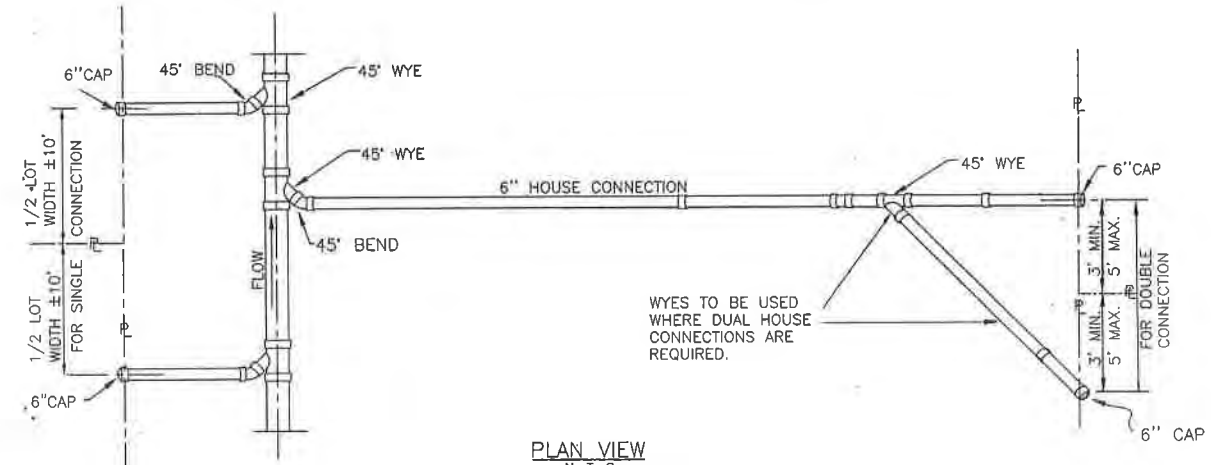
SEWERAGE AND WATER BOARD OF NEW ORLEANS

HYDRANT SETTING, DETAILS OF VALVE BOX AND COVER, AND VALVE MANHOLE

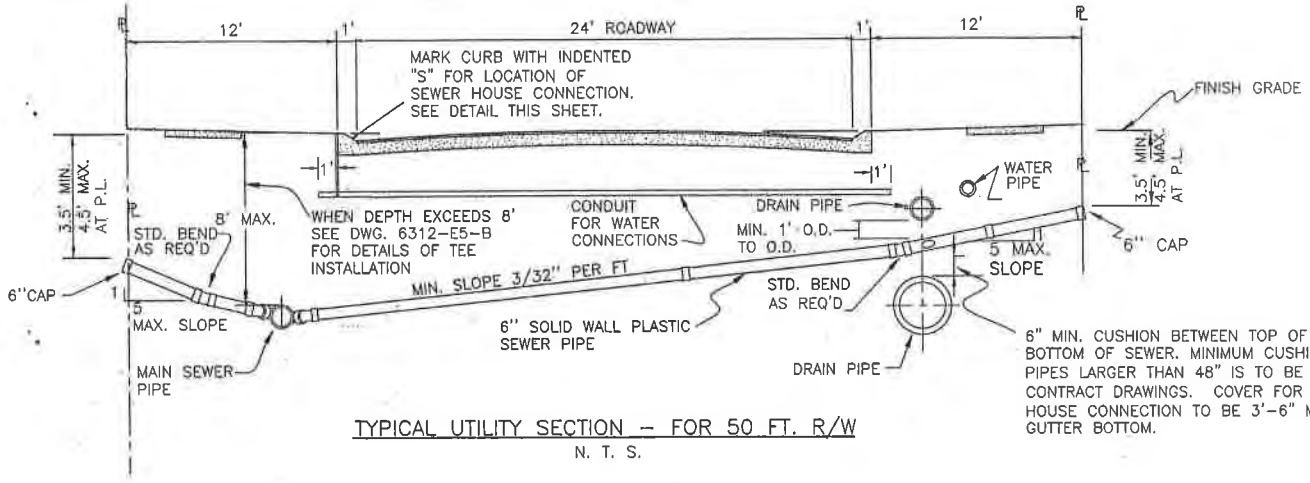
DWG. NO. 6179-F-2

NOTES:

1. THE LOCATION OF THE SEWER SERVICE CONNECTIONS SHALL BE IMPRINTED IN THE CURB WITH AN "S". (SEE DETAIL)
2. THE USE OF DOUBLE WYES ARE NOT ALLOWED.

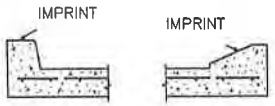


PLAN VIEW
N. T. S.



TYPICAL UTILITY SECTION – FOR 50 FT. R/W
N. T. S.

LETTER "S" TO BE 1/4" DEEP



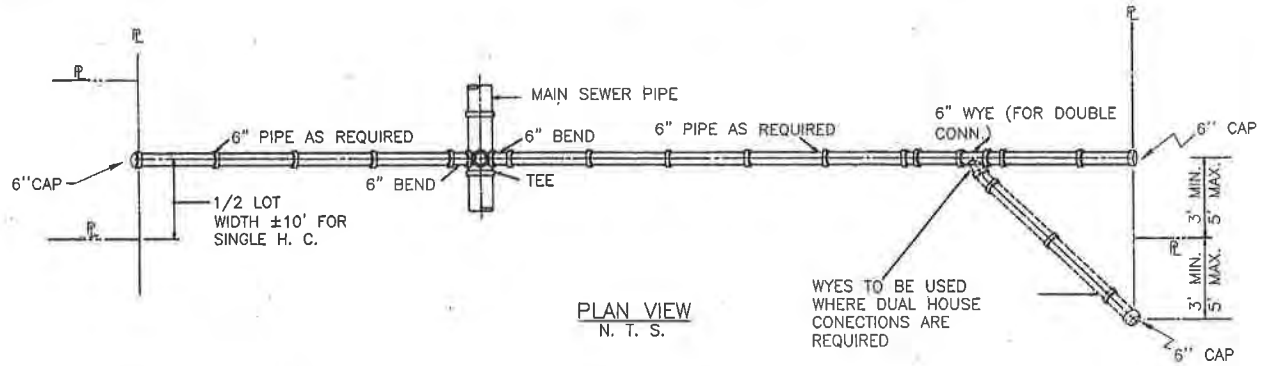
DETAIL OF SEWER LETTERS TO BE IMPRINTED IN CURB
N. T. S.

REV.	DATE	DESCRIPTION	BY

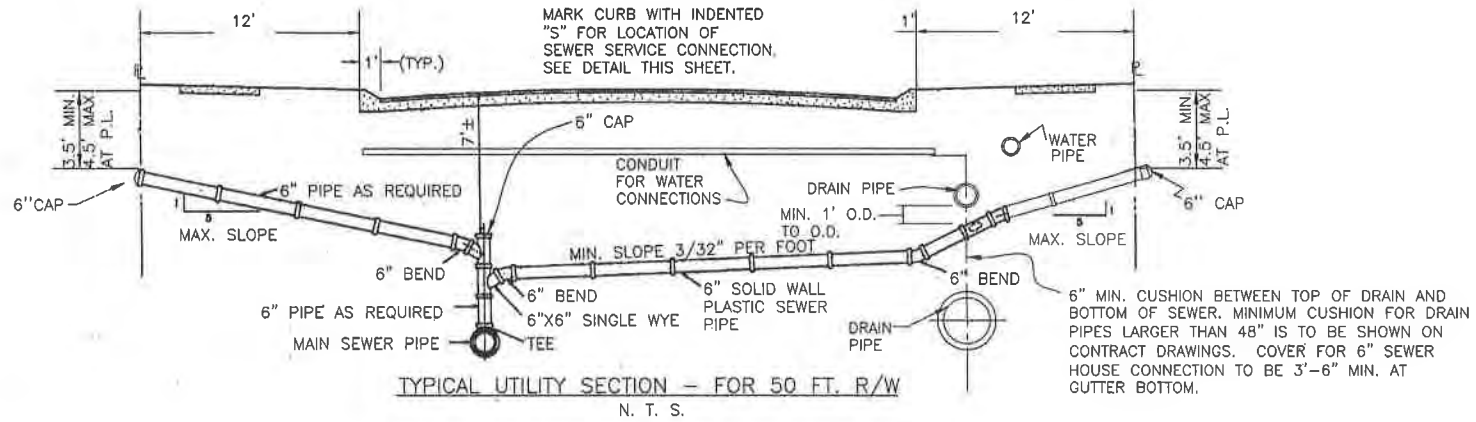
SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SEWER SERVICE CONNECTION FOR SEWER MAIN LESS THAN OR EQUAL TO 8' DEEP

DR. D. McCRAY	GENERAL SUPERINTENDENT
TRC.	
CK. M. JOHNSON	
AP. J. BECKER	DWG. NO. 6312-E5-A
SCALE NONE	
DATE 03-02-07	SET NO. SHEET NO.

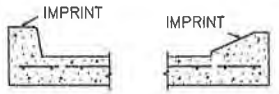


PLAN VIEW
N. T. S.



TYPICAL UTILITY SECTION – FOR 50 FT. R/W
N. T. S.

LETTER "S" TO BE 1/4" DEEP



DETAIL OF SEWER LETTERS TO BE IMPRINTED IN CURB
N. T. S.

NOTES:

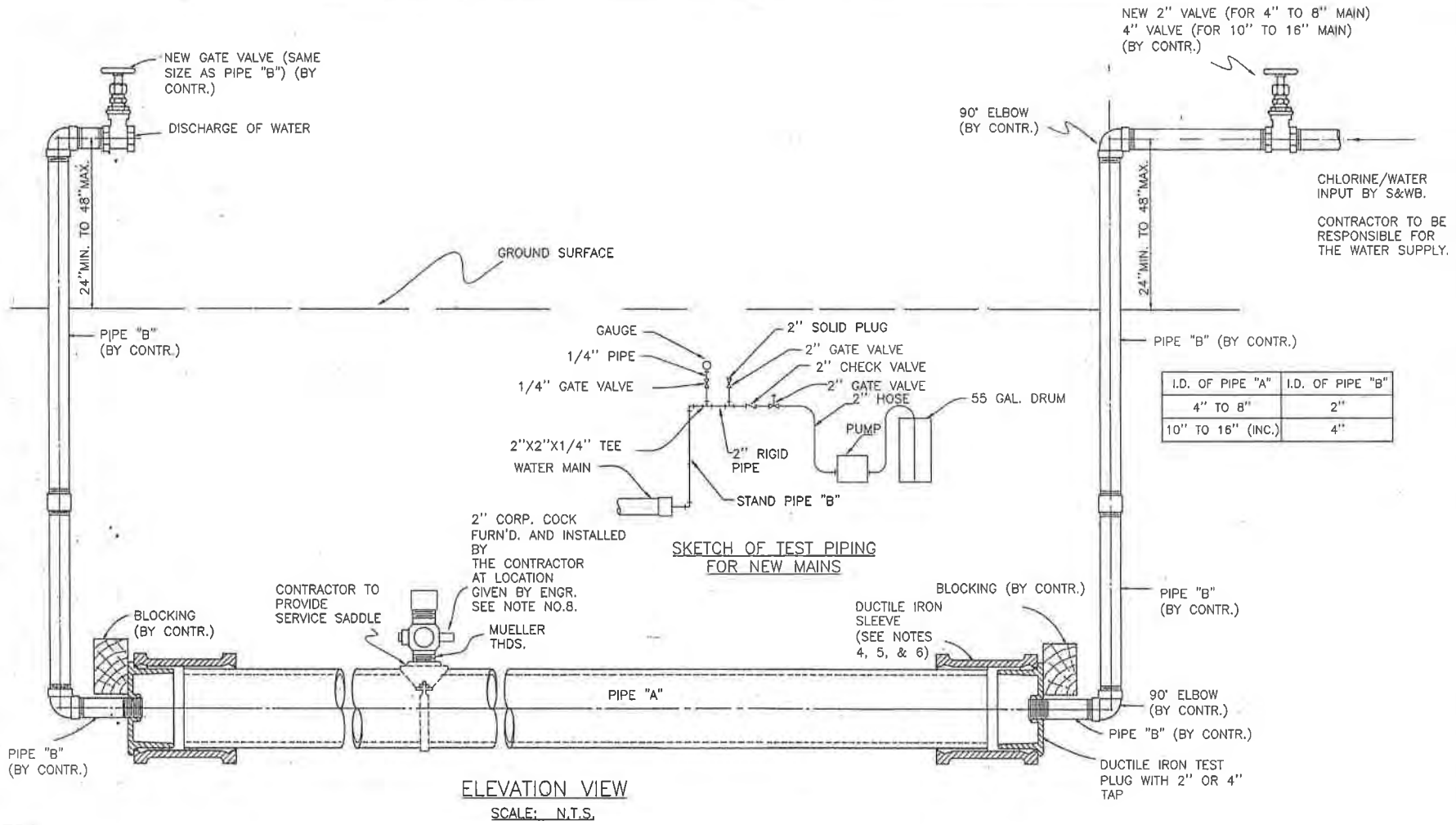
1. THE LOCATION OF THE SEWER SERVICE CONNECTIONS SHALL BE IMPRINTED IN THE CURB WITH AN "S". (SEE DETAIL)
2. FOR SEWER MAIN INSTALLATION SEE S&WB DWG. NO. 4697-E-5-A.
3. THE USE OF DOUBLE WYES ARE NOT ALLOWED.

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SEWER SERVICE CONNECTION FOR SEWER MAIN GREATER THAN 8' DEEP

DR. D. McCRAY	GENERAL SUPERINTENDENT
TRC.	
CK. M. JOHNSON	
AP. J. BECKER	DWG. NO. 6312-E5-B
SCALE NONE	
DATE 03-09-07	SET NO. / SHEET NO.



I.D. OF PIPE "A"	I.D. OF PIPE "B"
4" TO 8"	2"
10" TO 16" (INC.)	4"

SKETCH OF TEST PIPING FOR NEW MAINS

ELEVATION VIEW

SCALE: N.T.S.

NOTES:

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL THE FOLLOWING:
   a. 2" MIN. TEMPORARY WATER SUPPLY, (4" SUPPLY ON 10" TO 16")
   b. ALL PIPE, VALVES, AND FITTINGS TO THE TEST PLUG AT THE MAIN AS SHOWN.
   c. 2" CORP. COCK FOR INJECTION OF CHLORINE IN 16" MAINS ONLY.
   d. TEMPORARY STAND PIPES ON ALL VENT COCKS IN THE SYSTEM EXTENDING 2' TO 4' ABOVE GRADE AND TERMINATING WITH AN ELBOW AND VALVE.
2. PIPE "B" AND ALL FITTINGS CONNECTING TO PIPE "B" SHALL BE STAINLESS STEEL OR NEW GALV. IRON.
3. THE CONTRACTOR SHALL OPEN AND CLOSE ALL VALVES TO EXPEL THE AIR AND SHALL REMOVE THE VENT PIPES AND CLOSE THE COCKS WHEN NOTIFIED BY THE S&WB ENGINEER.
4. FOR DUCTILE IRON PIPE, USE DUCTILE IRON SLEEVE AND TAP PLUG (2" OR 4" AS SHOWN) OR FITTINGS AS SPECIFIED FOR P.V.C. PIPE.
5. FOR P.V.C. PIPE USE A DUCTILE IRON CAP WITH RUBBER RING GASKET, FOLLOWER GLAND, NUTS, AND BOLTS.
6. ALL MATERIALS AND LABOR REQUIRED FOR PRESSURE TEST, TO BE FURNISHED BY CONTRACTOR.
7. THE CONTRACTOR SHALL USE 2" MUELLER H-10003 CORPORATION COCK OR APPROVED EQUAL.
8. ON COMPLETION OF THE CHLORINATION PROCESS AND AT MAKING OF TIE-INS, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY PIPING, DISHED HEADS, SLEEVES, PLUGS, VALVES, ETC. WHICH SHALL REMAIN THE CONTRACTOR'S PROPERTY EXCEPT WHERE NOTED ON CONTRACT DRAWINGS.

REV.	DATE	DESCRIPTION	BY
3	03-08-07	REVISED NOTES AND DRAWING	D.MC.
2	5-27-99	NOTE NO. 8 - REDUCER	BHP
1	4-3-97	ALTERNATE TEST PIPING	BHP
0	8-25-83	TEST CONN. REVISED	BHP

SEWERAGE AND WATER BOARD OF NEW ORLEANS

TEST CONNECTION ON NEW WATER MAINS (4" TO 16"), FLUSHING AND CHLORINATION

DR. BHP
TRC
CHK
AP.
SCALE - NONE
DATE 7-13-83

DWG. NO. 7004-W

SET NO. | SHEET NO.

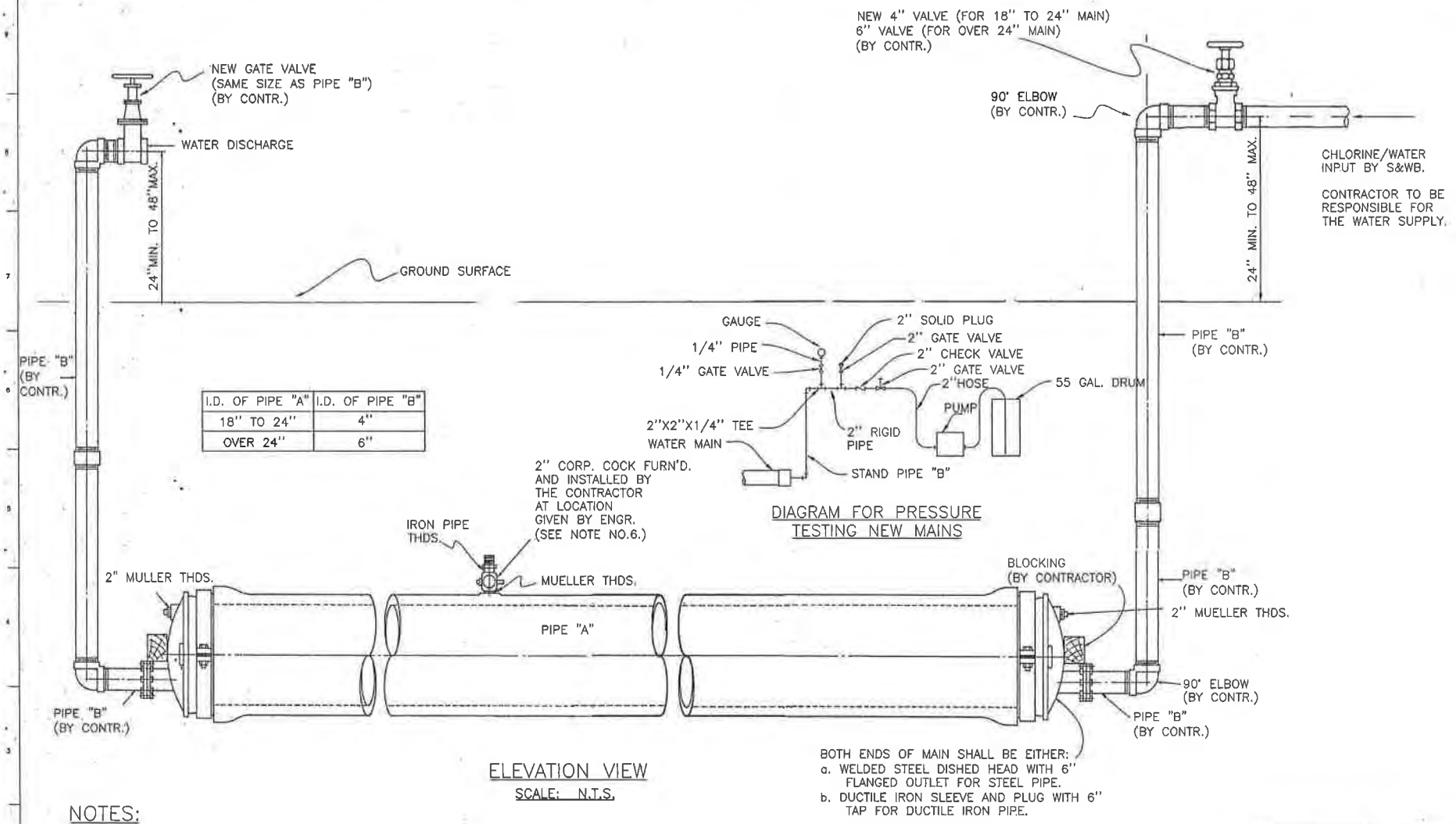


DIAGRAM FOR PRESSURE TESTING NEW MAINS

ELEVATION VIEW

SCALE: N.T.S.

BOTH ENDS OF MAIN SHALL BE EITHER:
a. WELDED STEEL DISHED HEAD WITH 6" FLANGED OUTLET FOR STEEL PIPE.
b. DUCTILE IRON SLEEVE AND PLUG WITH 6" TAP FOR DUCTILE IRON PIPE.

NOTES:

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL THE FOLLOWING:
   a. 4" MIN. TEMPORARY WATER SUPPLY. (DISCHARGE PIPE SHOULD BE ACCORDING TO SIZE OF LINE, 4" UP TO 24", AND 6" OVER 24".
   b. ALL PIPE, VALVES, AND FITTINGS TO THE FLANGED OUTLET AT THE MAIN AS SHOWN.
   c. PIPE, FITTINGS, AND VALVES AT DISCHARGE END OF THE MAIN.
   d. TEMPORARY STAND PIPES ON ALL VENT COCKS IN THE SYSTEM EXTENDING 2" TO 4" ABOVE GRADE AND TERMINATING WITH AN ELBOW AND VALVE.
2. PIPE "B" AND ALL FITTINGS CONNECTING TO PIPE "B" SHALL BE STAINLESS STEEL OR NEW GALV. IRON.
3. THE CONTRACTOR SHALL OPEN AND CLOSE ALL VALVES TO EXPEL THE AIR AND SHALL REMOVE THE VENT PIPES AND CLOSE THE COCKS WHEN NOTIFIED BY THE S&WB ENGINEER.
4. ON COMPLETION OF THE CHLORINATION PROCESS AND AT MAKING OF TIE-INS, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY PIPING, DISHED HEADS, SLEEVES, PLUGS, VALVES, ETC. WHICH SHALL REMAIN THE CONTRACTOR'S PROPERTY EXCEPT WHERE NOTED ON CONTRACT DRAWINGS.
5. ALL MATERIALS AND LABOR REQUIRED FOR PRESSURE TEST TO BE FURNISHED BY CONTRACTOR.
6. THE CONTRACTOR SHALL USE 2" MUELLER H-10003 CORPORATION COCK OR APPROVED EQUAL.

REV.	DATE	DESCRIPTION	BY
3	03-09-07	REVISED NOTES AND DRAWING	O.MC.
2	6-27-88	NOTE NO. 5 - REDUCER	BHP
1	4-5-87	ALTERNATE TEST PIPING	BHP
0	6-25-85	TEST CONN. REVISED	BHP

SEWERAGE AND WATER BOARD OF NEW ORLEANS

PRESSURE TEST CONNECTION ON NEW WATER MAINS (18" AND LARGER), FLUSHING AND CHLORINATION

DR. BHP
TRC
CH
AP.
SCALE NONE
DATE 7-13-83

DWG. NO. 7005-W
SET NO. SHEET NO.

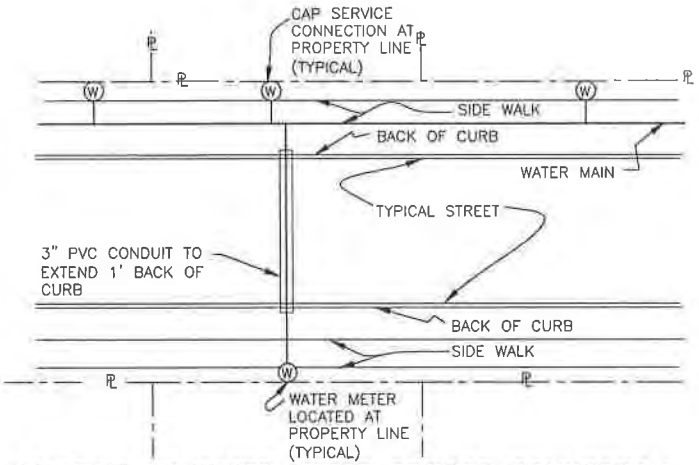
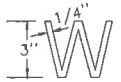
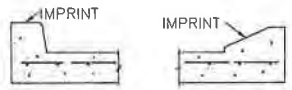


DIAGRAM OF WATER METER SERVICE CONNECTION



LETTER "W" TO BE 1/4" DEEP

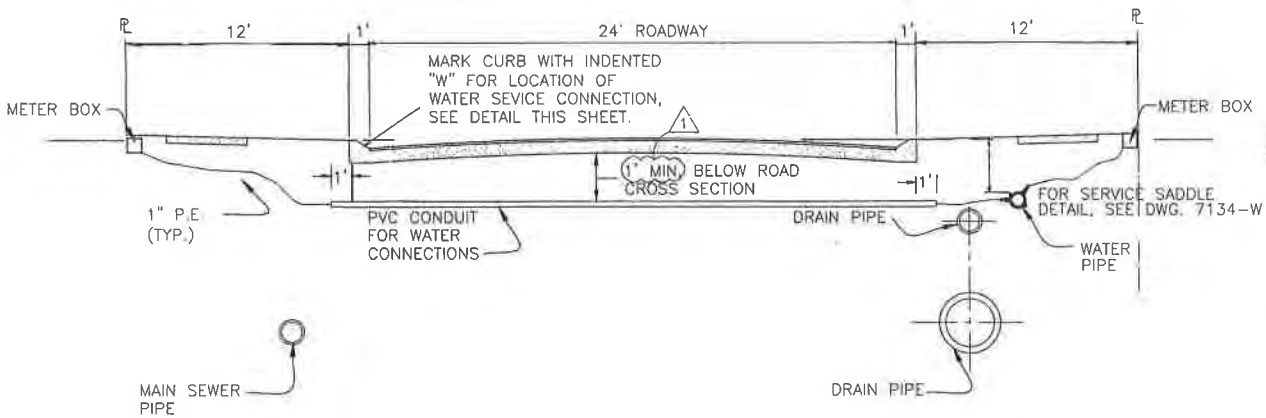


DETAIL OF WATER LETTERS TO BE IMPRINTED IN CURB

N. T. S.

NOTE:

1. TUBING MATERIAL SHALL BE TYPE "K" COPPER OR POLYETHYLENE PE 3406 AND SHALL CONFORM TO THE LATEST ISSUE OF ASTM D-2737 AND D-1248 FOR TYPE 3 OR 4 GRADE P-34 CLASS "C"
2. WATER SERVICE CONNECTION TO BE NEAR CENTERLINE OF LOT, MIN. OF 5' HORIZONTALLY FROM SEWER H.C.
3. THE LOCATION OF THE WATER SERVICE CONNECTIONS SHALL BE IMPRINTED IN THE CURB WITH AN "W". (SEE DETAIL)
4. ALL BRONZE/BRASS FITTINGS, CONNECTORS, CORPORATION STOPS AND APPURTENANCES SHALL BE OF DOMESTIC MANUFACTURE, SHALL BE MADE OF LEAD FREE BRONZE/BRASS, AND MEET ALL REQUIREMENTS OF AWWA, ASTM AND ANSI FOR USE IN THE POTABLE WATER DISTRIBUTION SYSTEMS.



TYPICAL UTILITY SECTION – FOR 50 FT. R/W

N. T. S.

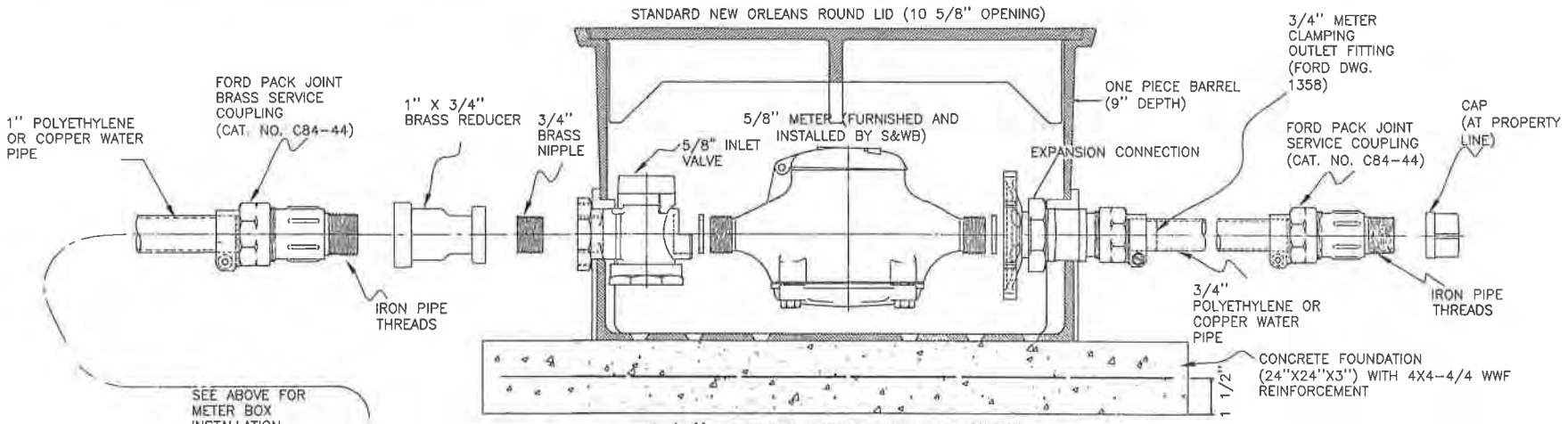
SCALE: N.T.S.

REV.	DATE	DESCRIPTION	BY
2	04.18.13	ADDITIONAL NOTE	DMD
1	10.05.12	GENERAL REVISIONS	DMD

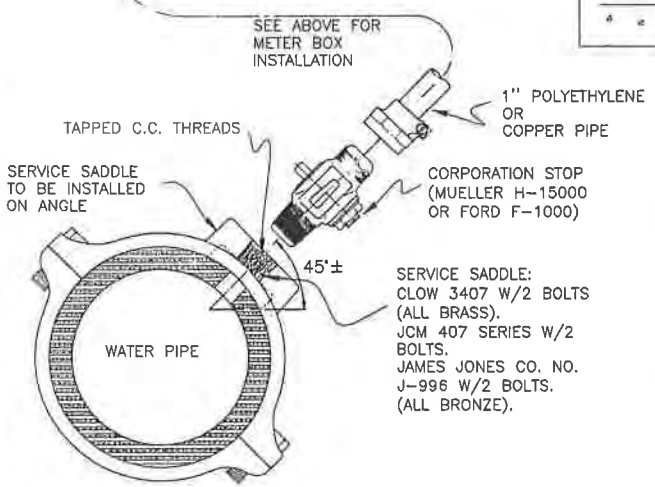
SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL WATER SERVICE CONNECTION

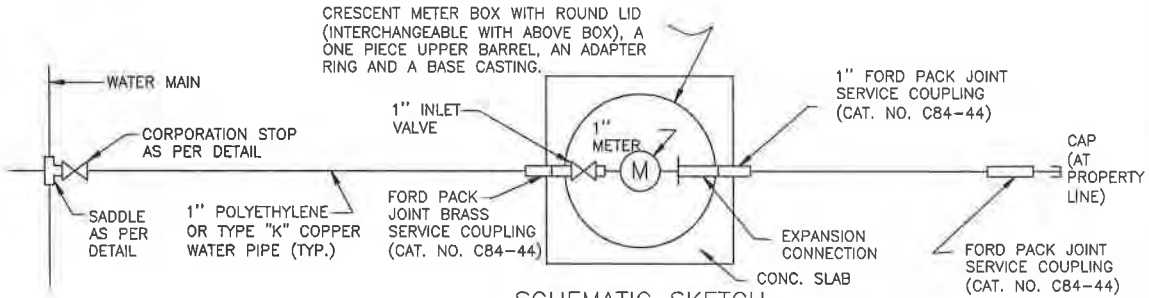
DR. D. McCRAY	
TRC.	
CK. M. JOHNSON	GENERAL SUPERINTENDENT
AP. J. BECKER	DWG. NO. 7134A-W
SCALE NONE	
DATE 03-09-01	SET NO. SHEET NO.



5/8" METER BOX INSTALLATION



SERVICE SADDLE



SCHEMATIC SKETCH
1" WATER METER SERVICE CONNECTION

NOTE:

1. TUBING MATERIAL SHALL BE TYPE "K" COPPER OR POLYETHYLENE PE 3406 AND SHALL CONFORM TO THE LATEST ISSUE OF ASTM D-2737 AND D-1248 FOR TYPE 3 OR 4 GRADE P-34 CLASS "C".
2. WATER SERVICE CONNECTION TO BE NEAR CENTERLINE OF LOT, MIN. OF 5' HORIZONTALLY FROM SEWER H.C.
3. ALL BRONZE/BRASS FITTINGS, CONNECTORS, CORPORATION STOPS AND APPURTENANCES SHALL BE OF DOMESTIC MANUFACTURE, SHALL BE MADE OF LEAD FREE BRONZE/BRASS, AND MEET ALL REQUIREMENTS OF AWWA, ASTM AND ANSI FOR USE IN THE POTABLE WATER DISTRIBUTION SYSTEMS.

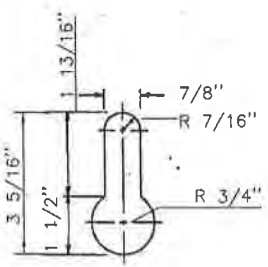
SCALE: N.T.S.

REV.	DATE	DESCRIPTION	BY
1	04.18.13	ADDITIONAL NOTE	DWC

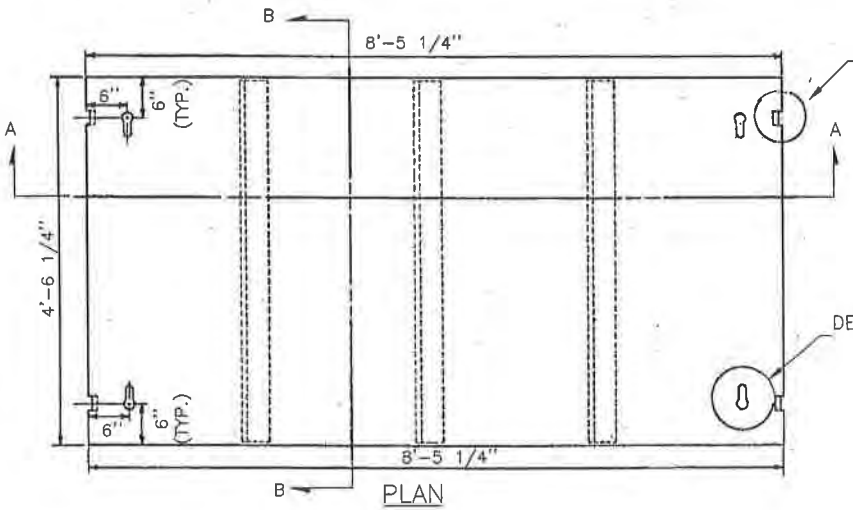
SEWERAGE AND WATER BOARD OF NEW ORLEANS

WATER METER SERVICE CONNECTION FOR 5/8" AND 1" FIXED METER BOX

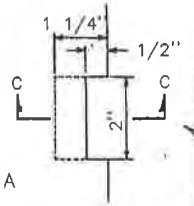
DR. D. McCRAY	
TRC.	
CK. M. JOHNSON	GENERAL SUPERINTENDENT
AP. V. BECKER	DWG. NO. 7134-W
SCALE NONE	
DATE 03-09-07	SET NO. / SHEET NO.



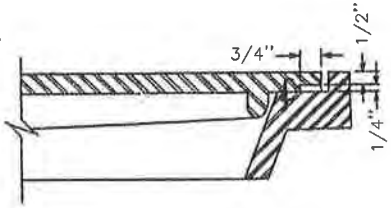
DETAIL – A
(4 REQ'D)



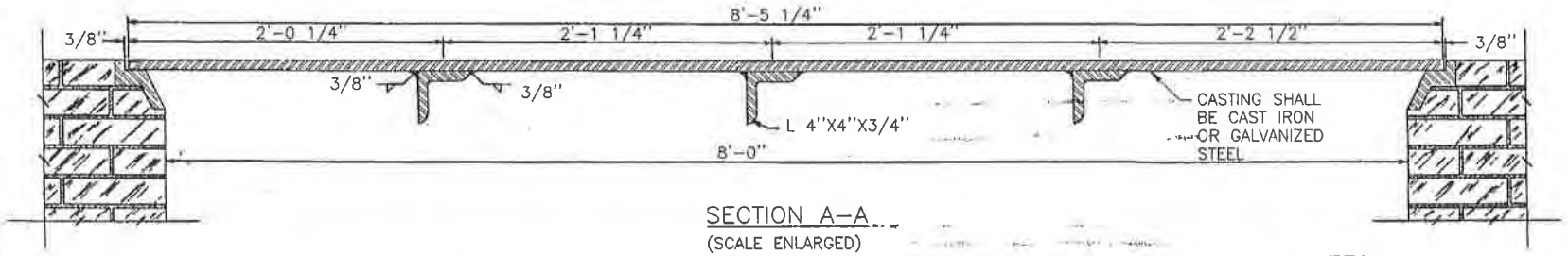
PLAN



DETAIL – B
(4 REQ'D)



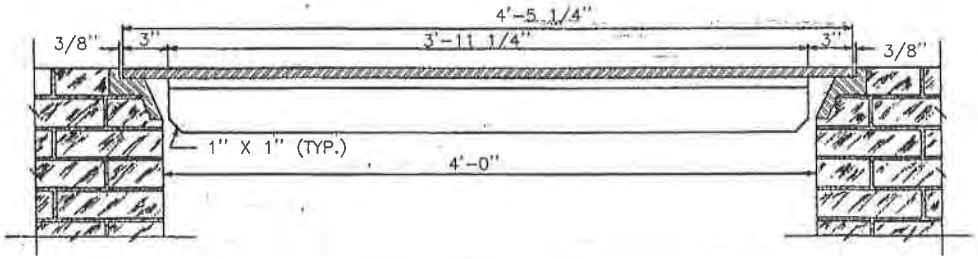
SECTION C–C
N. T. S.



SECTION A–A
(SCALE ENLARGED)

NOTES:

1. MANHOLE COVER TO BE GALVANIZED STRUCTURAL GRADE STEEL. (ASTM. A–36 OR EQUAL)



SECTION B–B
(SCALE ENLARGED)

SCALE: N.T.S.

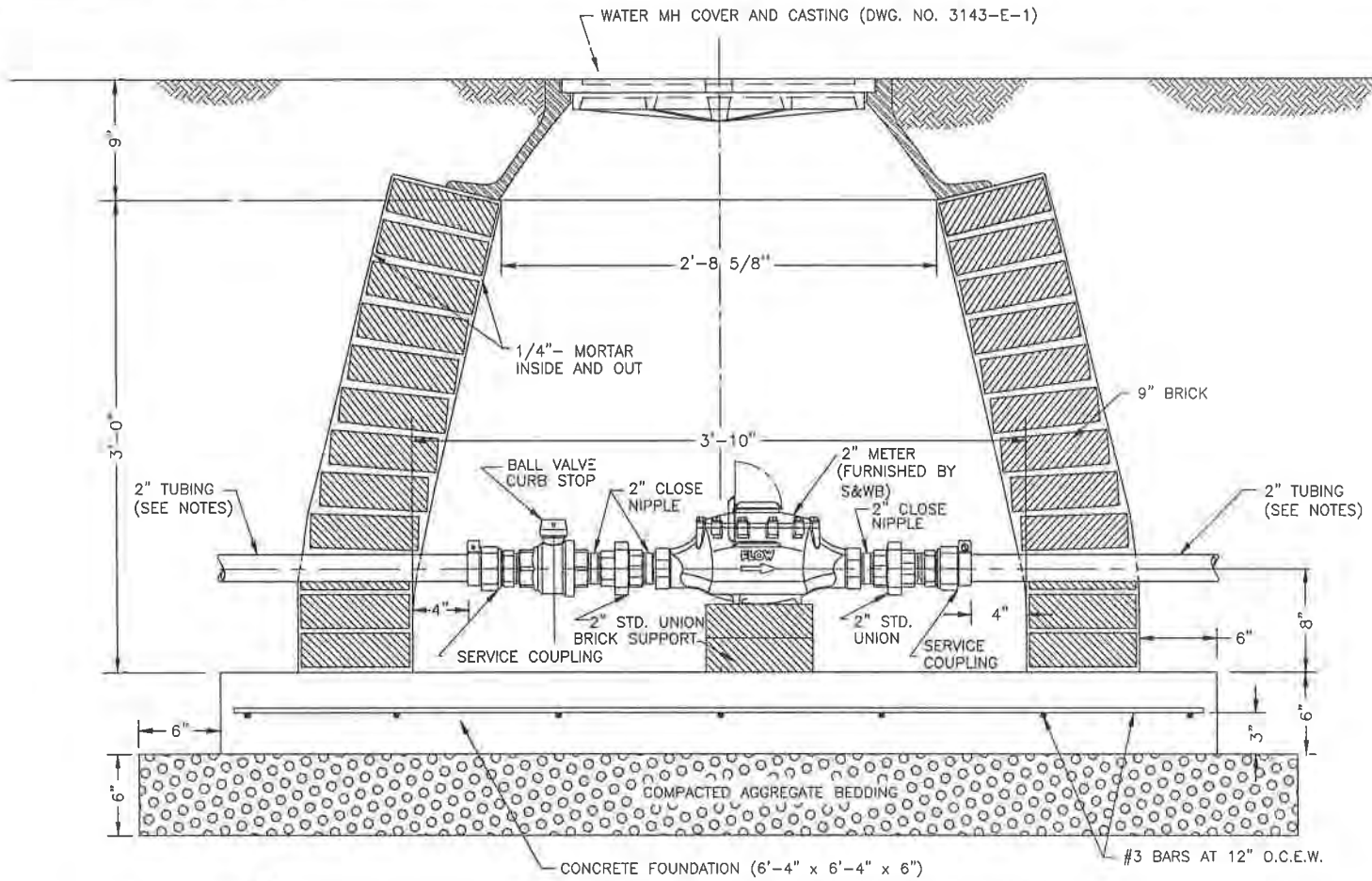
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

SPECIAL FABRICATED STEEL COVER FOR CANAL CLEANOUT MANHOLE

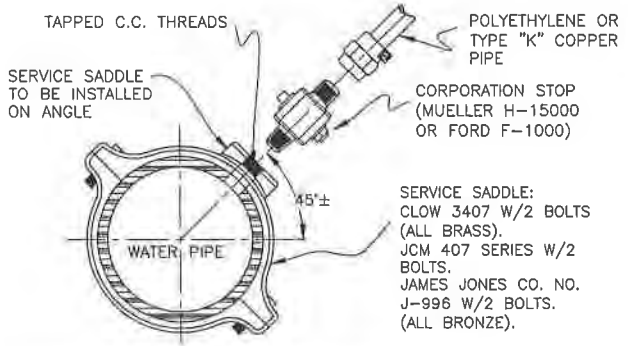
DR. D. McCRAY	GENERAL SUPERINTENDENT	
TRC.		
CK. M. JOHNSON		
AP. J. BECKER	DWG. NO. 7165-D	
SCALE NONE		
DATE 03-09-07	SET NO.	SHEET NO.

27



2" AND 1 1/2" DOMESTIC METER SERVICE

SCALE: N.T.S.



TAP AND SERVICE SADDLE

NOTES:

1. TUBING MATERIAL SHALL BE POYLETHYLENE PE 3406 OR PE 3408, TYPE "K" COPPER PIPE AND CONFORM TO THE LATEST ISSUE OF ASTM D-2737 AND D-1248 FOR TYPE III OR IV GRADE P-34 CLASS C.
2. WHERE A 1 1/2" METER IS REQUIRED, ALL TUBING, COUPLINGS, FITTINGS, ETC. SHALL BE THE SAME AS FOR A 2" CONNECTION, EXCEPT THEY SHALL BE 1 1/2" SIZE.
3. CONCRETE TO HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 P.S.I. IN 28 DAYS.
4. ALL BRONZE/BRASS FITTINGS, CONNECTORS, CORPORATION STOPS AND APPURTENANCES SHALL BE OF DOMESTIC MANUFACTURE, SHALL BE MADE OF LEAD FREE BRONZE/BRASS, AND MEET ALL REQUIREMENTS OF AWWA, ASTM AND ANSI FOR USE IN THE POTABLE WATER DISTRIBUTION SYSTEMS.

REV.	DATE	DESCRIPTION	BY
5	04-16-13	ADDITIONAL NOTE	DMC
4	03-06-07	GENERAL REVISIONS	D.M.C.
3	02-20-03	COMPLETELY REVISED AND REDRAWN	GP
2	02/20/01	ADDED OPT. SERVICE CONNECTION	BY
1	10/29/98	REMOVED 4" TO 10" METER DETAILS	WD
-	04/03/98	ADD TYPE II AND IV METER DETAILS	GP
-	01/05/94	INITIAL RELEASE	SHP

SEWERAGE AND WATER BOARD OF NEW ORLEANS

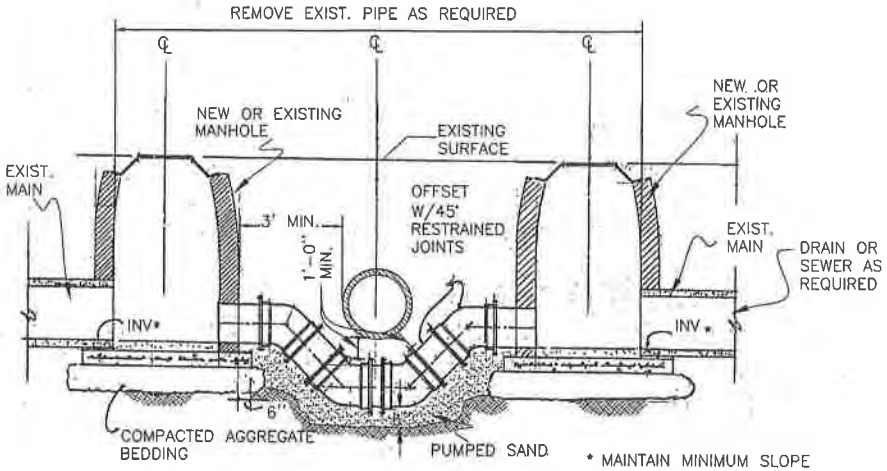
2" & 1 1/2" METER SERVICE CONNECTION

DR.	G. PERU
TRC.	
CK.	B. JONES
AP.	J. BECKER
SCALE	AS NOTED
DATE	02-20-03

GENERAL SUPERINTENDENT

DWG. NO. 7332-W

SHEET NO.

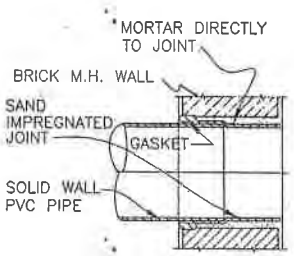


TYPICAL DRAIN & SEWER SIPHON DETAIL

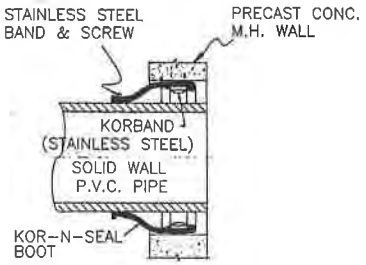
N. T. S.

NOTES:

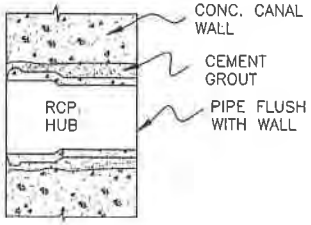
1. ALL FITTINGS AND PIPE TO BE APPROVED BY S&WB ENGINEER.
2. SIPHON AND LOCATION OF MANHOLES MUST BE APPROVED BY THE S&WB ENGINEER.
3. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES, & INVERTS TO BE MORTARED WITH A WATERPROOFING COMPOUND, THICKNESS OF 1/4" IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
4. REFER TO S&WB DWG. NO. D-870 FOR NEW DRAIN MANHOLE OR DWG. NO. 6178-B-6 FOR NEW SEWER MANHOLE.



BRICK WALL



PRECAST CONC. WALL



CONCRETE CANAL WALL

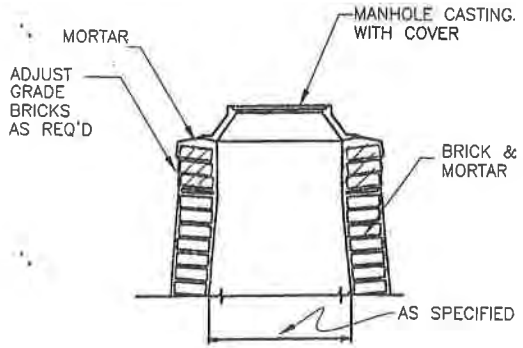
MANHOLE CONNECTORS

REV.	DATE	DESCRIPTION	BY

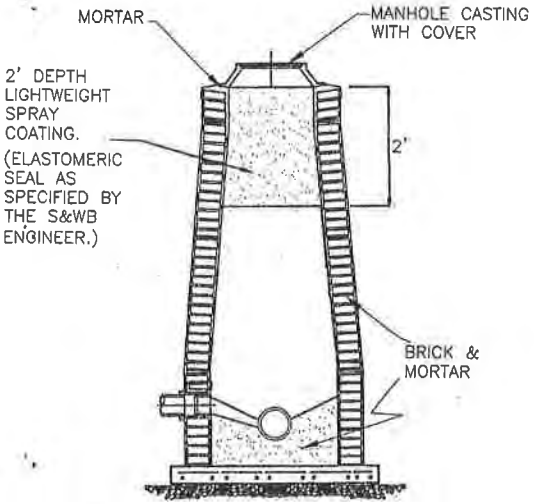
SEWERAGE AND WATER BOARD OF NEW ORLEANS

TYPICAL SEWER AND DRAIN SIPHON & PIPE/WALL CONNECTORS

DR. D. McCRAY	GENERAL SUPERINTENDENT
TR.	
CK. M. JOHNSON	
AP. J. BECKER	DWG. NO. 8178-SD
SCALE NONE	
DATE 03-09-07	SET NO. / SHEET NO.



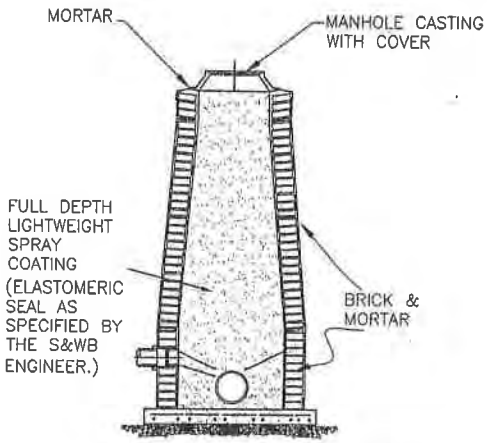
ADJUST OR REPLACE EXISTING MANHOLE FRAME AND COVER



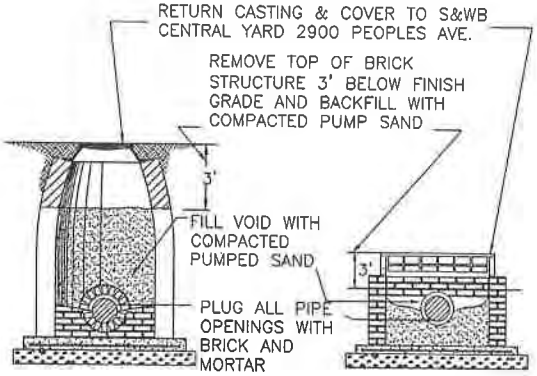
MANHOLE REHABILITATION 2' DEPTH WITH SPRAY APPLED STRUCTURAL CEMENTITIOUS LINER

NOTES:

1. LOCATION OF LINER MAY VARY AS SPECIFIED BY THE S&WB ENGINEER.



MANHOLE REHABILITATION FULL DEPTH WITH SPRAY APPLIED STRUCTURAL CEMENTITIOUS LINER



TYPICAL ABANDON MANHOLE AND CATCH BASIN DETAIL

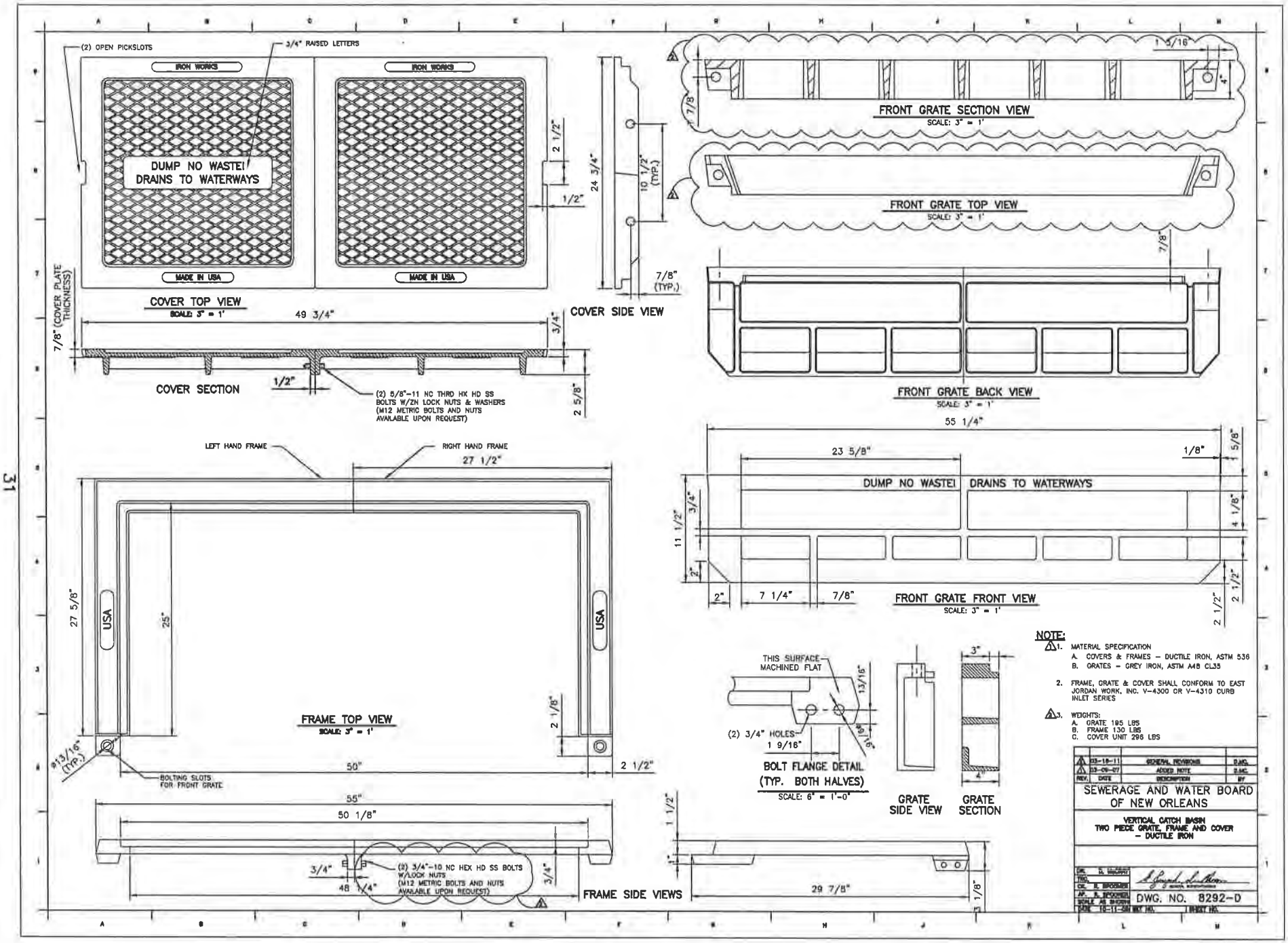
SCALE: N.T.S.

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

MANHOLE ADJUSTMENT AND REHABILITATION

DR. D. McCRAY	GENERAL SUPERINTENDENT
TRC.	
CK. M. JOHNSON	
AP. J. BECKER	DWG. NO. 8180-SD
SCALE NONE	
DATE 03-09-07	SET NO. / SHEET NO.



NOTE:

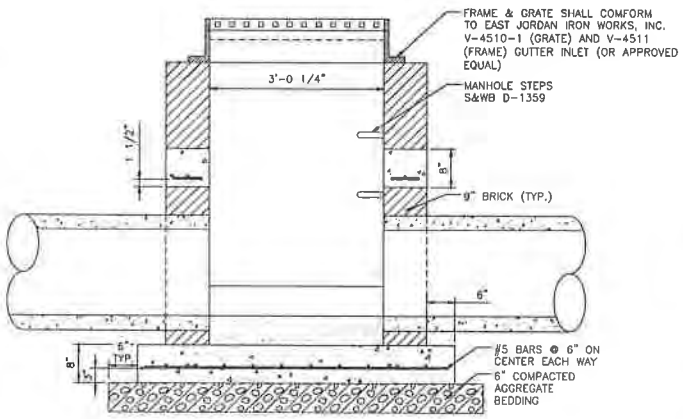
1. MATERIAL SPECIFICATION
   A. COVERS & FRAMES – DUCTILE IRON, ASTM 536
   B. GRATES – GREY IRON, ASTM A48 CL35
2. FRAME, GRATE & COVER SHALL CONFORM TO EAST JORDAN WORK, INC. V-4300 OR V-4310 CURB INLET SERIES
3. WEIGHTS:
   A. GRATE 195 LBS
   B. FRAME 130 LBS
   C. COVER UNIT 296 LBS

REV.	DATE	DESCRIPTION	BY
1	03-18-11	GENERAL REVISIONS	D.MC.
2	03-09-07	ADDED NOTE	D.MC.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

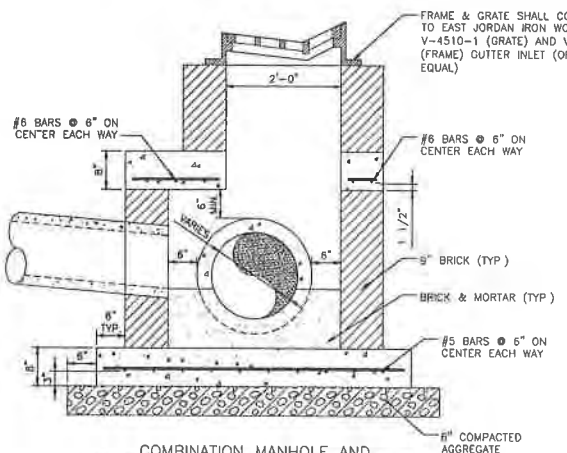
VERTICAL CATCH BASIN
TWO PIECE GRATE, FRAME AND COVER
– DUCTILE IRON

DWG. NO. 8292-D



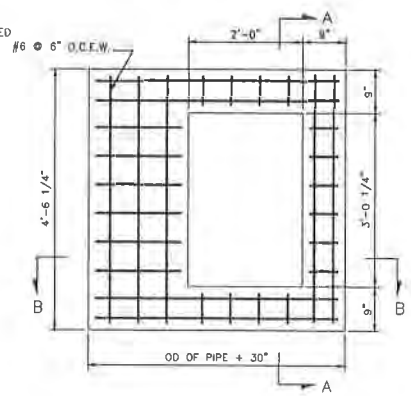
COMBINATION MANHOLE AND MOUNTABLE CATCH BASIN – SECTION A–A

SCALE: 1" = 1'-0"



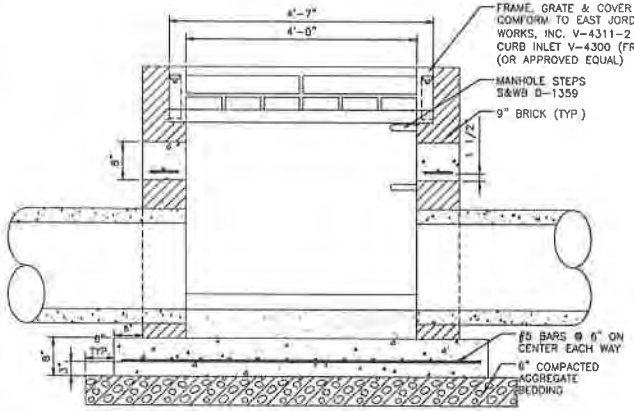
COMBINATION MANHOLE AND MOUNTABLE CATCH BASIN – SECTION B–B

SCALE: 1" = 1'-0"



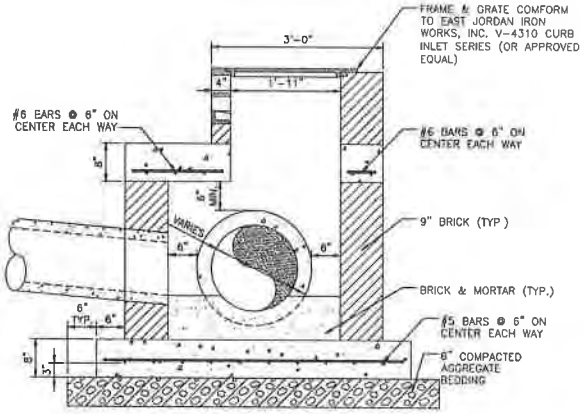
PLAN VIEW OF CONCRETE TOP SLAB (MOUNTABLE)

SCALE: 1" = 1'-0"



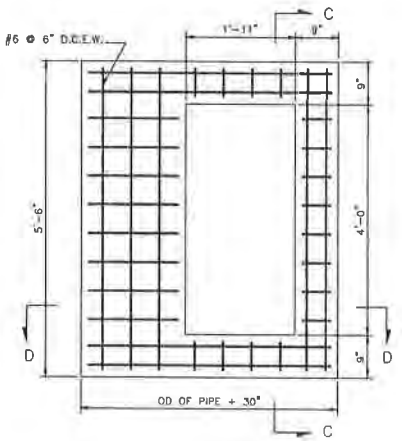
COMBINATION MANHOLE AND VERTICAL CATCH BASIN – SECTION C–C

SCALE: 1" = 1'-0"



COMBINATION MANHOLE AND VERTICAL CATCH BASIN – SECTION D–D

SCALE: 1" = 1'-0"



PLAN VIEW OF CONCRETE TOP SLAB (VERTICAL)

SCALE: 1" = 1'-0"

NOTES:

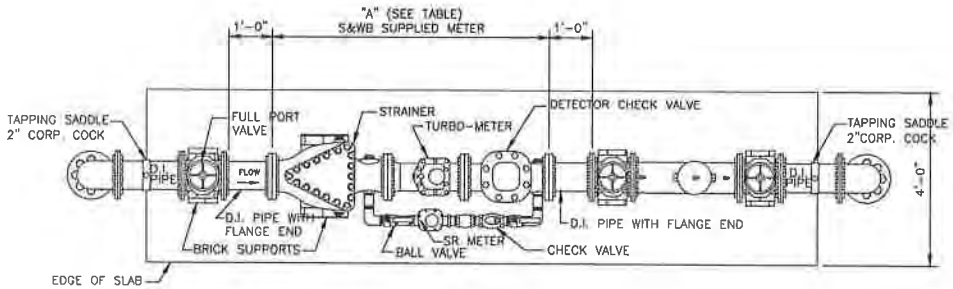
1. INSIDE & OUTSIDE OF BRICK WALLS, BENCHES & INVERTS, TO BE MORTARED WITH A WATERPROOFING COMPOUND FOR THICKNESS OF 1/4" IN ACCORDANCE WITH SPECIFICATIONS.
2. CONCRETE TO HAVE A MIN COMPRESSIVE STRENGTH OF 3,000 P.S.I IN 28 DAYS.
3. SEE S&WB DWG. NO. D-3431-A FOR DETAILED MEASUREMENTS OF MOUNTABLE CATCH BASIN
4. SEE S&WB DWG NO D-873 FOR DETAILED MEASUREMENTS OF VERTICAL CATCH BASIN

REV.	BASE	DESCRIPTION	DT.

SEWERAGE AND WATER BOARD OF NEW ORLEANS

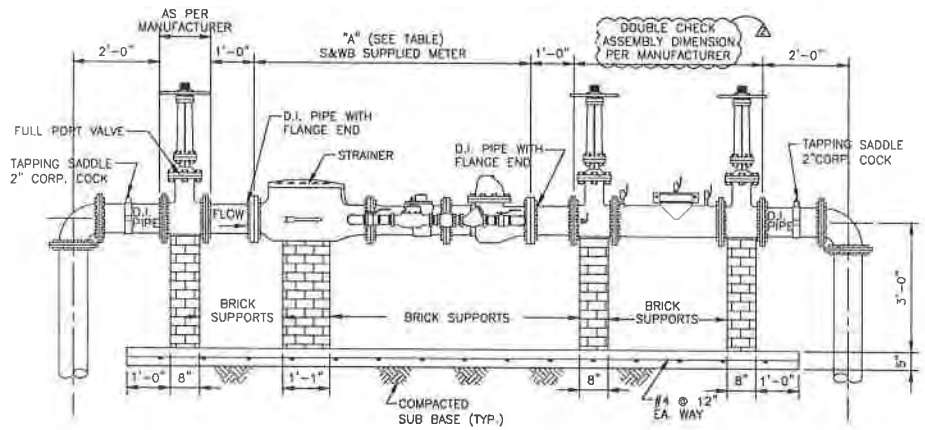
SINGLE COMBINATION CATCH BASIN – MANHOLE STRUCTURE

DR.	D. McCRAY	GENERAL SUPERINTENDENT
TRC.		
CK.	B. JONES	
AP.	R. SPOONER	
SCALE	1"=1'	DWG. NO. 8319-D
DATE	08-05-08	SHEET NO.



PLAN VIEW
SCALE: 3/4" = 1'-0"

S&WB SUPPLIED TURBO METER	"A" DIMENSION IN INCHES	
	SENSUS	BADGERMETER INC.
4"	52"	33"
6"	68"	45"
8"	77"	53"
10"	90"	68"



LONGITUDINAL SECTION
SCALE: 3/4" = 1'-0"

NOTES:

1. THE METER SHALL BE INSTALLED AS RECEIVED FROM THE S&WB METER DEPARTMENT AND MAY NOT BE MODIFIED IN ANY MANNER.
2. THE METER LOCATION SHALL NOT EXCEED 15' INSIDE THE PROPERTY LINE.
3. BACKFLOW PREVENTERS MUST BE LISTED AND CERTIFIED IN ACCORDANCE WITH THE UNIVERSITY OF SOUTHERN CALIFORNIA (USC) FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.
4. CONTRACTOR TO VERIFY WHICH TYPE OF METER WILL BE SUPPLIED BY THE S&WB METER DEPARTMENT.

REV.	DATE	DESCRIPTION	BY
4	06/20/13	GENERAL REVISIONS	DMC
3	05/02/13	GENERAL REVISIONS	DMC
2	01/28/11	REVISED "A" DIMENSION IN INCHES FOR 10"	DMC

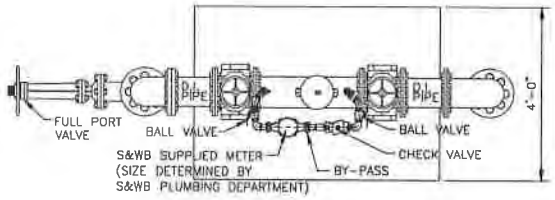
SEWERAGE AND WATER BOARD OF NEW ORLEANS

FIRE AND DOMESTIC

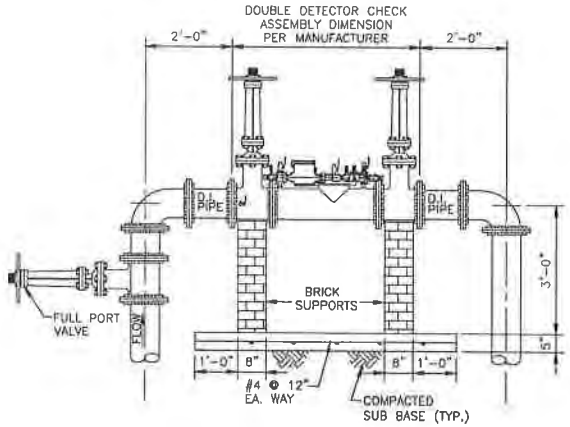
ABOVE GROUND ASSEMBLY DETAIL

DR.	D. McCRAY
TRC	
CK.	R. JONES
AP.	J. ARNOLD
SCALE:	AS NOTED
DATE:	08-14-08
SET NO.	
SHEET NO.	

DWG. NO. 8353-W1



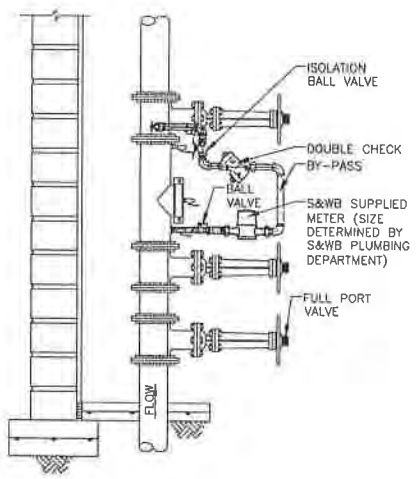
PLAN VIEW
SCALE: 3/4" = 1'-0"



DOUBLE DETECTOR CHECK ASSEMBLY
BACKFLOW PREVENTER DETAIL
HORIZONTAL INSTALLATION
SCALE: 3/4" = 1'-0"

NOTES:

1. THE METER SHALL BE INSTALLED AS RECEIVED FROM THE S&WB METER DEPARTMENT AND MAY NOT BE MODIFIED IN ANY MANNER.
2. THE METER LOCATION SHALL NOT EXCEED 15' INSIDE THE PROPERTY LINE.
3. DOMESTIC SERVICE CAN BE TAPPED BEFORE FULL PORT VALVE.
4. BACKFLOW PREVENTERS MUST BE LISTED AND CERTIFIED IN ACCORDANCE WITH THE UNIVERSITY OF SOUTHERN CALIFORNIA (USC) FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.



DOUBLE DETECTOR CHECK ASSEMBLY
BACKFLOW PREVENTER DETAIL
VERTICAL INSTALLATION
SCALE: 3/4" = 1'-0"

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

FIRE ONLY

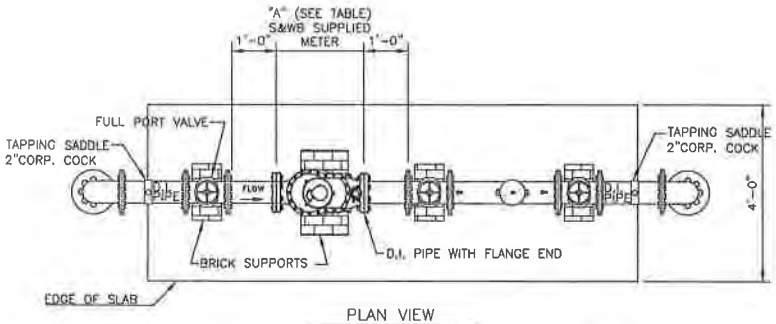
ABOVE GROUND ASSEMBLY DETAIL

DR.	D. McCRAY
TRC.	
CK.	R. JONES
AP.	J. ARNOLD
SCALE.	AS NOTED
DATE	08-14-03

GENERAL SUPERINTENDENT

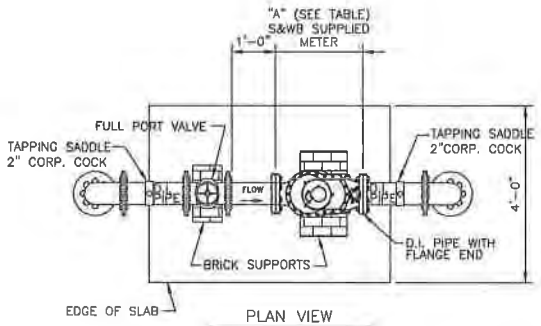
DWG. NO. 8353-W2

SHEET NO.



PLAN VIEW

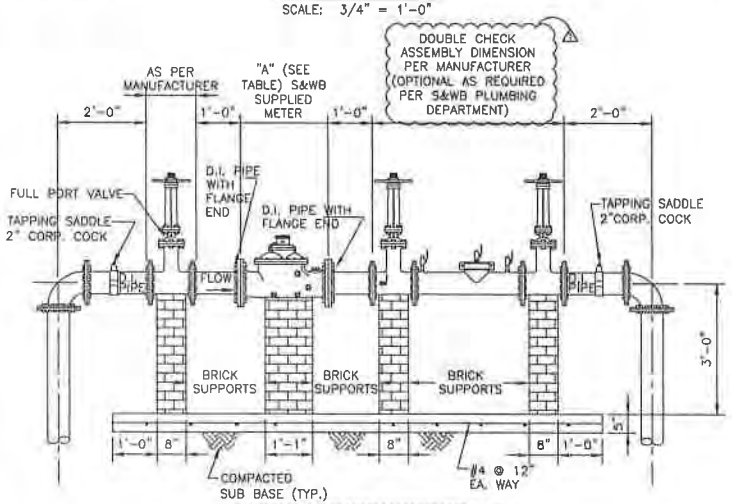
SCALE: 3/4" = 1'-0"



PLAN VIEW

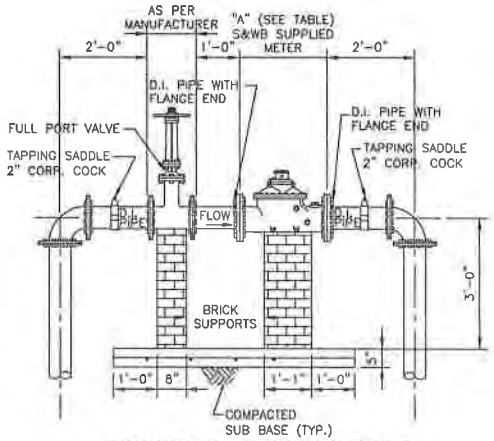
SCALE: 3/4" = 1'-0"

DOMESTIC ONLY	
S&WB SUPPLIED COMPOUND METER	"A" DIMENSION IN INCHES
4"	20"
6"	24"



LONGITUDINAL SECTION WITH DOUBLE CHECK ASSEMBLY

SCALE: 3/4" = 1'-0"



LONGITUDINAL SECTION WITHOUT DOUBLE CHECK ASSEMBLY

SCALE: 3/4" = 1'-0"

NOTES:

1. THE METER SHALL BE INSTALLED AS RECEIVED FROM THE S&WB METER DEPARTMENT AND MAY NOT BE MODIFIED IN ANY MANNER.
2. THE METER LOCATION SHALL NOT EXCEED 15' INSIDE THE PROPERTY LINE.
3. BACKFLOW PREVENTERS MUST BE LISTED AND CERTIFIED IN ACCORDANCE WITH THE UNIVERSITY OF SOUTHERN CALIFORNIA (USC) FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.

REV.	DATE	DESCRIPTION	BY
1	12/20/12	GENERAL REVISIONS	BMC

SEWERAGE AND WATER BOARD OF NEW ORLEANS

DOMESTIC ONLY

ABOVE GROUND ASSEMBLY DETAIL

DR. D. McCRAY
TRC.
CK. B. JONES
AP. J. ARNOLD
SCALE AS NOTED
DATE 08-14-08

GENERAL SUPERINTENDENT

DWG. NO. 8353-W3

SHEET NO. 1 SHEET NO.

APPENDIX G

General Specifications for Street Paving, 2015 Edition, Department of Public Works, City of New Orleans, Louisiana

GENERAL SPECIFICATIONS

FOR

STREET PAVING

2015 EDITION

DEPARTMENT OF PUBLIC WORKS

CITY OF NEW ORLEANS

LOUISIANA

Adopted by the Commission Council on November 5, 2015 by Ordinance No. 026696 MCS

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OFFICIALS

Of The

CITY OF NEW ORLEANS

MITCHELL J. LANDRIEU
Mayor

Councilmembers at Large:

JASON WILLIAMS
President

STACY HEAD
Vice President

District Councilmembers:

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District A

LATOYA CANTRELL
District B

NADINE RAMSEY
District C

JARED BROSSETT
District D

JAMES AUSTIN GRAY II
District E

MARK D. JERNIGAN
Director of Public Works

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Chief Engineer, Department of Public Works

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City Attorney

COPIES OF THIS BOOK MAY BE OBTAINED FROM:

City of New Orleans
Department of Public Works
1300 Perdido Street - Room 6W02
New Orleans, Louisiana, 70112

Price: $100.00 per printed copy or downloaded at no cost at http://www.nola.gov/dpw/

DEPARTMENT PERSONNEL MAY OBTAIN COPIES OF THIS BOOK FROM:

City of New Orleans
Department of Public Works
Engineering Division
1300 Perdido Street - Room 6W03
New Orleans, Louisiana, 70112

Title VI Notice: The Department of Public Works (DPW) fully complies with Title VI of the Civil Rights Act of 1964 and related statutes, executive orders, and regulations in all programs and activities. DPW operates without regard to race, color, national origin, income, gender, age, and disability. Any person who believes him/herself or any specific class of persons, to be subjected to discrimination prohibited by Title VI may by him/herself or by representative file a written complaint with the Louisiana Department of Transportation (LaDOTD). The LaDOTD Title VI Program Manager may be reached via phone at 225-379-1361. A complaint must be filed no later than 180 days after the date of the alleged discrimination.

DPW meetings are conducted in accessible locations and materials can be provided in accessible formats and in languages other than English. If you would like accessibility or language accommodation, please contact the Title VI Community Outreach Specialist at DPW at 504-658-8000.

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PART I - GENERAL PROVISIONS

SECTION C101
DEFINITIONS OF TERMS

Whenever in these specifications and contract, the following terms or pronouns in place of them, are used, the intent and meaning shall be interpreted as follows, unless such interpretations shall be inconsistent with or repugnant to the manifest intent and context of the said specifications and contract.

C101.01 AGENT: Person or persons authorized to act on behalf of the Director (See "Director").

C101.02 BIDDER: Any individual, partnership, firm or corporation submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.

C101.03 CALENDAR DAY: Any day of the week including Saturday, Sunday and Holiday, regardless of weather conditions, beginning and ending at midnight.

C101.04 CHIEF PROCUREMENT OFFICER: The duly authorized representative of the Director of Finance through whom proposals are issued and received in completed form from bidders.

C101.05 CITY OF NEW ORLEANS OR **CITY:** The incorporated municipality or City of New Orleans in the State of Louisiana.

C101.06 CONTRACT: The written agreement between the City of New Orleans and the Contractor setting forth obligations of the parties thereunder for performance of the prescribed work. The contract documents consist of the proposal, the General Specifications for Street Paving, the Special Specifications, the contract bond and the plans, including all modifications thereof incorporated in the documents before their execution; as well as any and all drawings and supplemental agreements which reasonably could be required to complete the construction in an acceptable manner.

C101.07 CONTRACT BOND: The security designated in the Uniform Bid Form to be furnished by the bidder as surety for the faithful performance of the contract and the specifications in all their details, except that said contract bond shall not cover maintenance after acceptance of the work.

C101.08 CONTRACT TIME: The number of working days or calendar days allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is shown in the contract, in lieu of a number of working or calendar days, such work shall be completed by that date.

C101.09 CONTRACTOR: The individual, partnership, firm or corporation to whom the contract is awarded.

C101.10 COUNCIL: The duly constituted and authorized governing body of the City of New Orleans.

C101.11 DEPARTMENT: The Department of Public Works of the City of New Orleans.

C101.12 DIRECTOR OF FINANCE: The authorized head of the subdivision of the City Government charged with receiving, expending and accounting of public money.

C101.13 DIRECTOR OR **DIRECTOR OF PUBLIC WORKS:** The authorized head of the subdivision of the City Government having jurisdiction over public streets, public alleys, bridges and related structures. Whenever the word "Director" appears herein, it is understood that an appointed agent may act for the Director.

C101.14 FIELD CHANGE AUTHORIZATION: A document outlining agreements reached in the field which authorizes changes necessary in the work. This document shall become a part of a plan change.

C101.15 FORCE ACCOUNT: A method of payment for extra work based on expenses incurred, including the actual cost of labor, material and equipment required to do the work.

C101.16 LaDOTD: Louisiana Department of Transportation and Development

C101.17 MAJOR ITEM: An item included in the contract as awarded, that has a total cost equal to or greater than ten (10%) percent of the original contract amount.

C101.18 MUTCD: Manual on Uniform Traffic Control Devices.

C101.19 PLAN CHANGE: An approved document issued to the Contractor covering changes in the plans or quantities, or both, and establishing the basis of payment and time adjustments for the work affected by the changes.

C101.20 PLANS: The contract drawings which show the location, type, dimensions and other details of the prescribed work consisting of, but not limited to, general and detail Drawings including such working drawings as may be furnished or approved by the Director.

C101.21 PROJECT: A specific undertaking of construction as described by the contract.

C101.22 PROPOSAL: The offer of a Bidder, on the prescribed form, to perform the stated work and to furnish the labor and materials at the prices quoted on the bid form.

C101.23 PROPOSAL GUARANTY: The security, commonly known as the bid bond, designated in the Uniform Bid Form to be furnished by the bidder as a guaranty of good faith to enter into a contract with the City of New Orleans if the contract is awarded to him.

C101.24 QUALIFIED PRODUCTS LIST (QPL): Lists maintained by the LaDOTD's Materials and Testing Section for products that do not lend themselves to the preparation of meaningful specifications, or for which repetitive full testing is too time consuming or expensive to be practical

for routine project control.

C101.25 SPECIAL SPECIFICATIONS: The contract specifications which include project specific details as well as additions and revisions to the General Specifications.

C101.26 SUBSTANTIAL COMPLETION: When the Contractor considers the Work ready for full occupancy or utilization by City, Contractor shall declare in writing to the Director that the Work is substantially complete and request that the Director issue a notice of substantial completion.

The date, upon which the Director agrees to issue the certificate of substantial completion, shall govern in regard to assessment of any liquidated damages, as described elsewhere in these specifications.

C101.27 SURETY COMPANY: The corporate body which is bound with and for the Contractor, who is primarily liable, and which engages to be responsible for his payment of all debts pertaining to and for his acceptable performance of the work for which he had contracted.

C101.28 TESTING LABORATORY: An independent testing laboratory retained by the City for the purpose of testing materials entering into the project.

C101.29 THEORETICAL SECTION: Theoretical Section shall be the measurement of the volume based upon horizontal distances and average end areas taken from the plans and the end areas will be bounded by the original ground line and the theoretical pay line as shown on the plans.

C101.30 TRUCK MEASURE: Truck Measure is based upon the capacity of hauling vehicles. Truck Measure is the volumetric measurement of a specific truck used for the hauling of material. Computation of truck volume shall be made in accordance with LaDOTD's EDSM III, 1.1.12. Contractor shall have hauling vehicles certified in accordance with these specifications as well as State and other local agency requirements.

C101.31 UNIFORM BID FORM: The approved or prepared form on which the bidder is to submit or has submitted his proposal for the work contemplated.

C101.32 WORK: The furnishing of labor, material, equipment, transportation supervision and tools or other facilities necessary to complete the contract.

C101.33 WORKING DAY: A calendar day, with exceptions stated herein, on which weather and other conditions not under control of the Contractor will permit construction operations to proceed for at least five (5) continuous hours of the day with the normal working force engaged in performing the controlling items of work.

No working days will be charged for the following days:

(1) Saturdays and Sundays.
(2) City recognized holidays or non-working days that are defined as regular legal holidays or special holidays that are proclaimed by the Mayor or fixed by the City Council.

(3) Days on which delays are attributable to the direct effect of strikes, riots or civil commotions.

Should the Contractor elect to work on the afore-stated days, and is so authorized by the Director to do so, these days will be charged as working days. The Contractor shall be charged for these days and shall reimburse the City for any overtime expenses required for services rendered on the above referenced days.

BIDDING REQUIREMENTS (CONTACT BUREAU OF PURCHASING FOR FULL REQUIREMENTS)

SECTION C106
CONTRACT PLANS AND SPECIFICATIONS FOR THE WORK

C106.01 The Contractor shall keep one copy of all plans and specifications on the work site, in good order, available to the Director.

C106.02 In the event of discrepancy or conflict in provisions of the various contract documents, precedence shall be given to the provisions as contained in the document which appears first in the following list: Proposal/bid, Special Specifications, Construction Plans, General Specifications and Standard Plans for Street Paving, Sewerage & Water Board General Specifications and Standard Drawings, the latest edition of LaDOTD Louisiana Standard Specifications for Roads and Bridges. The conflicting provision in the document appearing later in the above list is declared "null and void".

CONTRACT

SECTION C121
ASSIGNMENT AND SUB-LETTING

C121.01 A contract cannot be assigned without the prior written consent and approval of the Director.

C121.02 Any supplemental contract or agreement which the Contractor may propose to enter into with a sub-Contractor for the construction or execution of a portion of the contract shall not create any contractual relationship between any sub-Contractor and the City, and, the employment of a sub-Contractor shall in no way be construed to mean that the Contractor and his sureties are released from any of their responsibilities under the contract.

SECTION C122
RIGHTS OF VARIOUS INTERESTS

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this contract, the respective rights of the various interests involved shall be established by the Director.

The Contractor shall cooperate with officials of utility companies to avoid delays in completion of work due to non-removal or non-adjustment of utilities.

Some utility facilities will be removed, relocated, or adjusted in accordance with agreements between the City and utility companies. Such work may be underway concurrently with the Contractor's work and within construction limits covered by this contract.

The Contractor shall consider in his bid all permanent and temporary utilities, lines and appurtenances in their present or relocated positions and that no additional compensation will be allowed for delays, inconvenience or damage sustained by him due to interference from the said utility lines and appurtenances or the operation of moving them.

SECTION C123
ANNULMENT OF CONTRACT BY CITY

If at any time the Director shall be of the opinion that the Contractor is unnecessarily delaying any part of the work or is willfully violating any of the provisions of the specifications or is executing the same in bad faith, or if the Contractor shall become insolvent or declared bankrupt, or shall commit any act of insolvency or bankruptcy, or shall make any assignment for the benefit of creditors, or for any cause whatsoever shall fail to carry on the work in an acceptable manner, the Director shall, in writing, advise the Contractor wherein he believes the contract is being violated and at the same time demand immediate correction. Should the Contractor fail on receipt of such notification to immediately comply with the specifications, it shall then be the duty of the Director to at once, in writing, notify the bondsman of the Contractor of the Contractor's dereliction and at the same time

request a compliance with the specifications by the bondsman. Should the bondsman in turn fail to effect a compliance with the specifications within five (5) days, it shall then be the duty of the Director to promptly report the fact to the Mayor and the Mayor shall be privileged to annul the contract, which annulment shall carry with it forfeiture of all monies then due the Contractor or that may become due the Contractor, together with the full amount of the bond described in Section C119 of these specifications such forfeiture operating not as a penalty, but as acknowledgement of liquidated damages. The Director shall then have the power to place on any work such labor as he may deem advisable, by contract or otherwise, and to complete the work, or any part thereof, and to use such materials, equipment, and or property of the Contractor, as he may find at the site, or to procure other materials for the completion of the contract and to charge the cost of said labor and additional materials to the contract.

SECTION C124
CONTRACTORS RIGHT TO STOP WORK OR TERMINATE CONTRACT

If the work should be stopped under an order of any court or other public authority, for a period of ninety (90) or more calendar days through no act or fault of the Contractor or of anyone employed by him, or if the City should fail to pay the Contractor in accordance with Section C138 any sum not in dispute and certified by the Director, then the Contractor may upon seven (7) days written notice to the City and the Director, stop or terminate this contract and recover from the City payment for all work executed and accepted and any loss sustained upon any plant or materials and reasonable profit and damages. Such written notice shall be made certified U.S. Mail.

PROSECUTING THE WORK

SECTION C125
PUBLIC CONVENIENCE

C125.01 During the progress of the work the safety of the public, transit users, pedestrians, and residents in the actual and immediate vicinity of the project area must be provided. Convenient access to driveways, houses and buildings along the street must be maintained wherever possible. Temporary approaches to and crossings of intersecting streets and sidewalks must be provided for and kept in good condition wherever practicable. Detour or warning signs shall be provided and placed in advance of the actual project site. The size and information included on such signage will be dictated by the Director of Public Works, Chief Traffic Engineer, or his/her appointee. Sidewalks shall be kept in a clean and passable condition, free of debris and hazardous conditions.

C125.02 Garbage Collection and Mail Service: The Contractor shall ensure that garbage collection and mail service shall have an access provided for on a continuous basis during construction of the project.

C125.03 Noise Control: Contractor shall comply with the city code - Article IV "Noise" to avoid excessive noise. Such measure shall be appropriate for the normal ambient sound levels in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound muffling devices, and operated in a manner to cause the least noise, consistent with efficient performance of the work.

C125.04 Dust Control: The Contractor is responsible to comply with federal, state and local laws and regulations controlling pollution of the environment, including air, water and noise. The following are dust control methods that are required by the City to control fugitive dust from LAND CLEARING ACTIVITIES, EARTH MOVING ACTIVITIES, STORAGE PILES, DISTURBED SURFACE AREAS OR INACTIVE CONSTRUCTION SITES, UNPAVED ROADS AND SHOULDERS, PAVED ROAD TRACK-OUT. *Use of these control methods **DOES NOT** automatically assure compliance with the Federal and State regulations.* ***Use of more than one method may be necessary.***

CONTROL METHOD	DESCRIPTIONS
Watering	1. Application of water by means of water trucks, hoses, and/or sprinklers at sufficient frequency and quantity prior to conducting, during, and after construction activities. 2. Need sufficient quantities to keep the surface moist. 3. Pre-application of water to the depth of the proposed cuts or equipment penetration. 4. Apply at sufficient frequency and quantity to develop a surface crust. 5. Required application frequency will vary according to soil type, site-specific conditions, weather conditions, and amount of vehicle traffic.

Coverings	1. Tarps, plastic, or other materials can be used as a temporary covering. 2. When used, coverings must be anchored to prevent wind from removing them.
Wind fencing	1. Three to five foot barriers with 50% or less porosity, adjacent to roadways or urban areas. 2. Normally used in conjunction with watering or chemical stabilization.
Cover haul vehicles	Entire surface should be covered with water or tarps once vehicle is fully loaded.
Wheel washers	1. Should be placed where vehicles exit unpaved areas onto paved areas. 2. May be adjusted to spray entire vehicle including bulk-stored material in haul vehicles.
Sweep/Clean roadways	Either sweeping or water flushing may be used. Requires routine street sweeping if subject to material accumulation.
Site access improvements	1. Install a gravel pad or grizzly at the access point to your site. 2. Designate a single site entrance and exit. 3. Stay on established routes. 4. Reduce speed may need to be used with watering or chemical stabilization. 5. Maintained Gravel/Recycled Asphalt to a size and depth effective in controlling dust.
Restrict Access	1. Install fencing around the perimeter of property. 2. Install “No Trespassing” signs. 3. Eliminate Unnecessary travel, Restrict access or redirect traffic to reduce vehicle trips.
Altering loading and unloading procedures	1. Confine loading and unloading procedures to the downwind side of storage piles. 2. May need to be used in conjunction with wind sheltering.
Location	Locate haul roads as far from existing housing as possible.
Pre-grading planning	1. Grade each phase separately and time to coincide with the construction phase. 2. Grade entire project but apply chemical stabilizers or ground cover to graded areas where construction is scheduled to begin more than 60 days after grading is complete.
Operate off-road haul vehicles appropriately	1. Mix material with water prior to loading, and/or to entire surface of material after loading. 2. Empty loader slowly and keep bucket close to the truck while dumping. 3. Apply water as necessary during loading operation.
Alternative haul vehicles	Use bottom-dumping haul vehicles.
Chemical Stabilizers	1. Most effective in areas that are not subject to daily disturbances or on areas where active operations have ceased. 2. Apply per manufacturer’s recommendations. 3. Best for use on storage piles subject to infrequent disturbances. 4. Not recommended for high volume or heavy equipment traffic use.
Vegetation	Establish as quickly as possible when active operations have ceased.

During periods of high winds	1. Apply chemical stabilizers per manufacturer's directions, and prior to expected wind events. 2. Apply water as necessary, and prior to expected wind events. 3. Install temporary covers and Cover all haul vehicles. 4. Stop work and vehicle activity temporarily. 5. Clean streets with water flushing.

SECTION C126
PERFORMANCE OF WORK

C126.01 Construction Progress Schedule: Prior to beginning the work the Contractor shall submit to the Director a Construction Progress Schedule giving a satisfactory schedule of operations that provides for completion of the work within the contract time. This schedule shall be on the prescribed bar graph form and shall allocate the entire contract time. The Contractor shall have copies of the schedule available at the preconstruction conference.

If the Contractor's operations are affected by changes in the plans or the amount of work, or if the Contractor has failed to comply with the approved schedule, or if requested by the Director, the Contractor shall submit a revised Construction Progress Schedule for approval. This revised schedule shall show how the Contractor proposes to prosecute the balance of the work. The Contractor shall submit the revised schedule monthly or within 14 calendar days after the date of request or by the Director.

The approved Construction Progress Schedule will be used as the basis of establishing the controlling item of work, charging contract time and as a check on the progress of the work. The Construction Progress Schedule shall show only one controlling item of work for each contract day. If the Construction Progress Schedule has not been approved prior to the issuance of the Notice to Proceed, the Director will establish the controlling work item and charge contract time accordingly.

The most recent approved Construction Progress Schedule shall be maintained on-site by the Contractor at all times during the course of the contract.

C126.02 Work shall be commenced within ten (10) days after receipt of written Notice to Proceed from the Director. The entire project shall be completed within the time stipulated in the contract. If the Contractor is delayed at any time in the progress of the work by any act or neglect of the City, or by changes ordered in the work, or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any causes beyond the Contractor's control, or by any causes which the Director shall decide to justify the delay, then the time of completion shall be extended for such a reasonable time as the Director may decide. Written claims for time extensions shall be made within thirty (30) days of the first date of claim. But neither the extension of time for any reason beyond the date herein fixed for the completion of the work, nor the acceptance of any part of the work shall constitute a waiver by the City of the right to abrogate the contract for abandonment or delay in the manner provided by Section C124 of these specifications. Upon completion of the work, and before acceptance and final payment, the Contractor shall clean up the work and adjacent property and remove therefrom all surplus and discarded materials, rubbish and temporary structures, and shall leave the street or streets and the median (if any), upon which he

has been engaged in a neat and clean condition throughout the entire length of the improvement. For Working Day projects, work shall automatically be suspended on Saturdays, Sundays, all legal holidays, and after five-thirty (5:30) P.M. until seven (7:00) A.M. of the following day, unless permitted in writing by the Director. Said permission will not be unreasonably withheld. If the Contractor is delayed at any time in the progress of the work by any act or neglect of the City, the Contractor may be compensated for such delay at the discretion of the Director.

C126.03 The number of days allowed for completion of the work will be stated in the contract.

The Director will furnish the Contractor a monthly statement showing the number of days charged to the contract for the preceding month and the number of days specified for completion of the contract. The specified days for completion will not include additional days to be added for plan changes. The Contractor will be allowed thirty (30) days in which to file a written protest setting forth in what respect said monthly statement is incorrect; otherwise, the statement shall be deemed to have been accepted by the Contractor as correct.

If a protest is filed by the Contractor, the Director will conduct such reviews and investigations as required to rule on the protest within thirty (30) days from the date the statement is furnished by the Contractor. The number of days charged as listed, or revised within the allotted time, shall become final at the end of this thirty (30) day period, subject to change only through legal action.

When the contract time is on a calendar daily basis, it shall consist of the number of calendar days stated in the contract beginning with the date stipulated in the Notice to Proceed, including Saturdays, Sundays, holidays and non-work days. All calendar days elapsing between the effective dates of written orders by the Director to suspend work and to resume work for suspensions not the fault of the Contractor will be excluded.

When the contract time is a fixed calendar date, it shall be the date on which all work on the project shall be completed.

The contract time only for the work as awarded is based on the original quantities and includes the time necessary to procure material, equipment and an adequate labor force to complete the work in quantities set forth in the proposal. The contract time will be increased for performance of extra work commensurate with the following:

(1) Mathematical Increase: Upon completion and acceptance of the project, the original contract time will be adjusted proportionally to the amount of the final estimate divided by the original contract amount, except that, in the case of total project cost underrun, the original contract time will not be decreased.

(2) Increase for Difficulty: When the contract is altered and the Contractor requests additional contract days, the document authorizing or ordering alterations will show (a) the number of additional days justified, (b) the number of days added by anticipated overrun in costs (if any) due to alterations and (c) the difference between these two numbers. The difference between the two numbers will be added to the contract time.

(3) In no event shall the total contract time exceed the amount of contract time actually

expended.

If the Contractor finds it impossible, for reasons beyond his control, to complete the work within the contract time as specified or as extended in accordance with the provisions of this Subsection, the Contractor may, at any time prior to the expiration of the contract time as extended, make timely written request to the Director for an extension of time setting forth therein the reasons which the Contractor believes justify granting his request. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Director finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, the Director may extend the contract time in such amount as conditions justify.

Apart from extension of time for unavoidable delays and the waiving of any applicable liquidated damages, in no event shall the City or Engineer be liable to the Contractor, any Subcontractor, supplier, or any other person or organization, or any surety, and no payment or allowance of any kind shall be made to the Contractor as compensation for damages because of hindrance or delay for any cause in the progress of work, whether such delay be avoidable or unavoidable.

When substantial completion has been certified by the Director, daily time charges will cease. Daily time charges will recommence after a punch list has been prepared and given to the Contractor. Daily time charges will continue to accrue until all punch list items have been completed to the satisfaction of the Director.

C126.04 Should the Contractor fail to complete the work within the time specified in the Uniform Bid Form and allowed by the Director as provided for in these specifications, the Contractor shall pay to the City, not as a penalty, but as acknowledged liquidated damages, the sum per day stipulated in the Uniform Bid Form for each working day that he is delinquent. This amount shall be reported to the Director of Finance, who will deduct the same from any balance then due or which may become due the Contractor. The City will not ask the Contractor to waive "notice of default".

C126.05 Construction Progress Photographs: Construction photographs are a mandatory requirement of this contract. Contractor shall be responsible for the production of construction photographs as provided herein. The Director shall designate the subject of each photograph.

Notwithstanding any other provisions of these specifications, the Contractor shall take a minimum of 24 photographs at a minimum of eight (8) different locations per pay period. The intent of the photographs is to record the work in progress and show general views of the project as well as interesting items of the work. Photographs of each work item shall be taken before work begins, and after completion of work, as evidence of work performed.

Additionally, for each pay request the Contractor shall provide before, during, and after photographs of each work item that is being invoiced. The photographs should be taken from the same vantage point for each work item. The photographs shall be taken in sufficient frequency to clearly document the damaged area and all stages of the repair work performed. The intent of these photographs is to the document the construction has been performed in order to facilitate the City with requesting reimbursement for the work.

All photographs shall be produced by a competent photographer, and shall be color photographs of commercial quality. Digital Photography: Use 2.1 megapixel density or greater for photographs. Submit digital photographic files in JPEG file format. Photos shall be identified with description of view, date photographed, photographer's name, project number and name, and name of Contractor.

Photographic files become the property of the City. Do not publish photographs without written consent by the City. Submit one set of Progress Photographs with each Application for Payment at the times established for submittal of Applications for Payment. Monthly Applications for Payment shall be deemed incomplete if not accompanied by the required Progress Photographs. Contractor's failure or election to not submit a monthly Application for Payment shall not affect the requirement for monthly Progress Photographs.

No direct payment will be made for construction photographs.

C126.06 Field Office: For each major street project or as directed by the Director, the Contractor shall provide a field office (or an office trailer) on an approved site in close proximity to the work in accordance with the following requirements.

The field office shall be weather tight and constructed of wood, metal, masonry or other approved material for the purpose of housing the personnel, plans, records and reports as necessary. The field office shall have a minimum floor space of 160 square feet (15 sq m), or other approved size, that provides sufficient space with a minimum ceiling height of 7 feet (2.1 m). The field office shall have at least one outside door and have sufficient windows. The field office shall have electric lighting and power outlets as directed. The building and contents shall be secured by suitable locks and catches. The Director shall be afforded access to the field office at all times and shall be provided with a set of keys as necessary. The Contractor shall provide suitable desks, chairs and file cabinets for personnel using these facilities. The field office shall be heated and air conditioned, and have approved sanitary facilities. The field office shall be furnished, equipped, satisfactorily maintained, moved as directed, and subsequently removed from the project upon completion of construction.

The cost shall be included in Bid Item C727 (51) – Mobilization.

C126.06 Red-line drawings: Contractor shall provide manually marked-up "red line" drawings to the owner. The original contract drawings shall be modified to show all additions, deletions, and other changes made during construction to pavement, water, sewer, and drainage facilities. Drawing modifications shall include both a markup of the graphics and a brief written explanation describing any changes. Wherever applicable, revisions shall include updates to details, sections, index, notes, drawing call-outs, plan, and plan & profile views.

Each Sheet of the red line drawings shall include a stamp showing: RED-LINE DRAWINGS, name of Contractor, Superintendent's signature, and Date. Drawings shall also include: All field changes, any change in line or grade from the original drawings, location of mains and house service connections, and the limits of pavement removal and replacement.

To promote accuracy; during construction red line drawings shall be updated on a bi-weekly basis

with copies provided to the project engineer as work is completed for each block. Redlines shall be jointly reviewed/developed by the Contractor and Resident Inspector and discussed at each construction progress meeting. The Contractor shall furnish a final set of redline drawings prior to final inspection. The Contractor shall furnish redline drawings at no direct payment.

SECTION C127
PREPARATION AND RESPONSE FOR TROPICAL EVENTS AND OTHER WEATHER-RELATED EMERGENCIES

If there is an emergency declared by the federal, state, or city government in Orleans Parish, or in any portion thereof, or in any surrounding parish which affects the ability of the project to continue on schedule, then all work on this project shall cease until such time as the Contractor is instructed to resume work by the Department of Public Works, which has jurisdiction over this project.

If there is any type of work which must proceed to prevent harm to persons or property, or damage to the project itself, then Contractor should immediately contact the Department of Public Works for necessary instructions. If Contractor is unable to contact the Department of Public Works, the Contractor may perform the work necessary to prevent such harm in accordance with industry safety standards.

Contractor shall be entitled to an extension of time for the period of the stoppage, but shall not be entitled to any additional compensation by reason thereof.

SECTION C128
PERMITS AND REGULATIONS

C128.01 Permits and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the Contractor.

C128.02 The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as planned and specified. The Contractor is required to observe all laws and ordinances relating to the obstructing of streets, maintaining signals, keeping open passageways and protecting them where exposed to danger, and all general ordinances affecting him or his employees or his work hereunder in his relations to the City, or any persons, and to obey all laws and ordinances controlling or limiting the Contractor while engaged in the prosecution of the work under this contract. If the Contractor observes that the plans and specifications, or either, are at variance with laws and regulations, he shall promptly notify the Director in writing, and of any necessary changes in the work. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules or regulations, and without such notice to the Director he shall bear all costs arising therefrom.

C128.03 Required Safety Provisions: It shall be the duty and responsibility of the Contractor to provide all reasonable measures necessary to insure safety of the public. Types and placement of barriers, warning signs, lights, etc. shall be reviewed by the Director and be in conformance with the MUTCD.

C128.04 Required Traffic Provisions. The Contractor shall take appropriate measures to assure that traffic conditions as near normal as possible shall be maintained at all times so as to minimize inconvenience to the occupants of the adjoining property and to the general public. The Director may permit the Contractor to close streets and alleys to all traffic for a prescribed period of time.

Warning signs shall be placed far enough in advance of the construction operations to alert traffic within a public street, and cones or other approved devices shall be placed to channel traffic in accordance with instructions of the Director. Fire hydrants, fire stations, fire escapes, driveways and any other vital facilities as designated by the Director shall not be blocked or interfered with in connection with the work required for the approved work. The Contractor shall maintain safe crossings for vehicular traffic at all street intersections unless exception is made by the Director and the Contractor shall maintain safe crossings for pedestrians at intervals of not more than approximately one block of street. Subject to the foregoing exception, the work shall be so arranged that at least one-half of the street shall be open for traffic at all times unless otherwise approved by the Director.

The Contractor shall employ the services of a Professional Engineer, licensed by the State of Louisiana, who has background in traffic flow and control, to prepare and submit a detailed traffic control plan on behalf of the Contractor for review and approval by the Director. Such services will be paid under item C713(51).

The detailed traffic control plan is required on all streets and sidewalks where access will be impeded by work, except as designated by the Director.

C128.05 Notifications Required: The Contractor shall give 48 hours advanced notification of work and street impairment to the police, fire and other city departments and to the general public. The Contractor shall designate person(s) who can be contacted and shall be available on a 24 hour, seven days per week basis throughout the life of the project. The name and telephone number of the designated individual(s) shall be furnished to the Director prior to starting construction. The individual contacted shall be able to respond to emergencies occurring along the project area during normal, after work and holiday hours.

SECTION C129
TEMPORARY SIGNS, BARRICADES PAVEMENT MARKINGS, CONSTRUCTION SIGNING, TRAFFIC MAINTENANCE AND PUBLIC SAFETY

C129.01 Description: With reference to Section 713 of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, Latest Edition, Contractor shall be required to furnish, install and maintain temporary construction barricades, lights, signals, pavement markings and signs; provide flagmen; and comply with all other requirements regarding the protection of the work, workmen and safety of the public. Signs, barricades, temporary pavement markings, etc., shall conform to the details shown on the plans, the MUTCD and these specifications.

C129.02 Liability: Signs and barricades, and arrangements thereof, as shown on the plans, are minimum requirements and shall not be construed as negating requirements for additional proper and special signs and barricades, etc., as may be required by the Director. Appropriate signs for special conditions shall be furnished and installed as directed. Requirements as to proper signs, barricades or other safety precautions promulgated by the Contractor's insurers are not negated by these specifications.

These specifications shall not be construed as relieving the Contractor of any of his responsibilities for the safety of the traveling public, for any liability in connection therewith, or compliance with City and State laws or ordinances.

C129.03 Construction Requirements: Signs, barricades and related devices will be required when the Contractor's work is in progress on portions of the work covered by the Notice to Proceed, or when operations are suspended but the traveled portion of the road or sidewalk is not in a safe condition for the traveling public. During such times that barricades are not in place, appropriate regulatory signs shall be erected and maintained by the Contractor.

If partial Notice to Proceed is issued, the Contractor shall immediately begin erection of signs and barricades over the affected portions of the project to the extent necessary to comply with the requirements herein. When the full Notice to Proceed is issued, barricades will be erected at the beginning and end of the project, and signing throughout the remainder of the project shall be completed.

In no event shall construction work under the contract begin until signs, barricades and other traffic control devices, as provided above, have been erected and approved.

C129.04 The Contractor shall cooperate with the Director in placing of signs, as well as the City's forces responsible for maintenance of City signs, so that appropriate signs are in place at all times.

Signing shall remain in place and be maintained by the Contractor, supplemented by additional signs as required, throughout the life of the contract. Signs placed by the Contractor shall not be removed, unless required by the Director, until the project is completed and can be removed only upon final acceptance of the work.

Signs, barricades and related devices furnished and placed by the Contractor shall, upon removal, remain his property.

C129.05 Pavement Markings, color, width, type and material requirements of markings shall be in accordance with the MUTCD, and plan requirements. Temporary centerline and/or lane line markings shall be placed on each lift of asphaltic concrete surfacing subjected to traffic during construction. Temporary markings shall be in place at the end of each day's asphaltic concrete surfacing or cold planing operations on all lanes that are open to traffic.

Roadway centerlines and/or lane lines shall be marked with four (4') foot long stripes placed on approximate forty (40') foot centers. On the final surface, temporary markings shall be placed with sufficient accuracy to avoid conflict with permanent striping. The Contractor shall satisfactorily remove all temporary pavement markings by approved methods after completion of permanent

striping.

A pay item for this section is included in Section C713.

SECTION C130
MATERIALS, EQUIPMENT, EMPLOYEES
CONTRACTOR QUALITY CONTROL

C130.01 The Contractor shall provide and maintain an adequate quality control system along with personnel, equipment, supplies, and facilities necessary to obtain samples, perform tests and provide quality control of work.

The Contractor shall perform quality control sampling, testing and inspection during the work at a rate sufficient to ensure that the work conforms to the project specifications.

C130.02 Unless otherwise specified, all materials shall be new and workmanship, materials, appliances and equipment shall be of good quality and suitable for the character of work for which they are required.

C130.03 Disorderly, intemperate, or incompetent persons shall not be allowed upon the work. The Contractor's superintendent who neglects or refuses to comply with the instructions of the Director, shall, at the request of the Director, be promptly removed from the project.

All Contractors' employee personnel shall be qualified and capable of performing the necessary work in a competent and workmanlike manner as to assure the City that the quality of the work is in accordance with the general acceptance of the trade for such work. Any representative of the Contractor or Subcontractor who, in the opinion of the Director, does not perform in a skillful manner or is disorderly shall be, upon written request, immediately removed by the Contractor or Subcontractor. A person removed shall not return to the work site without written approval. If the Contractor fails to remove such a person or fails to furnish suitable and sufficient personnel to properly prosecute the work, the Director may suspend the work by written notice.

C130.04 All materials must be submitted in accordance with the instructions of the Director not less than ten (10) days in advance of commencing work. Materials furnished which do not fully comply with the requirements of the specifications shall be immediately removed from the work upon order of the Director.

SECTION C131
REMOVAL OF IMPROPER MATERIAL

All materials to be provided by the Contractor shall be of the best quality, and if the Contractor shall bring or cause to be brought on the work materials which do not conform to the requirements of the contract, the Director shall order the same to be removed at the expense of the Contractor. Should the Contractor refuse to remove the improper material, the Director may have the material removed at the expense of the Contractor.

SECTION C132
REMOVAL OF EQUIPMENT

In the case of annulment of this contract before completion from any cause whatever, the Contractor, if notified to do so by the City, shall promptly remove any part or all of his equipment and supplies from the property of the City, failing which, the City shall have the right to remove such equipment and supplies at the expense of the Contractor.

SECTION C133
SUSPENSION OF WORK

C133.01 The Director will have the authority to suspend the work wholly or in part due to the failure of the Contractor to correct conditions unsafe for the workmen or the general public; for failure to carry out provisions of the contract; for failure to carry out orders; for such period as he may deem necessary due to unsuitable weather; for conditions under the control of the Contractor considered unsuitable for the prosecution of the work or for any other condition or reason affecting the public welfare, health and safety. No allowance shall be made to the Contractor for damages sustained or alleged to have been sustained by him on account of such suspension of work. The period of such suspension, to be determined bythe Director and recorded in writing shall be added to the time specified in the proposal for the completion of the work.

C133.02 If the work is suspended, all materials delivered at the work but not yet placed therein shall be neatly piled so as not to constitute an obstruction or hazard and shall remain the responsibility of the Contractor. Contractor shall have the prerogative to remove materials, tools, etc. to protect same during such time of work suspension.

SECTION C134
WARRANTY REQUIREMENTS

The Contractor guarantees, by his signing of the contract, all materials and workmanship provided under the contract to be free of defects for a period of one year after the date substantial completion is recorded in the Mortgage Office. This guarantee will include all electrical and mechanical equipment and apparatus.

The Contractor guarantees by his execution of the contract, that for a period of one year after the date of substantial completion of the project or a portion thereof as established by the Director all necessary repairs to or replacement of said defective warranted equipment, apparatus, or material and workmanship shall be made by the Contractor at no cost to the City.

All instruction sheets that are required to be furnished by the manufacturer for materials and supplies and for operation shall be delivered by the Contractor to the Director prior to substantial completion of the project, and shall include the manufacturer's standard written warranty for each piece of mechanical and electrical equipment or apparatus furnished under the contract.

When the contract includes landscaping or maintenance of any form of plant life, unless otherwise provided, the warranty period for this portion of the contract shall be one year or two consecutive

planting seasons, whichever is longer, commencing after the date substantial completion is recorded in the Mortgage Office.

CHANGES, ACCEPTANCE, AND PAYMENT

SECTION C135
CHANGES IN THE WORK

The Director shall have the right to make alterations in the line, grade, plan, form or dimensions of the work herein contemplated, either before or after the commencement of the work and without notice to the sureties. If such alterations diminish the quantity of work to be done, they shall not constitute a claim for damages for anticipated profits for the work deleted.

But when the reduction in quantity of work is a material part of the work contemplated, the Contractor may be entitled to compensation, except for anticipated profits, as determined by the Director, including overhead and equipment charges which the Contractor may have incurred in expectation of the quantity of work originally estimated unless specifically provided herein:

A material part is the decrease of twenty-five (25%) or more of the original bid quantity for any major item. A major item is defined as an item included in the contract as awarded, that has a total cost equal to, or greater than ten (10%) percent of the original contractamount.

If the quantity for any major item of work is increased by 25% or less of the original bid quantity the increase shall be paid according to the quantity of work actually done and at the price established for such work under this contract. If its quantity is increased by more than 25%, its unit bid price may be negotiated at the discretion of the Director, before the work isperformed.

SECTION C136
EXTRA WORK

C136.01 The Contractor shall be prepared to do any extra work for which there is no price or quantity included in the contract but which is deemed necessary to fully complete the work. Such extra work shall form a part of the contract and shall be executed in the manner as if it had been included in the original estimate of quantities.

C136.02 Extra work shall be paid for at a unit price or lump sum to be agreed upon in advance in writing by the Director and the Contractor. Where such price and sum cannot be agreed upon by both parties, or where this method of payment is impractical, the Director may order the Contractor to do such work on a force account basis. The Contractor shall submit a detailed cost breakdown with each request for additional work.

C136.03 In computing the price of extra work on a force account basis, the Contractor shall be paid for all foremen and labor actually engaged on the specific work, at the current actual rate of wage for each and every hour that said foremen and labor are engaged in such work, plus twenty-five (25%) percent of the total thereof for superintendence, overhead and profit and use of small tools, hand tools and power tools not exceeding 2 HP; and in addition, the Contractor shall be allowed an amount sufficient to cover bond, Workmen's Compensation and all other Federal, State, or Municipal Employer payroll taxes. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance and taxes.

For all material used, the Contractor shall receive the actual cost of such material delivered at the site of the work, as shown by original receipted bill, to which shall be added fifteen (15%) percent for superintendence, overhead and profit.

For any equipment used that is owned by the Contractor, the Contractor shall be allowed an appropriate rental based upon the latest rental price as determined by the "Rental Rate Blue Book" in their most recent publication of their rental rate booklet, to which ten (10%) percent shall be added for fuels, oils, lubricants, tires, tracks and other general maintenance items.

Regardless of whether or not the Contractor owns or rents equipment, payment for use of such equipment shall be the minimum cost that would be incurred by the Contractor if it were rented on a hourly, daily, weekly or monthly basis whichever is cheapest for the City. The minimum cost shall be determined as the minimum number of days, including rain days, holidays and weekends, the equipment is required to be on the job site to complete the work in an expeditious manner. The Contractor shall also be paid the actual cost of transportation for any equipment which he owns and which he has to transport to the project for the extra work, to which no per cent shall be added.

No compensation for expenses incurred in executing extra work, other than herein specifically mentioned, will be allowed. If the Contractor is required to rent equipment for extra work, he will be paid the actual rental and transportation costs of such equipment, to which ten (10%) per cent shall be added for fuels, oils, lubricants, tires, tracks and other general maintenance items. The basis upon which rental costs are to be charged shall be agreed upon in writing before work is started.

Actual rental and transportation costs shall be obtained from receipted invoices and freight bills.

When the Contractor engages Subcontractors to perform certain portions of the work, he will be paid his actual cost of subcontracting to which ten (10%) per cent shall be added for his superintendence, overhead and profit. The Director reserves the right to approve the sub-Contractor for any extra work.

C136.04 A daily record of extra work done on the force account basis shall be submitted to the Director or his representatives by the Contractor within forty-five (45) days following the execution of the work. No less than two (2) copies of such record shall be made on suitable forms and signed by both the representative of the Director and the Contractor; one copy is to be retained by the Contractor. All bills for materials used on extra work shall be submitted to the Director by the Contractor upon certified statements to which will be attached original bills covering the cost of such materials.

C136.05 Payment for extra work of any kind will not be allowed unless the same has been approved in writing by the Director.

C136.06 If the Contractor deems additional compensation is due for work, material, delays, inefficiencies, disruptions or other additional costs or expenses not covered in the contract or not ordered as extra work, the Contractor shall notify the Director in writing of his intention to make a claim for such additional compensation before beginning the work on which the claim is based or within one working day of encountering the conditions or effects which the Contractor claims entitle him to additional compensation. If such notification is not given or the Director is not afforded

proper facilities by the Contractor for keeping account for actual costs incurred by the Contractor, the Contractor hereby agrees and shall be deemed to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the Director has kept account of the costs as aforesaid shall not be construed as proving or substantiating the validity of any claim.

SECTION C137
MANNER OF ACCEPTANCE

Upon substantial completion of all the work executed under the contract, the same shall be accepted by the Director, in the manner provided for in Section C138 of these Specifications.

SECTION C138
METHOD OF ACCEPTANCE & PAYMENT

C138.01 Payment for the property owner's portion of the cost of the work, and the City's portion of the cost of the work, if any, shall be made in accordance with the provisions of the law regulating and governing the manner and mode of paying for the cost of paving, repaving, surfacing, resurfacing, etc., unless otherwise stipulated in the Uniform Bid Form and Special Specifications.

C138.02 Railroad's or Electric Street Car's portion of the cost of the work when executed under these specifications shall be paid for in the same manner as the City's and Property Owner's portion unless otherwise stipulated in the Uniform Bid Form and project specifications.

C138.03 During the progress of the work the Contractor shall be paid monthly for work completed during the month. These payments shall be made to the extent of: 1. Ninety-five (95%) percent of the value of the work when the original contract value exceeds one million five hundred thousand dollars ($1,500,000.00). 2. Ninety (90%) percent of the value of the work when the contract value is one million five hundred thousand dollars ($1,500,000.00) or less. No allowance shall be made in the computation of monthly estimate for material delivered at the site of the work and not actually put into place, except with the prior approval of the Director. The retained percentage of each monthly estimate shall be paid to the Contractor not less than forty-five (45) days after the date of the recorded acceptance in the Mortgage Office of the Parish of Orleans of the completed work and upon the production of Mortgage Certificate properly dated and signed by the Recorder of Mortgages evidencing the fact that there are no recorded liens or any other encumbrances against the said work or the funds in the hands of the City of New Orleans due the Contractor for said work. Partial payment as hereinabove described will be made on estimates of the work done since the commencement or last previous estimate and shall not in any respect, act as an acceptance of the work to be done therefore or release the Contractor from any responsibility whatever, in connection therewith. At the time of making the final estimate upon the completion of the work as a whole, the entire work shall be subject to revision and adjustment by the Director.

C138.04 Supplemental Payments: A supplemental payment request will be permitted prior to the regular monthly payment when work is performed for which change orders were not approved in time to be included on the previous payment and the amount of the change order involved is sixty thousand dollars ($60,000) or more.

C138.05 Final Payment:

(1) When the contract is substantially complete as defined herein, the Contractor shall request the Director to arrange an inspection for substantial completion with all user agencies. All signs must be up, erected and functioning as part of the substantial completion. This inspection shall take place within ten (10) working days of receipt of the request. The Director will promptly make such inspection, and when the work is found acceptable under the contract and the contract fully performed or substantially completed, the Director shall promptly issue a certificate over his own signature, stating that the work required by this contract has been completed or substantially completed and is accepted by him under the terms and conditions thereof. The entire balance found to be due the Contractor including the retained percentage, less an amount based on the Director's estimate of the fair value of the claims against the Contractor and the cost of completing the unsatisfactory items of work with specified amounts for each item shall be due and payable. A punch list shall be prepared for unsatisfactory items which will be filed with the certificate of substantial completion and shall include reasonable values which may be more than bid price assigned to each punch list item, said amounts to be withheld by the City pending completion of that item by the Contractor. If claims against unsatisfactory items are more than the retainage, then the value of such claims shall be retained by the City. Retainage shall be paid to the Contractor at the expiration of the forty-five (45) day lien period. Deduction may be withheld for incomplete punch list items. The date of substantial completion of a project or specified area of a project is the date when the construction is sufficiently completed in accordance with the contract documents as modified by any change orders agreed to by the parties so that the City can occupy the project or specified area of the project for the use for which it wasintended.

(2) Before the final payment is issued, if required in the Special Conditions, the Contractor shall certify in writing to the Director that all payrolls, material bills, and other indebtedness connected with the work have been paid, or otherwise satisfied, except that in case of disputed indebtedness or liens, if the contract does not include a payment bond, the Contractor may submit in lieu of certification of payment a surety bond in the amount of the disputed indebtedness or liens, guaranteeing payment of all such disputed amounts, including all related costs and interest in connection with said disputed indebtedness or liens which the owner may be compelled to pay upon adjudication.

(3) The making of final payment shall constitute a waiver of all claims by the City, other than those arising from unsettled liens, from faulty work appearing within the guarantee period provided in the special conditions, from the requirements of the drawings and specifications, or from manufacturer's guarantees.

(4) If after the work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor, and the Director so certifies, the Director of Finance shall, upon certification by the Director, and without terminating the contract, make payment of the balance due for the portion of the work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment.

(5) Outside or user agencies required to accept any portions of the project shall be subject to the provisions of this section. Failure of the outside agency to inspect their area of work within ten (10) working days will not affect or delay the issuance of a certificate of substantial completion.

C138.06 Should the acceptance fail to be recorded within five (5) working days, the Contractor may, at his option, record this document at his cost.

C138.07 Partial Payments: Provided work is prosecuted in accordance with provisions of the contract and with satisfactory progress the Director will make the first progress estimate within two (2) calendar months from the date indicated to begin work in the Notice to Proceed. The Director will determine the progress estimate date. Each successive progress estimate will be made on this same date of each month thereafter until completion of the contract.

Each progress estimate will be an approximation of the proportionate value of the work performed up to the date the estimate is made and will be based on material in place and labor expended thereon, but no more than ninety-five (95%) percent of the total contract price of the work will be paid in advance of final acceptance.

The amount of said estimate, after deducting appropriate retainage and all previous payments, shall be payable to the Contractor.

Monthly estimates will be approximate and subject to corrections in the estimate rendered following discovery of any error in any previous estimates.

Should defective work or material be discovered or reasonable doubt arise as to the integrity of any part of the work completed prior to final acceptance and payment, there will be deducted from the first estimate rendered after such discovery an amount equal in value to the defective or questioned work, and this work will not be included in a subsequent estimate until defects have been remedied or causes for doubt removed.

If the Contractor is not a corporation, the Contractor's Federal Identification Number (if a firm) or Social Security Number (if an individual) shall be furnished to the Director of Finance upon request before payments will be made to the Contractor for any work under the contract.

Payment of the monthly estimates shall not be taken as an admission that the work is done or that its quality is satisfactory, nor as a release of the Contractor from the responsibility for any portion thereof, but the whole work and all particulars relating thereto shall be subject to revision and adjustment by the Director at the time of final acceptance and payment of the final estimate.

SECTION C139
PAYMENT WITHHELD

The City may withhold that portion of the payment to such extent as may be necessary to protect itself against loss from:

(a) Defective work not remedied.
(b) All costs associated with cancelled or failed tests.
(c) Failure of the Contractor to make payments properly to sub-Contractors for material or labor.
(d) A reasonable doubt that the contract can be completed for the balance then unpaid.

When the above grounds are removed payments shall be made for amounts withheld because of them.

SUPERINTENDENCE AND INSPECTION

SECTION C140
DIRECTOR OF PUBLIC WORKS' AUTHORITY

The Director shall have the right to:

(1) Stop the work;

(2) Reject the work;

(3) Have access to work site whenever the work is in preparation or in progress;

(4) Determine the amount or quantity, or the classification of several kinds of work or material, which are to be paid for under the contract;

(5) Coordinate the work with utility companies, railroad companies and all governmental user agencies.

Should the Contractor fail to correct defective work as required in this contract or persistently fail to carry out the work in accordance with the contract documents, the Director may by written notice direct the Contractor to stop the work or any portion thereof until the defective work has been remedied to the satisfaction of the Director. The right to stop the work shall not be construed to create a duty on the part of the Director to exercise this or any other right under the contract. The Director shall also have the right to stop the work should the Contractor fail to maintain contract safety provisions.

The Director will not be responsible for construction means, methods, techniques, sequences or procedures or for safety precautions and programs in connection with the work. These duties and responsibilities are exclusively the Contractor's obligations. The Director will not be responsible for the acts or omissions of the Contractor, Subcontractors or any of their agents or employees, or any other persons performing any of the work.

The Director will have authority to reject work which does not conform to the contract documents. The Director may require special inspections for testing of the work at any stage of preparation or completion. However, this right shall not be construed to create a duty on the part of the Director to exercise this or any other right under the contract.

SECTION C141
SUPERINTENDENCE

C141.01 The Contractor must at all times have an authorized representative on the work site to whom orders can be given; this representative will have full authority to carry out all orders given by the Director, and shall keep on the work, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Director.

C141.02 The Authorized Representative (superintendent) shall represent the Contractor and all directions given to same by the Director shall be as binding as if given to the Contractor. Directions shall be confirmed in writing upon written request in each case. The Contractor shall give efficient supervision to the work, using its best skill and attention.

C141.03 If the Contractor, in the course of the work, finds any discrepancy between the plans and the physical condition of the locality, or any errors or omissions in plans or in the layout as given by points and instructions, it shall be the duty of the Contractor to immediately inform the Director in writing, and the Director shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk.

SECTION C142
INSPECTION

C142.01 Duly authorized representatives of the Department will be assigned by the Director to observe the work; their duties will be to see that proper materials are used and that the work is done in accordance with the plans and specifications and to notify the Contractor and the Director of any deficiencies or non-compliance with the project plans and specifications. The right of final condemnation or acceptance of the work shall not be waived by the Director at any time during the progress of the work or after its completion.

C142.02 The Contractor shall be responsible for the faithful execution of his contract and his presence or absence is in no manner to be presumed to relieve in any degree the responsibility or obligations of the Contractor. The decision of the Director shall be final and binding upon all technical questions concerning the execution of the work, in the interpretation of the specifications, and as to all measurements.

C142.03 The Contractor shall notify the Director as to the exact time at which he proposes to begin work so that the Director may provide for the inspection of all materials used and all work done under this contract. Such inspection may extend to all or any part of the work and to the preparation or manufacture of materials to be used, whether within the limits of the work on the street, or at any other place.

C142.04 The Director shall have free access to all parts of the work and to all places where any parts of the materials to be used are procured, manufactured or prepared.

C142.05 The Contractor shall furnish the Director all information relating to the work and the materials therefore, which may be deemed necessary or pertinent, and with such samples of materials as may be required. The Contractor, at his own expense, shall supply such labor and assistance as may be necessary in the handling of materials for proper inspection, or for inspection of any work done by him. The City of New Orleans shall, at its own expense, retain the services of an independent testing laboratory to perform physical, chemical and other pertinent tests on materials entering into the project. All reports on materials tested by the testing laboratory will be sent to the Director and the Contractor stating whether or not the materials conform to these specifications.

C142.06 The duly authorized representatives of the Director shall have no authority to permit deviation from or to relax or extend any of the provisions of the specifications without the written permission of the Director, or his Agent, nor to delay the Contractor by failure to inspect materials and work with reasonable promptness.

C142.07 The Contractor shall provide the Director with a schedule of his intended job progress before work proceeds. This schedule shall be in the form of a Gantt Chart and shall include major items of work and indicate when the Contractor has planned the performance of these work items. The Director may request the Contractor to update this schedule as work progresses under the contract.

SECTION C143
PLANT INSPECTION

Plant inspection may be required for all asphaltic concrete pavements, precast concrete curb and Portland cement concrete. When payment is to be made by the tonnage, haul tickets shall be signed by a representative of the testing laboratory.

The cost of plant inspection shall be borne by the City of New Orleans.

SECTION C144
FINAL AUTHORITY

The Director shall decide all questions which may arise to the quality and acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of said work and shall decide all questions which may arise as to the interpretation of all plans and specifications relating to the work.

INJURY AND DAMAGES

SECTION C145
INJURY TO WORK

The Contractor shall be responsible for all injury which the work may suffer, without respect for cause, until it has been accepted as substantially complete by the Director.

SECTION C146
INJURIES TO PERSONS AND PROPERTY

C146.01 The Contractor shall alone be held responsible for all injuries to persons, and for all damage to the property of the City or others, caused by or resulting from the act of omissions of himself, his employees or his agents, during the progress of, or connected with the prosecution of the work, whether within the limits of the work or elsewhere, and whether under the contract proper or as extra work.

C146.02 The Contractor must protect and support all water, sewer and gas pipes or other conduits and buildings, walls, fences or other properties which may be damaged during the performance of his work. He shall take all reasonable and proper precautions to protect persons, animals and vehicles of the public from injury, and whenever necessary shall erect and maintain a fence or railing around any excavation, and place a sufficient number of warning lights about the work and keep them burning from twilight until sunrise, and shall employ one or more watchmen as an additional security whenever they are needed. He must, as far as practicable and consistent with good construction, permit access to private and public property and leave fire hydrants and catch basins free from encumbrances. He must restore, at his own expense, all injured property caused by any act of omission or commission on his part, or on the part of his agent, including sidewalks, curbing, sodding, pipes, conduits, sewers and other public property, to a condition as good as it was when he entered upon the work.

C146.03 During the progress of any and all parts of the work contemplated, the Contractor shall be required to prohibit and prevent any and all riding, driving on, or using in any manner any portion of such completed work except after the time hereinafter specified. To prevent the use of any completed work as above noted, the Contractor, at his own expense, shall effectually guard such portion of the work, with barriers sufficiently strong to afford the necessary protection.

C146.04 The Contractor shall indemnify and save harmless and defend the City from all suits and actions that may be brought against it by reasons of any injury, or alleged injury, to the person or property of another, resulting from negligence or carelessness in the execution of the work, or because of failure to properly light and guard the same.

C146.05 The Contractor must protect all vegetation or plant life, in whatever form, other than that proposed to be removed, altered or otherwise affected as part of the project. No parking upon, or use of, the median or neutral ground for storage of materials, equipment or supplies shall be permitted and no material, equipment or supplies may be stored or used on any unpaved area below the dripline of any tree unless specifically authorized by the Director. In case of damages of

any type to vegetation or plant life designated to remain in the project area, the Contractor shall replace the items in like kind or repair such damage to the satisfaction of the Department of Parks and Parkways staff without additional compensation.

C146.06 The Contractor must minimize damage to streets used for access to the project for the delivery of materials, equipment or supplies by observing weight and speed limits as defined in the City Code. Access routes to the work site from designated "truck routes" will be established at the pre-construction meeting. The Contractor and his sub-Contractor(s) will be required to adhere to these routes to and from the project site. The routes may be revised by the Director to accommodate the work as it progresses. The Contractor is required to keep the work site clean, particularly the roadways adjacent to the work site. The Contractor shall clear such roadways of dirt, silt, sand or other such material as often as necessary, or as specified by the Director. The work site shall be left in a clean condition at the close of each work day.

SECTION C147
DAMAGES

Should the Contractor be of the opinion at any time that he has sustained damages under this contract, for which he should be compensated, he shall make a written statement to the Director of the nature of the damage claimed within thirty (30) calendar days after sustaining such damages. The Director shall thereupon render a decision in the matter.

SECTION C148
OTHER STATUTES

Unless in direct conflict with the provisions stated herein, all state of Louisiana statutes applicable to construction shall be hereby adopted.

PART II - EARTH WORK

SECTION C201
CLEARING AND GRUBBING

C201.01 DESCRIPTION: This work consists of required clearing, grubbing, removing and disposing of vegetation and debris within the limits of the right-of-way and easement areas, except such items that are designated to remain or to be removed under other items.

This work consists of cutting trees, logs, brush, stumps and debris; excavating and removing stumps, roots, submerged logs, snags and other vegetative or objectionable material; disposing of removed material in a satisfactory manner and cleaning the area. When fencing or utility relocation is required, an area of 10 feet wide, adjacent to and inside the right-of-way line, shall be cleared and grubbed.

C201.02 GENERAL CONSTRUCTION REQUIREMENTS: The Director will designate trees, shrubs, plants and other items to remain. The Contractor shall preserve the items designated to remain. Equipment, materials and supplies shall not be stored in proximity of items designated to remain. Trees shall be removed without damaging items marked to remain. In case of damage to bark, trunks, limbs or roots of vegetation marked to remain, the Contractor shall repair such damage at no direct pay by horticultural and tree surgery practices published by the American Association of Nurserymen (AAN). Trees shall not be felled outside of the right-of-way. Damage outside the right-of-way caused by the Contractor's operations shall be the Contractor's responsibility.

C201.03 CLEARING AND GRUBBING: Clearing and grubbing shall be done within the construction limits and to a point in fills 15 feet beyond the toes of foreslopes and in cuts 15 feet beyond the tops of backslopes, when width of right-of-way permits, or to the limits shown on the plans; also from areas required for outfall ditches and channel changes. Trees, stumps, roots and other protruding vegetative obstructions not designated to remain shall be cleared and grubbed (including mowing when required by the Director). Undisturbed stumps, roots and nonperishable solid objects which will be a minimum of one foot below the subgrade or slope of embankments will be permitted to remain provided they do not extend more than six inches above the original ground line or low water level.

Except in areas to be excavated, stump holes and other holes left from clearing and grubbing shall be backfilled with usable soil which shall be thoroughly compacted.

C201.04 MEASUREMENT: No measurement of area will be made for payment.

C201.05 PAYMENT: Payment for clearing and grubbing will be made at the contract unit price under:

ITEM NO.	PAY ITEM	PAY UNIT
C201(01)	Clearing and Grubbing	Lump Sum

SECTION C202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS

C202.01 DESCRIPTION: This work consists of removal and satisfactory disposal of pavements, sidewalks, curbs, gutters and other obstructions not designated or permitted to remain, except obstructions to be removed under other contract items. It shall also include salvaging of designated materials and backfilling resulting trenches, holes and pits, except the area to be excavated. At locations where pavement, curbs or gutter, sidewalk, driveway, or footlaps are to be removed but are not to be replaced, the Contractor shall backfill the area with selected excavated or other suitable approved material at no direct payment.

C202.02 GENERAL CONSTRUCTION REQUIREMENTS: The Contractor shall remove and dispose of all pavements, sidewalks, curbs, gutters and other obstructions. Designated salvageable material shall be removed, without unnecessary damage, in sections which may be readily transported. Salvageable material shall be stacked at specified storage areas by the Contractor. When no storage sites are specified, salvaged materials shall be delivered to the street maintenance yard. Materials not designated to be salvaged shall be disposed of, off the project, outside the view of the traveling public with written permission of the property owner on whose property the material is placed. Copies of agreements with property owners shall be furnished to the Director prior to beginning of work. Saw cut may be required prior to removal.

C202.03 MEASUREMENT: When the contract stipulates that payment will be made for the removal of specific items on a unit basis, measurement will be made by the unit stipulated in the contract.

If the contract does not include pay items for removal of structures and obstructions, the removal work will not be measured for payment.

Hauling salvaged materials to specified storage sites will not be measured for payment.

Saw cut will be measured by the linear foot unless otherwise noted.

C202.04 PAYMENT: Payment for "removal and disposal of existing Portland Cement Concrete Pavement" shall be made at the contract unit price, including removal of asphaltic concrete pavement, regardless of thickness, on top of the existing Portland Cement Concrete Pavement and curb and gutter bottom if monolithic with pavement.

Payment for removal and disposal of "existing sidewalk, driveway, footlap," "existing curb", "existing curb and gutter bottom", "existing gutter bottom or rolling strip" and "existing asphaltic concrete pavement" shall be made at the contract unit price.

Payment for "saw cut" shall be made at the contract unit price per Linear Foot.

When the removal is an area to be excavated and payment is made under other items, no deduction will be made for those items.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C202(52)(C)	Removal and Disposal of Existing Portland Cement Concrete Pavement.	Square Yard
C202(52)(D)	Removal and Disposal of Existing Sidewalk, Driveway, Foot Lap (Concrete, Brick, Asphalt, etc.)	Square Yard
C202(52)(E)	Removal and Disposal of Existing Curb (Concrete, Asphalt, Brick, Stone, etc.)	Linear Foot
C202(52)(F)	Removal of Existing Curb and Gutterbottom	Linear Foot
C202(52)(G)	Removal of Existing Gutterbottom or Rolling Strip	Linear Foot
C202(52)(I)	Removal of Existing Asphaltic Concrete Pavement	Square Yard
C202(53)(C)	Removal of Existing Concrete Bus Pad	Square Yard
C202(54)(A)	Removal and Disposal of Concrete or Stone Headers	Linear Foot
C202(54)(B)	Removal and Salvage of Stone Headers	Linear Foot
C202(55)	Saw Cut Concrete Curb, Pavement, Side-Walk, Driveway, etc. According to Plans (_" Depth)	Linear Foot
C202(56)	Saw Cut, Wheel Cut or Spade Cut Existing Asphalt, According to Plans (_" Depth)	Linear Foot

SECTION C203
PREPARATION OF ROADWAY PAVEMENT SUBGRADE

C203.01 The roadway pavement subgrade shall be made to conform to the lines and elevations shown on plans, and to the proper crown as prescribed in these specifications.

C203.02 The surface of the finished subgrade shall be parallel to and conform to the cross section of the roadway pavement.

C203.03 Berms, ridges of earth, or other material that will interfere with the immediate discharge of water to the side of the crown shall not be left on the subgrade. The subgrade shall be maintained free from ruts so that it will, at all times, drain properly with no standing water. Excavation shall not exceed the prescribed lines and elevations so as to obviate the necessity for refilling.

Stumps and roots exposed in the preparation of the subgrade shall be, as directed by the Director, either removed or excavated to a depth of not less than one (1') foot below the subgrade and the resultant excavation filled with sand and compacted.

All equipment (excavation, compaction, hauling trucks, etc...) shall be subject to approval prior to usage. When the subgrade strength is sufficiently strong to support construction traffic without rutting, heavy equipment may be used

The subgrade shall be uniformly compacted by light weight roller (five tons). When the subgrade is in a wet condition, it shall be allowed to dry until the material is within reasonable limits of optimum moisture before compaction is attempted.

Upon completion of compaction by light weight roller the exposed subgrade areas shall be properly proof rolled in order to verify suitability of subgrade to receive the base course.

Proof roll shall consist of passing over the exposed surface with a 25 ton (+/- 1-ton) loaded tandem dump truck during dry weather and observed by the Director. Result of observations shall be documented including horizontal limits of area rolled, approximate extent of vertical deflections, and any observed excessive rutting or pumping (soft spots). Excessive rutting shall be considered prolonged deflection (rutting) in excess of 1-inch for new construction or ½-inch for reconstruction. Excessive pumping shall be considered temporary deflection with rebound (pumping) in excess of 1-inch for new construction or ½-inch for reconstruction. Areas of surface soils that are observed to excessively rut or excessively pump under the truck load (unsuitable subgrade) shall be removed to such an extent as directed by the Director, replaced with sand, and compacted under the Unsuitable Subgrade, Excavation, & Sand filling item. Additionally the Director may have testing performed on areas exhibiting excessive rutting or pumping and/or require adjustments or revision to the location or type of geogrid or backfill material to be installed.

When the Contractor encounters subgrade conditions that are impossible to proof roll and equipment is unable to move freely, the Contractor shall notify the Director.

C203.04 When subgrade is approved as the subbase for the pavement base material, it shall be constructed to have, as nearly as practicable, a uniform density throughout its entire width. Wherever the subgrade extends beyond the lateral limits of an old roadway, or wherever an old gravel, macadam, or other hard compacted crust comes within six (6") inches of the elevation of the finished subgrade, such old roadway or crust shall be plowed, loosened or scarified to a depth of at least six (6") inches and the loosened material redistributed across the full width of the subgrade, adding suitable material when necessary, so that when compacted to the required elevation, alignment and cross section, the subgrade will approach as nearly as possible a condition of uniform density. Compaction of the subgrade material shall be accomplished with a self-propelled roller weighing not less than five (5) tons.

Hand tamping portions of the subgrade, when necessary, may be directed by the Director. In such cases where hand tamping is permitted, the tamper shall be of an approved pneumatic type. Berms, ridges of earth, or other material that will interfere with the immediate discharge of water to the side of the crown shall not be left on the subgrade. The subgrade shall be maintained free from ruts so that it will, at all times, drain properly with no standing water. All depressions developing under traffic on the subgrade, or in connection with rolling, shall be filled with suitable material. Rolling shall be continued until the subgrade is uniformly compacted, properly shaped, and true to grade and alignment. It is not intended that the rolling shall be continued beyond this point, as the purpose of rolling is not to produce a subgrade that cannot be further compacted, but to produce a uniformly compacted subgrade. All hauling shall be distributed over the width of the subgrade so far as practicable, so as to leave it in a uniformly compacted condition. After being prepared in the above manner, the subgrade shall be so maintained until the concrete pavement or pavement foundation has been placed thereon. Excavation shall not exceed the prescribed lines and elevations so as to obviate the necessity for refilling. When considered necessary or of assistance in producing a compact, solid surfacing, the subgrade shall be well-sprinkled with water before being rolled.

C203.05 No geotextile or other base or subbase course shall be placed until the subgrade has been approved by the Director.

C203.06 GEOTEXTILE and GEOGRID FOR STABILIZATION: This work consists of furnishing and placing geotextile fabric and geogrid in accordance with these specifications and in conformance with the details shown on the plans.

Geotextile fabric and geogrid shall conform to Section C203.07 and C203.08. Rolls of geotextile fabric and geogrid shall be kept covered at all times until used. Geotextile fabric and geogrid that has been installed shall be covered with embankment within 7 calendar days. When ultraviolet damage occurs, the geotextile fabric and geogrid shall be removed and replaced. The geotextile fabric and geogrid shall be placed at the locations shown on the plans or as directed. Adjacent rolls of geotextile fabric and geogrid will be overlapped or sewn. When rolls are overlapped, the overlap shall be a minimum of three (3') feet, including the ends of the rolls. The top layer of the geotextile fabric and geogrid shall be parallel with adjacent rolls and in the direction of construction.

The geotextile fabric shall be placed as smooth as possible with no wrinkles or folds, except in curved road sections. For curved road sections, the geotextile fabric shall be folded to accommodate the curve. The fold shall be in the direction of construction and pinned or stapled. Ruts that occur during construction shall be filled and compacted prior to placement of geotextile fabric.

Damaged geotextile fabric and geogrid shall be either removed and replaced with new geotextile fabric and geogrid or covered with a second layer of geotextile fabric and geogrid extending three (3') feet in each direction from the damaged area

C203.07 GEOTEXTILE:

Work under this section includes furnishing and placing the specified geotextile on the existing subgrade or base. Geotextile manufacturers are encouraged to furnish engineering assistance during installation of woven fabric. In addition, manufacturers might provide special equipment which will ease handling and installation.

The woven fabric shall meet the following minimum requirements:

1. Grab Tensile Strength - 400 lbs. minimum per ASTM D-4632.
2. Trapezoid Tear Strength - 130 psi minimum per ASTM D-4533.
3. Bursting Strength - 620 psi minimum per ASTM D-3787.
4. Puncture Resistance - 130 lbs. minimum per ASTM D-4833.

The geotextile shall be delivered in rolls to facilitate installation. During shipment and storage the woven fabric shall be wrapped in a heavy-duty covering to protect it from direct sunlight, ultraviolet rays, temperatures greater than 140 degrees F. (60 degrees C.) mud, dirt, dust, debris and abrasion. The manufacturer shall furnish certified test reports showing that the geotextile meets the requirements of this section.

Unless otherwise specified by the manufacturer, installation of woven fabric shall be as follows:

1. The subgrade shall be graded to the elevations required by the plans.
2. Geotextiles which have a difference between the textures of the two sides shall be unrolled with the bearded or fuzzy side down and smooth side up.
3. The geotextile shall be spread in a uniform manner, lapped and in accordance with the manufacturer's recommendations, and stretched taut on transverse direction as required to prevent the subbase from pumping into the sand-shell base. Tears or rips in the fabric shall be patched.

No payment will be made for fabric used in patching or overlaps. Geotextile will be paid for per square yard in place at the price bid in the proposal. This price shall include all labor, equipment and materials required to install fabric according to the plans and specifications.

C203.08 GEOGRID:

The Contractor shall install a prior approved geogrid over the geotextile fabric in full compliance

with manufacturer's recommendations, to the alignment and grades designated, in locations shown on the plans or as directed by the Director. Use only material that has been approved by the Director. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section. The Contractor shall check the geogrid, upon delivery, to assure the proper material has been received.

The geogrid shall be a regular grid structure formed by punching and drawing a continuous sheet of select polypropylene material and shall have aperture geometry and rib and junction cross-sections sufficient to permit significant mechanical interlock with the material being stabilized. The geogrid shall have high flexural rigidity and high tensile modulus in relation to the material being stabilized and shall also have a high level of continuity through all ribs and junctions of the grid structure. The geogrid shall maintain its confinement and interlock capabilities under repeated dynamic loads while in service and shall also be resistant to ultraviolet degradation, to damage under normal construction practices, and to all forms of biological or chemical degradation normally encountered in the material being stabilized.

The geogrid shall meet the following minimum requirements**:**

1. Nominal Aperture size – 0.6 inches minimum to 1.6 inches maximum
2. Ultimate Tensile Strength – 850 lb/ft minimum per ASTM D-6637
3. Tensile Strength at 2% strain – 280 lb/ft minimum per ASTM D-6637
4. Tensile Strength at 5% strain – 580 lb/ft minimum per ASTM D-6637
5. Carbon Black Content – 0.5% minimum per ASTM D-4218

The Contractor may request a product from any geogrid manufacture listed on LaDOTD's Qualified Products List for approval.

Subgrade soil shall be prepared as indicated on the construction drawings or as directed by the Director. Geogrid shall be laid at the proper elevation and alignment as shown on the construction drawings. Geogrid shall be oriented such that the roll length runs parallel to the road direction. Geogrid shall be overlapped a minimum of 2-foot and there is no extra pay for overlapped area. Care shall be taken to ensure that geogrid sections do not separate at overlaps during construction. Placement of geogrid around corners will require cutting of geogrid product and diagonal overlapping of same to ensure that excessive buckling of grid material does not occur. Exercise care during placement of embankment over geogrid so as not to damage geogrid.

C203.09 MEASUREMENT: Roadway excavation, excluding pavement removal paid for in other items, shall be measured by the cubic yard, theoretical section, computed by the average end area methods.

Shape ditches to cross section as shown on the plans shall be measured by the linear foot.

Unsuitable subgrade, excavation, and sand filling, where directed for use by the Director, shall be measured by the cubic yard truck measure.

Geotextile fabric shall be measured by the square yard of covered areas in place. There will be no measurement for overlaps.

Geogrid will be measured by the square yard in place. There will be no measurement for overlaps.

C203.10 PAYMENT: Payment for the accepted quantities will be made at the contract unit prices.

Payment for "Roadway Excavation" shall include excavating, hauling, disposing of the excavated materials.

Payment for "Unsuitable Subgrade Excavation & Sand Filling" shall include excavation, disposal of unsuitable subgrade and replacing this material with sand, graded and compacted.

No direct payment will be made for grading and/or compacting the subgrade.

Payment will be made under:

ITEM NUMBER	PAY ITEM	PAY UNIT
C203(51)	Roadway Excavation	Cubic Yard
C203(53)	Shape Ditches	Linear Foot
C203(58)	Unsuitable Subgrade, Excavation, & Sand Filling	Cubic Yard (Truck Measure)
C203(59)	Geotextile Fabric for Stabilization	Square Yard
C203(60)	Geogrid	Square Yard

SECTION C204
ENVIRONMENTAL PROTECTION AND STORMWATER POLLUTION PREVENTION PLAN

The Contractor shall comply with federal, state, and local laws and regulations controlling pollution of the environment, including air, water and noise. The Contractor shall take precautions to prevent pollution of waters and wetlands with fuels, oils, asphalts, chemicals or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

The Contractor certifies under penalty of law that he understands and will abide by the terms and conditions of the following:

(a) Permit LAS000301: Municipal Separate Storm Sewer System MS4 Permit (LAS000301) for the Orleans Parish area. This permit requires a Stormwater Pollution Prevention Plan (SWPPP) for applicable activities;
(b) Permit LAR200000: Stormwater Discharges from Construction Activities from 1 to less than 5 acres (when applicable). This permit requires a SWPPP;
(c) Permit LAR100000: Storm Water Discharges from Construction Activities from 5 acres or more (when applicable). This permit requires a SWPPP;
(d) Section 54-154.1 of the New Orleans Municipal Code.

The use of erosion control features or methods other than those in the contract shall be as directed.

The Contractor's Storm Water Pollution Prevention Plan shall be comprised of all relevant components specified in the U.S. Environmental Protection Agency document entitled, "Storm Water Management for Construction Activities", and shall include Section 204.03, Temporary Erosion Control, the City of New Orleans General Specifications along with applicable supplemental specifications, special provisions, and the plans.

Construction operations in rivers, streams, lakes, tidal waters, reservoirs, canals and other impoundments will be restricted to areas where it is necessary to perform filling or excavation to accomplish the work and areas which must be entered to construct temporary or permanent structures. As soon as conditions permit, streams and impoundments shall be cleared of obstructions placed therein or caused by construction operations.

Frequent fording of waterways with construction equipment will not be permitted.

No residue from dust collectors, concrete mixers, vehicle wash racks, or entrance/exit debris shall be dumped into a stream or drainage structure. Attention is further directed to the federal, state and local air pollution control programs and their rules and regulations regarding air pollution, especially open burning, fugitive dust and asphaltic concrete plant restrictions. The Contractor shall maintain and operate equipment to minimize noise and vibration. Engines shall be equipped with properly functioning mufflers. The Contractor shall assure the activities near noise and vibration sensitive areas, such as churches, hospitals and schools are not unduly disruptive.

C204.01 REQUIREMENTS FOR NEW CONSTRUCTION AND DEQ PERMITS:

(a) Requirements for new construction:

<table>
<tr><td>• UNDER ONE ACRE DISTURBED
(Approx. ½ square block)</td><td>• FIVE ACRES OR MORE DISTURBED</td></tr>
<tr><td>. Storm Water Control Measures (SCMs) in place. (SCMs formerly known as BMP)
. NOI (Notice of Intent) not required.
. Complete Inspection Reports and submit one copy to DPW. Contractor and inspector should keep a copy on file.</td><td rowspan="3">. SCMs in place

. Must have NOI completed, sent to DEQ, and posted.

. Must prepare SWPPP, post prominently

. Must have General Permit posted on site with DEQ permit number for specific site.

. Must complete Notice of Termination (NOT) and submit to DEQ.</td></tr>
<tr><td>• ONE TO FIVE ACRES DISTURBED</td></tr>
<tr><td>. SCMs in place
. Must prepare SWPPP, post prominently
. Must have General Permit posted on site
. NOI not required.
. Complete All Req’d. Reports and submit them to DPW</td></tr>
</table>

(b) Compliance with DEQ Permits:

Description: This work consists of constructing and maintaining the SWPPP (Storm Water Pollution Prevention Plan) and Storm Water Control Measures (SCMs) for all construction sites which include clearing, grading, construction or excavation.

Required steps for disturbed sites exceeding one (1) acre:

1. Prepare a STORM WATER POLLUTION PREVENTION PLAN (SWPPP). This program will show how the Contractor will control runoff from the construction site. The basic idea is to KEEP all soil, dirt and pollutants within the limits of the site. (NOTE: AN EROSION CONTROL PLAN SHEET IS NOT A SWPPP.)

Typical parts of the SWPPP include:

a. Site description and endangered species in the area.
b. Controls to be used to reduce pollution.
  i). Storm Water Control Measures (SCMs)
  ii). Sediment and Erosion Controls to be installed.
c. Inspections and Record Keeping.
d. Site Notice.
e. Certification.

2. Submit a NOTICE OF INTENT (NOI) to DEQ. For LARGE construction sites (larger than 5 acres.) The Contractor has authority to begin as per DEQ permit 48 hours after the postmark date on the NOI.

3. Put up the SITE NOTICE at the construction site.

4. INSTALL all erosion control structures (SCMs) BEFORE starting construction

5. MAINTAIN all SCMs during construction and mark any changes on the SWPPP.

6. INSPECT all SCMs as indicated in the SWPPP and make any needed corrections or changes to the construction site.

7a. For SMALL sites (less than 1 acre), INSTALL SCMs. Inspect, maintain, and keep records.

7b. For MEDIUM construction sites (larger than 1 acre and less than 5 acres), after construction is completed and the soil has been stabilized, fill out a Completion Report and submit it to DPW project manager.

7c. For LARGE construction sites (larger than 5 acres), after construction is completed and soil has been stabilized, fill out a Notice of Termination (NOT) and submit NOT to DEQ (same address as shown below)

Inspection: Contractor shall inspect and repair or replace, as needed, all job site SCMs a minimum of:

- Weekly, and
- Before, during, and after a major rain event, or as necessary.

Contractor shall document each inspection in the SWPPP.

Permits: Permits are required for any clearing, grading, construction or excavation which is larger than 1 acre. The Contractor is responsible to obtain coverage under the Storm Water General Permit with DEQ (Office of Environmental Service, PO Box 4313, Baton Rouge, LA 70821-4313).

Activities EXEMPT from the required permit include:

- Clearing of land SOLELY for agriculture purposes,
- Oil and gas exploration, production, processing, transportation or treatment,
- Repaving roads and reworking utilities and pipelines unless more than 1 acre is disturbed,
- Routine maintenance performed to maintain the original line and grade, hydraulic capacity or original purpose of the facility (include culvert replacement, road patching, shoulder grading, pothole filling, road replacement without adding lanes, tree/brush removal)

Copies of the required DEQ permits shall be submitted to the Department of Public Works.

MEASUREMENT AND PAYMENT: Unless otherwise specified in Section C204.03, No direct payment shall be made for obtaining and maintaining the necessary permits, preparation, installation and inspection of the Storm Water Control Measures (SCMs) including all labor equipment or materials required to complete the Storm Water Management Program (SWPPP).

C204.02 – STORM WATER POLLUTION PREVENTION PLAN (SWPPP) and STORMWATER CONTROL MEASURES (SCMs)

(a) General:

1. The Contractor shall prepare and maintain a Storm Water Pollution Prevention Plan (SWPPP), which describes in specific details the Contractor's program to prevent contamination of the storm water collection system for this project. A suggested Template and Sample SWPPP Inspection Report, as well as other valuable information can be found at EPA's website http://cfpub.epa.gov/npdes/stormwaterlswppp.cfm.

2. Contractor shall implement, maintain, and inspect all erosion and sediment controls identified in the SWPPP. The program shall address both common construction activities and extraordinary events. The Contractor shall remove all temporary SCMs, such as silt fences, catch basin filters, wash areas, etcetera at the end of construction.

3. Contractor shall include Water Pollution Control Drawings (WPCD) in the SWPPP to illustrate the locations, applications, and deployment of the Storm Water Control Measures (SCMs) identified in the SWPPP. The WPCDs shall be included as an attachment to the SWPPP.

4. Storm Water Control Measures (SCMs): The Storm Water Control Measures (SCMs) are techniques, processes, activities, or structures used to reduce the pollutant content of a storm water or non-storm water discharge. SCMS may include simple, non-structural methods such as good housekeeping, staff training, and preventive maintenance. Additionally, SCMs may include structural modifications such as the installation of berms, canopies, or treatment control.

5. The Contractor shall comply with laws, rules, and regulations of the State of Louisiana and agencies of the United States Government prohibiting the pollution of lakes, wetlands, streams, or river waters from the dumping of contaminates, refuse, rubbish, or debris.

6. The Contractor shall submit copies of the SWPPP a minimum of 10 working days prior to beginning construction, to the Director. Contractor shall update the SWPPP as necessary during the work to prevent contamination of the storm water collection system.

7. Before start of work, Contractor shall train all employees and Subcontractors on the approved SWPPP and related WPCD and provide the Department of Public Works with written documentation of said training.

8. Suggested SCMs can be obtained from LA DEQ Small Business Assistance Program, 201 Evans Rd. Bldg. 4, Suite 420 Harahan LA. Phone 504-736-7739.

(b) Construction: The Contractor shall keep a copy of the SWPPP on the job site. The Contractor shall provide continuously at the jobsite all the tools, equipment, and materials necessary to implement the SWPPP at all times from project initiation through completion, including any punchlist or warranty work on the project. At a minimum the following requirements shall be met as applicable, to the maximum extent practicable, at construction sites:

1. Storm Drain System Protection: At the first order of work, the Contractor shall protect the existing storm drain system from entrance of construction debris and pollutants. Such protection shall include implementing the SCMs as outlined in the SWPPP. Protection shall prohibit the discharge of untreated runoff from temporary or permanent street maintenance/landscape maintenance material and waste storage areas from entering the storm drain system. Sediment that is generated on the project site shall be retained using structural drainage controls. In addition, the protection system shall have a minimum of three features:

- **a)** A particulate filter of geosynthetic material securely fastened in place such that it cannot be bypassed without significant physical damage;
- **b)** A prefilter for the particulate filter; and
- **c)** On-hand materials to close off the inlet or opening in the case of a significant pollution spill. Contractor shall monitor and maintain all storm drain inlet protection devices during rain events to prevent flooding.

2. Material Management & Storage: No construction-related materials, wastes, spills or residues shall be discharged from the project site to streets, drainage facilities or adjacent properties by wind or runoff. All materials and/or equipment storage areas where liquid construction materials are placed shall be protected by a physical barrier capable of containing the entire volume of stored liquid materials. During active construction activities, portions of the barrier may be removed for access. However, the barrier materials must be readily accessible for replacement by onsite construction personnel. The barrier must be in place at all times during the absence of Contractor personnel at the storage site. Building materials shall be placed on pallets and covered in event of rain. Do not store materials in the street or gutter area.

3. Equipment & Vehicle Maintenance: Non-storm water runoff from equipment and vehicle washing and any other activity shall be contained at the project site and shall not be allowed to discharge from the project site to streets, drainage facilities or adjacent properties by wind or runoff. The Contractor shall inspect vehicles and equipment on each day of use. Leaks shall be repaired off-site if possible. If necessary to repair on site, the runoff must be contained, or the problem vehicle or equipment shall be removed from the project site until repaired. If necessary, drip pans shall be placed under the vehicles or equipment while not in use to catch and/or contain drips and leaks.

4. SCMs Inspection: The Contractor shall inspect all pollution control SCMs regularly. The Contractor shall also repair/replace any damaged or clogged element on a daily basis. During periods of precipitation where any runoff occurs, the system shall be checked twice a day, seven days a week, whether or not any work has been performed. The Contractor shall keep a monitoring inspection log of each inspection.

5. Spill Prevention & Cleanup Plan: Contractor shall have a spill prevention plan and spill cleanup materials readily available and addressed in the SWPPP. Spills shall be cleaned up immediately using dry methods if possible. Spill cleanup material shall be properly disposed of offsite. Contractor shall keep a record of any spills in the inspection log. In addition, at the end of the project, the Contractor must certify that all contaminated materials have been properly disposed in accordance with the SWPPP.

6. Asphalt & Concrete Activities: Asphalt and concrete activities shall be scheduled for dry weather. Contractor shall prohibit saw cutting during a storm event of 0.25 inches or greater. Store bags of cement away from gutters and storm drains, sealed and covered, protected from rainfall runoff and wind. Place tarp under cement mixer before operating to catch spills. Never dispose of cement washout or concrete dust onto driveways, streets, gutters or storm drains.

7. Sidewalk Washing: The following methods should be utilized to prevent discharge of sidewalk cleaning wastewater into the storm drain system:

- **a)** Sweep and pick up all areas to be cleaned before using water.
- **b)** Manually scrape gum from sidewalks and other surfaces.
- **c)** Must use high pressure and low volume of water with no additives and at an average usage of 0.006 gallons per square foot of surface area to be rinsed.
- **d)** Use a wet/dry vacuum to collect wash water for disposal. Large volumes of wash water may require the use of a small sump pump to remove wash water from the job site.
- **e)** One or more of the following methods are recommended to prevent pollutants from entering the storm drain system:
  - Sandbags can be used to create a barrier around storm drains.
  - Rubber mats or plugs can be used to seal drain openings.
  - Temporary berms or containment pads help keep water on site.
  - Use berms of sandbags to direct wash water to landscaping.
  - Use large squeegees to accumulate sheet flow for collection.
  - Remember to remove plugs, berms, and sandbags or you may be liable for possible flooding.
- **f)** Wash water that contains hazardous waste such as oil-saturated absorbents, water with lead or other heavy metals from oxidized paint, and solvent cleaners requires special treatment and must be disposed of through a hazardous waste facility.

8. Employee SCMs Training: Contractor shall train employees and Subcontractors on SCMs implementation, general good housekeeping, and proper spill containment and cleanup. Before start of work, Contractor shall provide the Department of Public Works and the Sewerage & Water Board with written documentation of training and keep all documentation in the SWPPP.

9. Inspection: Contractor shall maintain SCMS at all times on a daily basis, shall inspect and repair or replace, as needed, all job site SCMS a minimum of:

- Biweekly
- Before, during and after a major rain event.

Contractor shall document the inspections in the SWPPP.

10. Dewatering: Avoid dewatering discharges where possible by using the water for dust control, infiltration, etcetera.

(c) Temporary Erosion Control:

1. This work consists of constructing and maintaining temporary erosion control features shown on the plans or as directed. Installation of temporary erosion control features shall be coordinated with construction of permanent erosion control features to the extent necessary to ensure economical, effective and continuous control of erosion and water pollution throughout the life of the contract.

The Contractor shall comply with a Storm Water Pollution Prevention Plan (SWPPP) and Storm Water Control Measures (SCMS) approved by the Department when conducting clearing or earthwork operations. The SWPPP shall include the erosion control features as shown on the plans, or as directed, in addition to other required components of the SWPPP specified by the US Environmental Protection Agency (EPA) and the Louisiana Department of Environmental Quality (LDEQ). The plan shall indicate the use of contract items and the coordination of this work with the scheduling of clearing and earthwork. SCMs include but are not limited to:

a) All mechanical equipment intended for use at said construction site must be properly maintained,
b) Erect silt barrier fencing around the construction site,
c) Cover all drain inlets in the immediate area of the construction site until all work is completed,
d) Spread and compact all fill material within a short time after delivery (approximately 48 hours),
e) Drive creosote pilings soon after their delivery (approximately 48 hours),
f) Cover any loose piles of dirt or creosote pilings with plastic, if they will not be put into place in a short time,
g) Clean all mortar and cement mixing equipment in such a manner that the discharge does not enter the storm water system, but is removed as solid waste to a proper location,
h) Cover all piles of sand used for mortar with plastic,
i) Do not store fuel, automotive fluids, paint, glue, solvents, plaster, or other petroleum products on site for extended periods of time, or in areas where they are subject to spillage or open to the elements. Such products should remain in their original packaging until ready for use,
j) Maintain proper absorbent and dirking material to guard against accidental spillage of automotive fluids and other liquid products used on site,
k) Seed grass mulch and fertilize (taking care not to over-fertilize) the soil areas of the

construction site after all work is completed,

l) Have all workers and equipment enter the construction area from a single stable entrance,

m) Have all work coordinated by a single Contractor who is responsible for the SWPPP.

2. Control of Erodible Soil:

a) General: The Contractor shall prevent the transmission of soil particles into streams, canals, lakes, reservoirs or other waterways. Except as necessary for construction, excavated material shall not be deposited into streams or impoundments, or in a position close enough to be washed in waterways by high water or runoff. The Contractor shall not disturb lands or waters outside the limits of construction, except as authorized.

b) Adjacent to Waterways: Stream banks shall be kept in their natural state. The Contractor shall not unnecessarily strip protective vegetation in the vicinity of stream banks and shall conduct operations without damage to banks. Banks shall not be excavated except as shown on the plans or as otherwise approved in writing. Work roads requiring bank cuts shall be approved by the Director prior to making such cuts. The banks shall be restored by the Contractor to the satisfaction of the project Director.

c) Adjacent to Property: The location of, and method of operation in, borrow pits, material pits and disposal areas obtained by the Contractor for waste material from the project (other than commercially operated sources) shall be the Contractor's responsibility.

3. Materials: Materials not covered by project specifications shall meet commercial grade standards and shall be approved before being incorporated into the project. No testing of materials used in temporary erosion control features will be required. Acceptance of temporary erosion control materials will be by visual inspection.

a) Mulches: Mulch shall comply with LaDOTD Subsection 1018.19 and emulsified asphalt shall conform to LaDOTD Section 1002. Use of cypress mulch is discouraged.

b) Seeding: Grass shall be an approved quick-growing species suitable to the area, providing a temporary cover which will not compete with permanent grasses. Rye grass is the only acceptable grass for winter cover.

c) Slope Drains: Slope drains may be constructed of pipe, fiber mats, rubble, Portland cement concrete, asphaltic concrete, plastic sheets or other acceptable material.

d) Fertilizer: Fertilizer shall comply with LaDOTD Subsection 1018.16.

e) Silt Fencing: Silt fencing shall be wire-supported or self- supported systems. Other silt fencing systems may be used when approved.

i) Wire-Supported: Wire-supported silt fencing shall consist of standard woven livestock wire, and minimum of 14-gage (2.0 mm diameter) wire, a minimum of 36 inches (900 mm) in height with a maximum wire spacing of 6 inches (150 mm). Posts shall be either wood or steel installed a minimum of 2 feet (0.6 m) in the ground. Filter material shall be burlap weighing approximately 7 1/2 ounces per square yard (0.25 kg per sq. m), approved jute fabric or approved geotextile fabric. Geotextile fabric shall comply with Section 1019, Class F.

ii) Self-Supported: Self-supported silt fencing shall consist of an approved geotextile

fabric suitably attached to posts of either wood or steel installed in accordance with plan details. Geotextile fabric shall comply with LaDOTD Section 1019, Class G.

f) Lime: Agricultural lime shall comply with LaDOTD Subsection 1018.17.

g) Temporary Construction Entrance: Temporary construction entrances shall consist of stone or recycled Portland cement concrete complying with LaDOTD Subsection 711.02, 2 lb (1 kg) class placed on geotextile fabric complying with Section 1019, Class D. The geotextile fabric underliner shall be placed at the locations designated for temporary construction entrances before stone or recycled Portland cement concrete is placed. The stone or recycled Portland cement concrete shall be placed and compacted to the required thickness as directed. This work also includes additional measures required to remove mud from truck tires, such as wash racks, etc.

h) Hay Bales: Hay or straw bales shall be rectangular bales, acceptable to the Director. The average length of bales shall be 34 inches (850 mm) minimum.

4. Exposure of Erodible Earth: The Director may direct the Contractor to provide immediate permanent or temporary erosion or pollution control measures to prevent contamination of streams, lakes, tidal waters, reservoirs, canals or other impoundments or prevent detrimental effects on property outside the right-of-way and damage to the project. Limitations of areas in which excavation and embankment operations are underway shall be commensurate with the Contractor's capability and progress in keeping finish grading, temporary erosion control, and permanent erosion control measures in accordance with the accepted schedule.

5. Incorporation of Erosion Control features: Use of temporary erosion control features will be authorized to correct unforeseen conditions that develop during construction; to control erosion prior to the time it is practical to construct permanent control features; or to provide immediate temporary control of erosion that develops during normal construction operations but is not associated with permanent erosion control features. Permanent erosion control features shall be incorporated into the project at the earliest practical time. Temporary erosion control features will be used as directed in areas where stage construction or other conditions not under control of the Contractor preclude completion of a section of roadway in a continuous manner, or where subsequent construction operations will cause damage to permanent erosion control features.

6. Construction Requirements: Temporary erosion control features shall consist of, but not be limited to, temporary seeding, temporary mulching, sandbagging, slope drains, sediment basins, sediment check dams, erosion checks, artificial coverings, berms, and stone entrances. The Director may direct use of temporary erosion control features or methods other than those included in the original contract. Soil deposits outside the right-of-way shall be immediately removed and the surface repaired at no direct pay. The Director shall have the authority to require the Contractor's operations to be discontinued until erosion deposits have been cleared and the area restored.

a) Temporary Seeding: Seeding shall be done in accordance with LaDOTD Section 717, except that ground preparation will be limited to blading the area. Lime or fertilizer shall be applied in accordance with LaDOTD Section 718; however, lime or fertilizer may be omitted or the application rate reduced as directed.

b) Temporary Mulching: Mulch and emulsified asphalt shall be furnished and applied in accordance with LaDOTD Section 716. Mulch may be omitted or the application rate reduced as ordered. When permanent seeding operations begin, temporary mulch materials may be plowed under during ground preparation.

c) Sandbagging: Sandbags shall be placed as directed.

d) Baled Straw or Hay: Baled straw or hay shall be placed as directed to form checks or dams to control erosion and siltation. Bales shall be properly staked or otherwise secured as directed, as shown on the plans. The bales shall be buried as necessary to prevent scour under the bales. A minimum of 2 stakes shall be driven through each bale.

e) Filter Socks: Filter socks may be used in lieu of baled straw or hay in front of catch basins.

f) Geotextile Filters: Use geotextile filters in combination with filter socks at catch basins in lieu of baled straw or hay.

g) Slope Drains: Slope drains shall be constructed with acceptable materials in accordance with plan details or as directed, if necessary to prevent scour. The discharge area shall be stabilized or protected by temporary riprap as directed. Cost of discharge area protection will be included under the slope drain item.

h) Sediment Basins: Sediment basins shall be constructed in accordance with plan details or as directed.

i) Sediment Check Dams: Check dams shall be constructed at locations shown on the plans or as directed. Check dams shall be constructed before clearing and grubbing or grading in the area is begun unless otherwise directed.

j) Silt Fencing: Silt fencing shall be furnished and constructed at designated locations or other locations, as directed by the Director.

k) Berms: Earth berms shall be constructed as directed to divert the flow of water from erodible surfaces.

l) Unforeseen Conditions: When unforeseen conditions are encountered, the Director may direct the Contractor to construct such temporary devices as required to control erosion during construction. Details may be developed jointly by the Director and the Contractor.

m) Maintenance of Erosion Control Features: The Contractor shall install, construct, repair, and maintain temporary erosion control features within 7 calendar days of being instructed to do so by the Director. Temporary erosion control features shall be inspected at least once every 14 calendar days and within 24 hours after a rainfall event of 0.5 inches or greater. The features are to be maintained as described below and, if required, replaced as directed at no direct pay.

  i) Temporary Seeding: The seeded areas showing erosion after inspection shall be reseeded if necessary.

  ii) Mulches: Mulched areas showing erosion shall be repaired and the mulch reapplied if necessary.

  iii) Straw or Hay Bale Barriers: The bale barriers shall be inspected after each rainfall and time frame as defined above and at least daily during prolonged rainfall. Close attention shall be paid to the repair of damaged bales, "end runs" and undercutting beneath bales.

  iv) Filter Socks and Geotextile Fabric: Ensure that filter socks remain in place and that geotextile filters do not allow runoff to enter the catch basin around the edges.

  v) Slope Drains: Slope drains shall be inspected weekly and after each rainfall as defined

above, and repairs made if necessary. The Contractor shall avoid the placement of any material on and prevent construction traffic across the slope drain.

vi) Sediment Check Dams: Sediment deposits shall be removed when the deposits reach one-half the height of the check dam. Inspections shall be made to insure that the center of the dam is lower than the edges. Erosion around the edges shall be corrected immediately.

vii) Silt Fencing: Sediment deposits shall be removed when the deposits reach one-half the height of the fence. If the fabric on the silt fence decomposes or becomes ineffective, the fabric shall be replaced promptly.

viii) Temporary Stone Construction Entrance and/or Wash Racks: The construction entrance shall be maintained to allow for removal of mud from the tires. The sediment from the wash rack runoff shall be removed once the wash rack is no longer performing as intended.

n) Removal of Temporary Erosion Control Features: Temporary erosion control feature existing at the time of construction of permanent erosion control features shall be removed or incorporated into the soil in such manner that no detrimental effect will result. The Director may direct that temporary features be left in place. Sediment in sediment basins, silt fences, check dams, and other catchment areas shall be removed, replaced with acceptable soils in accordance with LaDOTD Subsection 203.06, and compacted as directed at no direct pay.

C204.03 Protection During Suspension of Operations: Prior to the suspension of operations, the Contractor shall shape the top of the earthwork in such manner as to permit runoff of rainwater and shall construct earth berms along the top edges of embankments to intercept runoff water. Temporary slope drains shall be provided in the earth berm to carry runoff. When such preventive measures fail, the Contractor shall immediately take other action as necessary to prevent erosion and siltation. The Director may direct the Contractor to perform other erosion control work during suspensions of contract time.

C204.04 Measurement: When temporary erosion and pollution control measures are required due to the Contractor's negligence or failure to install permanent controls, such work shall be performed by the Contractor at no direct pay. Required temporary erosion and pollution control work which is not due to the Contractor's negligence will be measured as follows:

When separate items for temporary erosion control devices are included in the contract, and the work is ordered, the quantities to be paid for will be the weight in pounds (kg) of Temporary Seeding and in tons (Mg) of Temporary Mulching; the volume in cubic yards (cu m) of Sandbagging with the measurement of sand being made in a batch box or other satisfactory means; the number of hay bales placed; the length in feet (m) of Temporary Slope Drains measured along the ground surface and Silt Fencing measured along ground surface between end posts; the number of Sediment Basins and Sediment Check Dams acceptably constructed; the number of gallons (L) of emulsified asphalt, and the number of construction entrances.

Temporary erosion control items may be eliminated when conditions do not justify their use.

When temporary erosion control work is ordered and is not covered by contract items, the work shall be performed as extra work in accordance with LaDOTD Subsection 109.04 except that no extra work order will be required prior to starting work.
The construction of temporary earth berms along edges of the roadway to prevent erosion during grading and subsequent operations will not be measured for payment.

In case of failure of the Contractor to control erosion, or siltation, the Director may employ outside assistance or use his own forces to provide the necessary corrective measures, and the cost thereof will be deducted from payments for the work. Partial payments will be withheld until satisfactory temporary erosion control is established.

C204.05 Payment: Payment for temporary erosion control items that are included as contract items will be made at the contract unit prices.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C204(01)	Temporary Sandbagging	Cubic Yard
C204(02)	Temporary Hay or Straw Bales	Each
C204(03)	Temporary Slope Drains	Linear Foot
C204(04)	Temporary Sediment Basins	Each
C204(05)	Temporary Sediment Check Dams	Each
C204(06)	Temporary Silt Fencing	Linear Foot
C204(07)	Temporary Stone Construction Entrance	Cubic Yard
C204(08)	Curb Inlet Drain Filter (9” Diam. X 8 Ft. Long)	Each
C204(09)	Curb Inlet Drain Filter (6” Diam. X 6 Ft. Long)	Each

PART III - BASE AND SUBBASE COURSE

SECTION C302
BASE AND SUBBASE COURSE

C302.01 This work consists of furnishing and placing a base or subbase course on a prepared subgrade in accordance with these specifications and in close uniformity with the lines, grades, thicknesses, typical cross sections and materials shown on the plans or included herein.

Subbase under asphaltic concrete pavements and base under Portland cement concrete pavements shall be required when the natural insitu subgrade soil, as determined by soil tests, is not an A.A.S.H.T.O. A 4 or better material. When the subgrade *natural ground* is an A 4 material, the maximum liquid limit shall be twenty-five (25) and the maximum plasticity index shall be six (6), otherwise subbase material is required under asphaltic pavements and base material is required under concrete pavements.

C302.02 DEFINITIONS:

(a)	A.A.S.H.T.O.	American Association of State Highway and Transportation Officials unified soil classification system.
(b)	Base	An engineered layer of approved material placed directly below the pavement and can be one of a number of materials.
(c)	Subbase	An engineered layer of approved material placed below the base.
(d)	Subgrade	The existing insitu soil at its interface with the subbase, base or pavement.

The base and subbase courses shall be of the materials noted or specified on the approved plans and can only be changed with the approval of the Director.

C302.03 MATERIALS FOR BASE AND SUBBASE:

(a) Sand shall be natural or pumped sand with a maximum liquid limit of twenty-five (25) and a maximum plasticity index of six (6), free from trash, weeds or other foreign or deleterious material.

(b) Recycled Portland Cement Concrete: Recycled Portland Cement Concrete shall be 100 percent crushed Portland Cement Concrete and will be permitted in combination with an approved stone for base course. After being crushed, the recycled Portland Cement Concrete or the combination of stone and recycled Portland Cement Concrete shall conform to the following gradation:

U.S. SIEVE	PERCENT PASSING
1 ½"	100
1"	90-100
¾"	70-100
No. 4	35-65
No. 40	12-32
No. 200	5-12

The fraction of recycled Portland Cement Concrete passing the No. 40 sieve shall be non-plastic.

(c) Stone shall consist of 100 percent stone and shall conform to the following gradation:

U.S. SIEVE	PERCENT PASSING
1 ½"	100
1"	90-100
¾"	70-100
No. 4	35-65
No. 40	12-32
No. 200	5-12

The fraction of stone passing the No. 40 sieve shall be non-plastic.

(d) Asphaltic Concrete shall conform to the requirements of Sections C501-C509.

(e) Cold-milled Asphaltic Concrete may be used when approved by the Director.

(f) Other Base Materials may also be used when approved by the Director.

C302.04 DENSITY REQUIREMENTS:

MATERIAL	TEST	DENSITY PERCENT OPTIMUM
Sand Subbase	A.S.T.M. D698	95
Sand Base	A.S.T.M. D698	96
Crushed Concrete or Stone	La.D.O.T.D. 418E	95
Cold-milled Asphaltic Concrete	La.D.O.T.D. 418E	95

The density requirements for other material shall be in accordance with the requirements of the Director.

C302.05 TESTING: A testing program, acceptable to the Director, shall be conducted on subgrade, subbase and base under the direction of a Louisiana licensed civil engineer. Soil borings and laboratory analysis are required for the design of the roadway section. Classification and density tests are required on the subbase and base materials. The number and location of the tests are to be approved by the Director.

C302.06 The base and subbase shall be constructed so that contamination, segregation, soft spots, wet spots and other deficiencies are prevented.

C302.07 MEASUREMENT: The quantities for payment will be based on the horizontal dimensions and compacted thickness of the completed course shown on the plans, and any adjustments approved by the Director.

C302.08 PAYMENT: Payment for base course or subbase course will be made at the contract unit price per Cubic Yard (net section) including prime coat.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C302(51)	Base Course	Cubic Yard, Net Section
C302(53)	Subbase Course	Cubic Yard, Net Section

SECTION C306
SCARIFYING AND COMPACTING ROADBED

C306.01 DESCRIPTION: This work consists of scarifying, shaping, and compacting an existing roadbed to form a subbase or base course in accordance with these specifications, and in conformity with the lines, grades, depth and cross section shown on the plans or established.

C306.02 CONSTRUCTION REQUIREMENTS: Existing materials shall be scarified for the full width of roadbed and a minimum depth of 6 inches, shaped to the required section, and uniformly compacted to density requirement as specified in C302.04. Any damage to the scarified roadbed prior to compaction shall be corrected at no direct pay. The scarified, shaped and compacted roadbed shall have a smooth, uniform, closely knit surface, free from ridges, waves, depressions or loose material. The recompacted roadbed shall be primed in accordance with Section C505.

C306.03 MAINTENANCE OF COMPACTED ROADBED: The Contractor shall protect the compacted roadbed from damage due to either public traffic or construction operation and shall maintain the roadbed in satisfactory condition at all times, including the asphaltic prime coat. Any damage shall be immediately repaired by the Contractor at no direct pay.

C306.04 MEASUREMENT: The quantities of scarifying and compacting roadbed for payment will be the design lengths or areas as specified in the plans and adjustments thereto. Design quantities are based on the horizontal length of the roadbed shown on the plans. Design quantities will be adjusted when the Director makes changes to adjust to field conditions, if plan errors are proven, or when design changes are necessary.

C306.05 PAYMENT: Payment for scarifying and compacting roadbed will be made at the contract unit price, including prime coat.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C306(52)	Scarifying and Compacting Roadbed	Square Yard

PART IV - SURFACE COURSE

SECTION C402
TRAFFIC MAINTENANCE AGGREGATE

C402.01 DESCRIPTION: This work consists of furnishing and constructing aggregate surfacing for maintenance of traffic detour as directed and in accordance with the following requirements.

C402.02 MATERIALS: Aggregate for maintenance of traffic shall be crushed stone, crushed concrete, or approved equal.

C402.03 EQUIPMENT: Equipment necessary to produce a finished product meeting the specification requirements shall be furnished and maintained by the Contractor.

C402.04 CONSTRUCTION REQUIREMENTS: When directed, the Contractor shall satisfactorily place, shape, compact and maintain areas requiring traffic maintenance aggregate. When directed, the aggregate material shall be reused on the project at designated locations for traffic maintenance at no direct pay. When aggregate surfacing is no longer necessary for maintenance of traffic, the Contractor shall, unless otherwise directed, remove the aggregate surfacing and dispose of the removed materials in accordance with Section C202.

C402.06 MEASUREMENT: When directed, traffic maintenance aggregate shall be furnished and measured by the cubic yard, truck measure. Traffic maintenance aggregate for access to driveways and temporary surfacing of utility trenches will be provided and placed at no direct pay.

C402.07 PAYMENT: Payment for traffic maintenance aggregate maintained and subsequently removed (when required) will be made at the contract unit price.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C402(51)	Traffic Maintenance Aggregate	Cubic Yard (Truck Measure)

PART V - ASPHALTIC CONCRETE PAVEMENTS

SECTION C501
ASPHALTIC CONCRETE MIXTURES

C501.01 DESCRIPTION: These specifications are applicable to asphaltic concrete wearing, binder and base course mixtures of the plant mix type.

This work consists of furnishing and constructing one or more courses of asphaltic concrete mixture applied hot in conformance with these specifications and in conformity with the lines, grades, thicknesses and typical sections shown on the plans or established. The mixture shall consist of aggregates and asphalt with additives combined in proportions which meet the requirements of this Section including Table 1 and the absolute viscosity test of Subsection C503.02. Equipment and processes shall conform to Section C503.

Substitutions will be allowed for mixes without requiring a plan change as follows:

1. Wearing course of the same or higher stability for binder course.
2. Wearing or binder course for base course.
3. Higher stability for lower stability mix of the same course.

When any substitution is made, the plant requirements for the mixture used shall apply. The stability requirements of Table 1 of the mix used shall be equal to or greater than the mix originally specified.

Quality assurance requirements and design procedures shall be as specified in the latest edition of the LaDOTD's publication entitled "Application of Quality Assurance Specifications for Asphaltic Concrete Mixtures."

C501.02 MATERIALS: The Contractor shall keep accurate records, including proof of deliveries of materials for use in asphaltic concrete mixtures. Copies of these records shall be furnished to the Director upon request. Material shall conform to the following Subsections:

Asphalt (C1002.01)
Silicone and Anti-Strip Additives (C1002.02)
Aggregates (C1003.01 & C1003.06)
Hydrated Lime (LaDOTD 1018.03(a))
Mix Release Agent (LaDOTD 1018.26)

(a) Asphalt: Asphalt cement Grade AC-30 shall be used, except when mixtures contain 20% to 30% reclaimed asphaltic pavement, Grade AC-10 shall be used.

The Contractor shall reduce the amount of asphalt cement in the plant's storage or working tanks to 20% or less before adding another grade of asphalt cement or asphalt cement from another source.

(b) Additives:

(1) Silicone: Silicone additives, when needed, shall be dispersed into the asphalt by methods and in concentrations given in LaDOTD-QPL 22.

(2) Anti-Strip (AS): An anti-strip additive shall be added at the minimum rate of 0.5% by weight of asphalt and thoroughly mixed with the asphalt cement at the plant. Additional anti-strip additive shall be added up to 1.2% by weight of asphalt in accordance with Subsection C501.03(b).

(3) Hydrated Lime: Hydrated lime additive may be incorporated into all asphaltic concrete mixtures at the rate specified in the approved job mix formula. The minimum rate shall not be less than 1.5% by weight of the total mixture. Hydrated lime additive shall be added to and thoroughly mixed with aggregates in conformance with Subsection C503.02(e). Hydrated lime may be added as a mineral filler in accordance with Heading (c)(3).

(c) Aggregates: Aggregates shall meet the requirements of Table 1 and Subsection C1003.06.

(1) Recycled Portland Cement Concrete: Recycled Portland Cement Concrete will be allowed in base courses with a maximum of 70% recycled portland cement concrete by weight combined with new aggregates. Recycled concrete shall be crushed and screened into a minimum of two stockpiles composed of different sized aggregates separate from other materials at the plant. Recycled concrete shall be dried as required for new aggregates.

(2) Reclaimed Asphaltic Pavement (RAP): Reclaimed asphaltic pavement shall be stockpiled separate from other materials at the plant and will be subject to approval prior to use. Such stockpiles shall be uniform and free of soil, debris, foreign matter and other contaminants. Reclaimed materials that cannot be broken down during mixing or that adversely affect paving operations shall be screened or crushed to pass a 2-inch sieve prior to use.

(3) Mineral Filler: Mineral filler conforming to the requirements of Subsection C1003.06(10) may be used in all mixtures.

(4) Screenings: Screenings conforming to the requirements of Subsection C1003.06(6) may be used in all mixtures.

(5) Crushed Aggregates: Crushed aggregates are crusher generated materials manufactured by crushing materials which have a maximum of 10% passing the No. 4 sieve.

a. Type 3 Mixes: For Type 3 mixes, a minimum of 65% by weight of the new aggregates used in wearing and binder courses for travel lanes shall be crushed aggregates; the remaining 35% may be natural sand and mineral filler.

b. Friction Ratings for coarse aggregates shall be determined in accordance with Subsection C1003.06. The allowable usage of coarse aggregates shall be as follows.

Friction Rating	Allowable Usage
I	All mixtures
II	All mixtures
III	All mixtures
IV	All mixtures except Type 3WC

Type 3 WC (with ADT/lane greater than 1000 VPD) may use this aggregate provided a minimum of 50% by weight of the coarse aggregates in the mixture have a Friction Rating of I or II. This aggregate may also be used in mixtures for shoulders, drives, curbs, detours, etc.

C501.03 DESIGN AND QUALITY CONTROL OF MIXTURES:

(a) General: It is the intent of these specifications that the mixtures produced and placed meet the requirements for 100% payment. The Contractor shall be responsible for design, production, transportation and laydown of mixtures. Work shall meet the requirements of this Section and be subject to acceptance by the Department.

The Contractor shall exercise quality control over materials and their assembly, design, processing, production, hauling, laydown and associated equipment. Quality control is defined as the constant monitoring of equipment, materials and processes to ensure that mixtures produced and laid are uniform, are within control limits, and meet specification requirements. When these specifications are not being met and satisfactory control adjustments are not being made, operations shall be discontinued until proper adjustments and uniform operations are established. Control shall be accomplished by a program independent of, but correlated with, the Department's testing and shall ensure that the requirements of the job mix are being achieved and that necessary adjustments provide specification results.

The Contractor shall conduct such tests as necessary, in addition to the required tests, to design, control and place mixtures within specifications.

The quality of mixtures will be evaluated during two phases, mixture produced at the plant, and mixture hauled, laid and compacted. Quality of both phases will be evaluated in series of lots conforming to Subsection C501.11. A lot is a segment of continuous production of asphaltic concrete mixture from the same job mix formula produced for the Department at an individual plant. Plant quality control testing shall be conducted on each lot independent of delivery points. Project site quality control testing shall be conducted on each project for that portion of the lot placed on that project.

When the plant is in operation, the Contractor shall have a Certified Asphaltic Concrete Plant Technician at the plant that is capable of designing asphaltic concrete mixes, conducting any test or

analysis necessary to put the plant into operation and producing a mixture meeting specifications. Daily plant operations shall not begin unless the Certified Asphaltic Concrete Plant Technician is at the plant. The Asphaltic Concrete Technician certification will be awarded by the DOTD upon satisfactory completion of the DOTD's requirements.

(b) Job Mix Formula: The Contractor shall design the mixtures for optimum asphalt content and comply with requirements of DOTD TR 303, Method B; however, Method A may be used when approved. The job mix formula shall include the recommended formula and supporting design data. The recommended formula shall be submitted for approval to the Director on a properly completed Asphaltic Concrete Job Formula form. No mixture shall be produced until the proposed job mix formula has been approved.

The proposed job mix formula shall indicate a single anti-strip additive rate which is 0.1% greater than the percentage which will yield a minimum of 90% coating when tested in accordance with DOTD TR 317 or 0.1% greater than the percentage which will produce a minimum Tensile Strength Ratio (TSR) of 75% when tested in accordance with DOTD TR 322 whichever gives the greatest amount of anti-strip additive. The approved limit shall be 0.2% by weight of asphalt, with the lower limit being the quantity determined in accordance with DOTD TR 317 and the maximum limit not to exceed 1.2% by weight of asphalt.

The job mix formula shall indicate a single rate of hydrated lime additive when used. The job mix formula rate of hydrated lime additive shall not be less than 1.5% by weight of total mixture.

The job mix formula shall produce an asphaltic concrete mixture with a minimum TSR of 75% when tested in accordance with DOTD TR 322. The Contractor's proposed job mix formula shall indicate a minimum TSR value of 75% attained in accordance with DOTD TR 322 on plant-produced mixture or laboratory-produced mixture. The Department may validate the plant produced mixture, at its option. When the Department's validation result is less than 75% TSR, no further production for the job mix formula or any proposed job mix formula substituted for that mix type will be accepted on any DOTD project having DOTD TR 322 requirements until a passing plant-produced TSR value is verified by the Department. A previously validated and approved job mix formula may be produced in lieu of the disapproved job mix formula.

The job mix formula shall indicate the optimum mixing temperature which is the midpoint of the range shown on the Optimum Mixing and Compaction Temperatures Chart for the asphalt cement used. This chart shall be furnished by the Materials and Testing Section of the DOTD, or by the produce1xof the asphalt cement used. The job mix formula limits for mix temperature will be +/- 25^{o}F from the optimum mixing temperature.

When aggregates with a water absorption value greater than 2.0% determined in accordance with AASHTO T 84 for fine aggregate or AASHTO T 85 for coarse aggregate are used in the mixture, the Contractor shall increase the initial optimum asphalt cement content to compensate for the asphalt cement absorbed by the aggregates. When aggregates with an asphalt absorption value greater than 0.5%, determined in accordance with DOTD TR 320, are used in the mixture, the Contractor

shall increase the initial optimum asphalt cement content to compensate for the asphalt cement absorbed by the aggregates.

The job mix formula will allow the full range of gradation mix tolerances within the mix type specification limits.

The plant shall be operated to produce, on a continuing basis, a mixture uniformly conforming to the approved job mix formula. When this is not the case, the Contractor shall make satisfactory adjustments or cease operations. The Director may permit the Contractor to submit a new Asphaltic Concrete Job Mix Formula for approval. The Contractor shall submit a new job mix formula whenever a plant begins initial operations for the Department in a specific location or whenever a plant experiences a change in materials or source of materials. A new job mix formula will also be required whenever there are significant changes in equipment, such as the introduction of a new crusher, drum mixer, burner, etc.

(c) Control Charts: For control purposes, the Contractor shall obtain a minimum of one sample of mixture from each lot. Test results for extracted gradation (DOTD TR 309), percent crushed (DOTD TR 306) and asphalt content (DOTD TR 308) of each lot shall be plotted on control charts. The upper and lower control limits as shown on the approved job mix formula shall be included on the control chart. When the results of two consecutive extracted gradations on any sieve, except the No. 200, fall within 1% of the approved job mix formula gradation limit, or fall erratically within the range, the Contractor shall immediately make corrections to maintain the mix within the specified limits.

When the results of two consecutive extracted gradations on the No. 200 sieve fall within 0.5% of the approved job mix formula gradation limit or fall erratically within the range, the Contractor shall immediately make corrections.

(d) Reclaimed Asphaltic Pavement (RAP): The quantity of reclaimed asphaltic pavement to be used shall be designated in the job mix formula and meet the requirements of Table 1. The approved quantity shall be established after testing for absolute viscosity in accordance with Subsection C503.02(a). When mixtures contain less than 20% reclaimed asphaltic pavement, Grade AC-30 asphalt cement shall be used. Grade AC-10 asphalt cement shall be used in mixtures containing from 20% to 30% RAP. The mixture produced shall conform to the requirements for the type mixture specified. The Director may require the Contractor to reduce the percentage of reclaimed asphaltic pavement to meet acceptance criteria.

When RAP is used in the mixture, the new aggregate shall be dried and heated in a dryer to a sufficiently high temperature to produce a mixture with a minimum discharge temperature of 280^{o}F.

C501.04 WEATHER LIMITATIONS: Asphaltic concrete mixtures shall not be applied on a wet surface or when ambient temperature is below 40^{o}F, except that material in transit, or a maximum of 50 tons in a surge bin or silo used as a surge bin at the time plant operation is discontinued may be laid; however, mixture laid shall perform satisfactorily and meet specification requirements. Inclement weather will be sufficient reason to terminate or not begin production.

When base course materials are placed in plan thicknesses of 2 3/4 inches or greater, these temperature limitations shall not apply provided all other specification requirements are met.

C501.05 SURFACE PREPARATION: The surface to be covered shall be approved prior to placing mixtures. The Contractor shall maintain the surface until it is covered.

(a) Cleaning: The surface to be covered shall be swept clean of dust, dirt, caked clay, caked material and loose material by revolving brooms or other mechanical sweepers supplemented with hand equipment as directed. When mixtures are to be placed on portland cement concrete pavement or overlaid portland cement concrete, the Contractor shall remove excess joint filler from the surface by an approved burning method. The Contractor shall remove any existing raised pavement markers prior to asphaltic concrete overlay operations.

When brooming does not adequately clean the surface, the Contractor shall wash the surface with water in addition to brooming to clean the surface.

When liquid asphalt is exposed to traffic for more than 2 calendar days, becomes contaminated, or degrades due to inclement weather, the liquid asphalt shall be reapplied at the initial recommended rate at no direct pay.

(b) Applying Liquid Asphaltic Materials:

(1) Existing Pavement Surfaces: Before constructing each course, an approved asphaltic tack coat shall be applied in accordance with Section C504. The Contractor shall protect the tack coat and spot patch as required.

(2) Raw Aggregate Base Course and Raw Embankment Surfaces: The Contractor shall apply an approved asphaltic prime coat to unprimed surfaces, or protect in-place prime coat and spot patch as required with asphaltic prime coat, in accordance with Section C505.

(3) Cement and Lime Stabilized or Treated Embankment and Base Course Surfaces: The Contractor shall apply an approved asphaltic curing membrane when none is in place, or protect the in-place curing membrane and spot patch, as required, with asphaltic material in accordance with Section 506.

(4) Other Surfaces: Contact surfaces of curbs, gutters, manholes, edges of longitudinal and transverse joints, and other structures shall be covered with a uniform coating of an approved asphaltic tack coat conforming to Section C504 before placing asphalt mixtures.

C501.06 JOINT CONSTRUCTION:

(a) Longitudinal Joints: Longitudinal joints shall be constructed by setting the screed to allow approximately 25% fluff and also overlapping the paver approximately 2 inches onto the adjacent pass. Prior to rolling, the overlapped mix shall be pushed back to the uncompacted side, without scattering loose material over the uncompacted mat, to form a vertical edge above the joint. The vertical edge shall then be compacted by rolling to form a smooth, sealed joint. Longitudinal joints in one layer shall offset those in the layer below by a minimum of 3 inches; however, the joint in the top layer shall be offset 3 inches to 6 inches from the centerline of pavement when the roadway comprises two lanes of width, or offset 3 inches to 6 inches from lane lines when the roadway is more than two lanes. The narrow strip shall be constructed first.

Where adjacent paving strips are to be placed, the longitudinal edge joint of the existing strip shall be tacked.

(b) Transverse Joints: Transverse joints shall be butt joints formed by cutting back on the previously placed mixture to expose the full depth of the lift. An approved 10-foot static straightedge shall be used to identify the location at which the previously placed mixture is to be cut back to maintain no greater than a 1/8 inch deviation in grade. The cut face of the previously placed mat shall be lightly tacked before fresh material is placed. The screed shall rest on shims that are approximately 25% of plan thickness placed on the compacted mat or the screed shall be set at a distance that is 25% of plan thickness above the mat surface. Transverse joints shall be formed by an adequate crew. Transverse joints shall be checked by the Director for surface tolerance using a stringline extended from a point 10 feet before the joint to a point approximately 40 feet beyond the joint. Any deviation in grade from the stringline in excess of 3/16 inch for roadway wearing courses and 1/4 inch for other courses shall be immediately corrected prior to the paving operation continuing beyond 100 feet of the transverse joint. Additionally, the transverse joint shall meet the surface tolerance requirements of Table 1. The Contractor shall make necessary corrections to the joint before continuing placement operations.

Transverse joints in succeeding lifts shall be offset at least 2 feet.

(c) Sawing and sealing of joint in an asphaltic concrete overlay: When new concrete pavement or existing concrete foundation is to be overlaid with asphaltic concrete, joints shall be sawed or formed and sealed.

Saw cut shall be made in the overlay at the locations of all transverse and longitudinal joints in the concrete pavement. The sawed joints will have a minimum of 1/8" wide by 1" deep. Cleaning and drying the saw cut before applying hot poured sealant as specified in Subsection C601.04(g).

Sawing and sealing of joints in an asphaltic concrete overlay will be made at no direct pay.

C501.07 HAULING, PAVING AND FINISHING: Mixtures shall be transported from the plant and delivered to the paver at a temperature no cooler than 25^{o}F below the lower limit of the approved job mix formula. The temperature of the mix going through the paver shall not be cooler than 250^{o}F.

No loads shall be sent out so late in the day that completion of spreading and compaction of the mixture cannot be completed during daylight, unless artificial lighting has been approved.

When segregation occurs, haul trucks shall be loaded with a minimum of three drops of mix, the last of which shall be in the middle.

Each lift of asphaltic mixture shall be placed in accordance with the specified lift thickness. When no lift thickness is specified, binder and wearing course mixtures shall be placed in lifts not exceeding 2 inches plan thickness. Base course mixtures shall be placed in lifts of such thickness that all specification requirements are met.

With the Director's approval, motor patrols may be used to fill isolated depressions in the initial layer, provided this construction does not result in unsatisfactory subsequent lifts.

(a) Coordination of Production: The Contractor shall coordinate and manage plant production, transportation of mix and placement operations to achieve a high quality pavement and shall have sufficient hauling vehicles to ensure continuous plant and roadway operations. The Director will order a halt to operations when sufficient hauling vehicles are not available.

On final wearing course construction under traffic with pavement layers of 2 inches compacted thickness or less, the Contractor will be permitted to pave one travel lane for a full day. The Contractor shall pave the adjacent lane the next work day. When the adjacent travel lane is not paved the next calendar day and the longitudinal joint is exposed to traffic for more than 3 calendar days, the entire length of exposed longitudinal joint shall be cut back to plan thickness to a vertical edge and heavily tacked. When pavement layers are greater than 2 inches compacted thickness, the Contractor shall place approximately 1/2 of each day's production in one lane and the remainder in the adjacent lane.

Pavement shall be protected from traffic until it has sufficiently hardened to the extent the surface is not damaged.

(b) Paving Operations: All mixtures shall flow through the paver hopper. Mixtures dropped in front of the paver shall be either lifted into the hopper or rejected and cast aside. Delivery of material to the paver shall be at a uniform rate and in an amount within the capacity of paving and compacting equipment. The paver speed and number of trucks shall be adjusted to have one truck waiting in addition to the one at the paver in order to maintain continuous paving operations. The height of material in front of the screed shall remain uniform.

Transfer of mixture from haul truck to paver may be made by direct unloading into the paver hopper or by use of approved mechanical transfer devices to transfer mix from a haul truck or windrow. During mixture transfer, the paver shall not be jarred or moved out of alignment. During truck exchanges the level of mix in the paver hopper shall not drop so low as to expose the hopper feed slats.

Pavers shall be designed and operated to place mixtures to required line, grade and surface tolerance without resorting to hand finishing.

Longitudinal joints and edges shall be constructed along lines established. An acceptable method of longitudinal control shall be placed by the Contractor for the paver to follow. The paver shall be positioned and operated to closely follow the established line. Irregularities in alignment shall be corrected by trimming or filling directly behind the paver.

After each load of material has been placed, the texture of the unrolled surface shall be checked to determine its uniformity. The adjustment of screed, tamping bars, feed screws, hopper feed, etc., shall be checked frequently and adjusted as required to assure uniform spreading of the mix to proper line and grade and adequate compaction. When segregation of materials or other deficiencies occur, paving operations shall be suspended until the cause is determined and corrected.

Surface irregularities shall be corrected directly behind the paver. Excess material forming high spots shall be removed. Indented areas shall be filled and finished smooth. Hand placement in

accordance with Heading (c) for surface repair will be permitted. Material shall not be cast over the surface.

When paving and finishing operations are interrupted so that the mixture remaining in trucks, paver, paver hopper or on the pavement cools to such extent that it cannot be placed, finished or compacted to the same degree of smoothness and with the same texture and density as the uncooled mixture, the cooled mixture shall be removed and replaced at no direct pay.

When additional mix is required to increase superelevation in curves, the use of automatic slope control will be optional with the Contractor.

(c) Hand Placement: When the use of mechanical finishing equipment is not practical, the mix may be placed and finished by hand to the satisfaction of the Director. No casting will be allowed including casting the mixture from the truck to the grade. During paving operations material shall be thoroughly loosened and uniformly distributed. Material that has formed into lumps and does not break down readily will be rejected. The surface shall be checked before rolling and irregularities corrected.

C501.08 COMPACTION:

(a) General: After placement, mixtures shall be uniformly compacted by rolling while still hot, to at least the density specified in Table 1. If continuous roller operation is discontinued, rollers shall be removed to cooler areas of the mat, where they will not leave surface indentations. The use of steel wheel rollers which result in excessive crushing of aggregate will not be permitted.

The rolling pattern established by the Contractor shall be conducted by experienced operators in consistent sequences and by uniform methods that will obtain specified density and smoothness. Individual roller passes shall uniformly overlap preceding passes to ensure complete coverage of the paving area. The speed and operation of rollers shall not displace, tear or crack the mat. Non-vibrating steel wheel rollers shall be operated with drive wheels toward the paver. Any operations causing displacement, tearing or cracking of the mat shall be immediately corrected.

Equipment which leaves tracks or indented areas which cannot be corrected in normal operations or fails to produce a satisfactory surface shall not be used. Operation of equipment resulting in accumulation of material and subsequent shedding of accumulated material into the mixture or onto the mat will not be permitted.

To prevent adhesion of mixture, wheels of steel wheel rollers shall be kept properly moistened, but excess water will not be permitted.

Vibratory rollers may be used provided they do not impair the stability of the pavement structure or underlying layers.

The surface of mixtures after compaction shall be smooth and true to cross slope and grade within the tolerances specified. Mixtures that become loose, broken, contaminated or otherwise defective shall be removed and replaced with fresh hot mixture compacted to conform with the surrounding mixture.

Ripples in the mat surface will not be accepted. Lots with rippled areas will be subject to rideability testing by the Department. These areas will be compared with the balance of the lot and adjacent acceptable riding surfaces to determine acceptability. Areas identified by such testing as unacceptable shall be corrected at no direct pay. Damage to the longitudinal joint shall be minimized to conform to Subsection C501.07(a).

(b) Breakdown Rolling: Breakdown or initial rolling shall be accomplished with a static or vibratory steel-wheel roller designed for initial compaction of hot asphaltic concrete mixtures conforming to Subsection C503.06.

(c) Finish Rolling: Finish rolling shall be accomplished with an approved nonvibrating steel wheel roller conforming to Subsection C503.06 until roller marks have been eliminated.

After finish rolling, newly finished pavements shall have a uniform, tightly-knit surface free of cracks, tears or other deficiencies. Deficiencies shall be corrected at no direct pay and the Contractor shall adjust operations to correct the problem. This may require the Contractor to adjust the mix or furnish additional or different equipment.

(d) Hand Compaction: Along forms, curbs, headers, walls and at other places inaccessible to rollers, mixture shall be uniformly compacted to the satisfaction of the Director with approved hand tampers or mechanical tampers, conforming to Subsection C503.07.

C501.09 PAVEMENT SAMPLES: Samples shall be cores approximately 4" in diameter taken by an approved core drill. The Contractor shall furnish samples cut from the completed work. The removed pavement shall be replaced with hot or cold mixture and refinished during the work day coring is performed. No additional compensation will be allowed for furnishing test samples and replacing the areas with new pavement. Samples shall be taken by the Contractor in the presence of the Director's representative from areas selected by the Director in accordance with Subsection C501.11(b)(2)c. When the design thickness is greater than 1-3/8", cores less than 1-3/8" thick shall not be used as pavement samples for payment determination.

Cores shall be transported to the plant in approved transport containers or one-gallon friction-top cans. Regardless of transport container used, the container will be sealed, signed, and dated by the inspector using an approved method. The individually wrapped core will also be sealed, signed, and dated by the inspector using an approved method. Any evidence of tampering with the core wrappings, sticker, or of opening the container or friction-top can will result in the cores being rejected. Additional pavement samples will be required.

C501.10 DIMENSIONAL REQUIREMENTS: Mixtures that are specified for payment on a cubic yard or square yard basis shall conform to the following dimensional requirements. Overthickness and overwidth will be waived at no direct pay.

When grade adjustments are permitted for all mixtures except the final wearing course, areas with underthickness in excess of 1/4" shall be corrected to plan thickness at no direct pay by furnishing and placing additional mixture in accordance with Subsection 501.10(e). For the final wearing course, areas with underthickness in excess of the 1/4" shall be corrected to plan thickness at no direct pay by furnishing and placing a supplemental layer of wearing course mixture meeting

specification requirements in accordance with Subsection 501.10(e) over the entire area for the full width of the roadway when grade adjustments are permitted.

When grade adjustments do not permit, the deficient overthickness area shall be removed and replaced at no direct pay.

(b) Width: The width of completed courses will be determined in accordance with DOTD TR-602. Underwidths shall be corrected by furnishing and placing additional mixture a minimum of 1 foot wide and plan thickness at no direct pay.

C501.11 ACCEPTANCE REQUIREMENTS: All Department inspection procedures, including sampling and testing, form the basis for acceptance of the asphaltic concrete. Any section of pavement that is obviously deficient shall be satisfactorily corrected or replaced. Sampling and testing shall be accomplished following a stratified sampling plan in accordance with the Materials Sampling Manual and specified test procedures. Times and locations shall be established by the Director.

A standard lot is the production of asphaltic concrete mix from the same job mix formula produced for the Department at an individual plant in one day. Additional adjustments may be made to the standard lot size as specified in this Subsection. Minor adjustments will be made to the lot size to accommodate hauling unit capacity.

Acceptance testing for Marshall properties, percent anti-strip additive, percent hydrated lime (when used), quality of asphalt cement, aggregate gradation, percent crushed aggregate, percent asphalt cement, and percent moisture in loose mix will be conducted on the total lot quantity. Acceptance testing for pavement density, surface tolerance and dimensional tolerances will be conducted on that portion of the lot placed on each contract.

Pavement density and surface tolerance requirements will not be applied for short irregular sections, such as drives, aprons and turnouts; however, mix shall be placed to provide a neat, uniform appearance and shall be compacted by satisfactory methods.

For projects, or separate locations within a project, requiring over 100 tons of mixture, one sample will be taken for Marshall properties testing for each 250 tons or portion thereof produced. Sampling and testing for aggregate gradation, asphalt content and percent crushed shall be in accordance with Heading (b)(2)b. Five samples shall be taken for determination of pavement density, with the sampling distribution to be determined by the Director.

For projects, or separate locations within a project, requiring less than 100 tons, the job mix formula, materials, and plant and paving operations shall be satisfactory to the Director. Payment adjustments for Marshall properties will be based on "Individual Test Within Lot" values in Table 2. Sampling and testing requirements for aggregate gradation, surface tolerance and pavement density may be modified by the Director and the payment adjustment for deviations waived.

(a) Inspection: Mix exhibiting deficiencies before placement such as segregation, contamination, lumps, nonuniform coating, excessive temperature variations in surface texture and appearance or other deficiencies, apparent on visual inspection, will not be accepted. Poor

construction practices such as handwork, improper truck exchanges, improper joint construction, or other deficiencies, apparent on visual inspection, will not be accepted.

Deficiencies revealed by visual inspection after placement and before final acceptance shall be corrected at no direct pay.

When requested by the Contractor, the acceptability of mixtures or work rejected by visual inspection will be evaluated by tests and measurements.

(b) Sampling and Testing:

(1) Without Payment Adjustments: The Department will take samples or perform tests as outlined in these specifications to ensure that the asphaltic concrete conforms to Department standards, which include job mix limits, typical sections, material properties, surface deviations and verification of control testing. The Department will perform tests for gradation, percent crushed, percent asphalt cement, and Marshall properties to determine the acceptability of the asphaltic concrete without payment adjustment. Deviations from specified tolerances will not be accepted. When a sample or test indicates a deviation from a specified tolerance, the Contractor shall take immediate corrective action, or operations shall be discontinued.

(2) With Payment Adjustments: When the mix does not meet requirements in the areas listed in this Section, the Payment Adjustment Schedules shown in Table 2 will be applied. Production of mix that is not eligible for 100% will not be allowed on a continuous basis. When test results demonstrate that payment adjustments are necessary, satisfactory control adjustments shall be made, or production shall be discontinued.

The Department will pay the Contractor at an adjusted rate as specified in Table 2 for tests conducted by the Department on samples obtained from each lot of material, in accordance with the following Headings. In addition a payment adjustment will be applied for the use of asphalt cement which does not meet specifications.

a. Marshall Stability: Testing for Marshall Stability will be conducted by the Director. Compacted specimens of mixture shall conform to the properties in Table 1 when tested in accordance with DOTD TR 305 for both an individual and an average of four samples taken from each lot after the mixture is placed in trucks. One sample will be taken from each of four sublots. Temperature at the time of molding specimens shall be within 15°F of mix temperature at the time of sampling. When an individual test or the average of tests representing the lot is outside acceptance limits shown in Table 1, an adjustment in unit price for the lot will be made in accordance with Table 2.

b. Aggregate Gradation, Asphalt Content and Percent Crushed: Sampling and testing for aggregate gradation, asphalt content and percent crushed will be conducted by the Director. One loose mix sample, representing one/half day of production from an individual plant, randomly spaced throughout the production of each one/half day of production, will be taken after placement of the mix in the truck. These samples shall be tested at the plant laboratory in accordance with DOTD TR 309, TR 307 and TR 306, respectively. If the test results are within the job mix control limits given in Table 1, no payment adjustment will be made. When test results from the sample are outside the job mix control limits, the

Contractor's Certified Plant Technician will make immediate adjustments to maintain the mix within specified limits.

c. Pavement Density: Acceptance testing for pavement density will be conducted by the Director. Upon completion of compaction, five pavement samples per contract shall be obtained in accordance with Subsection C501.09 from each lot within 24 hours after placement of the lot. When this falls on a day the Contractor's crews are not working, sampling shall be done within 3 calendar days. The lot will be divided into five sublots of approximately equal length. One sample shall be obtained from each sublot. The number of samples representing a lot will not be less than five. The density requirement for the average of five samples will be as shown in Table 1 determined in accordance with DOTD TR 304. Payment will be made in accordance with Table 2.

When the sampling location determined by random sampling falls within areas that are to be replaced or within 1 foot of the pavement edge, another random sampling location will be used.

d. Longitudinal Surface Tolerance: Testing for surface tolerance will be required for each lot on the final roadway wearing course lift. Testing will be the responsibility of the Director. The surface will be tested with a ten (10') foot rolling straightedge in the longitudinal direction of the pavement before completion of the project. The rolling straightedge will be furnished by the Contractor and shall be recently calibrated. Surface corrections shall be made in accordance with subsection 3 below. The requirements for longitudinal surface tolerance on the final roadway wearing course lift shall be:

1. Longitudinal Surface Finish: One path in each lane of the finished surface will be selected at random. Intersections, driveways, drainage structures, bus pads or other roadway obstructions, shall be eliminated from the path of the straightedge.

2. Longitudinal variations: Longitudinal variations in the roadway wearing course surface will be subject to provisions of this section. Surface-finish deficiencies exceeding three-eighths (3/8") inch for more than 10% percent of the lot, shall be corrected in accordance with subsection 3 below. After corrections have been made, the entire lot will be subject to the provisions of this section.

3. Correction of Deficient Areas: Deficiencies to be corrected in the final wearing course shall be corrected by milling, removing and replacing or furnishing and placing a supplemental layer of wearing course mixture at least 2" thick for the full width of the roadway; all in a manner satisfactory to the Director and at no additional cost to the City.

e. Anti-Strip Additive: Testing for addition of anti-strip additive will be conducted at a frequency of twice per lot. When anti-strip additive is not added within the range given on the approved job mix formula, an adjustment in unit price will be made in accordance with Table 2. The payment adjustment required will be on the averaged whole percent payment for the lot. The lot will be divided into two approximately equal sublots. The percent pay will be adjusted for each sublot, then averaged to determine the payment adjustment for the lot.

C501.12 GEOTEXTILE FABRIC FOR PAVING (FOR CONCRETE WEARING COURSE ON PORTLAND CEMENT CONCRETE BASE):

(a) DESCRIPTION. Work shall include furnishing and placing the specified geotextile fabric on the pavement prior to installing the asphalt wearing course.

(b) MATERIALS. The geotextile fabric shall be nonwoven fabric and meet the following minimum requirements:

Tensile Strength (ASTM D-1682)	110 lbs (in either direction)
Elongation (ASTM D-1682)	55% (in either direction)
Melting point	320°F
Asphalt Retention	0.20 gal/sy

(c) CONSTRUCTION REQUIREMENTS:

(1) The pavement should be free from dirt, water, oil and foreign material. Cracks wider than 3/8" should be filled as specified in subsection C724.09.

(2) Prior to installation of the geotextile fabric a tack coat must be applied at the rate recommended by the manufacturer.

(3) The geotextile fabric shall be delivered in rolls to facilitate installation.

(4) During shipment and storage the geotextile fabric shall be wrapped in a heavy-duty covering to protect it from direct sunlight, ultraviolet rays, temperatures greater than 140°F (60°C), mud, dirt, dust, debris and abrasion.

(5) The manufacturer shall furnish a sample and certified test reports showing that the geotextile fabric meets the requirements of these subsections.

(6) Unless otherwise specified by the manufacturer the geotextile fabric shall be unrolled directly on top of the pavement in a uniform manner, free of wrinkles, and all sections overlapped by two (2') feet. Tears or rips in the fabric shall be patched.

C501.13 MEASUREMENT: Asphaltic tack coat, prime coat or curing membrane will not be measured for payment.

(a) Weight Measurement: Asphaltic concrete will be measured by the ton of 2,000 pounds from printed weights as provided in Section C503. Stamped printer tickets will be issued for each truckload of material delivered. Material lost, wasted, rejected or applied contrary to specifications will not be measured for payment.

Estimated quantities of asphaltic concrete shown on the plans are based on 110 lb/sq yd/inch thickness.

(b) Volume or Area Measurement: The quantities for payment will be the design quantities specified in the plans and adjustments thereto. Design quantities will be adjusted when the Director makes changes to adjust to field conditions or when design changes are necessary. Design quantities are based on the horizontal dimensions and compacted thickness of the completed course shown on the plans.

(c) Geotextile: Geotextile fabric shall be measured by the square yard, based on the theoretical area on the plans. Fabric used in patching or overlaps shall not be measured for payment.

C501.14 PAYMENT: Payment for asphaltic concrete will be made at the contract unit price on a lot basis. When the mix does not conform to acceptance requirements, payment will be made at an adjusted price per unit of measurement in accordance with Section C1002 and Table 2. The Director will provide adjustment percentage for properties of asphaltic materials.

(a) General: Payment for asphaltic concrete will include furnishing all required materials, producing the mixtures, preparing the surfaces on which the mixtures are placed, hauling the mixtures to the work site, and placing and compacting the mixtures.

(b) Wearing Course Mixes: The lowest percentage of contract price will be used for final adjustment in unit price for deficiencies in Marshall Stability, pavement density, surface tolerance, anti-strip additive, and asphalt cement properties.

(c) Base, Binder and Shoulder Mixes: The lowest percentage of contract price will be used for final adjustment in unit price for deficiencies in Marshall Stability, pavement density, anti-strip additive, and asphalt cement properties.

(d) Geotextile: Geotextile fabric will be paid for per square yard at the contract unit price which includes furnishing equipment, labor and materials to complete the item.

Payment will be made under:

ITEM NO.	PAY ITEM	Pay Unit
C501(51)	Asphaltic Concrete	Ton
C501(52)	Asphaltic Concrete	Cubic Yard
C501(53)	Asphaltic Concrete (___" Thick)	Square Yard
C501(54)	Geotextile Fabric for Paving	Square Yard

TABLE 1

REQUIREMENTS FOR ASPHALTIC CONCRETE MIXTURES

A. Mixture Requirements

U. S. Sieve % Passing	Type 3 Wearing Course	Binder Course	Type 5A Base	Mix Tolerance
1-1/2"	------	------	100	-----
1"	100	100	80 - 100	± 6
3/4"	95 - 100	85 - 100	------	± 6
1/2"	85 - 100	70 - 100	------	± 6
3/8"	70 - 100	60 - 95	------	± 6
No. 4	50 - 75	40 - 70	35 - 70	± 6
No. 10	28 - 55	28 - 50	------	± 6
No. 40	14 - 30	14 - 30	16 - 40	± 5
No. 80	8 - 20	8 - 20	------	± 4
No. 200[4]	3.0 - 8.0	3.0 - 8.0	3.0 - 8.0	± 2.0
Extracted Asphalt, %	------	------	------	± 0.4
Mix Temperature	------	------	------	± 25°F
% Cursched, Min.	85	70	As Needed	------
Aggregates[1] (Grade) A,B,C		A,B,C,I	A,B,C,D,G,H,I	------
Marchall Stability, lbs.				
No. of Blows	75	75	75	------
Design[2]	1700	1700	1400	------
Minimum	1500	1500	1200	------
Individual	1300	1300	1000	------
Marshall Flow,	1/100 in. 6 - 15	5 - 15	15 Max	------
% Voids	3.0 - 5.0	3.0 - 5.0	3.0-5.0	------
% VFA	70 - 80	70 - 80	70-80	------
% VMA Min[3]	14.5	14.0	13.0	------
% RAP, Max.	0.0	30.0	30.0	------

B. Pavement Requirements

Density, %:

Pavement Wearing & Binder Courses - 95.0

Base Course - 94.0

Grade Tolerance Variation, Inches:

Roadway Wearing Courses - 1/2

Binder Courses - ½

1 A - Gravel, B - Slag, C - Stone approved for wearing surface, D - Stone, G - Sand Gravel, H - Recycled portland cement concrete, I - Reclaimed asphaltic pavement. See Subsection C501.02(c).

2 The Contractor shall design a mixture at a stability value based on historical plant performance that will ensure compliance with 100 percent payment requirements for the average of four samples. Values listed may be used as guide.

3 For Design Guideline. For mixes with a theroetical gravity greater than 2.47, a tolerance of minus 1.0 percent will be applied to tthe minimum VMA.

4 Max of 6.5 percent passing the No. 200 sieve for design of all mixtures.

TABLE 2
PAYMENT ADJUSTMENT SCHEDULES

	Percent of Contract Unit Price/Lot[1]				
	100	98	95	80	50 or Remove [2]
Marshall Stability (lb):					
. Type 3 WC & BC:					
Lot (Average)	1500 & Above	------	1400 - 1499	1250 - 1399	Below 1250
Individual Test Within Lot	1300 & Above	Below 1300	------	------	------
. Type 5A Base:					
Lot (Average)	1200 & Above	------	1100 - 1199	1000 - 1099	Below 1000
Individual Test Within Lot	1000 & Above	Below 1000	------	------	------
Pavement Density: (% of Laboratory Density)					
95.0	95.0 & Above	------	94.0 - 94.9	92.0 - 92.9	Below 92.0
94.0	94.0 & Above	------	93.0 - 93.9	91.0 - 92.9	Below 91.0
Anti-Strip Addictive, % Below Job Mix Formula	Within Job Mix Formula	0.2 or less	More than 0.2	------	------

[1] Portion of lot placed on the project

[2] At the option of the Director

SECTION C502
SUPERPAVE ASPHALTIC CONCRETE MIXTURES

502.01 Description: These specifications are applicable to Superpave Asphaltic Concrete wearing, binder and base course mixtures of the plant mix type.

All references herein shall conform to the LaDOTD Louisiana Standard Specifications for Roads and Bridges, Latest Edition, Section 502, and latest revisions thereto. Section 502 shall govern except as amended herein. All references to the "department" and to "the Director" shall mean the City's representative in these specifications. Wearing Courses shall be (1/2" Nominal Size) and Binder and Base Courses shall be (3/4' or 1" Nominal Size and conforming to the Lift Thickness shown in Table 502-3). The use of a Material Transfer Device is not allowed unless receiving written approval from the Director.

502.02 Materials: See Latest Edition of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, including revisions thereto, except as modified herein.

(a) Asphalt Cement: The asphalt cement grades used shall be as specified in Table C502-1.

Table C502-1
Superpave Asphalt Cement Usage

Current Traffic Load Level	Mixture Type[1]	Grade of Asphalt Cement
Level A	Incidental Wearing Course	PG64-22
Level 1	Binder and Wearing Course	PG64-22
	Base Course	PG64-22*

[1] Nominal Aggregate Size must conform to the Lift Thickness requirements listed in Table C502-3 for each lift of asphalt.
* Binder and Base Course containing between 20 and 30 percent RAP shall use PG58-28. All Wearing Courses shall use PG64-22.

502.04 Job Mix Formula: Validation will be based on the first lot test results. All the specification criteria must be met for production to continue.

502.05 Plant Quality Control: This section does not apply to these specifications.

502.06 Plant Acceptance: This section does not apply to these specifications.

502.10 Roadway Quality Control: See Latest Edition of the LaDOTD Louisiana Standard Specifications including revisions thereto, except as modified herein. All references to Surface Tolerance and IRI specifications will not apply to these specifications.

502.11 Roadway Acceptance: See Latest Edition of the LaDOTD Louisiana Standard Specifications including revisions thereto, except as modified herein.

Density: Acceptance testing for pavement density will be conducted by the Director. One pavement core for each mix use shall be taken from each sublot within 72 hours after placement. Sampling shall be performed by the Director using the random number tables shown in DOTD TR 605. When the sampling location determined by random sampling falls within areas that are to be replaced, within 1 foot of the pavement edge, or within 5 feet of a transverse joint; another

sampling location will be determined. Samples will be drilled by the Contractor at the locations determined by the Director. The Director shall transport the cores to the asphalt plant for testing by the Director's representative. The Contractor's representative will inspect the cores upon delivery to the plant and before any testing is performed on the core. Any damaged cores or cores that are less than 1 3/8"; can be rejected at that time and a new sampling location must be determined and the core re-drilled. The removed pavement shall be replaced with hot or cold mixture and refinished during the work day the coring is performed. Cores less than 1 3/8" thick shall not be used as pavement samples for payment determination. The average density of all cores for each lot shall be greater than 92% of Maximum Theoretical Gravity (TR 327). Roadway density will be calculated using the lot average for Maximum Theoretical Gravity.

502.13 Quality Level Analysis: This section does not apply to these specifications.

502.14 Lot Sizes: This section has been modified as follows:

A lot is a segment of continuous production of asphaltic concrete mixture from the same job mix formula produced for a given job at an individual plant. A standard lot will be defined as:

- 2000 tons production
- Partial lots will require testing at the frequency of one test per 500 tons, and portion thereof.

Each lot will be sub-divided into four equal sublots based on expected production. Testing will be conducted as follows:

- First Sublot –
  - Tests will be performed on aged specimens compacted to N-design as follows:
    - Percent Voids
    - Percent VFA
    - Percent VMA
  - Theoretical Maximum Specific Gravity (Gmm)
  - Gradation, AC Content and Percent Crushed
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum
- Second Sublot –
  - Theoretical Maximum Specific Gravity (Gmm)
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum
- Third Sublot –
  - Tests will be performed on aged specimens compacted to N-design as follows:
    - Percent Voids
    - Percent VFA
    - Percent VMA
  - Theoretical Maximum Specific Gravity (Gmm)
  - Gradation, AC Content and Percent Crushed
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum

- Fourth Sublot –
    - Theoretical Maximum Specific Gravity (Gmm)
    - Aged or un-aged specimens compacted to N-maximum as follows:
        - Percent Gmm at N-initial
        - Percent Gmm at N-Maximum

Tests for Theoretical Maximum Specific Gravity, Voids, VMA and VFA shall be conducted by the Director. If lot averages (minimum two samples) exceed tolerances listed in Table C502-3, an adjustment must be made to the mix by the Contractor to bring the mix back within tolerance. If two consecutive lots are out on the same parameter, production must be halted and the mix re-designed.

Tests for Gradation, AC Content, and Percent Crushed and for aged or un-aged specimens compacted to N-maximum shall be conducted by the Contractor's Quality Control representative. If lot averages (minimum two samples) exceed tolerances listed in Table C502-2, an adjustment must be made to the mix by the Contractor to bring the mix back within tolerance. If two consecutive lots are out on the same parameter, production must be halted and the mix re-designed.

502.15 Measurement: See latest Edition of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, including revisions thereto, except as modified herein.

(a) Weight Measurement: Asphaltic concrete will be measured by the ton of 2,000 pounds (megagrams) from printed weights as provided in Section 503. Stamped printer tickets will be issued for each truckload of material delivered. Material lost, wasted, rejected or applied contrary to specifications will not be measured for payment.

Estimated quantities of asphaltic concrete shown on the plans are based on 110 lb/sq yd/inch (2.35 kg/sq m/mm) thickness.

(b) Volume or Area Measurement: The quantities for payment will be the design quantities specified in the plans and adjustments thereto. Design quantities will be adjusted when the Director makes changes to adjust to filed conditions or when design changes are necessary. Design quantities are based on the horizontal dimensions and compacted thickness of the complete course shown on the plans.

(c) Surface Tolerance Incentive Measurement: This Standard Specification section does not apply to this project.

502.16 Payment: Payment shall be made based on the measurement specified and adjusted for % Air Voids and Average Roadway Density in accordance with Table C502-4 included herein.

Payment will be made under:

ITEM NO.	PAY ITEM	Pay Unit
C502(51)	Superpave Asphaltic Concrete	Ton
C502(52)	Superpave Asphaltic Concrete	Cubic Yard
C502(53)	Superpave Asphaltic Concrete (_" Thick)	Square Yard

Table C502-2

Superpave Requirements

A. REQUIREMENTS FOR EXTRACTED ASPHALT CEMENT AND AGGREGATE GRADATION					
U.S. (Metric) Sieve Passing	1/2 inch (12.5 mm) Nominal	3/4 inch (19 mm) Nominal	1 inch (25 mm) Nominal		Mix Tolerance[1]
2 inch (50 mm)	---	---	---		±6
1 1/2 inch (37.5 mm)	---	---	100		±6
1 inch (25 mm)	---	100	90-100		±6
3/4 inch (19 mm)	100	90-100	89 Max		±6
1/2 inch (12.5 mm)	90-100	89 Max	---		±6
3/8 inch (9.5 mm)	89 Max.	---	---		±6
No. 4 (4.75 mm)	---	---	---		±6
No. 8 (2.36 mm)	28-58	23-49	19-45		±5
No. 16 (1.18 mm)	---	---	---		±4
No. 30 (600 µm)	---	---	---		±3
No. 50 (300 µm)	---	---	---		±3
No 100 (150 µm)	---	---	---		±2
No. 200 (75 µm)	2.0-10.0	2.0-8.0	1.0-7.0		±1.5
Extracted Asphalt, %	---	---	---		±0.4
Mix Temperature	---	---	---		±25°F (±14°C)
Aggregate[2]	A,B,C	A,B,C	A,B,C,D,E		---
B. PAVEMENT REQUIREMENTS					
Density, Min. 92.0 (% of Maximum Theoretical Gravity) Roadway Travel Lane Wearing, Binder and Base Courses					
Density, Min. 89.0 (% of Maximum Theoretical Gravity) Shoulders, Patching and Widening					

[1] Job Mix Formula based on validated mix design. Tolerances apply only to Lot average (2 samples minimum).

[2] A - Gravel, B - Slag, C - Stone approved for wearing surface, D - Stone, E - Reclaimed Asphaltic Pavement. See Subsection 502.02(c).

Table C502-3
Superpave Mixture Criteria

Nominal Max., Size Agg.	0.5 inch (12.5 mm)		0.75 inch (19 mm)		1.0 inch (25 mm)		
Type of Mix	Incidental Paving	Wearing Course	Binder Course		Binder Course	Base Course	
Level	A	1	1		1	1	
Asphalt Binder	Table C502-1						
Coarse Agg. Angularity, + No. 4 (4.75 mm)	55	75	75		75	75	
Fine Agg. Angularity, Min. % - No. 4 (4.75 mm)	40	40	40		40	40	
Flat and Elongated Particles, % Max. (5:1) + No. 4 (4.75 mm)	10						
Sand Equivalent, Min. % (Fine Agg.), - No. 4 (4.75 mm)	40	40	40		40	40	
Natural Sand Max. % of New Agg.	N/A	15	15		15	15	
RAP, Max. % of Mix[1]	20	20	30		30	30	
Compacted Mix Volumetrics							
VMA, Min. %	13	13	12		11	11	
Air Voids, %	2.5-4.5						
VFA, %	68-78						
$N_{initial}$ 91% max. (Gyrations)	7	7	7		7	7	
N_{design} 96.5±1.5 % (Gyrations)	75	75	75		75	75	
N_{max} 98 % max. (Gyrations)	115	115	115		115	115	
Moisture Sensitivity, TSR Min.	80						
Dust/Effective Asphalt Ratio, %	0.6 – 1.6						
Lift Thickness, inch	1.5 – 2.0	1.5 – 2.0	2.0 – 3.0		2.5 – 4.0	2.5+	

[1] For RAP percentages between 20 and 30 percent, use asphalt cement grade PG58-28.

Table C502-4
Payment Adjustment Schedule for Superpave

Parameter[1]	Percent of Contract Unit Price/Sublot		
	100	95	50 or Remove[2]
% Air Voids	2.5 – 4.5	2.0-2.4 or 4.6-5.0	<2.0 or >5.0
Average Roadway Density, % G_{mm}	≥ Lower limit	-0.1 to -0.9 below lower limit	-1.0 below lower limit

[1]The percent payment for plant acceptance will be the Lot Average for air voids,. Roadway pay is based on average roadway density of the sublot cores. The percent payment for roadway acceptance will be the average of the percent payments for density. The total percent payment for the Superpave mixture will be the lowest value of the percent payments for plant acceptance and roadway acceptance.
[2]At the option of the Director.
[3]Lot sizes less than 2000 tons will be accepted based on the average of all values reported.

SECTION C503
ASPHALTIC CONCRETE EQUIPMENT AND PROCESSES

C503.01 DESCRIPTION: This section specifies requirements for certification of plant and paving equipment used in producing, placing and compacting asphaltic concrete mixtures. It includes methods and equipment for handling and storing materials and transporting asphaltic concrete to the jobsite.

When less than 250 tons of mixture is required for a project or at separate locations within a project or for short irregular sections within a project, the paving equipment shall conform to the requirements of this Section, except that pavers without electronic screed and slope control devices may be permitted.

C503.02 PLANT EQUIPMENT:

(a) General: Plants furnishing asphaltic concrete mixtures in accordance with Section C501 shall be certified in accordance with current LaDOTD procedures. The plant and laboratory equipment, meters, scales, and measuring devices, shall be tested, inspected and certified every 90 calendar days and more often when directed, by a qualified independent scale service or the Weights and Measures Division, Louisiana Department of Agriculture and Forestry.

Asphaltic concrete shall be mixed at a central mixing plant by either the batch, continuous, or drum mixing process. Aggregates, additives and asphalt shall be proportioned in accordance with the approved Job Mix Formula.

The complete process, including plant with necessary auxiliary equipment and controls, operating procedures, and testing and sampling methods shall be approved during operation prior to use. Such approval will require a verification that the hardening properties of asphalt recovered from samples of mixture taken at the plant will not exceed the absolute viscosity value obtained on residue from the thin film oven test of the original asphalt by more than 2,000 poises. When samples of mixture are taken from the pavement, the absolute viscosity of recovered asphalt shall not exceed 12,000 poises. Asphalt shall be extracted from the mixture in accordance with DOTD TR 308 and recovered in accordance with AASHTO T 170. Absolute viscosity at 60^{O}C (140^{O}F) of the recovered asphalt shall be tested in accordance with AASHTO T 202.

The Contractor shall have a plant site laboratory conforming to LaDOTD Section 722 as a part of the plant facilities. The plant laboratory shall be equipped with a constant temperature oven capable of maintaining any temperature between 100^{O}F and 400^{O}F +/- 5^{O}F for drying aggregates and determining the moisture content of loose mix, a specimen ejector for removing specimens from Marshall molds, and other laboratory equipment used to perform Quality Control Testing.

(b) Asphalt Preparation Equipment: The asphalt working tank shall be capable of uniformly heating the material by approved methods, under positive control, to the required temperature. The asphalt circulating system shall be of adequate size to ensure proper and continuous circulation (except while asphalt is being measured). Pipelines and fittings shall be heated or

insulated. Proper mixing temperature of asphalt shall be maintained. A sampling spigot shall be provided in each tank or the supply line.

(c) Anti-Strip Additive Equipment: Anti-strip additive shall be dispensed directly into the asphalt feed line at a location between the asphalt control valve and the end of the asphalt discharge line. The process for accomplishing this shall be approved and shall provide that the required quantity of anti-strip additive is uniformly proportional to the quantity of asphalt. The process shall have a means by which such uniformity can be easily verified. The equipment shall include a positive displacement accumulating meter which accumulates and displays materials used, and reads to the nearest 0.25 gallon. The additive storage tank shall be a recirculating tank provided with uniform heat and an indicating thermometer at an approved location near the tank discharge point.

(d) Cold Aggregate Feeder: The plant shall be provided with accurate mechanical means for uniformly feeding aggregate into the dryer. Feeders shall be capable of uniformly delivering the maximum number of required aggregate sizes in their proper proportion. When more than one cold bin feeder is used, each shall operate as a separate unit. The individual controls shall be integrated with a master control for all materials.

Cold aggregate bins shall be of sufficient size to store the amount of aggregates required for continuous plant operation. Partitions between bins shall extend a minimum of 1 foot above the top of bins and be sufficient to eliminate contamination. The unit shall include a feeder mounted under bins with each bin compartment having an accurately controlled individual gate to form an orifice for measuring the material drawn from it. The orifice shall be rectangular, with one dimension adjustable by positive mechanized adjustment with locking system. Indicators shall be provided on each gate to show the gate opening in inches.

The plant shall be modified as required to permit recycling operations in conformance with air pollution standards. A separate cold feed system, including weight indicating apparatus, shall be provided for reclaimed asphaltic pavement.

Calibration of gate openings shall be based on the weight of samples taken from bin material. Material shall be fed from a bin through the individual orifice and bypassed to a container to be weighed. Material from each bin shall be calibrated separately. Weight calibration curves shall be developed and kept on file. The calibration process shall be part of the Contractor's quality control and shall be shown as a function of belt speed and gate opening. The method and frequency shall be as directed.

When a cold feed system is the only system used to control the proportioning of aggregates, an automatic plant shutoff shall be provided to operate when any aggregate bin becomes empty or flow is interrupted.

(e) Hydrated Lime Additive Equipment: When hydrated lime additive is mixed with aggregate on the belt feed, the hydrated lime additive equipment shall be interlocked and synchronized with cold feed controls to operate concurrently with the cold feed operation. A positive signal system

which shall automatically shut the plant down when a malfunction causes an improper supply of additive or water shall be installed. The plant shall not operate unless the entire additive system is functioning properly. The hydrated lime additive system shall consist of the following equipment.

(1) A separate bulk storage bin with a vane feeder or other approved feeding system which can be readily calibrated. The system shall provide a means for easy sampling of additive and verification of the quantity dispensed by weight. The feeder system shall require a totalizer.

(2) An approved spray bar or other approved system capable of spraying the composited aggregate with potable water before the addition of hydrated lime additive when the moisture content of the composited aggregate falls below 3 percent. An alternative system for spraying coarse aggregate stockpiles may be allowed when approved. The approved equipment and methods shall consistently maintain the aggregates in a uniform, surface wet condition. The moisture content of the aggregate-lime additive mixture following spraying and mixing shall be introduced into the automatic moisture controls of the plant.

(3) An approved pugmill or other approved mixing device to uniformly coat the composited aggregates with the hydrated lime additive shall be located between the point at which the additive is placed on the composited aggregate and the dryer.

The hydrated lime additive shall be dispensed directly onto the composited aggregate between the cold feed and the dryer. When cold feed control is used, the additive shall be introduced after the composited aggregate has passed through the vibrating scalping screen. The additive shall be uniformly blended with the composited aggregate before entry into the dryer. The process and equipment used for mixing the lime additive and aggregate shall be approved and shall provide that no less than the required amount of additive is continuously blended with the aggregate. When a belt scale is used on the composited aggregate feed belt, it shall be positioned to record the combined weight of the blended aggregate and hydrated lime additive.

(f) Mineral Filler Equipment: Mineral filler shall be proportioned separately from a hopper equipped with an adjustable feed which can be accurately and conveniently calibrated and which shall be interlocked with the aggregate and asphalt feeds. The feeder shall accurately proportion the mineral filler and shall be designed to give a constant flow of material. For batch plants, the mineral filler shall be batched into the mix along with the aggregates. For continuous mix and drum mixer plants, the mineral filler shall be introduced to the mix at an approved location sufficiently in advance of the addition of the asphalt to give proper drying time.

(g) Screening System: Plant screens shall be provided as required for proportioning, capable of screening aggregates to the required sizes and having normal capacity in excess of the full capacity of the mixer or dryer. The screens shall be exposed for inspection as directed.

The plant shall have a scalping system on the fine sand cold bin and other bins as necessary, to ensure removal of objectionable material.

When a belt scale is used, an additional vibrating scalping screen will be required between the aggregate cold feed discharge and belt scale. Other processes will require a vibrating scalping screen between the cold feed discharge and mixing process. The screens shall be sized to remove all oversize aggregate and other objectionable material.

(h) Dryer: The plant shall include one or more dryers that shall continuously agitate aggregates during heating and drying. The equipment shall be capable of heating and drying aggregates in the necessary quantities to supply the mixing unit continuously at its operating capacity and at a specified temperature and acceptable moisture content. The dryer shall be equipped with automatic burner controls. Slope of dryers shall be in accordance with approved recommendations of the dryer manufacturer.

(i) Hot Bins: Bin sizes shall be adequate for continuous operation of the plant at rated capacity. Bins shall be arranged to ensure separate and adequate storage of appropriate fractions of aggregate. Adequate dry storage shall be provided with an overflow pipe or chute to prevent contamination of materials. Each size of aggregate shall be stored in separate bins when screens are used. For screenless operation, aggregate shall be stored in one or more bins with adequate provisions to prevent segregation.

(j) Thermometers: The plant will not be permitted to operate with faulty or inadequate thermometers, and the thermometers listed herein shall be immediately repaired or replaced when faulty operation is detected. The plant shall be equipped with the following thermometers.

(1) Asphalt: A thermometer graduated in 5°F increments and having an accuracy of +/- 5°F shall be fixed in the asphalt feed line at an approved location near the discharge valve at the mixer unit to indicate the temperature of asphalt from storage.

(2) Anti-Stripping Additive: A thermometer graduated in 5°F increments and having an accuracy of +/- 5°F shall be placed at an approved point near the anti-stripping tank discharge point prior to the meter.

(3) Heated Aggregates for Asphaltic Mixture: The plant shall be equipped with an approved recording thermometer graduated in maximum 10°F increments and having an accuracy of +/- 5°F and a sensitivity which will provide an indication of temperature change at a rate of at least 10°F per minute. It shall be placed at the dryer discharge chute to register automatically the temperature of heated aggregates for batch plants, and at an approved location for continuous or drum-mixer plants to register automatically the temperature of the asphaltic mixture at discharge.

(k) Dust Collector: When a dust collection system returns fines to the mixture, the fines shall be returned at a uniform and regulated rate and at an approved location. In the drum-mix process, baghouse fines shall be added near the asphalt discharge. Baghouse fines shall be dispensed into the aggregate mixture by an approved feed control device from a collector box, surge bin or filler silo. This provision does not apply to primary collectors.

(l) Asphalt Measuring Equipment: Asphalt may be measured either by weight or volumetric measurement.

(1) Weight Measurement: Scales shall conform to Heading (n) of this Subsection and shall read to the nearest pound.

(2) Volumetric Measurement: Measurement by volume shall be by means of a positive displacement pump and shall be recorded in digital form to the nearest gallon. Provisions shall be made to periodically check by weight the quantity of asphalt delivered. The rate of asphalt delivered shall be continuously displayed in digital form corrected to 60°F and the quantity totalized. The quantity of asphalt shall be corrected to the approved job mix temperature. Measurement shall be continuous and accurate to 1.0% of the required measurement.

(m) Mixer Unit: The mixer unit shall produce a uniform blend at the specified production rate, with rapid and complete asphalt coating of aggregate that will give a minimum coating of 95% of the coarse aggregate particles retained on the No. 4 sieve when tested in accordance with AASHTO T 195.

(1) Batch Plants: Batch plants shall have an approved pugmill and spray bar. The pugmill shall have an approved rated capacity. It shall be operated at an approved capacity not to exceed the rated capacity. The mixer shall have an approved timing device to prevent entrance of additional material during mixing. The discharge gates shall be locked to ensure proper mixing. The device shall also lock the asphalt bucket throughout the dry mixing period.

(2) Drum-Mixer Plants: Drum-mixer plants shall have an approved drying and mixing operation. Aggregate and asphalt shall be fed into the drum-mixer so that aggregates are dried, uniformly mixed and adequately coated with asphalt.

(3) Continuous Mix Plants: Continuous mix plants shall have an approved drying and mixing operation. The plant shall have an approved pugmill and spray bar. The pugmill shall be operated at an approved capacity not to exceed the rated capacity with the aggregates uniformly mixed and adequately coated with asphalt.

(n) Weigh Hoppers: Weigh hoppers used in weighing aggregates, asphalt and mixtures shall be constructed to prevent leakage and shall be suspended from scales conforming to this Subsection.

In batch plants, asphalt and aggregate hoppers shall be of sufficient size to weigh the total batch in one operation.

Hoppers for weighing a mixture from a storage or surge bin shall be constructed and used to prevent segregation of mixture loaded into the haul truck.

(o) Scales and Printer Systems:

(1) Scales: Scales shall be accurate to +/- 0.5% of the indicated load. They shall be designed, constructed and installed so that operations do not affect their accuracy.

To determine the total weight of mix loaded in trucks, the Contractor shall provide springless dial scales or load cell scales for weigh hoppers. When weigh hoppers are not used, the Contractor shall provide truck platform scales. The Contractor shall provide belt scales for conveyor systems when the drum-mixer process is used.

(2) Printer System for Batch Plants: To determine percent asphalt cement for the mix, the Contractor shall provide an approved printer system which will print separately the weight of aggregates and asphalt. These weights shall be used for calculating the percent asphalt in the mixture. When a mixture is loaded directly into the haul truck, these weights shall be used for the purpose of determining pay weights for the mix. Printing equipment shall also print zero weight for each batch and total weight of mixture loaded in trucks.

In the event of a breakdown of the printing mechanism, the Contractor may be permitted to operate during the 48-hour period immediately following the breakdown, provided an accurate weight of mixture can be determined and provided repeated breakdowns do not occur.

(3) Printer Systems for Plants Using Storage or Surge Bins: When storage or surge bins are used, the Contractor shall provide truck-platform scales or weigh hopper to determine pay weights for the mix. The weigh hopper shall be equipped with an approved automatic printer system that will print zero weight, batch weight and total weight of mixture loaded into the truck.

Truck-platform scales shall be of sufficient length to weigh the entire unit transporting the mix. Scales shall be equipped with an approved automatic printer system that will print the tare weight as well as the total weight of the unit and the mix.

Scales with electronic digital readout displays, that do not automatically reset to zero after the tare weight is obtained, shall print the tare weight, zero weight and either the total weight of mix loaded into the unit or the total weight of the unit and mixture. Scales with electronic digital readout displays that automatically return to zero after the tare weight is obtained, shall print the tare weight and either the total weight of mix loaded into the unit or the total weight of the unit and mixture.

When scales are located so that a truck leaves the scales between empty weighing and loaded weighing, the printer shall print the tare weight, zero weight before loaded weighing, and total weight of the unit and mix. In the event of a breakdown of the printing mechanism, the Contractor may be permitted to operate during the 48-hour period immediately following the breakdown provided an accurate weight of mixture can be determined and repeated breakdowns do not occur.

(p) Mix Release Agent Dispenser System: The plant shall be equipped with an approved pressurized system capable of spraying a uniform coating of an approved asphalt mix release agent into the haul unit bed prior to loading. Diesel is not allowed as a mix release agent.

C503.03 STORAGE SILOS AND SURGE BINS: Storage silos or surge bins for storing asphaltic concrete mixtures may be used with approval.

(a) Conditions of Use: Use of silos or bins shall conform to the limitations on retention time, type of mixture, heater operation, bin atmosphere, bin level or other characteristics set forth in these specifications and other requirements stated in granting approval of these facilities. An indicator device which is activated when material in the bin drops below the top of the sloped portion shall be affixed to each bin and be visible to the loading operator. Mixtures shall be maintained above this level during production, except for extended periods when the plant is not in operation.

(b) Heated Silos: The storage silo heating system shall be capable or uniformly maintaining mix temperature without localized heating.

Maximum allowable storage time for asphaltic concrete mixtures is 18 hours. The Director may grant permission to exceed the storage time, provided test results and other data indicate that the additional storage time is not detrimental to the mix.

(c) Unheated Surge Bins: The maximum allowable storage time for unheated surge bins is 2 hours. The Department may grant permission to exceed the 2-hour storage time, provided test results and other data indicate that the additional storage time is not detrimental to the mix.

(d) Loading and Unloading Mixtures: The system shall be capable of conveying the mixture from plant to bin or silo by a drag slat enclosed conveyor system or other approved system. The conveyor shall be of an enclosed continuous type designed to prevent spillage and to remove the mix from the plant as fast as it is produced.

The mix shall be transported directly from plant to silos or bins by means of the conveyor system. The mixture from the silo or surge bin shall remain within +/- 15^{o}F of plant discharge temperature.

When the mixture is placed into a silo or bins through a surge device, an automatic warning system shall be provided to audibly warn the operator of a gate malfunction.

Silo or bin unloading gates shall be either clam shell gates operating under gravity feed or other approved gates that will not cause segregation or be detrimental to the mix.

C503.04 HAULING EQUIPMENT: Equipment for transporting asphaltic mixtures shall have tight, clean, smooth metal beds, sprayed daily or as often as directed with an approved asphalt mix release agent. Diesel fuel will not be allowed as a release agent.

Each vehicle shall have a cover of canvas or other suitable material large enough to completely cover the top and extend over the sides of the bed to protect the mixture from the weather or loss of

heat due to excessive haul time. The cover shall have sufficient tie-downs to hold the cover to the bed during hauling. The covers shall be used as directed.

The hauling unit shall discharge the mixture in a continuous manner so the spreader apron of the paver will not be overloaded. When the hauling unit/paver combination causes a surface deviation in excess of 1/8 inch, measured longitudinally with an approved 10-foot metal static straightedge, or other surface defects, the use of such hauling unit or paver shall be immediately discontinued. When rolling straightedge results indicate surface deviations which result in less than 100% payment or excessive correction of bumps, the results will be analyzed to determine if the deviations are caused by the hauling unit/paver combination. If the hauling unit/paver combination is determined to be the cause, their combination shall be discontinued.

Equipment such as bottom dumps shall be capable of discharging the mixture in a uniform windrow longitudinally down the pavement. A maximum of one truck load shall be allowed on the pavement. The temperature of the material in the windrow shall not drop below 275°F. The maximum amount of windrowed material allowed will be reduced if temperature requirements cannot be met. Distortions in surface tolerance resulting from improper unloading of the mixture shall be corrected immediately.

When size, speed and condition of trucks interfere with orderly paving operations, changes in equipment and/or operations shall be made.

Load Restrictions: Load restrictions shall be in accordance with the following:

The Contractor, Subcontractors and suppliers shall comply with legal load restrictions in hauling of materials or equipment on completed bridge structures, bases and pavements. A special permit will not relieve the Contractor of liability for damage resulting from moving of material or equipment. In no case shall the legal load limits be exceeded unless permitted in writing.

Operation of equipment of such weight or height or so loaded as to cause damage or overstress to structures, roadways or other construction will not be permitted. Hauling of materials over the base or surface course under construction shall be limited as directed. The Contractor shall be responsible for all damage done by hauling equipment.

C503.05 PAVING EQUIPMENT: Pavers shall be equipped with screed and slope control devices.

Equipment that is pushed by the paver shall be of such size and capacity that the paver will push them without affecting surface smoothness or edge line of the mixture.

Pavers shall be capable of placing mixtures within specified tolerances. A screed or strike-off assemble shall be used to distribute the mixture over the entire paving strip. The width of the paving strip will be approved. Assemblies, including extensions, shall place mixtures uniform in appearance and quality. The assembly shall be adjustable to provide the required cross section. The assembly shall be equipped with a heater and either a vibrator or tamping bars.

In hilly terrain, when mix is discharged directly into the paver hopper, a positive connection shall be provided between paver and hauling unit. When the hauling unit discharges directly into the paver hopper, the paver shall be capable of pushing the hauling unit.

Pavers shall be equipped with hoppers adequately designed and maintained to prevent spillage. Pavers shall also be equipped with augers to place the mix evenly in front of the screed, including extensions. Pavers shall be equipped with a quick and efficient steering device and shall be capable of traveling both forward and in reverse. Pavers shall be capable of spreading mixes to required thickness without segregation or tearing.

For shoulder construction, modified pavers or widening machines may be used when permitted.

A screed extension shall consist of a screed plate or plates, which meet all requirements for the screed, set forth in these specifications. The bottom surface of the screed extension shall be in the same plane as the bottom surface of the screed plate. A screed extension shall be used when mix is being placed within the traveled way and the paving strip is wider than the screed. Auger assembly extensions shall be used when screed extension in excess of 1 foot on a side are to be consistently used in the pavement operation. Such auger extensions shall extend to within 1 foot of the end of the screed. With approval, the use of an auger extension with screed extensions in excess of 1 foot on one side may be waived for transitions, taper sections and similar short sections. The Director may waive the requirement for auger extensions when hydraulically extended screeds, which trail the main screed assembly, are used, provided required density and surface texture are obtained.

A strike-off assembly or boxed extension shall not be used for paving within the traveled way, except when approved for short irregular sections or sections which are exceptions to the typical.

Pavers shall be equipped with screed and adjustable slope control devices capable of placing the mixture to grade within the tolerances specified, and distributing the mixture over the entire lane width and such partial lane widths as may be approved.

When a malfunction occurs in the automatic screed control device during laydown operations, work may continue for the balance of that day on any course other than the final wearing course. Any overrun resulting from placing material without the automatic screed control device shall be borne by the Contractor. When a screed control device malfunctions during final wearing course paving operations, plant operations shall be immediately discontinued and shall not be resumed until the screed malfunction has been remedied. Material in transit may be placed; however, slope tolerance, surface tolerance and grade tolerance shall be met.

When less than 250 tons of mixture is required for a project or at separate locations within a project or for short irregular sections within a project, the paving equipment shall conform to the requirements of this Section.

C503.06 COMPACTION EQUIPMENT:

(a) General: Compaction equipment shall be self-propelled and be capable of reversing without backlash. Compaction equipment shall be certified prior to use.

Poorly performing compaction equipment will be decertified and shall be replaced with suitable equipment or supplemented as necessary.

(b) Steel Wheel Rollers: Steel wheel rollers may be either vibratory or nonvibratory. Wheels shall be true to round and equipped with suitable scrapers and watering devices. Vibratory rollers shall be designed for asphaltic concrete compaction and shall have separate controls for frequency, amplitude and propulsion.

C503.07 MISCELLANEOUS EQUIPMENT AND HAND TOOLS: Power revolving brooms or power blowers and asphalt distributors shall be provided and maintained in a satisfactory working condition.

In areas that are inaccessible to conventional rollers, satisfactory mechanical compaction equipment, or hot hand tampers, shall be used. Tamping tools may be used for compacting edges.

The asphalt distributor shall be equipped with a suitable spray bar and nozzles designed to distribute material within the specified temperature range and shall be equipped with thermometers to indicate temperature of material in the tank. The distributor shall be designed to maintain a constant uniform pressure on asphaltic material as it passes through nozzles and to apply asphaltic material at the required rate. The distributor shall be equipped with a valve system that control the flow of asphaltic materials, a pump tachometer or pressure gauge that registers pump output, a bitumeter and odometer that indicates both the speed of the distributor in feet per minute and total distance traveled, and measuring devices, as necessary.

Charts shall be provided for an accurate, rapid determination and control of the amount of asphaltic materials being applied per square yard of surface under operating conditions. The bitumeter shall be calibrated to ensure accurate spraying operations and shall be kept clean of asphaltic buildup. The distributor shall be equipped with a hand-held spray attachment for applying asphaltic materials to areas inaccessible with the spray bar.

C503.08 HANDLING OF AGGREGATES: Aggregates shall be stored at the plant site so that no intermixing will occur. Material shall be stockpiled so that no detrimental degradation or segregation of aggregates will occur; no appreciable amount of foreign material will be incorporated into aggregates; and there will be no intermingling of stockpiled materials. Stockpiles shall be well drained.

Blending of aggregates shall be done from cold feed bins and not in stockpiles or on the ground at the plant site or the source.

Gradation and other properties of aggregate in stockpiles shall be such that when the aggregates are combined in proper proportions, the resulting combined gradation will meet the requirements of the approved job mix formula.

Proportioning of material at the cold feed shall be established to meet the approved job mix gradation requirements. Plants operating with only cold feed control shall not require additional manipulation to meet job mix requirements.

(a) Drying: Aggregates shall be heated and dried to produce a mixture meeting specification requirements. The quantity of material fed through the dryer shall be held to an amount which can be adequately heated and dried. When proper drying is not achieved and the quality of the mix is impaired, the Contractor shall adjust the rate of production of the dryer to obtain satisfactory results. The burner fuel used shall be clean burning so there is no contamination of aggregates. Contaminated aggregates or mixtures will be rejected.

(b) Hot Aggregate Storage: When batch plants are used, hot aggregates shall be stored in bins. Storage shall be accomplished to minimize segregation and loss of temperature of aggregates. When plant operation is interrupted and the temperature of material in hot storage cools to 25°F or more below the specified mixing temperature, bins shall be pulled and the material discarded. When a plant changes type of mix and the change requires a change of materials, bins shall be pulled and the material discarded.

C503.09 PROCESSING OF ASPHALT, ADDITIVES AND AGGREGATES: Aggregates shall be combined, either before or after drying, depending on the type of plant used, to meet the approved job mix formula. Asphalt shall be measured and introduced into the mixer or dryer in the quantities specified on the approved job mix formula.

The aggregate, asphalt and the mixture shall be processed at the temperature specified in the approved job mix formula. The temperature of the mixture at discharge from the mixer shall be within +/- 25°F of the optimum mixing temperature in the job mix formula. When the mixing, coating, placing or density requirements are not being met, the Director may require that the job mix temperature be changed or that the foregoing temperature range be restricted.

The moisture content of the final mixture shall be minimized and uniformly controlled to ensure that placing and density requirements are met. The maximum allowable moisture content of the final mixture shall be 0.5% by weight when tested in accordance with DOTD TR 319.

When the automatic adjustments or other critical control and shutoff devices are not functioning, the plant shall not operate.

(a) Plants with Pugmills: Prior to adding asphalt, the combined aggregate shall be thoroughly mixed dry, after which the proper amount of asphalt shall be sprayed over aggregates and mixed to produce a homogeneous mixture in which all aggregate particles are uniformly coated. Mixing times shall be in accordance with the approved job mix formula.

(b) Drum-mixer and Continuous Mix Plants: The system shall provide positive weight control of cold aggregates fed by a belt scale or other device interlocked with the asphalt measuring system to maintain required proportions of combined aggregates and asphalt. Aggregates shall be heated, dried and mixed with asphalt to produce a homogeneous mixture in which all aggregate particles are uniformly coated. Approved methods shall be provided to waste the first and last output of the plant after each interruption.

The Contractor's Certified Asphaltic Concrete Plant Technician shall measure the moisture content of the cold feed aggregates daily when starting the plant. Adequate scheduled tests during plant operations and adjustments to the plant shall be made to correct for moistures in the aggregate. The schedule for moisture content testing will be subject to approval.

Provisions shall be made for introducing the latest moisture content of the cold feed aggregates into the belt weighing system, thereby correcting wet aggregate weight to dry aggregate weight. Dry weight of the aggregate flow shall be displayed digitally in appropriate units of weight and time, and the quantity used totalized. The rate of flow of asphalt anti-strip, and lime (when used) shall also be digitally displayed and the quantity used totalized.

For mineral filler, a separate bin and feeder in accordance with Subsection C503.02(d) shall be furnished with its drive interlocked with the aggregate feeders. Mineral filler shall be introduced directly into the drum near the asphalt discharge.

SECTION C504
ASPHALTIC TACK COAT

C504.01 DESCRIPTION: This work consists of preparing and treating existing asphaltic or concrete surface with asphaltic material in accordance with these specifications and in conformity with the lines shown on the plans or established in the field.

C504.02 ASPHALTIC MATERIALS: Tack coat shall be a modified asphalt emulsion (Grade SS-1, SS-1H or CMS-2) or a modified asphalt emulsion (Grade CRS-2P, CRS-2L, SS-1P or SS-1L) conforming to Section C1002.

C504.03 WEATHER LIMITATIONS: Asphaltic tack coat shall not be applied on a wet surface or when the ambient air temperature is below 40°F.

C504.04 EQUIPMENT: The Contractor shall provide equipment for applying asphaltic material and preparation of the surface to be tacked. Equipment shall conform to Subsection C503.07. A hand-held pressure nozzle may be used for tack coat application in lieu of the spray bar/tachometer combination for irregular sections or short sections of 1500 feet or less.

C504.05 SURFACE PREPARATION: The surface shall be cleaned by sweeping or other approved methods. Edges of existing pavements which will form joints with new pavement shall be satisfactorily cleaned before tack coat is applied.

C504.06 APPLICATION: Asphalt shall be uniformly applied to a clean dry surface with no bare areas, streaks or puddles with an asphaltic distributor at a rate in accordance with Table 3. These rates may be raised or reduced as directed.

TABLE 3
ASPHALTIC TACK COATS

Existing Surface	Rate (Gal/sq yd)[1]
Bleeding Surface Treatment	0.02
Dry Surface Treatment	0.03
New Hot Mix	0.03
Old Hot Mix	0.07
Portland Cement Concrete	0.07
Friction Course	0.05
Cold Planed Surface[2]	0.08

[1] Rates are minimum rates of undiluted asphaltic material.
[2] Minimum of two applications.

The minimum application temperature for modified asphalt emulsions and emulsified asphalt Grades CRS-2L and CRS-2P is 160°F and Grades SS-1, SS-1H, CRS-2, SS-1L and SS-1P is 70°F.

Tack coat shall be applied in such manner as to cause the least inconvenience to traffic. The Contractor will be permitted to apply the tack coat 1 calendar day prior to the mixture laydown; however, when tack coat has been damaged by traffic pick-up or contaminated by dirt, dust or mud, the surface shall be cleaned and retacked prior to the mixture laydown at no direct pay. Tacked surfaces exposed to traffic for more than 24 hours or damaged due to inclement weather shall be retacked at no direct pay.

C504.07 MEASUREMENT AND PAYMENT: Asphaltic tack coat will not be measured for payment; however, payment under the contract will be subject to the payment adjustment provisions of Section C1002 for specification deviations of the asphaltic materials. The Director will provide the payment adjustment percentage for asphaltic materials.

SECTION C505
ASPHALTIC PRIME COAT

C505.01 DESCRIPTION: This work consists of preparing and treating a surface with asphaltic material in conformance with these specifications and in conformity with lines shown on the plans or established in the field.

C505.02 ASPHALTIC MATERIALS: Prime coat shall be cutback asphalt Grade MC-30, MC-70, or AEP Emulsified Asphalt conforming to Section C1002.

C505.03 WEATHER LIMITATIONS: Asphaltic materials shall not be applied on a wet surface or when ambient air temperature is less than 35^{O}F in the shade.

C505.04 EQUIPMENT: The Contractor shall provide the necessary equipment for proper construction of the work. Equipment shall be approved before construction begins and shall be maintained in satisfactory working condition. Equipment shall conform to Subsection C503.07.

C505.05 SURFACE PREPARATION: The surface to be coated shall be shaped to required grade and section shall be free from ruts, corrugations, segregated material or other irregularities, and shall be compacted to required density. Delays in priming may necessitate reprocessing or reshaping to provide a smooth, compacted surface.

C505.06 APPLICATION: Prime coat shall extend 6 inches beyond the width of surfacing shown on the plans. The prime coat shall not be applied until the surface has been satisfactorily prepared and is dry.

Prime coat shall be applied at the rates and temperatures shown in Table 4. Quantities of prime coat shall not vary from that shown in Table 4.

TABLE 4
PRIME COATS

	Application Rate (Gallon/square yard)		**Application Temperature(°F)**	
Asphalt Grade	**Min.**	**Max.**	**Min.**	**Max.**
MC-30	0.15	0.30	60	120
MC-70	0.15	0.30	100	180
AEP	0.15	0.30	60	120

C505.07 PROTECTION: After prime coat has been applied it shall cure for a minimum of 24 hours before the surfacing is placed. The Contractor shall keep traffic off the surface until the prime coat has properly cured, unless otherwise permitted.

If traffic is permitted, the Contractor may be required to spread approved granular material, as directed, over the prime coat at no direct pay.

The prime coat shall be maintained intact. When required, the primed surface shall be thoroughly cleaned prior to the placement of surfacing.

Where the prime coat has failed, the failed area shall be cleaned and be recoated with prime coat at no direct pay. When the prime coat is generally unsatisfactory, the Contractor shall reprime the unsatisfactory surface at no direct pay.

C505.08 MEASUREMENT AND PAYMENT: Asphaltic prime coat will not be measured for payment; however, payment under the contract will be subject to the payment adjustment provisions of Section C1002 for specification deviations of the asphaltic materials. The Director will provide the payment adjustment percentage for asphaltic materials. Payment for surface preparation will be made under other items.

SECTION C506
POROUS ASPHALTIC CONCRETE PAVEMENT

C506.01 DESCRIPTION: This work consists of constructing a porous asphalt pavement on a prepared sub-grade in accordance with this section and in conformity with the lines, grades, thicknesses and typical sections shown on the plans or established in the field.

The porous asphaltic concrete pavement shall consist of a mixture of aggregates, bituminous binder material including polymer modified asphalt, fibers, mineral filler, anti-strip additives, and other optional additives as may be specified.

C506.02 REFERENCES:

- AASHTO T96 – Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact
- AASHTO T209 – Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
- AASHTO T283 – Standard Method of Test for Resistance of Compacted Asphalt Mixtures to Moisture-Induced Damage
- ASTM D3203 – Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
- ASTM D4791 – Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
- ASTM D5821 – Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
- ASTM D6752 – Standard Test Method for Bulk Specific Gravity and Density of Compacted bituminous Mixtures Using Automatic Vacuum Sealing Method
- NAPA IS-115 – Open-Graded Asphalt Friction Courses, Design, Construction & Maintenance
- NAPA IS-131 – Porous Asphalt Pavements for Stormwater Management
- NAPA – National Asphalt Pavement Association
- NCAT – National Center for Asphalt Technology

C506.03 MATERIALS: The Contractor shall keep accurate records, including proof of deliveries of materials for use in porous asphaltic concrete mixtures. Copies of these records shall be furnished to the Director upon request. Material shall conform to the following Subsections:

Asphalt (C1002.01)
Silicone and Anti-Strip Additives (C1002.02)
Aggregates (C1003.01 & C1003.06)
Hydrated Lime (LaDOTD 1018.03(a))
Mix Release Agent (LaDOTD 1018.26)

as well as the following:

(a) Asphalt Binder: An asphalt binder shall meet the requirements of section C502.02.

(b) Additives: Additives such as cellulose or mineral filler, or anti-strip additives, shall be included as allowed by the Director.

(c) Aggregates: Coarse aggregate shall be that part of the aggregate retained on the No. 8 sieve and shall consist of clean, tough, durable fragments of crushed stone, or crushed gravel of uniform quality. Coarse aggregate shall:

(1) Have a percentage of wear as determined by AASHTO T96 of not more than 30 percent;

(2) Have at least 75% by mass (weight) of the material coarser than the No. 4 sieve with at least two (2) fractured faces, and 90% shall have one or more fractured faces as determined by ASTM D5821;

(3) Have not more than 5% of flat or elongated pieces (>5:1) as specified in ASTM D4791;

(4) Be free from clay balls, organic matter, and other deleterious substances.

(5) The nominal maximum aggregate size shall be ¾ inch.

C506.04 JOB MIX FORMULA: The Contractor shall develop for approval a job mix formula for proportioning of each type of porous asphalt pavement proposed for use as specified in accordance with C501 and the following:

(a) The recommended percent of bituminous material is 6% minimum based on the total weight of the mix, to assure adequately thick layers of asphalt around the aggregate.

(b) Fines in the job mix formula shall have a maximum of 20% passing the #4 sieve and 2.5% passing the #200 sieve.

(c) Mix design shall result in pavement that accepts 60 inches/hour (30 gallons per hour in a 12 inch diameter ring). Testing shall be in accordance with NCAT.

(d) Air void content shall be >16%.

C506.05 WEATHER LIMITATIONS: The Contractor must comply with Section C501 as well as the following:

(a) The ambient air temperature during the past 24 hours shall be above 50 degrees Fahrenheit,

(b) The asphalt laying temperature should be within 10 degrees Fahrenheit of the comparative temperature in the approved job mix design.

C506.06 SURFACE PREPARATION: The surface to be covered shall be approved prior to placing mixtures. The Contractor shall maintain the surface until it is covered. The stormwater storage/infiltration beds shall be in accordance with the following:

(a) Coarse aggregates shall meet the size and grading requirements as defined in Standard Sizes of Coarse Aggregate, AASHTO Specifications, 30th Ed., 2010, or later, unless otherwise specified.

(b) Coarse aggregate for groundwater recharge bed shall be 2-1/2" to 1-1/2" uniformly graded Crushed coarse aggregate, with a wash loss of no more than 0.5%, AASHTO size number 2 per AASHTO Specifications, 30th Ed., 2010, or later.

(c) Choker base course aggregate for groundwater recharge bed shall be 1" to 3/8" uniformly graded, crushed coarse aggregate, or approved equal, AASHTO Specifications, 30th Ed., 2010, or later.

(d) Filter fabric shall be Propex PERC™ Pervious Concrete Infiltration Fabric or approved equal.

(e) Impervious liner – shall be Permalon, PLY-X 150, or approved equal.

C506.07 JOINT CONSTRUCTION:

(a) Joints between old and new pavements or between successive days work shall be made to ensure a thorough and continuous bond between the old and new mixtures. Whenever the spreading process is interrupted long enough for the mixture to attain its initial stability, the paver shall be removed from the mat and a joint constructed.

(b) Transverse joints shall be butt joints formed by cutting the pavement in a vertical plane at right angles to the centerline, at location approved by the Director. The Director will determine locations by using a straightedge at least 16 feet long. The transverse joint shall be thoroughly coated with Type RS-1 emulsified asphalt just prior to depositing the pavement mixture when paving resumes.

(c) Tapered joints shall not be allowed. Longitudinal joints that have become cold shall be coated with Type RS-1 emulsified asphalt before the adjacent mat is placed. If directed by the Director, joints shall be cut back to a clean vertical edge prior to applying the Type RS-1 emulsified asphalt.

C506.08 HAULING, PAVING AND FINISHING: Mixtures shall be transported in clean vehicles with tight, smooth dump beds that have been sprayed with a non-petroleum release agent or soap solution to prevent the mixture from adhering to the dump beds.

Mineral filler, fine aggregate, slag dust, and similar materials shall not be used to dust truck beds.

(a) The asphaltic mixture shall be placed using self-propelled paving equipment with an activated screed or strike-off assembly capable of being heated in necessary, and capable of spreading and finishing the mixture without segregation. Track pavers are recommended.

(b) The use of water to cool the asphaltic mixture is prohibited.

(c) Place lifts no more than 24 hours after each previous lift to minimize the use of tack coats. Tack coats will only be allowed if required by the Director.

(d) The finished surface shall be of a uniform texture and evenness, and shall not show any indication of tearing, shoving, or pulling of the pavement during placement.

C506.09 COMPACTION:

(a) General: After placement, mixtures shall be uniformly compacted by rolling while still hot. If continuous roller operation is discontinued, rollers shall be removed to cooler areas of the mat, where they will not leave surface indentations. The use of steel wheel rollers which result in excessive crushing of aggregate will not be permitted.

(1) Roll the asphalt using a two-axle tandem roller when it is cool enough to withstand the roller without displacement of the asphalt, and using rollers sufficient to compact the asphalt without crushing the aggregate or compromising the required void content and infiltration rates.

(2) The number, mass (weight), and type of rollers furnished shall be sufficient to obtain the required compaction while the mixture is in a workable condition. Generally one breakdown roller will be needed for each paver used in the spreading operation.

(A) Breakdown rolling shall occur when the mix temperature is between 275 and 325 degrees Fahrenheit.

(B) Intermediate rolling shall occur when the ix temperature is between 200 and 275 degrees Fahrenheit.

(C) Finish rolling shall occur when the mix temperature is between 150 and 200 degrees Fahrenheit.

(3) Unless otherwise specified, the longitudinal joints shall be rolled first. Next, the Contractor shall begin rolling at the low side of the pavement and shall

proceed toward the center or high side with lapped rolling parallel to the centerline.

(4) Roll until all roller marks are gone; however, avoid excessive rolling which could reduce the infiltration capabilities of the asphalt.

(5) To prevent adhesion of the mixture to the rolls, rolls shall be kept moist with clean water or water mixed with very small quantities of detergent or other approved materials. Excess liquid will not be permitted.

(6) Any mixture that becomes loose and broken, mixed with dirt, or is in any way defective shall be removed and replaced with a fresh hot mixture. The mixture shall be compacted to conform to the surrounding area with segregation. Any area showing deficiencies shall be replaced at the Contractor's expense.

(b) Hand Compaction: Along forms, curbs, headers, walls and at other places inaccessible to rollers, mixture shall be uniformly compacted to the satisfaction of the Director with approved hand tampers or mechanical tampers, conforming to Subsection C503.07.

C506.10 PAVEMENT SAMPLES: Samples shall be cores approximately 4" in diameter taken by an approved core drill. The Contractor shall furnish samples cut from the completed work. The removed pavement shall be replaced with hot or cold mixture and refinished during the work day coring is performed. No additional compensation will be allowed for furnishing test samples and replacing the areas with new pavement. Samples shall be taken by the Contractor in the presence of the Director's representative from areas selected by the Director in accordance with Subsection C501.11(b)(2)c. When the design thickness is greater than 1-3/8", cores less than 1-3/8" thick shall not be used as pavement samples for payment determination.

Cores shall be transported to the plant in approved transport containers or one-gallon friction-top cans. Regardless of transport container used, the container will be sealed, signed, and dated by the inspector using an approved method. The individually wrapped core will also be sealed, signed, and dated by the inspector using an approved method. Any evidence of tampering with the core wrappings, sticker, or of opening the container or friction-top can will result in the cores being rejected. Additional pavement samples will be required.

C506.11 ACCEPTANCE REQUIREMENTS: All Department inspection procedures, including sampling and testing, form the basis for acceptance of the asphaltic concrete. Any section of pavement that is obviously deficient shall be satisfactorily corrected or replaced. Sampling and testing shall be accomplished following a stratified sampling plan in accordance with the Materials Sampling Manual and specified test procedures. Times and locations shall be established by the Director.

A standard lot is the production of asphaltic concrete mix from the same job mix formula produced for the Department at an individual plant in one day. Additional adjustments may be made to the standard lot size as specified in this Subsection. Minor adjustments will be made to the lot size to accommodate hauling unit capacity.

Testing:

(1) Quality Assurance (QA) Inspector: The Contractor shall provide at the Contractors' sole expense and the Director's approval a third-party QA Inspector to oversee and document mix production. All mix testing results during production shall be submitted to the QA Inspector.

The QC plan may be altered at the discretion of the Director and based on written recommendations from the QA Inspector.

For small batch production, the Director may also modify or eliminate some testing requirements in the QC plan.

(2) During Production: The Contractor shall sample, test, and evaluate the mix in accordance with the methods and minimum frequencies in the Table 1. Test results shall be delivered to the Director.

Table 1: QC/QA Testing requirements during production

Test	Minimum Frequency	Test Method
Temperature in Trucks Prior to leaving Plant	Six times per day	--
Gradation	Greater of either (a) 1 per 500 tons, (b) 2 per day, or (c) 3 per job	AASHTO T30
Binder Content	Greater of either (a) 1 per 500 tons, (b) 2 per day, or (c) 3 per job	AASHTO T164
Air Void Content	Greater of either (a) 1 per 500 tons, (b) 2 per day, or (c) 3 per job	ASTM D6752, Volumetric Measurement

Testing of the temperature, binder content, and air void content shall be within the limits set by this specification.

Testing of the gradation shall not vary from the approved design mix by more than the tolerances in Table 2.

Table 3: QC/QA testing tolerances during production

Sieve Size	Percent Passing
0.75	--
0.50	+/- 6.0
0.375	+/- 6.0
No. 4	+/- 5.0
No. 8	+/- 4.0
No. 200	+/- 2.0

Should the asphalt fail to meet all testing requirements initially, production modifications shall be made until the porous asphalt mix is within required tolerances. After the corrective action has been taken, the resulting mix will be sampled and tested again at the Contractor's expense.

If the resampled asphalt fails to meet all testing requirements again, the Director will be immediately informed and provided with the test results. The Director may determine that it is in the best interest of the project that production is ceased at that time. The Contractor will be responsible for all costs associated with the inability of the asphalt plant to meet all testing requirements.

(3) Following Placement: The full permeability of the pavement surface shall be tested prior to final acceptance in accordance with NCAT.

Test in place base and surface course for compliance with requirements for thickness, void content and unit weight as described above by using 1' x 1' slab samples. Repair or remove and replace unacceptable work as directed by the Director at the Contractor's cost.

Test finished surface for smoothness using a 10 foot straightedge applied parallel with and at right angles to the centerline of the paved area. Surface will not be accepted if gaps or ridges exceed 3/16 of an inch. The smoothness requirements specified herein apply only to the top lift of each layer, when asphalt is constructed in more than one lift.

QC/QA requirements during paving are summarized in Table 3.

Table 3: QC/QA requirements during paving

Activity Schedule	Frequency	Tolerance
Inspect truck beds for pooling (draindown)	Every truck	--
Take surface temperature behind joint heater	Each pull	10 degrees F of compaction temperature
Test surface smoothness and positive drainage with a 10 foot straight edge	After compaction	3/16 inch
Hose test with at least 5 gpm water	After compaction	Immediate infiltration, no puddling

C506.12 PROTECTION OF ASPHALTIC PAVEMENT: The minimum times prior to opening the pavement to traffic are as follows:

- After pavement has been permitted to cool to below 100 degrees Fahrenheit for all traffic,
- 24 hours for pedestrian traffic, and
- 48 hours for vehicular traffic.

The Contractor shall protect the porous asphalt from severe weather conditions and contamination by dust, dirt, mud, or other fine grained material or sediment. The asphalt shall be protected by an approved method from the time of placement until final acceptance of the project. Any damage to the porous asphalt caused by the Contractor's equipment shall be repaired by the contactor at no cost to the City. Any portion of the porous asphalt that becomes contaminated to the extent that drainage is reduced or inhibited shall be removed and replaced at no expense to the City.

C506.13 MEASUREMENT: Asphaltic tack coat, prime coat or curing membrane will not be measured for payment.

(a) Weight Measurement: Porous asphaltic concrete will be measured by the ton of 2,000 pounds from printed weights as provided in Section C503. Stamped printer tickets will be issued for each truckload of material delivered. Material lost, wasted, rejected or applied contrary to specifications will not be measured for payment.

Estimated quantities of porous asphaltic concrete shown on the plans are based on 110 lb/sq yd/inch thickness.

(b) Volume or Area Measurement: The quantities for payment will be the design quantities specified in the plans and adjustments thereto. Design quantities will be adjusted when the Director makes changes to adjust to field conditions or when design changes are necessary. Design quantities are based on the horizontal dimensions and compacted thickness of the completed course shown on the plans.

(c) Geotextile: Geotextile fabric shall be measured by the square yard, based on the theoretical area on the plans. Fabric used in patching or overlaps shall not be measured for payment.

C506.14 PAYMENT: Payment for porous asphaltic concrete will be made at the contract unit price on a lot basis. When the mix does not conform to acceptance requirements, payment will be made at an adjusted price per unit of measurement in accordance with Section C1002 and Table 2. The Director will provide adjustment percentages for properties of asphaltic materials.

(a) General: Payment for porous asphaltic concrete will include furnishing all required materials, producing the mixtures, preparing the surfaces on which the mixtures are placed, hauling the mixtures to the work site, and placing and compacting the mixtures.

(b) Wearing Course Mixes: The lowest percentage of contract price will be used for final adjustment in unit price for deficiencies in Marshall Stability, pavement density, surface tolerance, anti-strip additive, and porous asphalt cement properties.

(c) Base, Binder and Shoulder Mixes: The lowest percentage of contract price will be used for final adjustment in unit price for deficiencies in Marshall Stability, pavement density, anti-strip additive, and porous asphalt cement properties.

(d) Geotextile: Geotextile fabric will be paid for per square yard at the contract unit price which includes furnishing equipment, labor and materials to complete the item.

Payment will be made under:

ITEM NO.	PAY ITEM	Pay Unit
C506(51)	Porous Asphaltic Concrete	Ton
C506(52)	Porous Asphaltic Concrete	Cubic Yard
C506(53)	Porous Asphaltic Concrete (___" Thick)	Square Yard
C501(54)	Geotextile Fabric for Paving	Square Yard

SECTION C507
ASPHALTIC BINDERS

C507.01 DESCRIPTION: This section specifies requirements for the selection and placement of asphaltic interlayer reinforcement for flexible and rigid pavement.

C507.02 REFERENCES:

- Asphalt Institute Handbook.
- AASHTO Standard Specification for Highway Bridges.
- ASTM D276 – Standard Test Methods for Identification of Fibers in Textiles.
- ASTM D4595 – Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
- ASTM D4694 – Standard Test Method for Deflections with a Falling-Weight-Type Impulse Load Device.
- ASTM D4759 – Standard Practice for Determining the Specification Conformance of Geosynthetics.
- ASTM D5340 – Standard Test Method for Airport Pavement Condition Index Surveys.
- ASTM D5261 – Standard Test Method for Measuring Mass per Unit Area of Geotextiles.
- ASTM D6637 – Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Test Method; 2001.
- DIN EN ISO 10319 (2008-10) – Geosynthetics - Wide-Width Tensile Test (ISO 10319:2008).
- FHWA Federal Highway Administration – Design Guidelines.

C507.03 SYSTEM DESCRIPTION:

(a) Flexible Pavements: Provide interlayer reinforcement system installed between asphalt layers in a pavement structure to distribute loads, reinforce the pavement and reduce reflective cracking distresses.

(b) Rigid or Composite Pavements: Provide interlayer reinforcement system installed between freshly leveled asphalt overlay to absorb the strain and stress energy developed by traffic-induced working concrete joints and by slab shrinkage and expansion due to thermal changes.

C507.04 QUALITY ASSURANCE:

(a) Manufacturer Qualifications:

(1) Manufacturer with at least 10 years of documented experience in the manufacture and installation of fiberglass interlayer grids to reduce thermal or load associated cracking distress, and in the manufacture of the tack coat that meets the specification.

(2) Manufacturer with documented evidence of an established quality control program to assure products with consistent compliance with the requirements of this specification. Such a program would be ISO 9001:2008 Registration.

(3) Annual conformance testing performed by an accredited third party testing facility.

(b) Installer Qualifications:

(1) Firm with documented experience in the installation of fiberglass interlayer grid systems with at least two projects of similar construction and scope.

C507.05 DELIVERY, STORAGE, AND HANDLING:

(a) Store products in manufacturer's unopened packaging until ready for installation.

(b) Store in a dry, covered location that is free of dust, dirt, and moisture. Prevent excessive mud, fluid concrete, asphalt, or other deleterious materials from coming in contact with reinforcement grid materials.

(c) Store at temperatures between minus 29°C (minus 20°F), below 82°C (180°F) and maximum relative humidity of 85%.

C507.06 PROJECT CONDITIONS:

(a) Do not place grid reinforcement when the asphalt surface is wet, or contaminated with oil, soil or excessive dust.

(b) Existing pavement should show no signs of poor drainage, pumping of fines, excessive deflections or structural instability.

(c) Receiving surface shall be smooth, with the existing cracks pretreated per SHRP-H-348.

(d) Make all repairs as required prior to placement of interlayer system.

(e) Do not install asphalt on the grid reinforcement when the underlying asphalt surface is hotter than 60°C (140°F) or in the case of new asphalt, do not install prior to the asphalt cooling to 43°C (110°F) at least once previously.

C507.07 MATERIALS:

(a) The asphalt reinforcement grid shall consist of a high strength, fiberglass grid custom knitted and coated with an elastomeric polymer and self-adhesive glue.

(b) In addition, the reinforcement grid shall have the following/adhere to the following Minimum Average Roll Values (MARV) for material properties and should adhere to the strength properties in Table 1.

Table 1 –Material and Strength Properties

	PRODUCT PROPERTIES	METHOD	UNITS	Type 1	Type 2
Material Properties	Aperture Size (Center to Center)		mm (inch)	12.5 x 12.5 (0.5 x 0.5)	25.0 x 25.0 (1.0 x 1.0)
	Percent Open Area	CW-02215 MOD.[1]	%	Greater than or equal to 50	Greater than or equal to 50
	Fiberglass Coating			Elastomeric Polymer	Elastomeric Polymer
	Mass / Unit Area	ASTM D5261	g/m² (oz/yd²)	405 (12.0)	405 (12.0)
	Roll Width		m (ft.)	1.5 (5.0)	1.5 (5.0)
Strength Properties	Fiberglass Coating Softening Point	ASTM D36	°C (°F)	Greater than 149 (300)	Greater than 149 (300)
	Tensile Strength (MD x CD)	ASTM D6637	kN/m (lb./in)	100 x 100 (560 x 560)	100 x 100 (560 x 560)
	Tensile Strength @2%	ASTM D6637	kN/m (lb./in)	80 x 80 (456 x 456)	80 x 80 (456 x 456)
	Elongation at Break	ASTM D6637	(%)	Less than 3	Less than 3
	[1] - Army Corp of Engineers test method correlated to light emitted through fabric.				

Table 2 Product Performance Requirements

	TEST DESCRIPTION	TEST METHOD	METHOD OF MEASURE	PERFORMANCE
Performance Requirements	Coating Softening Temperature vs. HMA Asphalt Binder Compaction Temperature	Temperature Comparison	Job Mix Formula Compaction Temperature Requirement	Coating Softening Point > HMA Compaction Temperature
	Field Millability and Recyclability Validation	Field Milling of Asphalt with Interlayer System	References or Reports	Documented Experience
	Asphalt : Grid composite stiffness for durability of composite layers over life of pavement during individual and long term deformation	3Pt Beam Test at 70°F, Grid with polymer tack at mid depth relative to a control with polymer emulsion tack coat – cyclic stress controlled loading	Minimum Improvement Factor vs. Control	> 3x
	Fatigue and Rutting Performance	Circular Full Scale APT [1] Testing vs. Control	Rutting and Fatigue	> 2x (rutting) >3x (fatigue)
	Fatigue and Reflective Cracking	MMLS3 Scaled APT [1] Testing vs. Control	Fatigue and Reflective Cracking Testing	>3x
	Full Scale Crack and Durability Test	NCAT Test Track [1] Performance	Number of ESALS	>40 million

[1] : APT – Accelerated Pavement Testing

(c) The hot applied tack shall have the following/adhere to the following properties in Table 3.

Table 3 Typical Physical Properties

PARAMETER	TEST METHOD	MIN	MAX
Rotational Viscosity @ 149 °C, cP	AASHTO T316	----	3000*
Penetration @ 25 °C , dmm	ASTM D5	----	25
Softening Point, °C	ASTM D36	70	99
Original DSR @ 82 °C , G*/sin δ, kPa	AASHTO T315	1.0	----
Creep Stiffness, m-value @ 0 °C on original binder	AASHTO T313	0.285	----

* Rotational viscosity shall be waived if material can be successfully applied in the field.

C507.08 PREPARATION:

(a) Do not begin interlayer system until existing pavement condition has been evaluated and all repairs have been completed.

(b) Seal cracks between 3mm (1/8”) and 6 mm (1/4”) with an acceptable crack filler. Repair wider cracks using a method that provides a level surface. All holes shall be filled with hot asphalt and compacted level with adjacent surfaces.

(c) Surfaces shall be mechanically cleaned by sweeping and vacuuming and be free of oil, vegetation, sand, dirt, water, gravel, and other contaminants prior to placement of interlayer reinforcing.

(d) Cracks shall be marked and recorded prior to and after the true and leveling course. Identifying and preserving the crack location will ensure that the interlayer system is properly centered on each crack when full interlayer system coverage of the site is not specified.

C507.09 INSTALLATION:

(a) Storage of Material:

(1) Prior to use, store reinforcement rolls in unopened packaging vertically (on end) under dry, covered conditions free from dust, dirt, and moisture to prevent roll distortion and contamination.

(2) Store the product at temperatures above minus 29°C (-20°F), below 82°C (180°F) with a relative humidity of less than 85%.

Install interlayer reinforcement system in accordance with Tensar International’s installation guidelines.

(b) Leveling Course:

(1) Leveling course shall be a minimum thickness of 19 mm (3/4”) and shall have a surface temperature cooler than 60°C (140°F) and will have cooled to 43°C (110°F) at least once previously.

(2) Crack areas showing excessive surface irregularities shall be leveled prior to placement.

(3) Slab joint showing upward tenting shall be saw-cut to relieve pressure prior to leveling.

(c) Asphalt Reinforcement Grid Placement:

(1) Surface temperature shall be between 5°C and 60°C (40-140°F) prior to laying the grid reinforcement.

(2) The placement surface must be dry. Since moisture affects the adhesion of the grid to the pavement surface, grid placement should not be undertaken if rain is likely to fall prior to covering the grid with an asphalt mat overlay. Grid that is placed and will not adhere due to moisture shall be removed and replaced at the Contractor's expense.

(3) Reinforcement grid shall be laid out by mechanical means or by hand using sufficient pressure to eliminate ripples. Remove any ripples by pulling the grid tight. Cutting of the grid may be done on tight radii to prevent ripples.

(4) Lap transverse joints in the direction of the paving 76 mm to 152 mm (3-6"); longitudinal joints shall be overlapped 25 mm to 50 mm (1-2") or as recommended by the manufacturer, whichever is greater.

(5) Following the placement of the material, activate self-adhesive glue by rolling with a rubber coated drum roller or a pneumatic tire roller. In no instance shall steel-wheeled or vibratory rollers be used. Rolling shall continue until the adhesive is activated and the grid is bonded to the truing and leveling course. During rolling operations, roller tires shall be kept clean to the satisfaction of the Director. Reinforcement shall be laid and rolled over ironworks (i.e., manhole covers, drainage grates, etc.). Once the grid has been rolled, these portions of the mats covering the ironworks shall be removed by cutting the reinforcement grid with a utility knife or other similar tool.

(6) Construction and emergency vehicles will be allowed to run on the reinforcement grid after rolling. However, any damaged or de-bonded sections of the grid resulting from these vehicles, as determined by the Director, shall be immediately replaced with new grid sections, taking care to place the adhesive backing down and to overlap the grid already in place. As before, replacement sections shall be rolled in accordance with manufacturer's recommendations. Interlayer system shall be rolled until the adhesive is activated and the replacement grid section is bonded to the truing and leveling course. Any dirt, dust or other contaminants deposited on the grid-covered truing and leveling course by the construction equipment, maintenance vehicles, or emergency vehicles shall be removed by mechanical sweeping or vacuuming the surface. No additional payment will be made to replace sections of grids damaged by construction equipment, maintenance vehicles, or emergency traffic. No payment will be made to sweep or vacuum the surface, or to remove contaminates deposited by such traffic.

(7) Protect the asphalt reinforcing grid until placement of the finished asphalt topping. Repair damaged sections prior to placement of finished asphalt topping.

(8) Place the asphaltic overlay course the same day the interlayer reinforcing grid is placed.

(9) Overlay course shall be a minimum thickness of 40 mm (1-1/2").

(10) When a tack coat is specified, the approved tack coat should be used in conjunction with the interlayer system.

(i) If placed prior to the interlayer it must fully cure prior to placement of interlayer system,

(ii) if placed after to interlayer material it must fully cure prior to any construction traffic over the surface including paving

(d) FIELD QUALITY CONTROL

(1) Testing and Inspection shall be provided by an independent laboratory provided by the Contractor and acceptable to the Director.

(2) Perform adhesion tests in accordance with the following:

(i) Place approximately 1 m² (1 sq. yd.) of interlayer reinforcing grid on a properly prepared leveling course that is representative of the project condition.

(ii) Activate self-adhesive glue by rolling with a rubber-tired roller or by applying adequate pressure to fully activate the pressure-sensitive adhesive.

(iii) Use a calibrated spring balance by inserting the hook of the balance under the center of the grid and pulling upward until the grid starts to pull away from the surface.

(iv) A 9 kg (20 pound) pull is required without pulling the grid free or creating ripples in the grid.

(v) Consult grid manufacturer if grid does not meet this pull rating and do not place asphalt topping until an acceptable adhesion is achieved.

(3) Frequency of Tests:

(i) Adhesion Test: Provide a minimum of one test per 300 m² (3,000 sq. ft.) of surface area.

C507.10 PAYMENT: Payment for asphaltic binder will be made at the contract unit price.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C507(51)	Asphaltic Binder	Square Yard

SECTION C509
COLD PLANING ASPHALTIC PAVEMENT

C509.01 DESCRIPTION: This work consists of removing asphaltic concrete surfacing in accordance with these specifications and in conformity with the average depth, width, grade, cross-slope and typical sections shown on the plans or established in the field.

C509.02 EQUIPMENT: Equipment for cold planing asphaltic surfacing shall be certified, self-propelled planing machines or grinders. They shall have sufficient power, traction and stability to remove the thickness of asphaltic concrete necessary to provide profile grade and cross slope uniformly across the surface. Cold planing equipment shall be capable of working from an erected string line, shoe device or a traveling reference plane that will accurately reflect, for a minimum length of 30 feet, the average grade of the surface on which it is to be operated and shall have an automatic system for controlling cross slope at a given rate. Adequate loading equipment shall be provided to immediately remove materials cut from the surface and discharge the cuttings into a truck or on the shoulder as specified or directed. When cuttings are placed directly on the shoulder or used in asphaltic concrete, surfacing with lightweight aggregate shall be removed separately. Adequate personnel shall be provided to ensure that the cuttings are removed from the surface daily. The drum shall be round and true with sufficient number of teeth to yield a uniform and fine textured surface for bonding of the subsequent overlay. The machine shall be equipped with means to control dust created by the cutting action and shall have a system providing for uniformly varying the depth of cut while the machine is in motion.

C509.03 CONSTRUCTION REQUIREMENTS:

(a) GENERAL: The maximum forward speed of the planing machine shall be 40 feet per minute. The Director may approve forward speeds greater than 40 feet per minute provided the planed surface is uniform and fine textured and conforms to the surface tolerance requirements for a binder course. This speed shall be reduced as directed to provide a planed surface of uniform and fine texture with the specified grade and cross slope. Ridges left in the surface due to missing teeth shall be corrected by additional passes. The maximum depth of cold planing shall be 2 inches per pass when traffic is being maintained. Teeth lost during planing shall be immediately replaced.

Thirty foot (minimum) traveling reference plane shall be used on each pass of the planing machine. A shoe device to match the curb may be used when directed. The reference plane shall be placed on the best available adjacent surface.

When the entire roadway width has not been planed to a flush surface by the end of a work period resulting in a vertical or near vertical longitudinal face exceeding 2 inches in height, this longitudinal face shall be sloped as directed. Transverse faces present at the end of a work period shall be beveled as directed. Provisions shall be made at drives and turnouts to maintain local traffic.

Asphaltic concrete next to structures that cannot be removed by the planing machine shall be removed by other acceptable methods.

Pavement surfaces resulting from planing operations shall be of uniform texture, grade and cross-slope and free from loose material. Planed surfaces not meeting these requirements shall be replaned at no direct pay. No uneven, undulating surfaces will be accepted. The Contractor shall provide drainage of planed areas by cutting through the shoulder to the ditch.

The cold planing operation shall not precede the subsequent paving operation by more than 10 calendar days. This time may be extended by the Director upon request by the Contractor if extensive joint repairs or patching is required. For single lift overlays requiring shoulder stabilization, the cold planing operation shall not precede the subsequent paving operation by more than 30 days.

On roadways that are open to traffic, pavement striping removed by planing shall be replaced with temporary pavement markings at the end of each day's planing operations in accordance with Section C713.

Unless otherwise specified, surfacing material removed by planing shall become the property of the Contractor and shall be disposed of in accordance with Subsection C202.02. When specified on the plans, a portion or all of the surfacing material removed by planing will be retained by the Department and shall be hauled by the Contractor to the specified location and stockpiled as directed. Excess material shall then become the property of the Contractor and shall be disposed of in accordance with Section C202.02.

Required joint repairs shall be made after planing. Pavement patching should be completed before planing. When additional areas requiring patching are exposed by planing operations, such additional patching shall be performed after planing. Pavement patching shall be in accordance with Section C724.

(b) Except when planing reaches to the existing concrete base layer, the surface tolerance requirements of the cold planed surface shall meet the requirements for binder course in Section C501.

C509.04 MEASUREMENT: Measurement will be made by the square yard of asphaltic concrete surfacing satisfactorily removed.

C509.05 PAYMENT: Payment of cold planing asphaltic pavement will be made at the contract unit price, which includes removal of asphaltic concrete surfacing to the necessary depth, texturing the pavement surface, disposal of removed materials and cleaning the roadway. Payment for temporary pavement markings will be included under appropriate pay items.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C509(51)	Cold Planing Asphaltic Pavement (___" Average Thick)	Square Yard

PART VI - PORTLAND CEMENT CONCRETE PAVEMENT

SECTION C601
PORTLAND CEMENT CONCRETE PAVEMENT

C601.01 GENERAL CONSIDERATIONS:

(a) The Contractor shall construct the roadway pavement in substantial conformance with these specifications and in reasonable close conformity with the locations, lines, grades, slopes, thickness, sections and strength shown on the plans and included herein.

(b) Pavement shall be Portland Cement Concrete constructed over an approved base.

C601.02 REFERENCED SPECIFICATIONS:

LaDOTD Louisiana Standard Specifications for Roads and Bridges, latest edition
ASTM American Society of Testing and Materials
ACI American Concrete Institute
AASHTO American Association of State Highway and Transportation Officials, "Standard Specifications for Transportation, Materials and Methods of Sampling & Testing"
AWPA American Wood Preservers Association

C601.03 PAVEMENT THICKNESS: The pavement thickness shall be dependent upon soil properties, traffic type and frequency as determined by the Director. Unless otherwise stated, all streets shall be reinforced concrete having a minimum thickness of eight (8") inches.

C601.04 MATERIALS: Materials shall be furnished only from sources approved by the Director.

(a) Cement: Shall conform to the requirements of ASTM C 150, Type I or Type II.

(b) Aggregates:

(1) Fine aggregate shall be a clean natural sand conforming to the requirements of ASTM C 33.

(2) Coarse aggregate shall be clean, hard, durable gravel, crushed stone or crushed concrete conforming to the requirements of ASTM C 33, Gradation No. 467 or 57.

(c) Admixtures:

(1) If used, air entraining admixtures shall conform to the requirements of ASTM CZ60.

(2) Water used in mixing concrete shall be potable and fit for human consumption.

(3) Water reducing admixtures and water reducing, retarding admixtures shall conform to the requirements of ASTM C 494.

(4) Super plasticizers shall conform to the requirements of ASTM C 494, Type F or G.

(d) Fly Ash: Fly ash shall meet the requirements of ASTM C 618, Class C. Fly ash is approved for use in pavements only and not in structures.

(e) Ground granulated Blast Furnace slag shall meet the requirements of ASTM C 989.

(f) Expansion Joint Filler:

(1) Filler shall be clear-heart redwood, clear all-heart western red cedar, Idaho white pine, western white spruce, northern white pine, sugar pine, western hemlock, white fir, or other material approved by the Director.

(2) The dimensions shall be as specified with a tolerance of 1/16 inch in thickness, 1/8 inch in depth, and plus or minus 1/4 inch in length. The load required to compress the material in an oven dry condition to 50% of its original thickness shall not exceed 1,800 psi.

(g) Joint Sealing Compound: Joint sealing compound shall meet all of the requirements as stated below, heated and applied in strict conformance with manufacturer's recommendations.

(1) Hot Poured Asphalt Mineral Filler: Asphalt mineral filler shall be homogenous and shall be composed of asphalt and mineral filler. The asphalt shall be free from impurities. Asphalt mineral filler shall conform to the following requirements:

PROPERTY	AASHTO TEST METHOD	REQUIREMENT	
		MINIMUM	MAXIMUM
Softening Point, Ring and Ball Method, °F	T 53	125	145
Penetration at 32°F, 200 grams, 60 seconds	T 49	15	--
Penetration at 77°F, 100 grams, 5 seconds	T 49	50	70
Ductility at 77°F, cm	T 51	15	--
Asphalt, %	T 44	45	55
Mineral Filler, %	T 44	45	55
Water, %	T 55	--	2

(2) Hot Poured Elastic Asphaltic Type: This sealer shall conform to AASHTO Designation M 173, except the pour point test will be performed only as deemed necessary. Materials shall be applied in accordance with the sealer manufacturer's recommendations.

(3) Hot Poured Catalytically Blown Asphalt: Catalytically blown asphalt shall be uniformly blended with 10% diatomaceous earth filler which passes the No. 325 sieve. It shall form a suitable joint and crack sealer which may be melted to pouring consistency in a regular asphalt kettle at a temperature of 400°F to 485°F.

The material shall conform to the following requirements:

PROPERTY	AASHTO TEST METHOD	REQUIREMENT	
		MINIMUM	MAXIMUM
Penetration at 77°F, 100 grams, 5 seconds	T 49	68	88
Penetration at 32°F, 200 grams, 60 seconds	T 49	38	--
Penetration at 115°F, 50 grams, 5 seconds	T 49	--	160
Softening Point, Ring and Ball Method, °F	T 53	175	200
Flash, Cleveland Open Cap Method, °F	T 48	500	--
Specific Gravity, 77/77 %F	--	1.02	--
Ductility at 77°F, 5 cm/minute, cm	T 51	5	--
Flow, 140°F, cm	T 187	8	0.5
Ash Weight, %	T 111	8	20
Shock Test, 30°F	M 190-5.3.1	No Cracking	

(4) Cold Applied Sealing Compound: The Contractor may use cold applied sealing compound such as silicon sealants. Silicon rubber base joint sealing compound shall conform to Federal Specifications TT-S-001543A for Class A sealants.

(f) Metal parting strips used to form keyed joints shall be 16-gauge galvanized steel.

(g) Reinforcing Steel:

(1) Reinforcing bars shall conform to "Specifications for Billet-Steel Bars for Concrete Reinforcement" (ASTM A 615), "Specifications for Deformed Rail-Steel Bars for Concrete

Reinforcement" (ASTM A 616), "Specifications for Deformed Rail-Steel Bars for Concrete Reinforcement with 60,000 psi Minimum Yield Strength," or "Specifications for Axle-Steel Bars for Concrete Reinforcement" (ASTM A 160). Deformations for deformed bars shall conform to "Specifications For Deformations for Deformed Steel Bars for Concrete Reinforcement" (ASTM A 305).

(2) Bar and rod mats for concrete reinforcement shall conform to "Specifications for Fabricated Steel Bar or Rod Mats for Concrete Reinforcement" (ASTM A 124).

(3) Wire for concrete reinforcement shall conform to "Specifications for Cold-Drawn Steel Wire for Concrete Reinforcement" (A.S.T.M. A 82).

(4) Welded wire fabric for concrete reinforcement shall conform to "Specifications for Welded Steel Wire Fabric for Concrete Reinforcement" (A.S.T.M. A 185) except that the weld-shear strength requirement of Section 5b of those specifications shall be extended to include a wire size differential up to and including six gauge.

(5) When placed, all reinforcement shall be free from dirt, oil, paint, grease, mill scale, loose or thick rust, or other deleterious substances. When bending is required, it shall be accurately done. All reinforcement shall be placed in the exact positions shown on the plans. Reinforcement shall be securely held in position by wiring and blocking it from the forms and by wiring it together at intersections so that it will not be displaced during depositing and compacting of the concrete.

(h) Curing compound shall be a white pigmented, impervious membrane conforming to the requirements of ASTM C 309, Type 2.

(i) Tie bars shall be deformed concrete reinforcing steel conforming to ASTM A 615, Grade 40.

(j) Dowels and dowel assemblies shall be as shown on the plans and shall conform with the requirements of Subsection C601.16.

(k) Load transfer devices shall consist of approved dowel bar assemblies, either painted or plastic coated (see standard drawings).

(1) Dowel Bars: Dowel bars shall be plain bars conforming to ASTM Designations A 615, A 616, A 617, and their supplementary requirements. Paint for dowel bars shall conform to AASHTO Designation M 72.

Plastic-coated dowel bars shall be undercoated with an adhesive and given an outer coat of extruded polyethylene plastic in accordance with the coating requirements of AASHTO Designation M 254 and the following:

Adhesive Undercoating:

Adhesive Thickness 3 to 10 mils

Outer Coating:

Coating Material	High Density Polyethylene
Coating Thickness	14 to 20 mils
Total Thickness of Adhesive:	
Undercoating and Outer Coating	20 to 30 mils

(2) Dowels shall have a uniformly round cross-section and shall be saw-cut, smooth and free of burrs, projections, and deformations. Dowels shall be coated with one coat of an approved paint and thoroughly coated with an approved lubricant. In lieu of painted and lubricated dowels, plastic-coated dowel bars may be used. Plastic-coated dowel bars may be placed by approved mechanical devices equipped with suitable means to control proper depth and alignment of the dowel bars. Bars shall be positioned parallel to the pavement centerline and surface. Bars shall be firmly held in position by the mechanical device until concrete has been thoroughly consolidated around the bars. Painted and greased dowel bars shall be placed in approved metal dowel assemblies. An approved sleeve shall be furnished with each dowel bar used in expansion joints. The sleeve shall fit the dowel bar tightly and the closed end shall be watertight.

C601.05 FORMS:

(a) Straight-sided forms shall be made of metal having a thickness of not less than 7/32" and shall be furnished in sections not less than 10' in length. On curves with a radius greater than 150', straight forms of shorter lengths will be permitted. Forms shall have a depth not less than the specified edge thickness of the pavement and a base width at least 0.8 of the depth, except as otherwise approved by the Director.

Flexible or curved forms of proper radius shall be used on curves of a 150' radius or less and shall be of a design acceptable to the Director. Forms shall be provided with adequate devices for secure setting. Flange braces shall extend outward on the base not less than two-thirds the height of the forms. Forms with battered top surfaces and bent, twisted or broken forms shall be removed from the work. Repaired forms shall not be used until inspected and approved.

When approved by the Director, built-up forms may be used; however, the built-up forms shall not exceed 2". No limitation will be made on the use of built-up forms or the amount of build-up where the total area of pavement of any specified thickness on the project is less than 2,000 square yards. The top face of the form shall not vary from a true plane more than 1/8" in 10' and the upstanding leg shall not vary more than 1/4" from the vertical. The forms shall contain provisions for locking the ends of abutting form sections together tightly and for secure setting.

(b) Alignment and grade elevation of forms shall be checked and corrections made by the Contractor prior to placing concrete. When any form has been disturbed or any grade has become unstable, the form shall be reset and rechecked.

(c) Form removal shall be done carefully without damage to green concrete and in no case less than 12 hours after placing concrete. Holes or voids in surfaces shall be immediately filled with 1:2 mortar and floated smooth. Formed edges shall be cured after removal of forms.

C601.06 JOINTS AND REINFORCEMENT:

(a) Expansion Joints:

(1) Expansion joints should be 3/4" in thickness and will have smooth dowel bar assemblies. Dowels should be sized and spaced in accordance to the standard plans.

(2) Expansion joints shall be placed at all intersections and points of curvature; joints shall not exceed 300' center to center spacings.

(b) Contraction Joints:

(1) Contraction joints will have smooth dowel bar assemblies.

(2) Doweled contraction joint assemblies shall be placed at maximum 20' centers and at a minimum 10' centers. Dowels shall be sized and spaced according to the standard plans.

(c) Longitudinal Joints:

(1) Longitudinal joints shall be spaced so that pavement widths do not exceed 14'. Joints shall be formed by parting strips and doweled with deformed tie bars in accordance with the standard plans.

(2) Irregular slopes of pavement, cul de sacs and intersections shall be doweled in panels no larger than 14' on any side. They shall be formed by parting strips and doweled with the same deformed tie bars as above.

C601.07 CONCRETE PROPERTIES AND PROPORTIONS OF MATERIALS:

(a) The Contractor shall submit an appropriate mix design to the designated testing laboratory. The mix design shall be reviewed and forwarded to the Contractor and consulting engineer within 48 hours of receipt.

(b) The specified 28-day compressive strength (f'_c) shall be a minimum of 4,000 psi or as noted on the plans.

(c) Concrete shall have a minimum cementitious content of 500 pounds per cubic yard, be designed with a water reducing admixture, and have a maximum slump of 4 inches.

(d) High early strength concrete shall have a minimum cementitious content of seven sacks and be designed to provide a minimum strength of 3000 psi before the pavement can be opened to traffic where the pavement thickness exceeds nine inches, else a minimum strength of 4,000 psi

before the pavement can be opened to traffic. Additional test cylinders should be cast at the time of placement.

(e) Fly ash may be substituted for cement at the ratio of one pound of fly ash for each pound of cement up to a total of 150 pounds of fly ash per cubic yard of concrete in accordance with the approved mix design. Slag cement may be used to replace up to ½ of the total cementitious content.

(f) Concrete with a temperature of 95°F or greater at the time of placement, or concrete not deposited within one-and-one-half hours after initial injection of the water to the mix, shall be rejected. Any deviations from the above requirement shall be verified for strength by additional cylinders at the expense of the Contractor.

C601.08 CONCRETE MIXING AND DELIVERY:

(a) Concrete mixing shall be in accordance with the requirements of ACI 304R-00.

(b) Concrete delivery shall be in accordance with the requirements of ASTM C 94.

C601.09 PLACING AND FINISHING:

(a) Concrete may be placed and finished by machine. Concrete shall be placed between the forms in such a manner as to avoid segregation, avoid damage to forms and joints, and avoid unnecessary movement once it has been placed.

(b) The subgrade or base course shall be brought to a proper cross-section. High areas shall be trimmed to proper elevation. The finished grade shall be maintained in a smooth and compacted condition until the pavement is placed. No concrete shall be placed until the subgrade or base course has been approved.

(c) The subgrade or base course shall be uniformly moist when concrete is placed. If it becomes too dry, the subgrade or base course shall be sprinkled, but the method of sprinkling shall not be such as to form mud or pools of water.

(d) Concrete Placement:

(1) Concrete shall be deposited on the grade in such a manner as to require as little rehandling as possible. All equipment shall be designed and operated so as to assure placement and spreading of concrete without segregation. Placement shall be continuous between transverse joints without the use of intermediate bulkheads. Necessary hand-spreading shall be done with shovels or other approved tools, excluding rakes.

(2) Concrete shall be consolidated by use of a vibrating screed or internal vibrators approved by the Director.

(3) Concrete shall not be placed on a frozen subgrade when the air temperature is below freezing, or when the air temperature is expected to go below 32°F within 12 hours with a minimum concrete temperature of 50° F.

(4) The roadway pavement shall be of the size and shape shown on the plans including integral curb. It shall consist of one course of concrete with joints, dowels, etc., as called for in the plans.

(5) Final strike-off, consolidation and finishing shall conform to the requirements of Subsection C601.09.e, except metal tine texturing will not be required. The surface texture shall be a broom finish.

(6) Tolerance for surface smoothness shall be 1/4" in 10', except at high and low points and utility structures in the street.

(7) If split slab construction is used and not slip formed, forms on each side of the slab will be required. The side of the slab to be joined during a later placement will have tie bars. Caution shall be exercised in removing the form and in straightening the tie bars.

(e) Final Strike Off, Consolidation and Finishing.

(1) Sequence: The sequence of operations shall be the strike off, consolidation floating and removal of laitance, straight edging, and final surface finish.

(2) In general, the addition of water to the surface of concrete to assist in finishing operations will not be permitted unless approved by the Director. If approved, it shall be applied as a fog spray by means of approved spray equipment.

(3) During final surface-finish operations, all areas that are improperly finished shall be refloated and refinished as required.

(4) Concrete adjacent to joints shall be compacted or firmly placed, without voids or segregation, against the joint material. It shall also be compacted and firmly placed under and around load transfer devices, joint assembly units and other features designed to extend into the pavement. Concrete adjacent to joints shall be consolidated.

(5) After concrete has been placed and vibrated adjacent to joints as required, the finishing machine shall be brought forward operating in a manner to avoid damage or misalignment of joints. The finishing machine shall be stopped when the front screed is approximately 8 inches from the joint. Segregated concrete shall be removed from in front of and off the joint. The front screed shall be lifted and set directly on top of the joint and the forward motion of the finishing machine resumed. When the second screed is close enough to permit excess mortar in front of it to flow over the joint, it shall be lifted and carried over the joint. Thereafter, the finishing machine may be run over the joint without lifting the screed or on top of the joint.

(6) Machine-Finishing: Vibrators for full width vibration of concrete paving slabs shall not be operated longer than 15 seconds in one location. If uniform and satisfactory density of concrete is not obtained by the vibratory method at joints, along forms, at structures, and throughout the pavement, the Contractor shall furnish equipment and use methods which will provide pavement conforming to the specifications.

(7) Hand-Finishing: Unless otherwise specified, hand-finishing methods will not be permitted except in the event of a breakdown of the mechanical equipment. Hand methods may then be used to finish the concrete already deposited on grade. When a breakdown occurs in pavement areas not exceeding a width of 16' or irregular in dimension where operations of mechanical equipment are impractical, the pavement may be finished by hand methods.

(8) Concrete, as soon as it is placed, shall be struck off and screeded.

(9) The screed for the surface shall be at least 2 feet longer than the maximum width of slab to be struck off. It shall be of approved design, sufficiently rigid to retain its shape, and constructed of either metal or other suitable material shod with metal.

(10) Consolidation shall be attained by the use of a suitable vibrator or other approved equipment.

(11) In operation, the screed shall be moved forward on forms with a combined longitudinal and transverse shearing motion, moving always in the direction in which the work is progressing and so manipulated that neither end is raised from the side of the forms during the strike-off process. If necessary, this shall be repeated until the surface has a uniform texture, is true to grade and cross-section, and is free from porous areas.

(12) Longitudinal Float Method: The mechanical longitudinal float shall be of a design approved by the Director and shall be in good working condition. The tracks from which the float operates shall be accurately adjusted to the required crown. The float shall be accurately adjusted and coordinated with the adjustments of the transverse finishing machine so that a small amount of mortar is carried ahead of the float at all times. The forward speed shall be adjusted so that the float will lap the distance specified by the area of pavement at least twice. Excessive operation over a given area will not be permitted. Any excess water or soupy material shall be wasted over the side forms on each pass.

(13) Pan Float Method: The Contractor may use a machine composed of cutting and smoothing float or floats suspended from and guided by a rigid frame. The frame shall be carried by four or more visible wheels riding on and constantly in contact with the side forms.

(14) If necessary, following one of the preceding methods of floating, long handled floats, having blades not less than 5' in length and 6" in width, may be used to smooth and fill in open-textured areas in the pavement. Long handled floats shall not be used to float the

entire surface of the pavement in lieu of, or supplementing one of the preceding methods of floating. When strike-off and consolidation are done by hand methods and the crown of the pavement will not permit use of the longitudinal float, the surface shall be floated transversely by means of the long handled float. Care shall be taken not to work the crown out of the pavement during the operation. After floating, any excess water and laitance shall be removed from the surface of the pavement by a straightedge, 10' or more in length. Successive drags shall be lapped one-half the length of the blade.

(15) Straightedge Testing and Surface Correction: After floating has been completed and excess water removed, but while the concrete is still plastic, the surface of the concrete shall be tested for trueness with an accurate 10' straightedge swung from handles approximately 3' longer than one-half the width of the slab. The straightedge shall be furnished and used by the Contractor. It shall be held with the surface in successive positions parallel to the road centerline and the whole area gone over from one side of the slab to the other as necessary. Advance along the road shall be in successive stages of not more than one-half the length of the straightedge.

Any depressions found shall be immediately filled with freshly mixed concrete, struck off, consolidated and refinished. High areas shall be cut down and refinished. Special attention shall be given to assure that the surface across the joints meets with requirements for smoothness. Straightedge testing and surface corrections shall continue until the entire surface is found to be free from observable departures from the straightedge and the slab conforms to the required grade and cross-section.

(16) Final Finish and Texture: Unless otherwise specified, the final finish and texture shall be obtained using a broom in accordance with this subsection. The surface texture shall be a broom finish. It shall be applied when the water sheen has practically disappeared. The broom shall be drawn from the center to the edge of the pavement with adjacent strokes slightly overlapping. The brooming operation shall be so executed that the corrugation produced in the surface shall be uniform in appearance and not more than 1/16" in depth. Brooming shall be completed before the concrete is in such condition that the surface will be torn or unduly roughened by the operation. The surface, thus finished, shall be free from rough and porous areas, irregularities and depressions resulting from improper handling of the broom. Brooms shall be of such quality, size and construction and be so operated as to produce a surface finish meeting the approval of the Director. Subject to satisfactory results being obtained, the Contractor will be permitted to use mechanical brooming in lieu of manual brooming.

(17) Edging at Forms and Joints: After the final finish, but before the concrete has taken its initial set, the edges of pavement along each side of transverse expansion joints, formed joints and transverse construction joints shall be worked with an approved tool and rounded to the radius specified. A well-defined, continuous radius shall be produced and a smooth, dense mortar finish obtained. The surface of the slab shall not be unduly disturbed by tilting the tool during use. Tool marks appearing on the slab adjacent to joints shall be eliminated by brooming the surface. In doing this, the rounding of the corner of the

slab shall not be disturbed. All concrete on top of the joint filler shall be removed. All joints shall be tested with a straightedge before the concrete has set. Corrections shall be made if one side of the joints are higher than the other or if the joints are higher or lower than in adjacent slabs.

C601.10 CURING AND PROTECTING:

(a) Immediately after completion of finishing operations and as soon as marring of concrete will not occur, the entire surface of newly placed concrete shall be covered and cured with a white pigmented impervious membrane.

(b) The Contractor shall have available at the job site, sufficient covering material to cover and properly protect the last hour's pour against the effects of rain. This covering material may be burlap mats, waterproof paper or combined burlap and white polyethylene sheeting. Failure to provide sufficient cover material or to adequately take care of curing requirements shall be cause for immediate suspension of concreting operations.

(c) Curing compound shall be applied under pressure by mechanical sprayers at the rate recommended by the manufacturer. In no case should less than one gallon per 100 square feet of surface area be applied. The spraying equipment shall be the full atomizing type equipped with a tank agitator. At the time of use, the compound shall be stirred continuously by mechanical or other approved means. Hand-spraying odd widths or shapes and on surfaces exposed by the removal of forms will be permitted provided the curing compound has been thoroughly agitated prior to placing it in the hand sprayer. The curing compound shall be applied to the inside faces of joints to be sealed. In split-slab construction, the curing compound shall be applied in such a manner as to prevent the spraying of exposed reinforcing steel.

(d) Upon removal of side forms, the sides of the slabs and curbs exposed shall be protected immediately in such a manner as to provide a curing treatment equal to that provided for the surface.

(e) Curbs not cast integrally with the slab shall be cured in the manner specified above immediately after completion of finishing.

C601.11 OPENING FOR TRAFFIC:

(a) When the concrete strength determined by testing reaches 75% of design strength or 3,000 psi, or when approved by the Director, the street shall be open to traffic.

(b) No traffic shall be allowed on the pavement until all joints have been cleaned and sealed.

C601.12 ACCEPTANCE CRITERIA:

(a) For the purpose of establishing the thickness of concrete pavements or foundation, either plain or reinforced, constructed or specified herein, cores taken by the testing laboratory will be used.

The average thickness of the concrete pavement to be used as a basis for the price to be paid shall be the average thickness of the core drilling from the concrete, representing the area bounded between lines drawn at right angles to the center of the roadway and at a point halfway between any two consecutive cores. Cores will be taken at about the center of each 500 square yards (approximately) of paved lane or a major fraction thereof, with a minimum of one core per lane per block. No less than four cores shall be taken from the pavement or foundation built under any one contract. The following schedule will be used to determine the unit price to be paid for the work:

THICKNESS AS DETERMINED BY CORES	PROPORTIONAL PART OF CONCRETE PRICE ALLOWED
Full specified thickness or greater	100%
0.0 to 0.2 inch or less below specified thickness	100%
0.21 to 0.3 inch below specified thickness	90%
0.31 to 0.4 inch below specified thickness	85%
0.41 to 0.5 inch below specified thickness	80%
0.51 to 0.75 inch below specified thickness	70%
0.75 to 1.0 inch below specified thickness	60%

Should any core show a deficiency of more than 1" below the specified thickness, additional cores will be taken 5' on either side of the deficient core. If both of these cores are within the 1" tolerance, the procedure will be to cut cores in the following order: 25', 50', 100', the same to be measured from the location of the original core found to be deficient in thickness, then at 100' intervals until a thickness within the 1" tolerance is found in both directions.

Any cores required over those specified to establish the average thickness of the pavement or foundation shall be made at the expense of the Contractor. Areas found to be deficient in thickness by more than 1" shall be evaluated by the Director. If, in his judgement, the deficient areas warrant removal, they shall be removed and replaced with concrete of the thickness shown on the plans.

(b) Compressive Strength: Payment for compressive strength shall be paid in accordance with the following table:

PAYMENT (PERCENT OF CONTRACT UNIT PRICE/LOT)[1]	AVERAGE COMPRESSIVE STRENGTH, PSI[3]	
	WITHOUT AIR ENTRAINMENT	WITH AIR ENTRAINMENT
100	4000 & Over	3600 & Over
98	--	--
95	3500 to 3999	3150 to 3599
80	3000 to 3499	3000 to 3149
50 or Remove and Replace[2]	Below 3000	Below 3000
Correct or Remove and Replace[2]	--	--

[1] Payment adjustments shall be cumulative.

[2] At the option of the department after investigation.

[3] At 28 days.

C601.13 MEASUREMENT: The area of all roadway pavements will be determined by actual measurements from back of curb to back of curb and no allowance will be made for curvature of the cross section. Deductions will not be made for the rails of electric and other railroads, nor for subsurface structures in the street occupying less than twelve square feet of area, when these are within the area or areas paved under the contract.

C601.14 PAYMENT: Payment for Portland cement concrete pavement will be on a lot basis, at the contract unit price per square yard, which includes furnishing and placing all materials including tie-bars, dowel bars, joint material and welded wire fabric. If the pavement does not conform to acceptance requirements, payment will be made at an adjusted unit price in accordance with Section C601.12.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C601(54)	Reinforced Concrete Pavement (___" Thick)	Square Yard
C601(55)	Surcharge for High Early Strength (___" Thick)	Square Yard
C601(56)	Reinforced Concrete Bus Pad (___" Thick)	Square Yard

SECTION C604
PERVIOUS PORTLAND CEMENT CONCRETE PAVEMENT

C604.01 GENERAL CONSIDERATIONS:

(a) The Contractor shall construct the roadway pavement in substantial conformance with these specifications and in reasonable close conformity with the locations, lines, grades, slopes, thickness, sections and strength shown on the plans and included herein.

(b) Pavement shall be Portland Cement Concrete constructed over an approved base.

C604.02 REFERENCED SPECIFICATIONS:

- Annual Book of ASTM Standards, 2014; American Society for Testing and Materials, Philadelphia, PA.
- Standards of the American Association of State Highway and Transportation Officials (AASHTO).
- American Society of Testing and Materials ASTM C 29 “Test for Unit Weight and Voids in Aggregate.”
- ASTM C 33 “Specification for Concrete Aggregates. ”ASTM C 42 “Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
- ASTM C 117 “Test Method for Material Finer than 75 µm (No. 200) Sieve in Mineral Aggregates by Washing.”
- ASTM C 138 “Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.”
- ASTM C 140 “Methods of Sampling and Testing Concrete Masonry Units.”
- ASTM C 150 “Specifications for Portland Cement” (Types I or II only).
- ASTM C 172 “Practice for Sampling Fresh Concrete.”
- ASTM C 260 “Specification for Air-Entraining Admixtures for Concrete.”
- ASTM C 494 “Specification for Chemical Admixtures for Concrete.”
- ASTM C 595 “Specifications for Blended Hydraulic Cements” (Types IP or IS only).
- ASTM C 618 “Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Portland Cement Concrete.”
- ASTM C 989 “Specification for Ground Granulated Blast-Furnace Slag for use in Concrete and Mortars.”
- ASTM C 1077 “Practice for Laboratories Testing Concrete and concrete Aggregates for use in Construction and Criteria Laboratory Evaluation.”
- ASTM C 1688 “Standard Test Method for Density and Void Content of Freshly Mixed Pervious Concrete.”
- ASTM D 448 “Specification for Standard Sizes of coarse Aggregate for Highway Construction.
- ASTM D 1557 “Tests for Moisture-Density Relations of Soils and Soil Aggregate Mixtures using 10 Pound Rammer and 18-inch Drop”
- ASTM E 329 “Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel and Bituminous Materials as used in Construction.”

- ASTM C 1701 **"**Standard Test Method for Infiltration Rate of In Place Pervious Concrete

C604.03 QUALITY ASSURANCE:

(a) Perform work of this section in accordance with ACI 522.

(b) Follow recommendations of ACI 306R when concreting during cold weather.

(c) Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.

C604.04 CONTRACTOR QUALIFICATIONS:

(a) The Contractor shall employ no less than one National Ready Mixed Concrete Association (NRMCA) Certified Pervious Concrete Craftsman who must be on site, overseeing each placement crew during all concrete placement, or the Contractor shall employ no less than three NRMCA Certified Pervious Concrete Installers, who shall be on site working as members of each placement crew during all concrete placement unless otherwise specified. Alternative documentation of qualifications shall be permitted when approved by the Director. Prior to award of the contract, the placing Contractor shall furnish a statement attesting to qualifications and experience and the following:

(1) A minimum of 3 completed projects, total square footage to exceed 10,000 sf with addresses.
(2) Unit weight acceptance data.
(3) In-Situ pavement test results including void content and unit weight.
(4) Sample of Product (i.e. core or test panel)

(b) If the placing Contractor and concrete producer have insufficient experience with Portland Cement pervious concrete pavement (less than 3 successful jobs), the placing Contractor shall retain an experienced consultant or NRMCA Certified Pervious Craftsman to monitor production, handling, and placement operations at the Contractor's expense.

(c) Test Panels: Regardless of qualification, Contractor is to place, joint and cure two test panels, each to be a minimum of 225 sq. ft. at the required project thickness to demonstrate to the Director's satisfaction that in-place unit weights can be achieved and a satisfactory pavement can be installed at the site location.

(d) Test panels may be placed at any of the specified Portland Cement pervious locations on the project or at another test site. Test panels shall be tested for thickness in accordance with ASTM C 42; void structure in accordance with ASTM C 138; and for core unit weight in accordance with ASTM C140, paragraph 6.3.

(e) Satisfactory performance of the test panels will be determined by:

(1) Compacted thickness no less than ¼" of specified thickness.

(2) Void Structure: 15% minimum; 28% maximum.
(3) Unit weight plus or minus 5 pcf of the design unit weight.
(4) If measured void structure falls below 13% or if measured thickness is greater than ¼" less than the specified thickness of if measured weight falls less than 5 pcf below unit weight, the test panel shall be removed at the Contractor's expense and disposed of in an approved landfill.

(f) If the test panel meets the above-mentioned requirements, it can be left in-place and included in the completed work.

C604.05 PROJECT CONDITIONS:

(a) Protect adjacent work from splashing of paving materials. Remove all stains from exposed surfaces of paving, structures, and grounds. Remove all waste and spillage. Do not damage or disturb existing improvements or vegetation. Provide suitable protection where required before starting work and maintain protection throughout the course of the work. Restore damaged improvements, including existing paving on or adjacent to the site that has been damaged as a result of construction work, to their original condition or repair as directed to the satisfaction of the City, and authority having jurisdiction at no additional cost.

(b) Do not place Portland cement pervious concrete pavement mixtures when the ambient temperature is 40 degrees Fahrenheit or lower, unless otherwise permitted in writing by the Director.

C604.06 CONCRETE MIX DESIGN:

Contractor shall furnish a proposed mix design with proportions of materials prior to commencement of work. The data shall include unit weights determined in accordance with ASTM C 1688.

C604.07 STORMWATER STORAGE/INFILTRATION BEDS:

(a) Coarse aggregates shall meet the size and grading requirements as defined in Standard Sizes of Coarse Aggregate, Table 4, AASHTO Specifications, Part I, 13th Ed., 1982, or later, unless otherwise specified.

(b) Coarse aggregate for groundwater recharge bed shall be 2-1/2" to 1-1/2" uniformly graded Crushed coarse aggregate, with a wash loss of no more than 0.5%, AASHTO size number 2 per AASHTO Specifications, 30th Ed., 2010, or later.

(c) Choker base course aggregate for groundwater recharge bed shall be 1" to 3/8" uniformly graded, crushed coarse aggregate, or approved equal, AASHTO Specifications, 30th Ed., 2010, or later.

(d) Filter fabric shall be Propex PERC™ Pervious Concrete Infiltration Fabric or approved equal.

(e) Impervious liner – shall be Permalon, PLY-X 150, or approved equal.

C604.08 MATERIALS:

(a) Cement. Portland Cement Type I or II conforming to ASTM C 150 or Portland Cement Type IP or IS conforming to ASTM C 595. Slag or Flyash may be used as part of the total cementitious content.

(b) Aggregate. Use #9 (1/4") Washed, crushed limestone coarse aggregate. If other gradation of aggregate are to be used, submit data on proposed material to City for approval.

(c) Admixtures. The following admixtures may be used as needed:

(1) Type A/F Water Reducing – ASTM C 494.
(2) Air Entraining Agent – ASTM C 260. May be used to improve resistance to freeze/thaw cycles.
(3) A viscosity modifier. Used to reduce paste drain down caused by using a dirty aggregate.
(4) Buckeye Cellulose fibers. Dosed at the rate of 3# per cubic yard.

(d) The following admixtures shall be used:

(1) A hydration stabilizer that also meets the requirements of ASTM C 494 Type B Retarding or Type D Water Reducing/Retarding admixtures. This stabilizer suspends cement hydration by forming a protective barrier around the cementitious particles, which delays the particles initial set.
(2) HydroMax® Internal Curing Admixture dosed at the rate of 1.5 oz/cwt of total cementitious material. Should reduce the amount of cementitious material needed as well as the need for a viscosity modifier.
(3) Water: Potable water shall be used.

(e) Proportions:

(1) Cement Content: For pavements subjected to vehicular traffic loading, the total cementitious material shall not be less than 480 lbs. per cu. yd. For other pavement areas not subject to vehicular traffic loading, the total cementitious material shall not be less than 450 lbs. per cu. yd.
(2) Aggregate Content: the volume of aggregate per cu. yd. shall be equal to 27 cu. ft. when calculated as a function of the unit weight determined in accordance with ASTM C 1688. An aggregate/cement ratio range of 4:1 to 4.5:1. A unit weight range of 105 lbs/cu. ft. to 140 lbs/cu. ft. per ASTM C 1688. Voids of 15% to 28%.
(3) Admixtures: Shall be used in accordance with the manufacturer's instructions and recommendations.
(4) Mix Water: Mix water shall be such that the cement paste displays a wet metallic sheen without causing the paste to flow from the aggregate. (Mix water yielding a cement paste with a dull-dry appearance has insufficient water for hydration). Water cement ratios can range from 0.24 to 0.39. Insufficient water results in inconsistency in the mix and poor bond strength. High water content results in the paste sealing the void system

primarily at the bottom and poor surface bond.

C604.09 INSTALLATION:

(a) Subgrade Preparation.

(1) Existing subgrade under bed areas shall NOT be compacted or subject to excessive construction equipment traffic prior to stone bed placement.
(2) Where erosion of subgrade has caused accumulation of fine materials and/or surface ponding, this material shall be removed with light equipment and the underlying soils scarified to a minimum depth of 6 inches with a York rake or equivalent and light tractor.
(3) Bring subgrade of stone recharge bed to line, grade, and elevations required.
(4) Fill and lightly regrade any areas damaged by erosion, ponding, or traffic compaction before the placing of stone.

(b) Recharge Bed Installation.

(1) Upon completion of subgrade work, the Director shall be notified and shall inspect at his discretion before proceeding with recharge bed installation.
(2) Filter fabric, pipe, and recharge bed aggregate shall be placed immediately after approval of subgrade preparation. Any accumulation of debris or sediment which has taken place after approval of subgrade shall be removed prior to installation of filter fabric at no extra cost to the City.
(3) Place PERC™ filter fabric in accordance with manufacturer's standards and recommendations. Adjacent strips of filter fabric shall overlap a minimum of sixteen inches (16"). Secure fabric at least two feet (2') outside of bed and take steps necessary to prevent any runoff or sediment from entering the storage bed. Place impervious liner over geo-textile extending six feet (6') beyond toe of slope face at building face, secure as recommended by manufacturer.
(4) Install coarse aggregate in 6 inch maximum lifts. Lightly compact each layer with equipment, keeping equipment movement over storage bed subgrades to a minimum. Install aggregate to grades required on the drawings.
(5) Install 1" thick choker base course size #57 (AASHTO) aggregate evenly over surface of stone bed, sufficient to allow placement of pavement, and notify Director for approval.
(6) Following placement of bed aggregate, the filter fabric shall be folded back along all bed edges to protect from sediment washout along bed edges. At least a two foot (2") strip shall be used to protect beds from adjacent bare soil. This edge strip shall remain in place until all bare soils contiguous to beds are stabilized and vegetated. In addition, hay bales shall be placed at the toe of slopes which may be adjacent to beds to further prevent sediment from washing into beds during site development. As the site is fully stabilized, excess filter fabric along the bed edges can be cut back to gravel edge.

C604.10 PORTLAND CEMENT PERVIOUS PAVEMENT CONCRETE MIXING, HAULING AND PLACING:

(a) Mix Time. Central mixed concrete shall be mixed for a minimum of one minute after introduction of all materials into mixer. Truck mixers shall be operated at the speed designated as mixing speed by the manufacturer for 75 to 100 revolutions of the drum.

(b) Transportation. The Portland Cement aggregate mixture may be transported by ready mix trucks or dump trucks or mixed on site and should be used within one (1) hour of the introduction of mix water, unless otherwise approved by the Director. This time can be increased to 180 minutes when utilizing the hydration stabilizer specified above at the proper dosage rate, unless otherwise approved by the Director.

(c) Each truck should not haul more than two (2) loads before being cycled to another type concrete, unless delivered by dump truck or if a stabilizing hydration agent is used in the pervious concrete mix design or if field experience proves that there is no significant concrete buildup in concrete mixer after delivery.

(d) Prior to placing concrete, the subbase shall be soaked and in a wet condition (no ponding of water) at time of placement. Failure to provide a moist subbase will result in a reduction in strength of the pavement.

(e) Discharge shall be a continuous operation and shall be completed as quickly as possible. If consolidation occurs during concrete discharge, placement shall be halted and wet concrete removed (this may happen towards the end of some loads).

(f) Concrete shall be deposited as close to its final position as practicable and such that fresh concrete enters the mass of previously placed concrete. The practice of discharging onto subgrade and pulling or shoveling to final placement is not allowed.

(g) Placing and Finishing Equipment. Unless otherwise approved by the Director in writing, the Contractor shall provide mechanical equipment of either slipform or form riding with a following compactive unit that will provide a minimum of 10 psi vertical force. The pervious concrete pavement will be placed to the required cross section and shall not deviate more than +/- 3/8 inch in 10 feet from profile grade.

(h) If placing equipment does not provide the minimum specified vertical force, a full width roller or other full width compaction device that provides sufficient compactive effort shall be used immediately following the strike-off operation.

(i) Strike off the pervious concrete 1/2" to 3/4" above the final grade prior to compaction, if needed, by using either slip-form, form riding vibrating screed, form riding aluminum roller screed or laser screed. Strike off may be done by hand for sidewalks. Care must be taken to avoid filling voids in the concrete.

(j) If vibration, internal or surface applied, is used, it shall be shut off immediately when forward progress is halted for any reason.

(k) The Contractor will be restricted to pavement placement widths of a maximum of fifteen (15') feet unless the Contractor can demonstrate competence to provide pavement placement widths greater than the maximum specified to the satisfaction of the City.

C604.11 CURING:

(a) Curing procedures shall begin immediately following all finishing operations if PerviouShield™ liquid spray on curing compound/densifier is used.

(b) Curing procedures shall be complete within 20 minutes after the final placement operations if polyethylene sheeting is used. The pavement surface shall be covered with a minimum .31 mil thick polyethylene sheet (painters plastic) or other approved covering material prior to final cross rolling of the surface and then covered with a layer of four to six (4 – 6) mil thick polyethylene sheeting. Prior to covering, an evaporative reducer shall be sprayed above the surface when required due to ambient conditions (high temperature, high wind, and low humidity). The cover shall overlap all exposed edges and shall be secured (without using dirt or stone) to prevent dislocation due to winds or adjacent traffic conditions.

(c) Cure Time: Portland Cement Type I, II, or IS – 7 days minimum.

(d) No truck traffic shall be allowed for 10 days (no passenger car/light trucks for 7 days and no pedestrian traffic for 24 hours).

C604.12 JOINTING:

(a) Control (contraction) joints shall be installed as indicated by plans. They shall be installed at a depth of the 1/ 3 to 1/4 the thickness of the pavement.

(b) These joints can be installed in the plastic concrete or saw cut. If saw cut, the procedure should begin as soon as the pavement has hardened sufficiently to prevent raveling and uncontrolled cracking (normally after curing), minimum of 24 hours after placement. Removal of plastic to perform saw cutting will cause pervious concrete to hydrate too quickly (Not a concern if PerviouShield™ is used). If plastic is removed to accommodate saw cutting, re-hydrating of pervious concrete is required. Walking on pervious concrete too early can damage concrete surface

(c) Transverse constructions joints shall be installed whenever placing is suspended a sufficient length of time that concrete may begin to harden.

(d) Isolation (expansion) joints should be used in structure widths exceeding thirty (30) feet or at seventy five (75) feet on sidewalks or when pavement is abutting slabs or other adjoining structures.

(e) Expansion joint material shall be K-form screed rail or approved equal. To reduce raveling, if transverse or isolation joints are used, or where pervious concrete meets impervious pavement, extra compaction may be necessary.

(f) Additional installation specifications for the pervious concrete provided by the material source and Director shall be followed strictly.

C604.13 PORTLAND CEMENT PERVIOUS PAVEMENT CONCRETE TESTING, INSPECTION, AND ACCEPTANCE:

(a) The City will retain an independent testing laboratory. The testing laboratory shall conform to the applicable requirements of ASTM E 329 "Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction" and ASTM C 1077 "Standard Practice for Testing Concrete and Concrete Aggregates for use in Construction, and Criteria for Laboratory Evaluation" and shall be inspected and accredited by the Construction Materials Engineering Council, Inc. or by an equivalent recognized national authority.

(b) The Agent of the testing laboratory performing field sampling and testing of concrete shall be certified by the American Concrete Institute as a Concrete Field Testing Technician Grade I, or by a recognized state or national authority for an equivalent level of competence.

(c) Testing and Acceptance.

(1) A minimum of 1 gradation test of the subgrade is required every 5000 square feet to determine percent passing the No. 200 sieve per ASTM C 117.

(2) A minimum of one test for each load of pervious concrete in accordance with ASTM C 172 and ASTM C 29 to verify unit weight shall be conducted. Delivered unit weights are to be determined in accordance with ASTM C 29 using a 0.25 cubic foot cylindrical metal measure. The measure is to be filled and compacted in accordance with ASTM C 1688. The unit weight of the delivered concrete shall be +/- 5 pcf of the design unit weight.

(3) Test panels shall have two cores taken from each panel in accordance to ASTM C 42 at a minimum of seven (7) days after placement of the pervious concrete. The cores shall be measured for thickness, void structure, and unit weight. Untrimmed, hardened core samples shall be used to determine placement thickness. The average of all production cores shall not be less than ½" less than the specified thickness. After thickness determination, the cores shall be trimmed and measured for unit weight in the saturated condition as described in paragraph 6.3.1 of 'Saturation' of ASTM C 140 "Standard Methods of Sampling and Testing Concrete Masonry Units." The trimmed cores shall be immersed in water for 24 hours, allowed to drain for one (1) minute, surface water removed with a damp cloth, the weighed immediately. Range of satisfactory unit weight values are +/- 5 pcf of the design unit weight.

(4) After a minimum of seven (7) days following each placement, three cores shall be taken in accordance with ASTM C 42. The cores shall be measured for thickness and unit weight determined as described above for test panels. Core holes shall be filled

with concrete meeting the pervious design or other concrete material as permitted by the Director.

(d) Maintenance.

There shall be a maintenance plan submitted to the Director to prevent the clogging of the pervious concrete pavement which shall include periodic testing for flowability by the pervious concrete installer prior to the pervious concrete being opened to service, with flow rates reported in writing to the City and again at six (6), twelve (12) eighteen (18) and twenty-four (24) months and again report the results in writing to the Director. It is the Contractor's responsibility to help the City to develop a maintenance plan. Acceptable methods to restore levels of flowability are either to vacuum or powerwash the pervious concrete sections.

C604.14 PAYMENT: Payment for Portland cement concrete pavement will be on a lot basis, at the contract unit price per square yard, which includes furnishing and placing all materials including tie-bars, dowel bars, joint material and welded wire fabric. If the pavement does not conform to acceptance requirements, payment will be made at an adjusted unit price in accordance with Section C601.12.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C604(54)	Pervious Concrete Pavement (___" Thick)	Square Yard

PART VII - INCIDENTAL CONSTRUCTION

SECTION C701
CULVERTS AND STORM DRAINS

Culverts and storm drains shall conform to all of the requirements of the General Specifications and Standard Plans of the Sewerage & Water Board (S&WB) of New Orleans (the latest revision) except as noted.

C701.01 GENERAL:

(a) The Contractor shall furnish all materials, equipment, labor and supervision to remove the existing deteriorated main, install new mains and fittings, including appurtenances such as tie-ins to existing system, lumber foundation, bedding, backfilling, necessary dewatering and by-passing during the execution of this contract.

(b) All workmanship, material and tests shall conform with Section E of the General Specifications of the S&WB and S&WB Standard Drawing No. 7260-D except as noted herein.

(c) The Contractor shall notify the Chief of Network Engineering of the S&WB in writing not less than three or more than ten working days in advance of starting the job so as to schedule the inspection of the work. Failure to do so prior to starting work will result in the Contractor being required to expose the bedding on all pipe previously installed.

(d) The Contractor may use more than one crew in performing work in various sections of a system at a given time, provided he has the approval of the Director.

(e) The Contractor performing work under this contract shall be required to coordinate his operations with the S&WB and other utilities prior to making any excavation so that the location of their services can be identified. The Contractor shall exercise caution in making excavations to avoid damage to these services and other utilities.

(f) The Contractor will be furnished a list of the locations of water and sewer house connections. It will be the Contractor's responsibility to verify the location of these so as to avoid damage. Furnishing this information should not be construed as a waiver of the Contractor's liability, but rather an attempt on the part of the S&WB to minimize the Contractor's hazard. The existing house connections submitted in the list are from S&WB records and could vary from the actual location. Any damage to the existing water, sewer and drain connections resulting from negligence shall be repaired by the S&WB at the expense of the Contractor. The Contractor is also responsible for damage to other utilities and the property of others.

(g) Existing drain house connections shall be tied into the new mains. No new drain house services shall be installed.

C701.02 INSTALLATION: Where the entire drain line is replaced between manholes, the drain pipe shall be reinforced concrete pipe conforming to Section C of the General Specifications of the S&WB and to the Standard City Plans, unless otherwise noted. Installation of drain lines, including bedding and foundation lumber, shall be in accordance with S&WB Standard Drawings No. D-3809, No. D-3810, No. D-3933 and D-3934.

The new drain lines and house connections, where required, shall be installed at the existing elevations and locations indicated, unless changed by the Director. The Contractor shall schedule his work so that the drain lines and catch basin connections between two manholes are completed before moving to another location (this will minimize the spillage of storm water into an open trench). The Contractor shall isolate the block where the work is in progress by plugging the upstream and downstream manholes. Should the storm water build up to within three feet of the top of the upstream manhole, or if directed by the Director, the Contractor shall pump the water to the downstream manhole or to a nearby catch basin, through bypass pumping. No mains or lines shall be left open overnight; a temporary tie-in shall be made between the end of the new main and the existing, and plugs at manholes shall be removed so as to allow flow to continue until work is resumed.

Backfill material shall be pumped sand and shall be placed at or near optimum moisture content and compacted according to one of the following procedures:

Backfill material shall be placed in layers not to exceed 12 inches. Each layer shall be compacted to a minimum of 95 percent of maximum density using approved mechanical compaction equipment, or:

Backfill material may be placed in layers not exceeding 3 feet by thoroughly flooding and compacting each layer to a minimum of 95 percent maximum density at or near optimum moisture content using approved mechanical compaction equipment, prior to placing a subsequent layer. During placement, backfill materials shall be thoroughly saturated with water and satisfactory drainage of materials shall be provided. The above backfill material compaction procedures shall be applied also for any service connections and point repairs.

Filter cloth around the joints of drain lines shall be non-woven conforming to LaDOTD Specification Section 1019, class B.

C701.03 DRAIN HOUSE CONNECTIONS: All existing drain house connections shall be removed and replaced with new PVC pipe from the new drain line to one (1') foot behind the curb where it will be tied to the existing drain house connection pipe.

The need for replacing existing drain house connections from the back of the curb to the property line (or any point between) shall be determined by the S&WB after field inspection or as indicated on the drawings. The new pipe will be tied to the existing pipe at that point.

If the existing drain line is being removed and not replaced, or if the S&WB determines it is necessary, an alternate method may be utilized by connecting the existing drain house connections

into a PVC collector line located behind the curb and tied into the catch basins or manholes, as directed by the S&WB.

The new house connection pipe may be connected to the new reinforced concrete pipe by drilling the concrete pipe and by using a rubber boot (Kor-n-Seal boot or approved equal) or sand impregnated PVC bell grouted in the concrete pipe, to connect the new PVC pipe.

No bends greater than 45 degrees will be allowed in drain house connection pipe.

No drain house connection shall be installed in the corners of catch basins. All connections shall be in the side or back of the catch basins.

All pipes and fittings shall be approved by the S&WB. The connection of any two dissimilar house connection materials shall be accomplished by the installation of a “No-Hub” coupling consisting of a neoprene sleeve and bushing adapter and two stainless steel bands. The coupling shall be manufactured in strict accordance with Fernco specification, or approved equal.

Where it is necessary to connect the drains to existing manholes, catch basins, or canals, the existing short bell pieces remaining in the wall of the structure shall be inspected. If in bad condition, the short bell pieces shall be broken out and new short bell pieces inserted to the full thickness of the walls and permanently grouted (see S&WB Dwg. 6178-B-6). The annular space between the concrete pipe and the wall of the structure shall be grouted with a type three, high early strength cement, or quick setting EMBECO or similar material.

If a PVC pipe is to be connected to a manhole or other concrete or brick drainage structure, the Contractor shall use a sand-impregnated PVC stub, grouted with cement grout as specified above, for the manhole connection.

Drain house connections shall be backfilled as described herein for drain lines.

C701.04 POINT REPAIRS OF EXISTING DRAIN LINES: Where the existing drain line has to be removed and replaced with new concrete pipe, said pipe fittings shall conform with Section E of the S&WB General Specifications. Bedding and foundation lumber for the drain line shall conform with S&WB drawings No. D-3809, No. D-3910, No. D-3933 and No. D-3934. Bedding and foundation lumber shall extend under the existing pipe for a distance of not less than 12 inches from the end of pipe to insure proper bedding under the coupling.

The Contractor shall make point repairs to the lines at specific locations shown on the drawings and as listed in the schedule of bid prices. Point repairs shall be made by dry type and shall conform to Section XII of NASSCO (National Association of Sewer Service Companies). The Contractor shall make an excavation to expose a basic "ten (10) linear feet" of main per point repair. Any additional footage of repair beyond the ten-foot minimum for each point repair shall be approved by the Director or as indicated on the Drawings as “Beyond point repair”. The Contractor is required to have all materials and equipment on hand prior to the start of excavation so that there will be a

minimum of inconvenience to the residents. All trenches must be backfilled at the end of the day. Backfill will be in accordance with the same as described herein for new drain lines.

For drain point repairs, and for all other drain repairs, the connection of any two dissimilar materials shall be accomplished by the installation of a "no-hub" coupling consisting of a neoprene sleeve and bushing adapter, two stainless steel bands, and stainless steel screws. The coupling shall be manufactured in strict accordance with Fernco coupling specifications, or approved equal.

C701.05 INSPECTION: At the completion of the point repair or replacement of mains between manholes, and prior to final acceptance, the S&WB may inspect the mains with a remote controlled television unit or by visual inspection of large lines. The Contractor will be required to repair, at his expense and in an approved manner, all defects in his workmanship disclosed by these tests and inspections before final acceptance.

C701.06 AS BUILT DRAWINGS: The Contractor shall furnish a set of "as built" drawings upon completion of the work and prior to final inspection. These drawings shall be a legibly marked set of prints of the Contract Drawings, revised to show clearly all field changes.

C701.07 MEASUREMENT: Drain pipes will be measured in place and the length determined by measuring from center to center of manholes, or other subsurface structures of which they form a part. If the drain line is connected to a square or rectangular manhole, the measurement will be to the center of the manhole. If the drain line is connected to a box canal wall, the measurement will be to the face of the wall.

C701.08 PAYMENT: Payment for the accepted quantities will be made at the contract unit price.

(a) Payment for reinforced concrete pipe shall be made at the contract unit price, per linear foot of the types and sizes specified, including excavation, removal of existing pipe (if any), foundation lumber, bedding, engineering fabrics, backfill, complete shoring, pumping as necessary and tie-ins to manholes and catch basins. (Bid Items C701(53) or C701(54)).

(b) Payment for reinforced concrete wye in a new drain line shall be made at the contract unit price per Item No. C701(59) and shall be in addition to the payment per linear foot for reinforced concrete drain pipe.

Payment for reinforced concrete wye in an existing drain line shall be made at the contract unit price per Item No. C701(65), including a ten (10') foot point repair (total length including wye),couplings, excavation, removal of existing pipe, granular bedding, engineering fabric, backfill, foundation lumber, shoring, and pumping as necessary and saw cutting of existing pipe. (Bid Items (C701(53) or C701(54)).

(c) Payment for reinforced concrete tee shall be made at the contract unit price, per Item No. C701(66).

(d) Payment for point repairs of existing drain lines, up to ten (10') feet shall be made at the contract unit price, per each of the sizes specified, including excavation, foundation lumber, bedding, engineering fabrics, backfill, complete shoring and pumping, as necessary, pipe fittings, couplings, saw cutting existing pipe, removal of existing pipe, and tie-ins to existing manholes if required as per Item No. C701(68). Payment for point repair beyond ten (10') feet shall be made at the contract unit price per linear foot, including the above work, as per Item No. C701(69).

(e) Drain house connections from new drain line to back of curb shall be paid per each including, fittings, tie-ins, excavation, backfilling, removal of existing pipe (if any) and drilling the reinforced concrete pipe, per Item No. C701(70). Payment for drain service line tie-ins beyond back of curb will be made by linear foot of tie-in service lines, including the removal of existing pipes, fittings, and backfill (Item C701(71)). PVC collector line to catch basins for drain house connections shall be paid per linear foot, including, fitting tie-ins to catch basins, excavation, and backfilling per item No. C701(72).

Payment will be made under:

ITEM NUMBER	PAY ITEM	PAY UNIT
C701(53)	Reinforced Concrete Pipe (Size)	Linear Foot
C701(54)	Reinforced Concrete Arch Pipe (Size)	Linear Foot
C701(57)	Yard Drain Service Line (Size & Type)	Linear Foot
C701(58)	Reset Culvert Pipe (Size)	Linear Foot
C701(59)	Reinforced Concrete Wye or Arch Equivalent – New (size)	Each
C701(65)	Reinforced Concrete Wye or Arch Equivalent – Existing (size)	Each
C701(66)	Concrete Tee (size)	Each
C701(67)	Clean and Flush Culvert	Linear Foot
C701(68)	Point Repair of Existing Drain Lines up to Ten (10') Feet (size)	Each
C701(69)	Point Repair of Existing Drain Lines Beyond Ten (10') Feet (size)	Linear Foot
C701(70)	Drain House Connection (size) From New Drain Line to Back of Curb	Each
C701(71)	Drain House Connection Beyond Back of Curb (Size)	Linear Foot
C701(72)	Collector Line to Catch Basins for Drain House Connections (Size)	Linear Foot
C701(73)	Abandoning Existing Drainage Pipes in Place and Fill with Flowable Material (size)	Linear Foot
C701(74)	Removal and Disposal of Existing Drain Lines (Not in Same Trench) Including Backfilling with River Sand and Compaction	Linear Foot

SECTION C702
MANHOLES, CATCH BASINS, DROP INLETS, AND CLEAN-OUTS

C702.01 DESCRIPTION: This work consists of the construction and adjustment of manholes, catch basins, drop inlets, and cleanouts in accordance with the General Specifications and Standard Plans of the Sewerage & Water Board of New Orleans (latest revision), and in conformity with lines shown on the plans or established. The surrounding structure shall be backfilled and compacted in accordance with Subsection C701.02.

C702.02 CONSTRUCTION REQUIREMENTS:

(a) MANHOLES: (No. 1, No. 2, No. 3, Standard Drain Manholes, Special Drain Manholes and Special Conflict Manholes.) Manholes shall be built according to the Standard Plans of the S&WB and/or as indicated on the plans.

(b) CATCH BASIN ADJUSTMENTS: (Type A, type B and type C.)

(1) Type A: The work consists of making slight adjustments in alignment and raising or lowering the elevation of the casting, no additional walls are required.

(2) Type B: The work consists of building a wall inside the wall and outside of the front wall of the basin or racking over or drawing in the rear wall and building a brick wall outside of the front of the front wall or vice versa, and preserving and reusing the footing courses and subgrade lumber and the side walls.

(3) Type C: The work consists of removing the basin completely and rebuilding it either at the same location or at a different location, as directed.

(c) CATCH BASINS AND DROP INLETS: (No. 1, Double No. 1, No. 2, No. 3, No. 4, No. 5, Standard Catch Basin, Standard Drop Inlet, Single and Double Mountable Catch Basins.)

The structures shall be built conforming to the Standard Plans of the S&WB.

(d) REHABILITATE EXISTING CATCH BASIN: The work consists of reshagging inside, stopping leaks and resealing where required.

(e) REHABILITATE EXISTING MANHOLE: The work consists of reshagging inside, stopping leaks and resealing where required.

(f) TAP-IN TO EXISTING DRAIN LINE: The work consists of breaking out the existing drain line and tapping the new drain line into it, including stub.

(g) ADJUST MANHOLE OR DROP INLET: The work consists of adjusting manholes or drop inlets to grade with brick and mortar where directed.

(h) SIX (6") INCH DRAIN CLEANOUT FOR ROOF DRAIN: The work consists of installing new a cleanout box with casing for roof drain in accordance with plans.

(i) CLEANOUT BOX IN EXISTING CULVERT AND NEW CULVERT: The work consists of installing a new brick cleanout box with casting in accordance with the plans.

C702.03 MEASUREMENT: New and adjusted manholes, catch basins, drop inlets and clean-outs will be measured by the pay unit. New or rehabilitated manholes will be measured by vertical foot height. The height of manholes will be determined by measuring from the invert of the manholes to the top of the cast iron cover. Excavation and backfill shall not be measured for payment.

C702.04 PAYMENT: Payment for the accepted quantities will be made at the contract unit price.

(a) Payment for "standard manhole" shall be made at the contract unit price per foot height, including excavation, granular bedding and backfilling.

(b) Payment for "catch basin adjustment" shall be made at the contract unit price per each, including excavation, granular bedding and backfilling. For type C, the price shall include the risk of breakage and replacement of any casting and the cost of bricking up the front grating where necessary, so as to make such catch basins conform to a No. 1 standard catch basin.

(c) Payment for "catch basin & drop inlet" shall be made at the contract unit price per each, including excavation, granular bedding and backfilling.

(d) Payment for "rehabilitate existing catch basin" shall be made at the contract unit price per each.

(e) Payment for "rehabilitate existing manhole" shall be made at the contract unit price per foot height.

(f) Payment for "tap-in to existing drain line" shall be made at the contract unit price per each.

(g) Payment for "adjust manhole or drop inlet up to six (6") inches with brick and mortar" shall be made at the contract unit price per each, including the base material (Portland cement concrete or asphaltic) to be replaced around the manhole. Payment for "adjust manhole or drop inlet over six (6") inches" shall be made at the contract unit price per foot height, or any fraction of a foot, including the above work.

(h) Payment for "six (6") inch drain cleanout for roof drain" shall be made at the contract unit price per each, including excavation and backfilling.

(i) Payment for "cleanout box in existing culvert" and in "new culvert" shall be made at the contract unit price per each, including excavation and backfilling.

Payment will be made under:

ITEM	PAY ITEM	PAY UNIT
C702(52)(J)	No. 1 Standard Drain Manhole	Foot Height
C702(52)(K)	No. 2 Standard Drain Manhole	Foot Height
C702(52)(L)	No. 3 Standard Drain Manhole	Foot Height
C702(52)(M)	Special Drain Manhole	Each
C702(52)(N)	Special Conflict Manhole	Each
C702(53)(J)	Type A Catch Basins Adjustment	Each
C702(53)(K)	Type B Catch Basins Adjustment	Each
C702(53)(L)	Type C Catch Basins Adjustment	Each
C702(53)(M)	No. 1 Standard Catch Basin	Each
C702(53)(N)	Double No. 1 Catch Basin	Each
C702(53)(O)	No. 2 Standard Catch Basin	Each
C702(53)(P)	No. 3 Standard Catch Basin	Each
C702(53)(Q)	No. 4 Standard Catch Basin	Each
C702(53)(R)	No. 5 Standard Catch Basin	Each
C702(53)(S)	24" X 30" Clear Opening Standard Drop Inlet	Each
C702(53)(T)	Single Mountable Catch Basins	Each
C702(53)(U)	Double Mountable Catch Basins	Each
C702(53)(V)	Rehabilitate Existing Catch Basin	Each
C702(54)(I)	Rehabilitate Existing Manhole	Foot Height
C702(54)(K)	Tap-in to Existing Drain Line	Each
C702(54)(A)(1)	Adjust Manhole or Drop Inlet up to 6" with Brick and Mortar	Each
C702(54)(A)(3)	Adjust Manhole or Drop Inlet over 6" with Brick and Mortar	Foot Height
C702(55)(C)	6" Drain Cleanout for Roof Drains	Each
C702(56)	Clean Out Box Existing Culvert	Each
C702(57)	Clean Out Box New Culvert	Each

SECTION C706
DRIVEWAYS AND SIDEWALKS

C706.01 DRIVEWAYS:

(a) Driveways shall be constructed of such lengths and widths and at such points as shown on the plans or as may be designated by the Director.

(b) Where driveways are to be constructed within the sidewalk area, where lip concrete curb is installed, the details of the driveways shall be as shown on Standard Plans for Standard Mountable Driveway or Heavy Duty Mountable Curb Driveway, as specified in the proposal.

(c) All standard driveways shall be six (6") inches and all heavy duty driveways shall be eight (8") inches in thickness. Driveways shall be constructed of Portland cement concrete having a minimum compressive strength of three thousand (3,000) psi. at twenty-eight (28) days. The minimum cement content shall be five and one-half (5-1/2) bags per cubic yard of concrete. The maximum water content, including free water in the aggregate, shall not be greater than six (6) gallons per bag of cement. The consistency of the concrete shall be such as to have a slump of from two (2") inches to four (4") inches.

(d) Driveways shall be reinforced with 6 X 12 – W7.5 X W6.5 welded wire fabric weighing seventy-seven (77) pounds per hundred (100) square feet.

(e) Expansion joints shall be provided where shown on Standard Plans or as may be otherwise directed.

(f) Weakened planes shall be formed by a jointing tool or other acceptable means. Weakened planes shall extend into concrete for at least 1/4 of the depth and shall be approximately 1/8 inch wide.

A longitudinal weakened plane shall be formed along the centerline of drives more than 16 feet wide, and transverse weakened planes shall be formed at not more than 16-foot intervals.

(g) The subgrade on which the driveways are to rest shall be thoroughly rolled or tamped so as to be uniformly compacted and solidified. The finished grade shall be smooth, even, well-graded and exactly parallel to the finished surface of the driveway.

(h) Immediately after placing and tamping the concrete in place, it will be brought to the established grade by means of a strike board. Finishing shall be completed by use of a soft-haired brush, moved lightly over the surface in the direction of the width of the driveway. Joints are to be straight and square, in good alignment and edges finished by a joiner, so as to avoid sharp corners.

C706.02 SIDEWALKS AND RAMP ACCESSIBILITY:

Sidewalks and ramps shall comply with the most current regulations for Titles II and III of the Americans with Disabilities Act of 1990 (ADA) and applicable accessibility standards published by

the Department of Justice (the 2010 ADA Standards for Accessible Design, “2010 Standards”, or later).

(a) An ADA curb ramp is a short ramp cutting through a curb or built up to it to provide an accessible path of travel.

(1) On a curb ramp, the running slope is the slope in the direction of pedestrian travel on the ramp run and must be 8.33 percent (1:12) or less. Where provided, curb ramp flares shall not be steeper than 1:10.

(2) On a curb ramp, the cross slope is the slope perpendicular to [across] the direction of pedestrian travel on the ramp run and the cross slope of the ramp run itself may not exceed 2 percent (1:50).

(3) The ramp, or ramp run, must be at least 48 inches wide, not including the flared sides. The ramp run must have detectable warnings – i.e., dome-shaped bumps – that extend the full width and depth of the ramp.

(4) Transitions from the ramp to the walkway, gutter, and street must be flush (level) and free of abrupt level changes. The gutter must have a slope of no more than 5 percent (1:20) toward the ramp.

(5) Landings shall be provided at the tops of curb ramps. The minimum landing clear length shall be 48 inches. The landing clear width shall be at least as wide as the curb ramp, excluding flared sides, leading to the landing.

(6) Diagonal or corner type curb ramps with returned curbs or other well-defined edges shall have the edges parallel to the direction of pedestrian flow. The bottom of diagonal curb ramps shall have a clear space of 48 inches minimum outside active traffic lanes of the roadway. Diagonal curb ramps provided at marked crossings shall provide the 48 inches minimum clear space within the markings. Diagonal curb ramps with flared sides shall have a segment of curb 24 inches long minimum, located on each side of the curb ramp and within the marked crossing.

(b) Raised islands in crossings shall be cut through level with the street or have curb ramps at both sides. Each curb ramp shall have a level area 48 inches long minimum by 48 inches wide minimum at the top of the curb ramp in the part of the island intersected by the crossings. Each 48 inch minimum by 48 inch minimum area shall be oriented so that the 48 inch minimum length is in the direction of the running slope of the curb ramp it serves. The 48 inch minimum by 48 inch minimum areas and the accessible route shall be permitted to overlap.

(c) The running slope of sidewalks must be 5 percent (1:20) or less. The cross slope of sidewalks must be 2 percent (1:50) or less. The clear width of sidewalks shall be at least 48 inches and a sidewalk with a clear width of less than 60 inches shall provide passing spaces at intervals of 200 feet maximum. If the longitudinal slope of the sidewalk exceeds 1:20, it is considered a ramp and a level landing must be provided for every 30-inch change in elevation.

C706.03 PORTLAND CEMENT CONCRETE SIDEWALK OR BANQUETTE PAVEMENT:

(a) Portland cement concrete sidewalk or banquette pavement shall be of such widths and fixed at such elevations as may be stipulated in the proposal and Special Specifications, or may be otherwise designated by the Director. They shall consist of a one course Portland cement concrete pavement four (4") inches in thickness.

(1) The concrete shall have a minimum compressive strength of three thousand (3,000) psi. at twenty-eight (28) days. The minimum cement content shall be five and one-half (5-1/2) bags per cubic yard of concrete. The maximum water content, including free water in the aggregate, shall not be greater than six (6) gallons per bag of cement. The consistency of concrete shall be such as to have a slump of from two (2") inches to four (4") inches.

(2) Sidewalks or banquettes shall be reinforced with 6 X 6 – W2.9 X W2.9 wire mesh weighing forty-two (42) pounds per hundred square feet.

(b) In preparing the subgrade on which the Portland cement concrete sidewalk or banquette pavement will be placed, all soft and spongy places shall be removed and all depressions filled with suitable materials which shall be thoroughly compacted in layers not exceeding six (6") inches in thickness. The subgrade shall be thoroughly tamped until it is brought to a firm, unyielding surface. It shall have a slope in conformity with the slope of the finished surface of the Portland cement concrete sidewalk or banquette pavement.

When the Portland cement concrete sidewalk or banquette pavement is to be constructed over an old path composed of gravel or cinder, the old path shall be entirely loosened, the material spread for the full width of the subgrade and compacted as specified.

(c) All fills shall be made in a manner satisfactory to the Director. The use of muck, quicksand, soft clay, spongy or perishable material is prohibited. The top of all fills shall extend at least two (2') feet beyond the sidewalk or banquette pavement on each side and the sides shall have a maximum slope not greater than one (1) vertical to one and one-half (1-1/2) horizontal before any Portland cement concrete sidewalk or banquette pavement will be allowed to be placed thereon.

(d) Concrete shall be of the strength and consistency herein before described. The method of mixing and placing shall be in conformance with the requirements for Subsections C601.20 and C601.21, Portland cement concrete pavement. Concrete that does not flush readily shall be removed immediately from the grade and not re-used, except that the coarse aggregate can be salvaged by washing.

(e) After mixing, the concrete shall be handled rapidly and the successive batches deposited in a continuous operation completing individual sections to the required depth and width. The forms shall be filled and the concrete struck off and tamped. The method of placing the various sections shall be such as to produce a straight clean joint between them so as to make each section an independent unit. If dirt, dust or other foreign substances collect on the surface, they shall be removed before the trowelling is started.

(f) After the concrete has been tamped in accordance with subsection C706.02 (e), it will be brought to the established grade by means of a strike board, and it will then be worked with a wood float in a manner which will thoroughly compact it and provide a surface free from depressions or irregularities of any kind. Excessive working shall be avoided. In no case shall dry cement and sand be sprinkled on the surface. The surface edges of all slabs shall be rounded to a radius of one-half (1/2") inch.

(g) Portland cement concrete sidewalk or banquette pavement shall be divided into blocks of such dimensions, by means of a joiner or grooves, as shown on the Standard Plans or as the Director may designate. Weakened planes shall be formed by a jointing tool or other acceptable means. Weakened planes shall extend into concrete for at least one-quarter (1/4") inch of the depth and shall be approximately one-eighth (1/8") inch wide. Spacing of weakened planes shall be equal to the width of the sidewalk. Transverse expansion joints shall be made at intervals of about ninety (90') feet and constructed in accordance with the standard plans.

All expansion joints shall be carefully made so as to be truly perpendicular to the surface of the sidewalk or banquette pavement and at right angles to the edge of same. The surface of the concrete adjacent to expansion joints shall be finished with a wood float, which is divided through the center and which will permit finishing on both sides of the joint at the same time. An expansion joint shall also be provided adjacent to solid walls of masonry, behind curbs, at intersections and at footlaps. Where posts or poles fall within the limit of the sidewalk or banquette pavement, an expansion joint not less than one-half (1/2") inch in width shall be placed around said posts or poles and filled with joint filler. In the case of expansion joints adjacent to masonry walls, at footlaps and around posts or poles, the joint filler shall not extend above the surfaces of the sidewalk or banquette pavement and any excess filler that so protrudes shall be cut off and made flush with the sidewalk or banquette pavement.

(h) As soon as the finished work has hardened sufficiently to prevent damage, the surface of the walk shall be covered with curing compound. The freshly finished work shall be protected from hot sun and drying winds until it can be covered as above specified. Curing by application of chemicals or some other method of curing may be used upon the approval of the Director. The concrete surface must not be damaged or pitted by raindrops and the Contractor shall provide and use, where necessary, sufficient tarpaulins to completely cover all sections that have been placed within the preceding twelve (12) hours. The Contractor shall erect and maintain suitable barriers to protect the walk from traffic, and any section damaged from traffic or other causes, shall be repaired or replaced by the Contractor at his own expense, in a manner satisfactory to the Director. The walk shall not be opened to traffic until the prescribed curing period has expired.

(i) Portland cement concrete sidewalk or banquette pavement at intersections, including ramps for the handicapped, shall be six (6") inches thick and placed as above specified.

C706.04 BRICK SIDEWALK OR BANQUETTE PAVEMENT:

(a) Brick sidewalk or banquette pavement shall be of such width, grades or elevations as shown on plans or as may be designated by the Director and laid in the manner herein described and as shown on the standard plan.

(b) The surface of the earth upon which the brick sidewalk or banquette pavement will rest shall be first graded and tamped and otherwise prepared as specified for Portland cement concrete sidewalk or banquette pavement.

(c) Five (5") inches of reinforced concrete foundation having a compressive strength of not less than three thousand (3,000) psi. in twenty-eight (28) days shall be poured and tamped. The brick shall be laid on a prepared subgrade, a minimum of a three-eighths (3/8") inch setting bed which is composed of one (1) part cement to three (3) parts sand. Bricks shall be in close contact with each other and thoroughly tamped. After tamping, they shall be thoroughly sprinkled and all joints shall at once be completely filled with grout formed of one (1) part Portland cement concrete to three (3) parts sand. Thereafter, clean, sharp sand shall be evenly spread on the surface to a thickness of approximately one-half (1/2") inch. When the grout has been in place for seventy-two (72) hours or longer, this sand shall be removed and may be re-used at the option of the Contractor.

(d) After completion, the brick sidewalk or banquette pavement shall be closed to traffic and not opened until so directed by the Director. The Contractor will be required to barricade and protect the walk in every way as prescribed and required for Portland cement concrete sidewalk or banquette pavement.

(e) Brick sidewalk or banquette pavement will be paid for by the square yard, at the price bid in the proposal for that item, which price shall include grading and all the materials, reinforced concrete foundation, labor, tools, equipment and service employees used in completing the brick sidewalk or banquette pavement in place as herein described.

C706.05 RELAYING SIDEWALK OR BANQUETTE PAVEMENT:

(a) All sidewalk or banquette pavement relaid shall conform to the requirements herein fixed for new sidewalk or banquette pavement. Where old bricks are not suitable for relaying, they shall be replaced by new brick.

(b) When Portland cement concrete sidewalk or banquette pavement is unavoidably disturbed in executing the work embraced by the specifications, the limits of the area proposed to be disturbed or removed shall be sharply defined by the Contractor with concrete saw made lines and then carefully removed along said lines. Should the surface fracture along irregular lines, a straight line shall be struck and the edge made true. When other sidewalk or banquette pavement is unavoidably disturbed, they shall be restored by the Contractor to the same conditions in which they were before they disturbed them, and for such work, he shall be compensated at the prices bid in the proposal for relaying sidewalk or banquette pavement; no compensation shall be allowed for relaying sidewalk or banquette pavement that has been unnecessarily disturbed.

(c) Relaying sidewalk or banquette pavement shall be paid for by the square yard at the price bid in the proposal for those items, which price shall include all materials, labor, tools, equipment and services employed in taking up the sidewalk or banquette pavement and restoring them to the same condition in which they were before being disturbed, including the grouting of old brick. Exception is made in the case of Portland cement concrete sidewalk or banquette pavement, which price shall include all material, labor, tools, equipment and services employed in taking up and relaying them.

C706.06 MINIMUM SIDEWALK OR BANQUETTE TREATMENT WITHIN THE DOWNTOWN DEVELOPMENT DISTRICT:

This will be in accordance with Section 146-193 of the City Code.

C706.07 MINIMUM SIDEWALK OR BANQUETTE TREATMENT WITHIN THE VIEUX CARRE:

This will be in accordance with Section 146-194 of the City Code.

C706.08 TILE STREET NAMES:

(a) LETTERS OR NUMBERS FOR TILE STREET NAMES: Letters or numbers for tile street names shall be hard, tough, durable, porcelain tile or other material satisfactory to the Director. The letters or numbers shall be block type on tile not less than five and one-half (5-1/2") inches, nor greater than six (6") inches high. The letters or numbers shall not be less than five (5") inches high, of blue or willow green in color, on a white background. Letter or numbers for tile street names shall be installed and oriented so that they may be read by pedestrians approaching the intersection where they are located.

(b) RESETTING TILE STREET NAMES: Existing tile street names shall be salvaged intact by saw-cutting the name out of the concrete in which the tiles are imbedded. The saw-cut shall be located two (2") inches away from the name's perimeter and will extend through the depth of the concrete, usually four (4") inches. The salvaged street name tile shall be reset in the fresh concrete of the sidewalk intersection, flush with the level of the sidewalk and clean of any cement residue.

C706.09 MEASUREMENT: The area of driveways will be determined by surface measurements and no extra allowance will be made for shoulders.

Sidewalk pavements will be paid for by surface measurements and no deduction will be made for subsurface structures occupying less than five (5) square feet of area. Areas under structures encroaching on public property not paved will not be included in the surface measurement.

C706.10 PAYMENT: Payment for concrete driveways, sidewalks or banquette pavement will be made at the contract price per square yard, which includes excavation, installation of expansion joint and welded wire fabric. Granular material for adjustment and removal of existing driveways, sidewalk or banquette pavement shall be paid for in other items.

Payment for "letters or numbers for Tile street names" will be per each tile at the contract unit price.

Payment for "Resetting Tile Street Name" will be per name at the contract unit price.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C706(51)	Concrete Sidewalk (___" Thick)	Square Yard
C706(52)	Concrete Driveway (___" Thick)	Square Yard
C706(54)	Sidewalk at Intersection Including Handicapped Ramps (___" Thick)	Square Yard
C706(55)	Sidewalk in Median Including Handicapped Ramps	Square Yard
C706(56)	Handicapped Ramp (Specify Concrete Brick or Stone)	Square Yard
C706(57)	Brick Sidewalk	Square Yard
C706(58)	Relaying Brick Sidewalk	Square Yard
C706(59)	Stone Sidewalk	Square Yard
C706(60)	Relaying Stone Sidewalk	Square Yard
C706(61)	Letter or Number for Tile Street Name	Each
C706(62)	Resetting Tile Street Name	Each

SECTION C707
CURBS AND GUTTERS

C707.01 INTEGRAL CONCRETE CURB, STRAIGHT OR CIRCULAR: Integral concrete curb shall be either mountable or barrier curb. Concrete curb and barrier curb shall be constructed monolithically with the same materials, having the same compressive strength and placed and cured in the same manner as the concrete in the roadway slab. The dimensions shall be as shown on standard plans. The overall depth shall be determined by the curb exposure, depth of gutterbottom and roadway slab.

(a) The curb forms shall provide for the dimensions specified and must be set to the established grades.

(b) Premoulded joint filler shall be placed and extended through the entire curb section, at those points where joint filler is used in the roadway slab.

C707.02 COMBINED CONCRETE CURB AND GUTTERBOTTOM AND/OR CONCRETE CURB, STRAIGHT OR CIRCULAR:

(a) Combined concrete curb and gutterbottom shall be either combined mountable concrete curb and gutterbottom or barrier concrete curb and gutterbottom. Concrete curb shall be either mountable or barrier. The type of concrete curb or concrete curb and gutterbottom to be provided shall be as shown on plans. The forms to be used shall conform to the requirements of these specifications on "FORMS".

(1) The concrete used shall be mixed with the same materials, having the same compressive strength and shall be cured in the same manner as specified for "Reinforced Concrete Roadway Pavements".

(2) Where it is required to construct concrete curb and gutterbottom, the curb and gutterbottom must be poured monolithically.

(3) Undowelled contraction joints shall be placed through the entire width of the concrete curb or curb and gutterbottom, at no greater than fifteen (15') foot intervals. Contraction joints shall be formed by a jointing tool or other acceptable means, having a 2" depth and 1/4" width and filled with silicone sealant or an approved joint sealant.

Dowelled expansion joints shall be placed at intersections, not to exceed three hundred (300') foot intervals, and/or as indicated on the plans.

Pre-moulded joint filler shall be placed through the entire section of the concrete curb or curb and gutterbottom. The concrete curb and gutterbottom shall be reinforced in accordance with the standard plans.

(4) The forms shall provide for the dimensions specified and must be set to the established grades. After placing, concrete shall be worked with a float, in a manner that will thoroughly compact it and provide a surface free from depressions or irregularities of any kind.

C707.03 CONCRETE GUTTER:

(a) Where the concrete gutter is constructed as a part of combined curb and gutterbottom, it shall conform to the requirements of combined curb and gutterbottom. Jointing shall conform to subsections C601.06(a) and C601.06(b).

(b) Where the concrete gutter is constructed in conjunction with roadway pavement, it shall, unless otherwise specified or directed, be poured monolithically with, become part of, be laid at the same time, in the same manner and have the same compressive strength as concrete roadway foundation, for such roadway pavements. It shall be of the same width indicated on the plans and of such depth as will be equal to the combined thickness of the roadway foundation and the roadway pavement wearing surface.

(c) The subgrade shall meet the requirements for roadway pavement sub-grade.

(d) Immediately after the concrete has been placed, it shall be tamped, struck off and worked with a wood float in a manner to provide a surface free from irregularities and depressions, bringing the mortar to the top. The surface shall then be broomed or brushed with a soft hand broom in the direction of the flow line of the gutter. Surface joints shall be made by a steel joining tool and premoulded joint filler shall be placed and extended through the entire gutter section at those joints where filler is used in the roadway slab or curb.

(e) Curing the gutter shall be similar to that provided for roadway pavement.

C707.04 STONE CURB:

(a) Stone curb shall either be old stone curb or new stone curb as herein specified.

(b) Old stone curb shall be of suitable quality with well-defined face and top, of the depth not less than prescribed for new curb and not less than three (3') feet in length.

(c) New stone curb shall be best North River Blue Stone or Cabin Creek Blue Stone or Granite or similar stone acceptable to the Director, and shall measure five (5") inches in thickness for the remainder of depth, and in lengths of not less than five (5') feet except for closures. It shall be of such depth as may be indicated on the plans or otherwise specified. The top of the curb shall be peen-hammer dressed, and the face for ten (10") inches below the top pointed, so that there will be no protrusions or depressions measuring more than one-half (1/2") inch from a straightedge laid in any direction parallel to the general surface. All ends shall be squared so as to form close-fitting joints. No drill holes will be permitted to show on any exposed surface. All edges shall be well-defined.

(d) Closures shall not be less than two and one-half (2-1/2') feet in length and must not be placed adjacent to catch basins or over fresh excavations or adjacent to one another. No more than three (3) such closures will be allowed between any two fixed points such as circular curb for corners, circular curb for driveways or catch basins.

C707.05 SETTING AND RESETTING STONE CURBS:

(a) Stone curb shall be set to lines and grades indicated on plans, or as may be otherwise directed. The subgrade on which the curb base is to be placed shall be excavated and thoroughly tampered by means of a pneumatic tamper.

(b) After the curb has been set to proper line and grade as above, the Contractor shall place under each curb joint, or as close thereto as may be practical, a concrete pier. These piers and concrete base shall be constructed in accordance with dimensions shown on the detail plans, care being taken that the excavation therefore made prior to the pouring of the concrete is evenly cut and as nearly true to the plans as the character of the excavation materials will permit. Care should be taken also, that all loose material is removed from the finished subgrade of the roadway prior to pouring concrete.

(c) One pier shall be provided under each curb joint except in cases where it is impractical to construct one at said point, as where a drain sewer or gas service is directly under the joint and is sufficiently high to prevent the pier being built to the dimensions shown on the plans. In this case, two (2) piers shall be constructed, one (1) on each side of the curb joint and as close thereto as practical.

(d) After setting curb, the excavated area behind same shall be backfilled by tamping and this filling shall be brought to the top of the back of the curb.

(e) Old stone curb of proper quality and dimensions will be relined and reset at its present location when required by the proposal or special specfications, or it shall be removed to other points within the limits of the project, as may be designated by the Director, and there reset.

(f) The ends of all curb, whether new or old, shall be neatly squared so as to form close-fitting joints. Joint filler one-half (1/2") inch in thickness shall be placed adjacent to catch basins and circular curbs when setting stone curbs. All joints in stone curb shall be thoroughly and neatly pointed with mortar. The joints in the precast concrete curbs shall be neatly filled with a joint filler, one-eighth (1/8") inch thick. This joint filler material shall be finished flush with the top and roadway face of the curb.

(g) When stipulated in the Uniform Bid Form and Special Specifications, that curb shall be set in a recess in the concrete foundation of the pavement, then this shall be done only after the concrete has become thoroughly hardened. The recess shall be cleared of all foreign matter and on its bottom surface there shall be placed a bed of stiff mortar, varying from one-quarter (1/4") inch to three quarter (3/4") inch in thickness and averaging one-half (1/2") inch in thickness depending on the irregularities in the bottom of the stone curb, or the concrete roadway foundation. When the curb stones have been so set, the recess on both sides of the curb shall be filled from top to bottom with liquid mortar. Compensation for providing the recess and for filling same with mortar after the curb has been set shall be included in the price per linear foot bid in the proposal for curb.

(h) Cuts of proper dimensions, executed in a neat and workmanlike manner shall be made where directed and where required in both new and old curb for drain pipe or gas pipe where required under the curb for connections. No additional compensation shall be made for such cuts.

(i) No extra compensation will be allowed for removing obstructions, gallery or shed posts, etc. that may be encountered in setting new or old curb, nor will any extra compensation be allowed for shoring or reinforcing sheds or galleries that may be necessary.

C707.06 CIRCULAR STONE CURB:

(a) Circular stone curb shall be granite, free of stratification and excess of mica, flint and feldspar. The entire top shall be peen-hammer dressed, and the face of eight (8") inches from the top and the back for four (4") inches from the top of the curb shall be neatly pointed. All edges shall be well defined. The stone shall have squared and neatly finished ends, so as to form close-fitting joints.

(b) Circular stone curb shall be of the radius indicated on plans or as otherwise specified. When the radius is two (2') feet or less, the circular curb shall be in one (1) piece; where the radius is more than two (2') feet, and not more than four (4') feet, the circular curb shall be in two (2) pieces; where the radius is more than four (4') feet, and not more than six (6') feet, the circular curb shall be in three (3) pieces; where the radius is more than six (6') feet, and not more than eight (8') feet, the circular curb shall be in four (4) pieces; where the radius is more than eight (8) feet, and not more than ten (10') feet, the circular curb shall be in five (5) pieces; and where the radius is more than ten (10') feet, and not more than twelve (12') feet, the circular curb shall be in six (6) pieces.

(c) Circular stone curb shall be twelve (12") inches in depth, five (5") inches in width at both ends, and of such widths intermediate to the ends as shown on plans.

C707.07 SETTING CIRCULAR STONE CURB:

(a) Circular curb shall be of the quality and dimensions hereinbefore prescribed for circular curb.

(b) All joints in circular stone curb shall be thoroughly and neatly jointed with mortar and such amount of lamp black added as may be necessary to make the color of the mortar correspond with the color of the stone immediately after it has been set and while it is to correct line and grade.

(c) Circular curb shall be placed on a concrete foundation four (4") inches in thickness mixed in proportion of one (1) part cement to three (3) parts fine aggregate to six (6) parts coarse aggregate.

C707.08 TIMBER CURB:

(a) Timber curb shall be placed on the lines and at the grades as shown on the drawings or as furnished by the Director, and shall be of the dimensions indicated on the plans and herein described.

(b) The face of curbs shall be set either barrier or with a batter as may be designated.

(c) Timber curb shall be formed of either creosoted No. 1 Common Pine, twelve (12 lb.) pound treatment, or treated No. 1 Common Pine .6 lb/cf of CCA, anchors, braces, sills and boards as shown on plans and herein described.

(d) Posts shall measure four (4") inches by four (4") inches and generally the length shall be three (3) times the depth of the finished curb measured on its surface. Posts shall generally be spaced six (6') foot centers apart.

(e) Boards shall be three (3") inches thick and not less than eight (8") inches wide and generally not less than sixteen (16') feet long. They shall be laid horizontal with close-fitting sides and end joints. Joints shall be broken so that boards alongside of each other shall not break joints on the same posts.

(f) At such points as may be designated, cuts of proper dimensions, executed in a neat and workmanlike manner shall be made for drain pipe connections and for the proper construction of foot bridges. No direct compensation shall be made for such cuts.

C707.09 ASPHALTIC CURB: Asphaltic curb shall be placed by an approved extruding machine. Prior to placing curb, the Contractor shall apply asphaltic tack coat conforming to Section C504.

C707.10 MEASUREMENT: The length of curb, gutter, and curb and gutterbottom will be established by measurements of the actual curb, gutter and curb and gutterbottom in place and no allowance will be made for waste due to closures or other causes.

Circular curb shall be measured at the top outer face.

Timber curb will be measured by the number of board feet (MFBM) including board and posts.

Joint materials, rebars, concrete base and piers for stone curb or resetting existing curb shall not be measured for payment.

Excavation for reconstruction of curb and gutter bottom only, and excavation for setting and resetting stone curbs in rehabilitating projects shall not be measured for payment.

C707.11 PAYMENT: Payment for curbs, gutters, and curbs and gutterbottoms shall be made at the contract unit price per linear foot including curb transitions or depressions or after hand-forming curbs and curb and gutterbottom as directed by the Director, subject to the payment adjustment

provisions of Section C501 for asphaltic concrete mixtures and Section C601 for Portland cement concrete.

Payment for wood curb shall be made at the contract unit price per Thousand Board Feet (MFBM).

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C707(54)	Asphaltic Curb	Linear Foot
C707(55)	Concrete Mountable Curb with or Without Dowels (Straight, Circular or Depressed)	Linear Foot
C707(56)	6" Concrete Barrier Curb with or Without Dowels (Straight, Circular or Depressed)	Linear Foot
C707(57)	8" Concrete Barrier Curb with or Without Dowels (Straight, Circular or Depressed)	Linear Foot
C707(58)	Concrete Gutterbottom or Rolling Strip	Linear Foot
C707(59)	Concrete Mountable Curb and Gutterbottom	Linear Foot
C707(60)	6" Concrete Barrier Curb & Gutterbottom or Rolling Strip	Linear Foot
C707(61)	8" Concrete Barrier Curb & Gutterbottom or Rolling Strip	Linear Foot
C707(62)	Stone Curb Including Base (Straight, Circular or Depressed)	Linear Foot
C707(63)	Reset Existing Curb (Precast Concrete, Stone, etc.) Including Base	Linear Foot
C707(64)	Timber Curb	Thousand Board Feet (MFBM)

SECTION C713
TEMPORARY SIGNS, BARRICADES AND PAVEMENT MARKINGS

C713.01 MAINTENANCE OF TRAFFIC:

(a) Reasonable provisions for local traffic throughout the length of the project and the life of the contract must be made by the Contractor during construction without direct compensation.

(b) When specified, the Contractor may also be required to provide for through traffic over the entire project, or designated portions thereof.

(c) The Contractor shall keep the portion of the project being used by public traffic, whether through or local traffic, in such condition that traffic (including garbage collection and mail delivery) will be adequately accommodated. He shall furnish, erect and maintain barricades, warning signs and delineators, and shall provide flagmen and pilot cars in accordance with the plans and the MUTCD. He shall also provide and maintain, in a safe condition, all required temporary approaches or crossings, intersections with roads, streets, business parking lots, residences and garages.

C713.02 PAVING SEQUENCES:

(a) When asphaltic concrete pavement layers are placed in two (2") inch thickness or less, the Contractor will be permitted to pave in one lane for a full day; the adjacent lane may be paved the following workday. When pavement layers are greater than two (2") inch thickness, the Contractor shall place approximately one half (1/2) of each day's production in one (1) lane and the remainder in the adjacent lane. At the end of each day's overlay operation, temporary pavement markings shall be placed and proper signs and barricades displayed. During the period that all lanes are open to traffic, the Contractor shall neither store material nor park equipment on roadway shoulders.

(b) The Contractor shall be responsible for supplying, maintaining and moving, when necessary, adequate barricades, warning signs and lights to safely inform the traveling public as to the location of the work at all times.

C713.03 DETOUR PLAN:

(a) The Contractor shall adhere to the detour plan as shown in the plans. Any changes requested by the Contractor must be approved by the Director before implementation.

Where no detour plan is shown, but is required by the Director to maintain the safe and efficient flow of traffic or efficiency of the Contractor's operation, it shall be developed by the Contractor and approved by the Director.

(b) The Contractor is to provide and maintain construction fences, temporary barricades and sidewalks as required by the Department of Public Works or other authorities in providing security to the premises during the construction period. The Contractor shall provide all necessary items to

insure accessible pedestrian access to properties during construction. When required, the Contractor shall maintain sidewalk barricades, fences and lighting with flashing lights or steady burn lights at locations required by local authorities.

(c) Hauling of material or equipment. Any material or equipment hauled to or from the construction site will be by a route approved or designated by the Department of Public Works Traffic Engineering Division prior to start of construction.

C713.04 TEMPORARY SIGNS, BARRICADES, AND PAVEMENT MARKINGS: Temporary signs, Barricades and Pavement Markings shall conform to Section 713 of the LaDOTD Louisiana Standard Specifications for Road and Bridges, the latest Edition.

C713.05 MEASUREMENT: The furnishing, erecting, maintaining and subsequent removing of temporary construction signs, barricades, pavement markings & markers and related devices will be measured on a lump sum basis.

C713.06 PAYMENT: Payment for temporary construction signs, barricades and related devices will be at the contract lump sum price in accordance with the following schedule:

% of Total Contract Amount Earned	**Allowable % Lump Sum Price for Temporary Signs and Barricades**
Initial Erection	20
25	40
50	60
75	80
100	100

Payment will be made under:

ITEM NO.	**PAY ITEM**	**PAY UNIT**
C713(51)	Temporary Signs, Barricades, Pavement Markings	Lump Sum

HORTICULTURAL REQUIREMENTS

SECTION C714
SODDING

C714.01 DESCRIPTION: This work consists of furnishing, hauling, planting, rolling, watering and maintaining live grass sod at locations shown on the plans or as directed. Sodding shall be in compliance with the Department of Parks and Parkways Section 02485 “Seeding and Sodding” which shall take precedence in any conflict.

C714.02 MATERIALS: Approved sod shall be either field grown grass or nursery grown grass.

Field grown grass sod shall be Bermuda grass or other approved grass native to the sodded area.

Nursery grown grass sod shall be Tiffway Bermuda, Common Bermuda or St. Augustine grass. If Common Bermuda sod is laid between September 15 and March 31, the Contractor shall overseed the sod with Fescue seed as otherwise indicated in the Seeding Section (C717).

Fertilizer shall be Agriform CRF 16-7-12 (+ iron) or equal approved by the Department of Parks and Parkways.

Sod shall be free from noxious weeds or other vegetation.

Water may be obtained from any source. Brackish, chemically contaminated, or oily water shall not be used.

C714.03 GENERAL CONSTRUCTION REQUIREMENTS: Sod shall be Grade A and cut with approved sod cutters. The designated area shall be mowed when necessary. Sod shall be cut to a minimum soil depth three quarter (3/4”) inch to one (1”) inch for field grown grass and one (1") inch for nursery grown grass, and to a uniform width and in convenient lengths for handling. Soil shall be retained on roots of sod during excavating, hauling and planting. Only common Bermuda slab sod shall be used within thirty (30') feet of the outer edges of paved shoulders. Sod cut more than 48 hours before placing shall not be used unless authorized. Sod taken from areas that may produce inferior growth will not be accepted.

C714.04 HANDLING SOD: Sod shall be placed flat, grass side up on boards of convenient lengths and hauled to planting site with soil intact. Only one layer of sod shall be placed on each board. Boards shall be of sufficient thickness to prevent excessive bending and of sufficient width to prevent sod from hanging over the edges.

Stacked sod shall be kept moist and satisfactorily protected from the elements.

C714.05 PLANTING: Areas to receive sod shall be pulverized to a depth of at least four (4") inches, graded and cleared of weeds, grass, stones and other debris. If an item for agricultural lime is included in the contract, liming shall be done when the area is being pulverized. When an

item for fertilizer is included in the contract, approximately ninety (90%) percent shall be broadcast over the area to receive sodding, and the remaining ten (10%) percent shall be broadcast over sod after placing and rolling. Upon delivery to the planting site, sod shall be transferred onto the surface soil. Areas to be sodded shall be watered as directed. Sod shall be placed with minimum space between slabs. Slabs which do not fit closely shall be pulled together with suitable tools and pegged when necessary. When directed, sod surface will be top dressed with sand to smooth-out uneven spots. Sod should have alternating seams (joints).

C714.06 ROLLING: Sod shall be rolled after planting with smooth drum steel rollers or cultipackers. Where rolling is impractical, sod shall be tamped by approved hand methods. Sod shall be installed to cover all exposed bare areas, with tight even seams. Sod shall be rolled after installation to ensure complete contact with the soil.

C714.07 WATERING: Sodding shall be watered as directed. Water sod immediately after installation. Watering shall be done in a manner to prevent erosion of soil or sod. Sod shall be kept moist for thirty (30) days after sodding.

C714.08 MAINTENANCE AND PROTECTION:

(a) Rainfall is usually not adequate to keep newly seeded or sodded turf grasses alive and healthy, supplemental watering is required.

(b) Refill, resod, and refertilize all bare areas as necessary to achieve complete coverage with a satisfactory stand of grass with no gaps larger than four inches (4") square.

(c) At least three (3) mowings shall be completed before the turf will be accepted. At the time of the first cutting, mower blades should be set at 2-1/2" high. Mow prior to the grass growing taller than 3.75". Inform the Parkway and Park Commission Landscape Architect at time of each mowing.

(d) The sodded areas shall be protected against traffic by placing warning signs, protective fencing, or other means as may be required until turf is established and accepted by the Parkway and Park Commission

C714.09 MEASUREMENT: Sodding shall be measured by the square yard along the surface of the completed sodding.

C714.10 PAYMENT: Payment for sodding shall be made at the contract unit price, which includes water and fertilizer.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C714(51)	Sodding	Square Yard

SECTION C717
SEEDING

C717.01 All areas of public greenspace where turf grass has been damaged during construction shall be reseeded by the Contractor. The plans shall designate the limits of seeding and fertilizing.

C717.02 Materials to be used shall include:

(a) Soil: Soil required for preparation of seed bed shall be Mississippi River Batture Sand.

(b) Seed: Grass seed (March through September) shall be hulled Bermuda Grass with minimum 82% by weight of pure live seed and maximum 1% by weight weed seed.

Grass seed (September through March) shall be 50% Turf Type Tall Fescue (variety "Jaguar") and 50% non-hulled Bermuda Seed. Fescue shall have minimum 82% by weight pure live seed have minimum 82% by weight pure live seed and maximum 1% by weight weed seed.

(c) Fertilizer: Fertilizer shall be a complete fertilizer with an analysis of 8-8-8, 13-13-13, or equal approved by the Parkway and Park Commission.

C717.03 PREPARATION AND INSTALLATION:

(a) Prior to seeding, the bed shall be prepared by breaking, disking, harrowing, blading, dragging or other approved methods. The soil shall be thoroughly pulverized to a minimum depth of four (4") inches and smoothed by means of raking or other approved method. This requirement may be waived if 3" to 4" of Mississippi River Batture sand is used for dressing. Each area then shall be rolled with a light roller and then finely raked. The finished surface shall be smooth, finely textured and free from sticks and debris.

(b) Fertilizer shall be distributed evenly, by mechanical spreader, over all areas to be seeded. The rate of application shall be twenty (20) pounds per 1,000 square feet, as per manufacturer's specifications.

(c) Grass seed shall be applied at the rate of ten (10) pounds each of the specified seed types per 1,000 square feet of seed bed by means of an approved mechanical seed spreader which will provide a depth of 1/8" to 1/4", or rake seed into soil.

(d) Water seed immediately after installation. Watering shall be done in a manner to prevent erosion of soil or seed.

C717.04 MAINTENANCE AND PROTECTION:

(a) Rainfall is usually not adequate to keep newly seeded or sodded turf grasses alive and healthy, supplemental watering is required.

(b) Refill, reseed and refertilize, all bare areas as necessary to achieve complete coverage with a satisfactory stand of grass no gaps larger than four inches (4") square.

(c) At least three (3) mowings shall be completed before the turf will be accepted. At the time of the first cutting, mower blades should be set at 2-1/2" high. Inform the Parkway and Park Commission Landscape Architect at time of each mowing.

(d) The seeded areas shall be protected against traffic by placing warning signs, protective fencing, or other means as may be required until turf is established and accepted by the Parkway and Park Commission.

C717.05 MEASUREMENT: Seeding will be measured by Lump Sum.

C717.06 PAYMENT: Payment for seeding, including fertilizer and water will be made at the contract unit price under:

ITEM NO.	PAY ITEM	PAY UNIT
C717(51)	Seeding	Lump Sum

SECTION C719
LANDSCAPING

C719.01 TREE PROTECTION: At the field plan-in-hand meeting of each project, the Department of Public Works and the Department of Parks and Parkways will prepare a list which will state the location of each tree by station and distance off the survey base line and what work is required at each tree location. The list will be enclosed in the project specifications. Tree protection shall be in compliance with the Department of Parks and Parkways Section 02480 "Landscape Protection During Construction".

(a) The Contractor shall be responsible for damage to any City tree within the construction area and liable to the City for compensation of damage.

(b) The Contractor must notify the Department of Parks and Parkways, Tree Department at least ten (10) working days prior to the beginning of construction.

(c) The Contractor shall provide a Louisiana Licensed Arborist to perform the necessary tree trimming, root pruning, or removal of any tree or stump on City property. A non-exclusive list of licensed previously approved arborists may be obtained from:

Department of Parks and Parkways
Tree Department
2829 Gentilly Blvd.
New Orleans, LA 70122
Ph. (504) 658-3201
Fax. (504) 658-3227
ParksandParkways@nola.gov

(d) The Licensed Arborist must obtain a permit from the Department of Parks and Parkways, Tree Department prior to working on any City Trees.

(e) The Critical Root Zone (CRZ) of a tree is established on the basis of the trunk diameter. The CRZ is a circular area which extends from the trunk in a radius of 12 inches to every inch diameter of trunk taken at 4.5 feet above grade, or to the outer edge of the dripline, whichever distance is furthest.

(f) Prior to beginning construction, the Contractor must complete trimming trees requiring clearance for all new construction.

(g) The attachment of signs, barricades, equipment or materials in any manner to any tree is prohibited.

(h) Excavation within the CRZ of any City tree is permitted only under existing roadbeds. All other excavation (i.e. street widening, neutral grounds, or sidewalks) within the dripline of any City trees will be inspected by the Department of Parks and Parkways, Tree Department prior to beginning construction.

(i) Trenching within the CRZ of any City tree is not permitted. Boring or hydraulic jacking is acceptable within the dripline if performed according to the following specifications. The boring or jacking must be at minimum depth of thirty inches (30") and begin ten (10') feet from the dripline of the tree. Placement of boring pits and direction of the boring must be approved by the Director prior to beginning construction. Under unusual conditions, the Director may approve alternative methods. Boring or jacking shall be in compliance with Section C728 "jacked or bored pipe."

(j) Where tree roots interfere with placement of new curbs, delete the typical one (1') foot excavation for placement of new curbs within the driplines of any City-owned tree. Hand forming curbs within the dripline of City trees may be required at no direct pay.

(k) Where tree roots interfere with placement of new sidewalk, wherever possible ramp over roots using a minimum four (4") inch gravel bed and filter cloth between the gravel bed and the new concrete. If ramping is not an option, an on site inspection by the Department of Public Works, Department of Parks and Parkways, the Contractor, and the Contractor's licensed arborist will be required prior to excavating for the new sidewalk to determine the extent of root pruning necessary for construction clearance. Do not place expansion joints over roots, only use control joints.

(l) No more than two (2") inches of cut or fill is permitted within the CRZ of any City-owned tree except under existing roadbeds.

(m) Storage is never permitted within the CRZ of any tree. The use of neutral grounds and other City property for the storage of materials, supplies, equipment, or vehicles is permitted only with specific written authorization from the Department of Parks and Parkways Director.

(n) The erection of barricades around the perimeter of tree CRZ may be required. The Contractor is responsible for maintaining the temporary barricades until completion of the project. The tree protection fencing and posts shall be removed upon Substantial Completion and become the property of the Contractor. The minimum barricade requirements shall be the following:

Wooden or rigid chain link barricade of at least five (5’) feet in height.

(o) Tree trimming is defined as the cutting of tree branches. The Parkway and Park Commission Urban Forester will consult the Contractor and the licensed arborist to determine the extent of trimming allowable. Tree trimming will only be performed on tree branches conflicting with construction. No trimming will be allowed that will alter the natural form of a tree.

(p) Root pruning is defined as the cutting or grinding of roots. The Parkway and Park Commission Urban Forester will consult with the Contractor and the licensed arborist to determine the extent of root pruning allowable.

(q) Root trenching is defined as cutting of roots using a trenching machine. The Parkway and Park Commission Urban Forester will consult with the Contractor and the licensed arborist to determine the extent of root trenching allowable.

(r) Root pruning and root trenching will be at No Direct Payment for trees with less than four (4") inch caliper measured six (6") inches off the existing ground.

C719.02 MAINTENANCE OF NEUTRAL GROUNDS:

(a) The Contractor is responsible for restoring the neutral ground to a like or better condition than existed prior to construction. All areas disturbed during construction shall be regraded to a smooth even surface, eliminating ruts and holes. All obstructions such as bricks, concrete, wire, cable, wood, metal, shell, gravel, and other debris must be removed. Pump Sand may be used to backfill low areas to complete grading. Restoration of turf grass is covered in Section C717.

(b) The Contractor is responsible for the maintenance of turf grass and other plant material on neutral grounds within the limits of the entire construction area defined by the project limits on the construction plans and specifications for the duration of the project.

(c) Maintenance shall commence when construction begins or when any supplies, equipment, signs, barricades, or other materials related to the construction are placed on the neutral ground, whichever occurs first; and continue until Final Acceptance.

(d) Maintenance shall primarily include mowing with grass to be maintained no higher than six (6") inches at any time. Intervals between mowing shall not extend beyond three (3) weeks.

(e) Under certain rare circumstances, if newly planted trees or shrubs or other existing plantings requiring maintenance during construction, are inaccessible to Parkway and Park Commission maintenance personnel and equipment for watering, weeding, trimming or other maintenance, the Contractor may be required to perform such maintenance during construction at no Direct Pay.

(f) The Contractor shall be responsible for damage to any City-owned tree, groundcover, or shrub on the neutral ground or other greenspace within the construction area and liable to the City for compensation of damage.

(g) No tree, groundcover, or shrub may be removed from public greenspace without the approval of the Director.

C719.03 INSTALLATION OF NEW AND RELOCATED TREES AND SHRUBS:

(a) Removal from the construction site of trees or shrubs to be relocated shall be accomplished by the use of an appropriately sized tree spade. For trees, the tree spade must be adequate to obtain a minimum of one (1') foot of root ball diameter for each one (1") inch of tree caliper measured one (1') foot off the ground.

(b) The Contractor must contact the Department of Parks and Parkways Landscape Architect at least ten (10) working days prior to the installation of new or relocated trees and shrubs. The Department of Parks and Parkways Landscape Architect will determine and identify the planting sites for new or relocated trees and shrubs.

(c) The Contractor is responsible for ensuring that all trees and shrubs are planted according to locally accepted horticultural practices, including planning hole preparation, soil backfill, fertilizer, mulch, watering, staking, and guying (See Standard Plans). Planting shall be in compliance with the Department of Parks and Parkways Section 02481 “Installation of New Plant Materials”.

(d) The Contractor is responsible for maintenance of any new or relocated trees and shrubs from the time of planting until one year from the date of Final Acceptance of the project.

(e) Maintenance shall include all necessary watering, fertilizing, weeding, pruning, disease and insect control, straightening and adjustment, replacement of dead or unhealthy plants, and other procedures consistent with good horticultural practices which are necessary to insure normal, vigorous and healthy growth of the plant material.

C719.04 MEASUREMENT:

(a) Gravel bed and filter cloth over tree roots shall be measured by square yard.
(b) Tree protection shall be measured per the linear foot.
(c) Tree removal shall be measured per each.
(d) Tree replacement shall be measured per each.
(e) Tree relocation shall be measured per each.
(f) Tree trimming shall be measured per the lump sum.
(g) Root pruning shall be measured per each.
(h) Root trenching shall be measured per each.

C719.05 PAYMENT:

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C719(55)	Gravel Bed and Filter Cloth over Tree Roots	Square Yard
C719(56)	Tree Protection	Linear Foot
C719(57)	Tree Removal (dbh Size, Type)	Each
C719(58)	Tree Replacement (dbh Size, Type)	Each
C719(59)	Tree Relocation (dbh Size, Type)	Each
C719(60)	Tree Trimming	Lump Sum
C719(61)	Root Pruning	Each
C719(62)	Root Trenching	Each

INCIDENTAL CONSTRUCTION II

SECTION C723
GRANULAR MATERIAL

C723.01 DESCRIPTION: This work consists of furnishing and placing batture sand for dressing behind the curb and granular material for other adjustments, in accordance with these Specifications and in conformity with the lines, grades and typical sections shown on the plans and as directed.

C723.02 MATERIALS: Batture sand shall be used for dressing behind the curb. When the cross slope is steep and construction takes place during the rainy season, batture sand shall be replaced by silt clay soil at no additional cost as directed by the Director. For other adjustments, granular material shall be used and conform to subsection 1003.07.

C723.03 MEASUREMENT: Soil dressing behind the curb and granular material shall be measured by the cubic yard, truck measure.

C723.04 PAYMENT: Payment for soil dressing behind the curb and granular material for other adjustments will be made at the contract unit price, including compaction.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C723(52)	Batture Sand for Dressing, Granular Material for other Adjustments	Cubic Yard, Truck Measure

SECTION C724
PAVEMENT REPAIR, JOINT REPAIR, AND CRACK REPAIR

C724.01 DESCRIPTION: This work consists of pavement repair, joint repair and crack repair of existing pavements in accordance with applicable sections of the City Code and these specifications and in conformity with the lines, grades and typical sections shown on the plans or as directed.

C724.02 MATERIALS:

Portland cement concrete shall conform to Section C601.
Asphaltic concrete shall be any type mixture listed in Section C501 or Section C502.
Asphaltic tack coat shall conform to Section C504.
Mix for joint repair shall be Type 3 Wearing Course conforming to Section C501.

C724.03 EQUIPMENT: Equipment furnished shall meet the specification requirements for the types of material used.

C724.04 GENERAL CONSTRUCTION REQUIREMENTS: The Contractor shall remove existing surfacing and base materials and perform all required excavation for pavement repair, joint repair and crack repair. When through traffic is maintained, the Contractor shall complete the replacing of pavement, place the widening material, or fill and compact open areas or trenches, at the end of each day's operation.

Excavation and compaction of the subgrade shall be in accordance with the plans or as directed by the Director. The subgrade shall be compacted uniformly.

Existing surfacing and excess excavation shall be disposed of beyond the right-of-way in accordance with Section C202.

C724.05 SCOPE: The scope of the roadway pavement repair and restoration required is based on the extent of pavement repair required, type of pavement, condition/age of the pavement, and type of street. For purposes of roadway pavement repair scoping the following definitions apply:

Concrete panel - A panel is defined as a homogenous section bound by full original construction joints on each side.

Condition of the pavement – the condition of the roadway pavement on a specific block as reflected by its Pavement Condition as determined using ASTM D6433 - 11: Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys. Pavement Conditions include Excellent, Good, Fair, Poor, Very Poor, and Failure.

Pothole – a contiguous area in the roadway of less than 12 square feet where the pavement exhibits distress and/or is beginning to fail, or has failed, but the base course underneath the pavement has not begun to fail. Potholes shall be repaired in accordance with Section C724.11.

Utility Service Cut – an intentional cut into the roadway surface as part of an excavation that extends through the pavement and is a feature of work for the repair, replacement, installation or other related work on one or more underground utility lines.

(a) Restoration of concrete pavements and pavements with a bituminous wearing surface and concrete foundation. In the case of concrete pavements and pavements with a bituminous wearing surface and concrete foundation, the following shall be required when restoring utility service and other repair cuts regardless of size:

(1) The concrete for restoration of service cuts shall have a compressive strength of at least 4,500 pounds per square inch at 72 hours. On streets with a concrete base or full depth concrete paving, dowelling into the existing concrete pavement shall be employed.

(2) The pavement must be restored by replacement of the full concrete panel in which the cut or part of the cut is made, unless otherwise approved/directed by the DPW Director or his designee.

(3) The concrete and any wearing surface on top of the concrete base shall be saw cut and remove, to a depth equal to that of the pavement to be restored, unless otherwise directed by the DPW Director. Cutouts outside of the trench lines must be normal or parallel to the trench line. Pavement edges shall have vertical face and be neatly aligned with the center.

(4) If the extent of the cut(s) and subsequent pavement restoration is seventy-five percent (75%) or more of the pavement surface area of the street block in which the cut was made, the entire street block from intersection to intersection shall be repaved, unless otherwise approved/directed by the DPW Director.

(b) Restoration of asphaltic concrete pavements. In the case of full depth asphalt roadways, the following shall be required when restoring utility service and other repair cuts regardless of size:

(1) The existing pavement shall be saw cut and removed in a manner that does not damage the base that is to remain in place, for a distance of at least 12 inches on each side of the width of the trench and 12 inches at each end thereof.

(2) In addition to the full-depth restoration of the cut, the street's wearing surface to a minimum depth of 2-1/2 inches shall be removed and replaced on the entire street block, as measured from beginning of intersection to the beginning of intersection, as part of the pavement restoration, unless otherwise approved/directed by the DPW Director, if:

a) The roadway pavement and one or more major utility lines (water, sewer, drainage) have been constructed or reconstructed within the last 5 years (3 years, if the roadway was only resurfaced) and the service cut and subsequent pavement restoration runs

for more than 100 linear feet along the length of the block or covers 25% or more of the pavement surface area of the block; or

b) The service cut and subsequent pavement restoration runs for more than 150 linear feet along the length of the block or covers 50% or more of the pavement surface area of the block, regardless of the age of the pavement.

For purposes of this determination, the restoration of more than one separate cut made within a 12-month period shall be considered as one combined restoration effort.

The Director may grant exceptions to these roadway pavement repair and restoration requirements on a case-by case basis upon written request, subject to applicable City Code requirements.

If the roadway pavement damages/repairs extend into the area of the roadway or curb and no Americans with Disabilities Act (ADA) compliant is present, then an ADA-complaint ramp is required to be installed as part of the repair and restoration work on that corner, except as directed by the Director and except in cases where routine maintenance such as pothole repairs (C724.11), joint resealing (724.09), and crack repairs (C724.08 or C724.10), is being completed.

C724.06 ASPHALTIC CONCRETE REPAIR:

(a) Where a section of an existing asphaltic concrete roadway has deteriorated and needs to be replaced, it shall be completely removed and replaced with full depth asphaltic concrete.

(b) On streets having a bituminous wearing surface, such surfaces shall be removed for a distance of 9 inches on each side of the width of the trench and 9 inches at each end thereof.

(c) If the bituminous surface is on concrete base, the concrete shall be undercut for nine inches to form a keyway having a depth equal to that of the pavement to be restored.

(d) When the bituminous surfacing is on a base other than concrete, it will then be required to cut back the base for nine inches in each horizontal direction.

(e) Unstable pavement shall be removed over cave-ins, areas of contiguous subsidence, overbreaks and small floating sections and is to be treated the same as the main trench.

(f) Cutouts outside of the trench lines must be normal or parallel to the trench line. Pavement edges shall have vertical face and be neatly aligned with the center.

(g) The Director will designate the area of pavement to be removed. A minimum of 2 inches saw cut into the pavement shall be required to ensure a square break of the pavement to be removed.

(h) All pavement within the designated area shall be removed and the subgrade area prepared to receive an eight (8") inch compacted base course. Compacted pumped sand as required shall be used to replace unsuitable subgrade or to fill voids as directed.

(i) Just prior to placing the new asphaltic concrete, the vertical faces of the old asphaltic pavement shall be coated with asphaltic tack coat, and an asphaltic coat shall be applied on the base course. Tack coat **and** prime coat shall conform to all requirements of Sections C504 and C505.

C724.07 CONCRETE PAVEMENT REPAIR:

(a) Where expansion has caused a buckling of the roadway base pavement resulting in a ramp effect in the roadway or where sections of roadway pavement have deteriorated and need to be replaced, sections of roadway pavement are to be completely removed and replaced with High Early Strength Concrete Pavement and subsequent asphalt surfacing as required.

(b) The Director will designate the areas of pavement to be removed. Asphalt surfacing, if any, shall be removed to permit a minimum of two (2”) inches saw cut into the concrete base pavement is required to ensure a square break of the pavement to be removed.

(c) The breaking out shall be done with hydraulic or pneumatic equipment only. No free fall equipment shall be allowed. When breaking the concrete pavement, every attempt shall be made to save a minimum twelve (12) inches of the existing welded wire fabric on each side. In the event that the welded wire fabric cannot be saved, or where none exists, tie bars shall be drilled and epoxy grouted into the existing pavement to allow for a proper tie-in.

(d) All concrete pavement within the designated area is to be removed and the subgrade area prepared to receive an eight (8") inch compacted base course. Compacted pumped sand as required shall be used to bring subgrade to the required elevation. It shall also be used to replace unsuitable subgrade or to fill voids as directed.

(e) Just prior to placing the new concrete, the vertical faces of the old concrete pavement are to be coated with an approved concrete epoxy per A.S.T.M. C 881 Type II. The new roadway pavement shall consist of four thousand (4,000) psi. at three (3) days, High Early Strength Concrete reinforced with 6 X 12 - W 7.5 X W 6.5 welded wire fabric, seventy-seven (77) pounds per one hundred (100) square feet. The new mesh shall be tied to the existing mesh where possible.

(f) Wherever a joint (any type) or a part thereof falls within the affected area, the same shall be reestablished in kind and shall be incidental to the work included as Concrete pavement repair.

(g) After all roadway pavement repairs have been completed at a location, Bituminous Wearing Course material, if required, shall be placed in a continuous operation.

C724.08 CONCRETE JOINT REPAIR:

(a) Where a roadway pavement contraction joint or expansion joint has failed, the roadway pavement and defective joint shall be removed and replaced with a new expansion joint and High Early Strength Concrete Pavement.

(b) The Director shall designate the areas of pavement and joints to be removed. Asphalt surfacing, if any, shall be removed to permit a minimum of two (2") inches saw cut into the concrete base pavement is required to ensure a square break of the pavement to be removed.

(c) The breaking out shall be done with hydraulic or pneumatic equipment only, no free fall equipment shall be allowed. When breaking the concrete pavement, every attempt shall be made to save a minimum twelve (12") inches of existing welded wire fabric on each side. In the event that the welded wire fabric cannot be saved or where none exists, tie bars shall be drilled and epoxy grouted into the existing pavement to allow for a proper tie in.

(d) All concrete pavement within the designated area shall be removed and the subgrade area prepared to receive an eight (8") inch compacted base course. Compacted pumped sand as required shall be used to bring subgrade to the required elevation. It shall also be used to replace unsuitable subgrade or to fill voids as directed.

(e) Just prior to placing the new concrete, the vertical faces of the old concrete pavement are to be coated with an approved concrete epoxy per A.S.T.M. C 881 Type II. The new roadway pavement shall consist of four thousand (4,000) psi. at three (3) days, High Early Strength concrete reinforced with 6 X 12 - W 7.5 X W 6.5 welded wire fabric, seventy-seven (77 lbs.) pounds per one hundred (100) square feet. An expansion joint is to be constructed.

(f) After all pavement and joint repairs have been completed at a location, bituminous wearing course material, if required, shall be placed in a continuous operation.

C724.09 JOINT RESEALING:

(a) This work shall apply for all type of joints requiring sealing.

(b) Clean all joints of contaminants, impurities and old sealants and backer rods, if any, by grinding, saw-cutting or blast cleaning.

(c) Blow out dust, loose particles and other debris from joints with oil-free compressed air.

(d) Install an approved backer rod in joints as required.

(e) Apply an approved joint sealant in a continuous operation to properly fill and seal the joint width.

C724.10 CRACK REPAIR:

(a) Cracks between three-eighth (3/8") and one (1") inch:

(1) A groove about one-half (1/2") inch wide and three-fourths (3/4") inches deep should be made along the crack by sawing or grooving. The equipment must be capable of following closely the path of the crack.

(2) Clean the crack with compressed air. The crack must be free of dust, dirt and other material that might prevent bonding of the seal.

(3) Seal the crack, using hot poured asphaltic-type sealant as specified in subsection C601.04(g)(2).

(b) Cracks greater than one (1") inch:

(1) Clean all cracks of contaminants, impurities and old sealants to the depth required by blast-cleaning.

(2) Coat vertical faces of the cracks with an asphaltic tack coat.

(3) Apply an approved asphaltic sand mix in a continuous operation to properly fill.

C724.11 POTHOLE REPAIR ON ACCESS ROUTES: The work consists of cutting the pavement around the pothole in a rectangular shape, lining with the tack coat, filling with hot mix asphalt wearing course and compacting. Location of repair sites shall be as specified by the Director and shall encompass sufficient work to require a minimum of one (1) ton of asphalt per repair operation.

C724.12 MEASUREMENT:

(a) Pavement repair and joint repair. Pavement repair and joint repair will be measured by the square yard of existing pavement designated to be removed and replaced.

(b) Joint resealing, and crack repair. Joint resealing and crack repair will be measured by the linear foot.

(c) Pothole repair on access routes. Pothole repair on access routes, will be measured by the ton of asphalt.

C724.13 PAYMENT: Payment will be made at the contract unit price.

(a) Asphaltic concrete repair: Payment for asphaltic concrete repair will be made at the contract unit price per square yard, including saw cutting, removal of existing pavement, base preparation excavation, base course, tack coat, prime coat and asphaltic concrete. The cost of pumped sand as mentioned in Subsection C724.05(c) will be paid for by bid item No. C203(58).

(b) Concrete pavement repair. Payment for concrete pavement repair will be made at the contract unit price per square yard, including saw cutting, removal of existing pavement, excavation, base preparation, base course, Portland Cement concrete and welded wire fabric. The cost of pumped sand as mentioned in Subsection C724.06(d) will be paid for by bid item No. C203(58).

(c) Concrete joint repair. Payment for concrete joint repair will be made at the contract unit price per square yard, including the work mentioned in Subsection C724.12(b) and installation of new joint assembly.

(d) Joint resealing. Payment for joint resealing will be made at the contract unit price per linear foot including the works described in Subsection C724.08.

(e) Crack repair. Payment for crack repair will be made at the contract unit price per linear foot, including the works described in Subsection C724.09.

(f) Pothole repair on access routes. Payment for pothole repair on access routes will be made at the contract unit price per the ton including the works mentioned in Subsection C724.10.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C724(51)(A)	Asphaltic Concrete Repair	Square Yard
C724(51)(B)	Concrete Foundation Repair with Asphalt Overlay	Square Yard
C724(51)(C)	Concrete Pavement Repair	Square Yard
C724(53)(A)	Concrete Joint Repair	Square Yard
C724(53)(B)	Joint Resealing	Linear Foot
C724(54)(A)	Crack Repair Between 1/8" and 1/2" Wide	Linear Foot
C724(54)(B)	Crack Repair Greater than 1" Wide	Linear Foot
C724(55)	Pothole Repair on Access Routes	Ton

SECTION C727
MOBILIZATION

C727.01 DESCRIPTION: This work consists of preparatory work and operations, including those necessary for movement of personnel, equipment, supplies and incidental to the project site; the establishment of offices, buildings and other facilities necessary for work on the project; the cost of bonds and any required insurance; and other preconstruction expenses necessary for start of the work excluding the cost of construction materials.

C727.02 PAYMENTS:

(a) When the contract does not include a pay item for mobilization, no direct payment will be made for mobilization.

(b) When the contract contains a pay item for mobilization, payment will be made at the contract lump sum price, subject to the following provisions:

Partial payments for mobilization will be made in accordance with the following schedule up to a maximum of ten (10%) per cent of the original contract amount, including this item, and payment of any remaining amount will be made upon completion of all work under the contract.

Percent of Total Contract Amount Earned		Allowable Percent of the Lump Sum Price For the Item
1st Partial Estimate	up to	25 **%**
10 **%**	up to	50 **%**
25 **%**	up to	75 **%**
50 **%**	up to	100 **%**

No payment adjustments will be made for this item due to changes in the work. Additional Mobilization cost occasioned, by a plan change, if approved, will be paid for within the Plan Change.

Nothing herein shall be construed to limit or preclude partial payments otherwise provided by the contract.

Payment will be made under:

ITEM NO.	**PAY ITEM**	**PAY UNIT**
C727(51)	Mobilization	Lump Sum

SECTION C728
JACKED OR BORED PIPE

C728.01 DESCRIPTION: This work consists of furnishing and installing pipe in embankments at the locations shown on the plans by jacking or boring in accordance with these specifications.

C728.02 MATERIALS: Pipe and joint materials shall conform to Section C701 for drain lines, C741 for water mains and C742 for sewer lines.

C728.03 CONSTRUCTION REQUIREMENTS: In general, pipes 30 inches diameter and greater shall be jacked, and pipes less than 30 inches diameter shall be bored.

The work shall begin at the outfall end of pipe when possible. When the grade at the jacking or boring end is below ground surface, suitable pits or trenches shall be excavated for conducting operations and placing joints of pipe. Adequate sheeting and bracing shall be provided to prevent earth caving.

For pipe with bell joints, if the outside diameter of pipe bell exceeds the outside diameter of pipe barrel by more than 1 inch, pipe shall be either cased or pressure grouted its full length. The casing shall be an approved type and size, and shall be furnished and installed by the Contractor in accordance with these specifications. Pressure grouting shall be performed with approved materials placed by approved methods.

The method used shall be such as not to weaken or damage the embankment. The Contractor shall furnish to the Director for approval a plan showing the proposed procedure, including backstop or jacking frame arrangement, pipe guides, position of jacks and jacking head. Approval of this plan shall not relieve the Contractor from responsibility to obtain the desired result.

(a) Jacking: Heavy duty jacks suitable for forcing pipe through the embankment shall be provided. Even pressure shall be applied to all jacks and shall be transmitted to the pipe end through a jacking head. The jacking head shall be designed so that pressure is uniformly applied around the ring of the pipe. Backstop or jacking frame shall be adequate to resist pressure of the jacks under load. Pipe shall be set on guides properly fastened together to support the pipe in the proper direction at correct grade. Suitable cushioning material, such as plywood, shall be provided between sections of concrete pipe.

Material shall be excavated ahead of the pipe and shall be removed through the pipe. Excavation shall not extend more than 2 feet beyond the forward end of pipe. When the character of embankment material dictates, the distance shall be reduced to prevent the embankment from being damaged. Excavated material shall be disposed of in accordance with Subsection C202.02.

Excavation on the underside of pipe, for at least 1/3 the circumference of pipe, shall conform to the contour and grade of the pipe. A clearance of not more than 2 inches may be provided for the upper half of pipe, tapered to zero at the point where excavation conforms to contour of pipe.
A steel cutting edge may be used around the forward end of pipe, constructed so that it will transmit pressures uniformly around the ring of the pipe.

Jacking shall continue without interruption, to prevent pipe from becoming firmly set in the embankment.

Pipe shall not vary horizontally or vertically by more than 1 inch in 10 feet from established line and grade. Any variation shall be regular, and no abrupt changes in direction will be permitted. Any pipe damaged or misaligned in jacking operations shall be removed and replaced by the Contractor at no direct pay.

(b) Boring: Boring shall be done mechanically, using a pilot hole approximately 2 inches in diameter. The pilot hole shall extend through the embankment and shall be checked for line and grade before boring begins. Variations from line and grade shall not exceed those specified for jacking. The pilot hole shall serve as centerline of the larger diameter hole to be bored.

The use of water and other fluids with boring operations will be permitted only to lubricate cuttings. Jetting will not be permitted.

In unconsolidated soil formations, a gel-forming colloidal drilling fluid consisting of at least ten (10%) percent high-grade, bentonite may be used to consolidate cuttings of the bit, seal walls of the hole, and furnish lubrication for subsequent removal of cuttings and installation of pipe.

Overcutting in excess of 1 inch shall be remedied by pressure grouting the entire length of the installation.

Pipe shall be joined as specified in Section C701 for drain lines, C741 for water mains and C742 for sewer lines.

C728.04 MEASUREMENT: Quantities of jacked or bored pipe for payment will be the design lengths as specified on the plans and adjustments thereto. Design quantities will be adjusted if the Director makes changes to adjust to field conditions, if plan errors are proven, or if design changes are made. Required excavation, sheeting, bracing, falsework, casing, joint materials and grouting will not be measured for payment.

C728.05 PAYMENT: Payment for jacked or bored pipe will be made at the contract unit price per linear foot under:

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C728(51)	Jacked or Bored Pipe (Size, Type, Class or Thickness)	Linear Foot

SECTION C729
TRAFFIC SIGNS AND DEVICES

C729.01 DESCRIPTION: The Contractor shall furnish and install traffic signs (street edge signs), street name signs and project signs with accessories and posts of specified materials, sizes, shapes, weights and designs.

In general, the work and materials shall conform to the MUTCD as modified by these specifications or as shown on the plans.

Signs shall be fabricated in an approved plant. The fabrication Contractor shall show evidence of successful experience in fabrication and erection of quality reflectorized signs.

The term legend shall mean border strip, letters, numerals and symbols which convey the message on signs.

C729.02 MATERIALS: Materials shall be new stock conforming to the following:

(a) Sign and Marker Sheeting: Sheeting material for sign panels, delineators and markers shall conform to LaDOTD Section 1015. Reflective sheeting material shall be either ASTM Type I, ASTM Type II or ASTM Type III, as specified. When not specified, either ASTM Type I, Type II or Type III may be furnished.

(b) Ferrous Metal: Ferrous metals shall conform to LaDOTD Subsection 1015.02(a). Ferrous metal shall be galvanized in accordance with LaDOTD Section 811.

(c) Aluminum: Aluminum sign panels shall conform to LaDOTD Subsection 1015.04(a).

(d) Fittings: Structural bolts, nuts, washers and miscellaneous hardware shall conform to LaDOTD Subsection 1015.02.

(e) Flexible Sign Posts: Flexible posts for small signs, markers and delineators shall conform to LaDOTD Subsection 1015.03.

C729.03 GENERAL REQUIREMENTS: The Contractor has the option of furnishing either steel or aluminum posts. Sign panels shall be aluminum. Before beginning work, the Contractor shall notify the Director in writing as to the combination of signing materials he proposes to furnish. The same combination of signing materials shall be used throughout the project.

C729.04 FABRICATION OF SIGNS AND MARKERS:

(a) General: The completed product shall have a surface free of cracks, blisters, blemishes and wrinkles.

Metal fabrication including shearing, cutting and punching of holes shall be completed prior to surface treatment of metal and application of sheeting. Metal panels shall be cut to size and shape and shall be free of buckles, warps, dents, cockles, burrs and defects resulting from fabrication. Surface of sign panels shall be flat.

Splice plates joining sign panels shall not extend behind horizontal sills. Aluminum panels shall be a nominal 0.080 inch thick.

(b) Surface Treatment: Surface treatment shall be in accordance with approved recommendations of the reflective sheeting manufacturer.

(c) Sheeting Application: Application of sign face and legend sheeting shall be in accordance with approved recommendations of the reflective sheeting manufacturer. Unless otherwise approved in writing, reflective sheeting shall be applied to panels in such a manner that there are no horizontal splices.

Legend shall be of the shape, size, dimension and stroke specified in the MUTCD and sign face shop drawings. Legend shall be applied in accordance with LaDOTD Subsection 1015.05.

(d) Object Markers and Delineators:

(1) Object Markers: Object markers shall be yellow reflectorized material conforming to LaDOTD Subsection 1015.05 and low gloss black nonreflectorized material conforming to LaDOTD Subsection 1015.06 or 1015.07, mounted on nominal 0.080 inch thick aluminum panels.

(2) Delineators: Delineators shall be ASTM Type III reflective sheeting (silver, red or yellow, as specified) conforming to LaDOTD Subsection 1015.05 applied to properly treated base panels, punched or sheared to specified dimensions for rigid steel posts or applied directly to flexible posts.

(e) Packaging: Before being packed, signs shall be allowed to stand for at least 12 hours after completion of screening. Signs shall be slipsheeted and packed in such manner as to ensure their arrival at their destination in an undamaged condition. Packaged signs shall not be permitted to become wet during storage or shipment.

C729.05 STREET NAME SIGNS: The Contractor shall supply erect street name signs complete, in place, according to the provisions below:

(1) Sign Dimensions:

8" High or 12” High, as specified by the Director.

24", 30" or 36" Long.
No faces longer than 36".

(2) Sign Material: Aluminum plate, 0.080 inch thick with all corners rounded on approximately 3/4" radius. All holes 7/32".

(3) Sign Legend and Border: See standard plans.

(4) Color: See standard plans.

(5) Sign Post: Galvanized steel, two (2 lb/ft) pounds per foot, U-channel. The sign post must be installed with seven (7') foot vertical clearance and three (3') feet of post underground.

(6) Bracket and Hardware: Bracket (if needed) and hardware in galvanized steel, approved by the Department of Public Works.

(7) Sign Locations: The number and location of street name signs shall be approved by the Traffic Engineer of the Department of Public Works. In principle, all existing vertical street name signs shall be replaced with new horizontal street name signs. All old signs, damaged or illegible, shall be replaced.

C729.06 PROJECT SIGNS: The Contractor shall supply erect project signs, complete in place according to the provisions, as detailed in the project specifications.

C729.07 CONSTRUCTION REQUIREMENTS: When removal of existing signs is required, the Contractor's sign removal operations shall be coordinated as directed with new sign construction to provide for adequate signing to be in place at all times.

(a) Sign Locations: Sign support locations shall be as shown on the plans or as directed. Locations which are obviously improper because of topography, existing appurtenances or other conflicting conditions will be adjusted to the closest desirable location. The Contractor shall determine elevations for post length determinations at the established sign support location.

(b) Sign Positioning:

(1) Traffic Signs: Traffic signs shall be constructed with sign faces vertical. Sign faces, other than parking regulations, located less than 30' from the edge of the travel lane shall be placed at a 93° angle from the center of the travel lane. Sign faces located 30' or more from the edge of the travel lane shall be placed at an 87° angle from the center of the travel lane. Parking signs shall be placed at a 45 degree angle from the center of the travel lane. Where the lanes divide or on curves or grades, sign faces shall be oriented to be most effective both day and night and avoid specular reflection.

(2) Delineator, Object Marker and Milepost Assemblies: These assemblies shall be placed at least 2' beyond the outer edge of roadway shoulder, 2' beyond the face of curb, or in the line of guard rail.

(3) Vertical and Horizontal Clearances: The bottom of the sign shall be a minimum of 7' above the existing terrain.

Minimum horizontal clearance from edge of roadway to any ground sign shall be as shown on the plans or as directed.

(c) After erection, sign faces shall be cleaned to allow adequate visibility of the sign.

C729.08 ACCEPTANCE OF SIGNS: After installation of signs is complete, the Traffic Engineer of the Department of Public Works will inspect the signs, sign faces, mounts, installations, hardware and matters relating to the requirements of this Section for conformance to applicable plans, standards and project specifications.

Color match, uniformity and spacing of legend, specular glare and, sign type and design will be inspected for conformance to plans and specifications. When specular reflection is apparent on any sign, its positioning shall be adjusted by the Contractor to eliminate this condition. Signs shall be clean at the time of inspection. Reflective sheeting shall be free of cuts, scratches, breaks or other defects which might allow moisture to infiltrate and damage reflective cells. Nonstandard or otherwise unacceptable signs and traffic control devices shall be replaced or repaired as directed by the Director. The Contractor will be required to correct damage that is discovered at the time of the sign inspection.

C729.09 MEASUREMENT: Traffic signs, street name signs, project signs, delineators and object marker assemblies shall be measured per each.

Concrete footing for securing sign posts will not be measured for payment.

C729.10 PAYMENT: Payment for installation of traffic signs, project signs, delineators and object marker assemblies shall be made at the contract unit price per each, including signs, posts and footing to complete the item in place.

Payment for installation of street name signs shall be made at the contract unit price per each, including four signs at each post, brackets, hardware, posts and footing to complete the item in place.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C729(51)	Traffic Sign	Each
C729(54)	Delineator Assembly	Each
C729(66)	Object Marker Assembly	Each
C729(71)(A)	Street Name Sign on Existing Post	Each
C729(71)(B)	Street Name Sign on New Post	Each
C729(72)	Project Sign	Each

SECTION C731
RAISED PAVEMENT MARKERS

C731.01 DESCRIPTION: This work consists of furnishing and placing raised pavement markers in accordance with plan details.

C731.02 MATERIALS:

(a) Markers: Markers shall conform to LaDOTD Subsection 1015.09. The same product shall be used throughout the project. Markers shall be the specified class, type, color, size and shape.

(b) Adhesive: Markers shall be placed with bituminous adhesive on asphaltic surfaces and epoxy adhesive on portland cement concrete surfaces.

(1) Bituminous Adhesive: Bituminous adhesive shall conform to LaDOTD Subsection 1015.09(c)(2).

(2) Epoxy Adhesive: Epoxy adhesive shall be Type V epoxy resin system conforming to LaDOTD Subsection 1017.02. Epoxy components shall be mixed in equal parts by volume. Adhesive shall be mechanically mixed and dispensed, unless hand methods are permitted.

C731.03 CONSTRUCTION REQUIREMENTS:

(a) Weather Limitations: Markers shall not be applied when there is moisture on the surface.

(1) Epoxy Adhesive: When a normal set adhesive is used, application of markers will not be permitted at ambient air temperatures less than 50°F. When a rapid set adhesive is used, application of markers will be permitted at ambient air temperatures between 35°F and 50°F, provided adhesive is adequately heated to obtain proper viscosity for mixing and application, and provided adhesive is identified as a rapid set type on container labels and Certificates of Delivery.

(2) Bituminous Adhesive: Markers shall be applied when the ambient air temperature is 50°F or greater.

(b) Cleaning of Surfaces: Surfaces on which markers are to be applied shall be cleaned of all materials that may reduce the bond of adhesive. Surfaces shall be cleaned by blast cleaning or other approved methods which do not damage the surface; however, blast cleaning equipment shall be provided with positive cutoff controls. Surfaces shall be maintained in a clean dry condition until placement of markers.

(c) Application of Markers: Surfaces on which markers are to be placed shall be blown dry immediately prior to marker placement. Markers shall be applied to surfaces with adhesive in accordance with the manufacturer's recommendations.

(1) Epoxy Adhesive: Voids in a cured undisturbed sample approximately 1/16 inch thick from the extrusion nozzle shall not exceed 4 percent by volume. Machine mixer and applicator shall be capable of accurately and uniformly proportioning the two components in a 1 to 1 ratio within five (5%) percent by volume of each component (i.e., within 47.5 to 52.5 percent for each component). Periodic checks of proportioning equipment shall be made to determine the actual ratio of components. This shall be done by placing containers in front of the mixing chamber and measuring the actual volume of each component. Equipment shall be arranged so it is possible to bypass the mixer to perform these periodic checks. Temperature of adhesive shall be maintained between 70°F and 110°F before mixing. The temperature shall be adjusted to prevent excessive flow of epoxy from the marker when installed. The area of the epoxy adhesive bed shall be equal to the bottom area of marker. Adhesive shall be applied in sufficient quantity to cause excess adhesive to be forced out around the perimeter of the marker. Voids in markers with an open grid pattern on bottom shall be filled with adhesive immediately prior to placement.

(2) Bituminous Adhesive: The adhesive shall be heated and melted in either thermostatically controlled double boiler type units utilizing heat transfer oil or thermostatically controlled electric heating pots. The melter/applicator unit shall be suited for both melting and pumping application through heated applicator hoses. The adhesive shall be heated to between 375°F and 425°F and applied directly to the pavement surface from the melter/applicator by either pumping or pouring. The area of the bituminous adhesive bed shall be a minimum of 6 inches in diameter. Markers shall be applied to the adhesive within 10 seconds. The marker shall be placed in the adhesive bed by applying downward pressure until the marker is firmly seated. Adhesive on exposed surfaces of markers shall be immediately removed with soft rags moistened with mineral spirits or kerosene. Markers shall be protected against impact until the adhesive has hardened. The adhesive may be reheated and reused; however, the pot life at application temperatures shall not be exceeded.

C731.04 MEASUREMENT: Reflectorized raised pavement markers will be measured by counting the number of markers furnished, placed and accepted.

C731.05 PAYMENT: Payment for reflectorized raised pavement markers will be made at the contract unit price under:

ITEM NO.	PAY ITEM	PAY UNIT
C731(52)	Reflectorized Raised Pavement Markers	Each

SECTION C732
PLASTIC PAVEMENT MARKINGS

C732.01 DESCRIPTION: This work consists of furnishing and placing reflective pavement markings of hot applied thermoplastic at the locations shown on the plans or as directed, in conformance with the MUTCD, plan details and these specifications.

C732.02 MATERIALS: Thermoplastic marking material shall be a plastic compound reflectorized by internal and external application of glass beads, conforming to LaDOTD Subsections 1015.10 and Subsection 1015.13, respectively. Width and color of markings shall be as specified.

Thermoplastic material shall be delivered in containers of sufficient strength to permit normal handling during shipment and transportation without loss of material. Approved heat-degradable containers that can be placed in heating kettles along with the plastic material will be permitted. Each container shall be clearly marked to indicate color of material, process batch number, name of manufacturer and date of manufacture. Glass beads used in drop-on application to molten plastic shall be shipped in sacks of multi-ply paper or burlap, both with a polyethylene liner. The sacks shall be strong enough to permit handling without damage, and have a capacity of 50 pounds of beads. Sacks shall be sufficiently water-resistant so that beads will not become wet or caked in transit.

C732.03 CONSTRUCTION REQUIREMENTS:

(a) Equipment for Thermoplastic Markings: Material shall be applied to pavement by either spray or extrusion methods. Equipment shall provide continuous mixing and agitation of material. Conveying parts of equipment between main material reservoir and discharge mechanism shall prevent accumulation and clogging. Parts of equipment which come in contact with the material shall be easily accessible for cleaning and maintaining. Mixing and conveying parts shall maintain material at the application temperature. Equipment shall be capable of producing continuous uniformity in dimensions of stripes. Equipment shall be capable of producing various widths of traffic markings. Glass beads shall be applied to the molten surface of completed stripes by an automatic bead dispenser attached to the striping machine in such a manner that beads are dispensed simultaneously with the thermoplastic material at a controlled rate of flow on installed lines. The glass bead dispenser shall be equipped with an automatic cutoff control synchronized with cutoff of thermoplastic material. Kettles to hold a minimum of 1,000 pounds of material shall be provided for melting and heating thermoplastic material. Kettles shall be equipped with automatic temperature control devices so that heating can be done by controlled heat transfer liquid rather than direct flame, to provide positive temperature control and prevent overheating of material. Applicators and kettles shall be equipped and arranged to comply with requirements of the National Board of Fire Underwriters. Applicators shall be maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. Applicator equipment shall consist of a motorized mobile unit capable of installing traffic stripes either left or right of applicating unit so that only one lane for traffic will be occupied during installation.

Applicators shall produce sharply defined lines and provide means for cleanly cutting off stripe ends and applying broken lines. The applicator unit shall have a tachometer or other approved device to

insure uniform application at the required rate. It shall be adjustable for applying 1, 2, or 3 adjacent lines simultaneously at the specified spacing. The ribbon extrusion die or shaping die shall not be more than 2 inches above the roadway surface during application.

(b) Weather Limitations: Application of markings will not be permitted when there is excessive pavement moisture or when the surface temperature or ambient temperature is below 50°F. The pavement shall be considered excessively moist when it is visibly wet or when a 1 square foot piece of polyethylene film condenses moisture after being placed on the pavement surface for 15 minutes.

(c) Cleaning of Surfaces: Surfaces on which markings are to applied shall be cleaned of materials that may reduce adhesion of the thermoplastic marking materials to the pavement. Cleaning shall be done by blast cleaning or grinding. Surfaces shall be kept clean until placement of markings.

Existing thermoplastic markings on the roadway that are not flaking or peeling do not require removal prior to placement of new thermoplastic markings. When thermoplastic markings will replace the existing painted markings, the existing painted markings do not require removal prior to applying new thermoplastic markings, provided the existing painted markings are not flaking or peeling.

Existing lane line pavement markings on bridges shall be removed prior to applying new markings.

When preformed plastic markings will replace any of the existing markings, the existing markings shall be removed prior to applying the preformed plastic markings.

Removal shall be accomplished by methods which will not damage the pavement or bridge deck. Removal shall be to such extent that 75% of the pavement surface or bridge deck under the markings is exposed. At the end of each day's operations, temporary pavement markings conforming to Section C713 shall be placed in areas where existing markings have been removed and new markings not placed. Temporary pavement markings shall be satisfactorily removed prior to resuming plastic striping operations.

(d) Application of Markings: Material shall be installed in specified widths from 4 inches to 24 inches. Finish lines shall have well defined edges and be free of waviness. Measurements shall be taken as an average through any 36-inch section of line. Longitudinal lines shall be offset approximately 2 inches from longitudinal joints. A tolerance of +1/2 inch and -1/8 inch from the specified width will be allowed, provided the variation is gradual. Segments shall square off at each end without mist or drip. Transverse variations from the control device up to 1 inch will be allowed provided the variation does not increase or decrease at the rate of more than 1/2 inch in 25 feet. Lines not meeting these tolerances shall be removed and replaced at no direct pay.

Thickness of material, not including drop-on beads, shall be not less than 90 mils for lane lines, edge lines and gore markings and not less than 125 mils for crosswalks, stop lines and word and symbol markings. A binder sealer material recommended by the thermoplastic marking manufacturer shall be applied to the pavement surface or bridge deck prior to application of the

thermoplastic markings. Thermoplastic material shall be applied either by extrusion at 390°F to 450°F or by spray at 410°F to 450°F. Immediately after application of the markings, glass beads shall be applied at a minimum rate of 300 pounds per mile. Material shall not scorch or discolor when kept at this temperature range for four hours.

C732.04 MEASUREMENT:

(a) Plastic Pavement Striping: Plastic striping will be measured by the linear foot of striping, exclusive of gaps.

(b) Plastic Pavement Legends and Symbols: Plastic legends and symbols will be measured by lump sum. Symbols shall include all letters, lines, bars or markings necessary to convey the message at each location.

C732.05 PAYMENT: Payment for plastic pavement markings and removal of existing markings will be made at the contract unit prices.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C732(52)	Plastic Pavement Striping (Solid Line)(___" Width)	Linear Foot
C732(53)	Plastic Pavement Striping (Broken Line)(___" Width)	Linear Foot
C732(54)	Plastic Pavement Legends and Symbols	Each
C732(55)	Plastic Pavement Striping Removal	Linear Foot

SECTION C736
RESTORATION OF TRAFFIC SIGNAL LOOP DETECTORS IN CONNECTION WITH ROADWAY REHABILITATION

C736.01 GENERAL: Vehicle Loop detectors shall detect the presence or passage of every vehicle which passes over the interconnected loop embedded in the surface roadway. Loops shall be of the size and shape indicated in the plans. Loop construction shall be in conformance with the details in the plans and these specifications.

C736.02 TESTING: Each Loop shall be tested for continuity, resistance, inductance and insulation leakage. For the latter, a 600-volt Megohmeter shall be used to measure resistance between one end of lead-in wire and the nearest reliable electrical ground. Resistance to ground shall be greater than 10 megohms. Inductance shall be checked with an approved Loop Tester supplied by the Contractor.

This test shall be made with no vehicle over the Loop. The Contractor shall perform these tests in the presence of the authorized representative of the Department of Public Works unless written authorization is given by the authorized representative for permission to do otherwise. Tests shall be made from the pullbox where the Loop wires tie into the lead-in, and at the controller cabinet where the lead-in cable is terminated. The Contractor shall record the location, data and readings taken, noting satisfactory results have been obtained. Any Loop failing to pass these tests shall be recut at the Contractor`s expense.

C736.03 SAW CUT: Loop wire shall be installed in saw cuts in the roadway made by a diamond or abrasive power saw. The slot width and depth shall be as indicated on the plans; however, in all cases, the slot shall be between 1/4" to 3/8" wide and 1-1/2" to 2-1/2" deep.

The saw cuts shall be overlapped so that the slot has full depth at all corners. All corners where Loop wires turn shall be diagonally cut so that there are no jagged edges or protrusions which may damage the wire. Prior to installation of the wire, the saw cuts shall be cleaned and dried. There shall be no cutting dust, grit, oil, moisture or other contaminants in the saw cut.

C736.04 LOOP WIRE: Loop wire and lead-in to the pull or aerial junction box shall be AWG #14 stranded Type XHHW gasoline and oil resistant single conductor insulated for 600 volts. XHHW wire shall meet the requirements of the latest edition of NEMA Standard WC-7 and Section 310 of the N.E.C. and IMSA 51-3, 1984. The Loop wire shall not have any cuts, nicks, abrasions or breaks in the insulation before or after installation in the slot. Any wire having defects in the insulation shall be replaced at no additional cost to the City.

Loop wire and lead-in to the pullbox or Loop detector shall be one continuous length of wire with no splices.

Loop lead-in from the curb or edge of pavement to the pullbox or conduit shall be installed in one inch conduit as indicated on the plans. The Loop lead-in for each loop shall be run in separate saw cuts from the loop to the pullbox.

The two loop lead-in wires shall be twisted two to five turns per foot from the loop to the point of termination.

The wire shall be placed in the bottom of the slot so that there are no kinks, curls, straining or stretching of the insulation. Subsequent turns of the loop shall be placed to assure vertical stacking of the wires.

Special care shall be taken in seating the wires so that the insulation will not be broken or abraded. No sharp tools such as screwdriver or metal object shall be used for this operation.

Loop location and configuration shall be as shown on the plans unless otherwise directed.

C736.05 LOOP SEALANT: All saw cuts with the wire installed shall be inspected and approved by the authorized representative of the Department of Public Works, unless written authorization is given by the authorized representative for permission to do otherwise, before the sealer is installed.

The sealant shall be encapsulant one-part urethane elastomeric compound requiring no mixing, measuring or application of heat prior to or during its installation. The sealant encapsulant shall be designed specifically for sealing detector loops in concrete or asphalt and have flow characteristics which insure complete encapsulation of the wires.

The encapsulant loop sealant shall have the ability to enable vehicular traffic to pass over the properly filled saw cut immediately after installation without stringing of the material. The encapsulant shall form a surface skin within 60 minutes at 75^{o}F at 50% Relative Humidity (RH).

The cured sealant encapsulant shall exhibit resistance to effects of weather, vehicular abrasion, motor oil, gasoline, antifreeze solution, brake fluid, deicing chemicals and salt normally encountered, in such a manner that the performance of the vehicle detector loop wire is not adversely affected. The sealant shall maintain its protective characteristics throughout the ambient temperature ranges experienced within the continental United States.

The Contractor shall install the sealer in strict adherence to the manufacturer's recommendations and these specifications.

The sealant shall be designed for roadway installation when the surface temperature is between 40^{o}F and 100^{o}F. No sealer shall be installed during inclement weather or under any condition which might introduce moisture into the saw slots.

A minimum of 75% of the sealant weight shall remain solid with no volume shrinkage after all solvent has evaporated. The sealant shall have an installation viscosity range of 5,000 to 85,000 cps.

The tack-free drying time shall be a maximum of 24 hours. The cure time of 1/8" thick film shall be a maximum of 30 hours. However, the under filling of the saw cut from 1/8" to 1/4" shall permit opening of the intersection immediately after the work has been completed.

The sealant shall have an elongation at break point property between the range of 400% to 700%. The tensile strength of the sealant shall be a minimum of 800 psi.

C736.06 SHIELDED CABLE: Shielded cable shall conform to IMSA Specification 50-2, AWG #14.

Shielded cable shall be installed continuous from the loop wire splice in the curbside pullbox to the cabinet mounted terminal strip allocated for detector lead-in cable termination. No splices shall be allowed between these points. The Contractor shall take adequate measures to protect cable from damage during handling and installation.

All splices in pullboxes must be carefully made to insure constant low resistance and must be insulated by means of a plastic casting splice kit to render a waterproof joint. Connections shall be soldered. The shielded drain wire in the pullbox shall be cut off flush and waterproofed so as not to come in contact with the pullbox or ground. The shielded drain wire shall be terminated with a ground wire and solidly grounded at the amplifier.

C736.07 MEASUREMENT: Loop detectors will be measured by the Linear Foot of sawed lot. Measurement will include sawing, installed wire, shielded cable and sealing. Measurement will be made from the curbside pull box and once around each loop perimeter.

C736.08 PAYMENT: Payment for loop detector will be made at the contract unit price under:

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C736(59)	Loop Detector	Linear Foot

SECTION C740
CONSTRUCTION LAYOUT

C740.01 DESCRIPTION: This section sets forth requirements for all construction layouts. The work consists of establishing lines and grades, taking all cross sections, and staking out the construction work in accordance with these specifications, plan details, and as directed. This work also includes but is not limited to, the layout of pavement striping and raised pavement markers, setting of line and grade for construction of super elevated curves or other applicable work items, and providing assistance in the coordination of utility relocation activities to ensure that the placement of relocated facilities will not conflict with required construction.

C740.02 CONSTRUCTION REQUIREMENTS: The Contractor shall establish all lines and grades and stake out all work on this project, including sufficient vertical and horizontal points for utility relocations for use by the Department and others.

The project survey control and horizontal alignment are based on NAVD 88 and the Louisiana State Plane Coordinate System (NAD-83--92), as determined by GPS observation. The construction plans and/or right-of-way map depicts the coordinates of sufficient survey control points to establish or re-establish horizontal control throughout the length of the project. The Contractor shall employ such methods as approved by the Director for the location of the project alignment and other necessary survey control points in accordance with currently acceptable surveying standards and practices. The Contractor shall verify the values of any intermediate bench marks shown on the plans, by checking against these bench marks.
The Contractor shall employ qualified engineering and surveying personnel experienced in layout and construction of highways and bridges to correctly establish and keep complete and comprehensive notebook records (field books) of all lines and grades necessary from initial layout to final acceptance.

The Contractor shall provide sufficient qualified staff, of at least one employee, on site during utility relocation periods. The Contractor shall provide any necessary survey work to ensure there are no utility conflicts with required construction. The Contractor shall provide daily documentation of utility relocation activities for incorporation into the project diaries.

The Contractor shall be liable for the accuracy of the initial layout and all subsequent alignment and elevations and shall, at no additional pay, rebuild, repair or make good any portion of the work found to be incorrectly positioned either horizontally or vertically at any time before final acceptance.

The Contractor shall notify the Director immediately of any apparent errors in the plans. The Contractor shall compute and provide template grades to the Director. In order to obtain pipe order lengths, the appropriate grades shall be provided to the Director two weeks in advance of the work.

Computer generated printouts will be allowed when approved. Stationing for overlay projects shall be set using an approved measuring device that is accurate to 0.1 percent. Stakes shall be placed every 100 linear feet and maintained by the Contractor throughout construction.

Layout of striping, raised pavement markers, and signs shall be done by methods approved by the Director prior to placement.

C740.03 MEASUREMENT: Measurements for determination of pay quantities will be made by the Department. Construction layout and utility oversight and coordination will be measured per lump sum, which will include all labor, materials and incidentals required to complete the work. No changes in the lump sum contract price will be made for minor additions or deletions to the scope of work.

C740.04 PAYMENT: Payment for construction layout, and utility oversight and coordination will be made at the contract lump sum price in accordance with Table 740-1.

Payment shall be made under:

Table C740-1

Construction Layout Payment Schedule

Percent of Total Contract Amount Earned	Allowable Percent of Lump Sum Price for Construction Layout
Staffed	25
25	50
50	80
75	95
100	100

ITEM NO.	PAY ITEM	PAY UNIT
C740(51)	Construction Layout	Lump Sum

SECTION C741
WATER MAINS

Water mains shall conform to all of the requirements of the General Specifications and Standard Plans of the Sewerage & Water Board (S&WB) of New Orleans (the latest revision), except as noted.

C741.01 GENERAL:

(a) The Contractor shall furnish all labor, supervision, materials and equipment required for the replacement of existing water mains with new mains, including house connections, valves, manholes, hydrants, and making necessary offsets, as required.

(b) All workmanship and materials shall conform with section F of the General Specifications of the S&WB and Dwg. No. 7260-W except as noted herein.

(c) The Contractor shall notify the Chief of Network Engineering of the Sewerage & Water Board in writing a minimum of three working days and not more than ten working days in advance of starting the job.

(d) All tie-ins to the existing water mains shall be made by the Contractor. The S&WB Forces shall close all valves and witnessing the tests and chlorination of the mains. Contractors shall not operate S&WB valves. Prior to making tie-ins, the Contractor shall notify residents at least 48 hours in advance of interruption of service.

(e) The existing utilities shown are approximate. The Contractor shall verify the location of utilities in the field and shall protect them from damage.

(f) Water and sewer services damaged by the Contractor shall be repaired by the S&WB at the Contractor's expense. The Contractor will be furnished a list of the locations of water and sewer house connections. This listing is from S&WB records and the listed locations could vary from the actual locations. It is the Contractor's responsibility to verify the location of these services and to protect them from damage. Furnishing this information should not be construed as a waiver of the Contractor's liability, but rather an attempt on the part of the S&WB to minimize the Contractor's hazards

C741.02.1 MATERIALS:

(a) All new water mains 4-inch through 12-inch, unless otherwise noted, shall be solid wall DR 18 Polyvinyl Chloride (PVC) pipe manufactured in accordance with AWWA C900, latest edition, and shall be U.L. listed. New water mains 16-inch through 30-inch, unless otherwise noted, shall be solid wall DR 18 PVC pipe manufactured in accordance with AWWA C905, latest edition, and shall be U.L. listed. Pipe shall be furnished in standard lengths (min. 16 feet) with integral cast bells or couplings using elastomeric gaskets conforming to the AWWA C900 or AWWA C905 specification.

(b) Ductile iron pipe, unless otherwise noted, shall be Special Thickness Class 52. All ductile

iron pipe shall be furnished with an asphaltic outside coating in accordance with AWWA C151 and a cement-mortar lining and seal coating, where applicable, in accordance with AWWA C104.

(c) Ductile iron fittings for water mains shall be mechanical joint restrained with external restraints such as Megalug as manufactured by EBAA Iron, Inc., or approved equal in accordance with the applicable requirements of AWWA C110 or C153 with rubber gasket joints conforming to AWWA C111. All fittings shall be furnished with an asphaltic outside coating in accordance with AWWA C151 and a cement-mortar lining and seal coating, in accordance with AWWA C104. All fittings, bends, tees, etc. shall have restrained joints in accordance with and for the length recommended by the manufacturer. All nuts, bolts and washers shall be manufactured of stainless steel conforming to the requirements of ASTM A276, Grade 316.

(d) Joint restraint devices shall be Megalug as manufactured by EBAA Iron, Inc., or approved equal. Restrained joints for pipe, valves and fittings shall be designed for a working pressure of 350 psi unless otherwise specified. Joints shall be capable of being deflected 4 degrees, after assembly.

(e) All buried ductile iron pipe and fittings shall be wrapped with 8 mils polyethylene wrap in accordance with AWWA C105. This polyethylene wrap shall cover all buried ductile iron pipe and fittings, including joints, and shall be overlapped a minimum of twelve inches between sections and sealed with black polyethylene tape.

C741.02.2 INSTALLATION

(a) The installation of the new water main shall conform to the manufacturer's recommendations, and all the applicable requirements of Section F of the S&WB General Specifications.

(b) Bedding and backfill for water mains and all appurtenances shall be pumped Mississippi River Sand, free of roots, wood, clay lumps, or any other foreign matter and shall meet the requirements of LaDOTD Louisiana Standard Specifications for Roads and Bridges (LSSRB) Section 1003.07, latest edition.

(c) The trench bottom shall be smooth and free from roots, rocks, etc. The pipe shall be laid on a smooth bed of pumped Mississippi River sand six inches in depth for the full width of the trench and extending to the top of the pipe.

(d) Special care should be given in placing and consolidating the sand under the pipe haunches to provide adequate side support to the pipe while avoiding displacement and misalignment. The remainder of the trench shall be spread in loose lifts not to exceed twelve (12) inches and shall be compacted by mechanical vibrating equipment to at least 95 percent laboratory maximum density (dry) as determined by ASTM D 1557 at a moisture content within the limits of plus five (5) percent to minus three (3) percent of optimum. Density tests shall be one (1) per lift per one hundred (100) feet of trench. Field density in-place tests will be performed in accordance with ASTM D 2922.

(e) The Contractor shall prevent foreign material from entering the water main and contaminating it during storage and construction. The Contractor will be responsible for the cleanliness of the main at all times. At the end of each work day or stoppage of work, the Contractor must provide

a temporary water tight plug at each open end. When the work is resumed, the trench must be free of water and dirt before the plug is removed.

(f) At points of tie-ins, valves, offsets and other locations where the use of ductile iron pipe is required, the Contractor shall furnish AWWA C150, Special Thickness Class 52 ductile iron pipe with rubber gasket joints. All ductile iron pipe and fittings shall have cement mortar lining in accordance with AWWA C104 and shall be wrapped with 8 mils polyethylene wrapped in accordance with AWWA C105. This tubular wrap shall cover all ductile iron pipe and fittings, including joints, and shall be overlapped a minimum of twelve inches between sections and sealed with black polyethylene tape.

(g) Offsets in water mains shall be made by the Contractor with ductile iron bends or ductile offset fittings. All ductile iron fittings and bends shall be mechanical-joint with retainer glands and shall have stainless steel nuts and bolts. Bends shall be 22.5 degree or 45 degree and no bends greater than 45 degrees are allowed unless specifically called out in the Plans.

(h) Water main offsets in the new main that are indicated on the drawings are considered main line fittings and payment is included in the price of the new water main. Water line offsets not indicated on the drawings are to be paid at the bid price for water line offsets.

(i) Where called for in the Plans, the water main shall be installed by horizontal directional drilling. PVC pipe shall meet the requirements of Section C741.02.1. Pipe material shall be submitted to Director for approval prior to installation. The directional drilling equipment is to consist of a directional drilling rig of sufficient capacity to perform the bore and pull back the pipe, a drilling, fluid mixing, delivery and recovery system of sufficient capacity to successfully complete the installation, a drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be reused (if required), a Magnetic Guidance System (MGS) or "walkover" system to accurately guide boring operations, a vacuum truck of sufficient capacity to handle the drilling fluid volume, and trained and competent personnel to operate the system. All equipment must be in good, safe condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project. The Contractor shall be responsible for appropriate disposal of any drilling fluid used in the process.

C741.02.3 LUBRICANT FOR GASKETED PIPE AND FITTINGS

(a) Lubricant shall be suitable for potable water systems and shall conform to and be certified by both of the following standards:

ANSI/NSF 14: Plastic Piping System Components and Related Materials
ANSI/NSF 61: Drinking Water System Components – Health Effects

(b) Lubricant shall be nontoxic and suitable for potable water systems, non-corrosive and be non-flammable. Lubricant shall be an emulsified polymer based product, specifically formulated to be water-soluble without causing turbidity. Lubricant shall not transfer taste and/or odor to the new water main installations. Lubricant shall not promote bacterial growth and be safe for use on all metal and plastic pipes. Lubricant shall be easily flushed from the line and be non-reactive to chlorinated water. Lubricant should work easily on both wet and dry surfaces.

The use of oleate-based lubricants is not permitted for new water main installations due to odor and taste transfer problems.

C741.02.4 VALVES, VALVE BOXES, AND VALVE MANHOLES

(a) Valves shall be procured by the Contractor. Valves 4 in. to 12 in. shall be S&WB R.D. Wood Gate valves as shown in S&WB Dwg. 11897-W-62 or American RD Rotating Gate Disc Valve C-500 with adjustable packing. Valves 16 in. and larger shall be American RD gate valves. Valves shall have raised pattern letters "SEWERAGE & WATER BOARD" on the body of the valve. Valves must turn clockwise to open.

(b) Valves 4" to 12" shall be installed as shown on S&WB Drawing 6179-F-2.

(c) Existing valves that are replaced or no longer needed shall be removed and delivered to S&WB Central Yard, 2900 Peoples Avenue, at no direct pay.

(d) Valve Manholes for valves up to and including 12" shall be brick and installed as shown on S&WB Drawing No. 6179-F-2. Water manhole casting and covers shall conform to S&WB Drawing No. 3143-E-1.

(e) Valve Manholes for valves 16" and larger shall be as shown in the details included in the plans.

(f) Existing manholes that are replaced or no longer needed shall be abandoned in accordance with S&WB Drawing No. 8180-SD, at no direct pay.

(g) Existing manhole castings and covers that are replaced or no longer needed shall be removed and delivered to S&WB Central Yard, 2900 Peoples Avenue, at no direct pay.

(h) Valve boxes shall be installed as shown in S&WB Drawing 6179-F-2.

C741.02.5 FIRE HYDRANTS

(a) Fire Hydrants shall conform to at least one of the following: (1) 5 in. Breakaway Fire Hydrant Bronze Trim, as detailed in S&WB Dwg. No. 11825-W-62 or, (2) 5½ in. American-Darling Co.'s B-62-B or, (3) S&WB Mueller Hydrant A473 as detailed in Mueller Dwg. No. FH285 or (4) 5 in. New Orleans HYBRID-2 as detailed in Kennedy Valve Dwg. No. 81661-HYBRID-2. For details of setting hydrants, see S&WB Dwg. No. 6179-F-2.

(b) New fire hydrant leads shall be 6" solid wall DR 18 PVC pipe manufactured in accordance with AWWA C900, and shall be included in the water main unit price per linear foot. All hydrant lead joints shall be restrained.

(c) Existing hydrants that are removed shall be delivered to the S&WB Central Yard, 2900 Peoples Avenue, at no direct pay.

(d) Any fire hydrants existing or new and not in service must be covered, firmly secured and identified as being "Not in Service" at no direct pay.

C741.03 SERVICE CONNECTIONS:

(a) No direct tapping of the new water main will be permitted for making house service connections. Service saddles suitable to use with PVC pipe shall be used; i.e., Clow No. 3407 (all bronze) or JCM 407 Series with 2 bolts, or J. Jones J-966 (all bronze), or approved equal. The Contractor shall use only shell type hole cutter that will retain the coupon or chips and is designed to accommodate walls equal to pressure class 200.

(b) The Contractor shall replace all existing house water connections from the new main to the meter. There shall be no splicing allowed of new or existing water service connections. Existing services shall be tied into new mains using a service saddle and corporation cock.

(c) Existing 5/8", 3/4" and 1" water house connections to be replaced shall be replaced with 1" Polyethylene (PE) tubing from the main to the meter (see S&WB Dwg. Nos. 7134-W and 7134A-W). All other existing water house connections shall be replaced with the same size as the existing connection, unless otherwise noted

(d) All Polyethylene (PE) tubing through 2" shall be PE 3406, DR9, conforming to ASTM D2737.

(e) All Bronze/Brass fittings, connectors, corporation stops and appurtenances used in conjunction with PE tubing shall be of domestic manufacture, SHALL BE MADE OF LEAD FREE BRONZE/BRASS, and meet all requirements of AWWA, ASTM, and ANSI for use in the potable water distribution systems.

(f) Existing 4" through 8" water house connections to be replaced shall be replaced with solid wall DR 18 Polyvinyl Chloride (PVC) pipe manufactured in accordance with AWWA C900, from the main to the meter.

C741.04 INSPECTION:

(a) After the award of the Contract, the Contractor's representative, in the company of representatives of the Department of Public Works and the Sewerage & Water Board will inspect all meter boxes and list the condition of each and what corrective action is required.

(b) It is the Contractor's responsibility to schedule the meter box inspection prior to the start of construction. If no pre-construction inspection is performed, it will be assumed that all meter boxes were in good condition prior to the start of construction. Any required repairs will be at the Contractor's expense.

(c) Prior to final acceptance, all meter boxes located within the limits of this project shall be in good repair, at proper grade, properly aligned and cleaned of mud and debris. The types of repair as specified in the bid items and noted in the pre-construction inspection will be paid per each at the price bid in the proposal. The Contractor shall be paid for one bid item only for each meter box. Required repairs which were not noted at the pre-construction inspection will be assumed to be the result of the Contractor's negligence and will be repaired at his expense.

(d) All inspection of the water main and related appurtenances will be performed under the inspection of, and to the satisfaction of, the S&WB. Final acceptance of the water system is subject to a one-year maintenance period following the substantial completion date of the contract accepted by the S&WB.

C741.05.1 HYDROSTATIC TESTING:

(a) The Contractor shall provide and install all materials in accordance with S&WB Dwg. Nos. 7004-W and 7005-W, latest revision. The test plugs are to be caps or plugs as required and shall be secured to the pipe ends. The test plugs become the Contractor's property after their use. Prior to commencement of the hydrostatic testing, all pipes to be tested should be filled with water a minimum of twenty-four hours prior to testing in order to minimize absorption of water by the inner surface.

(b) The Contractor shall make a hydrostatic test of the main when the entire main has been laid, including service connections, valves and hydrant leads, and all apparent defects in the main, coating, joints, etc., have been repaired as described in Paragraph F-15 of the S&WB General Specifications. Testing of only a portion of the main will be done only with the approval of the S&WB. The Contractor shall provide all the equipment and all the labor required for filling and emptying the main and measuring the pressure and leakage. The Contractor's test setup shall include provisions for the Sewerage & Water Board to install their own pressure gage so that the Contractor's pressure readings can be verified.

(c) All valves in the system shall be wide open so that pressure will come on the flanges and the test plugs which close the ends of the main and its branches, and not on the valve discs.

(d) The main shall be filled from the nearest hydrant, or from other sources of supply where hydrants are not available, to the flange outlet in the test plug. When the main is completely filled with water to the satisfaction of the Director, the Contractor shall close the air cocks. He shall apply a hydrostatic pressure of 100 psi on the water main system, including fire hydrants, fire hydrant leads, valves, and service connections and shall maintain this pressure for a minimum period of (2) two hours with no pressure loss.

(e) If leakage develops, the Contractor shall locate the leaks and repair them, working only from outside the main and using only such methods as approved in advance by the S&WB's Engineer.

(f) It is the intent of these specifications and of the contract based thereon, that all pipe joints be water tight under all service conditions. Any and all leaks from improperly laid or defective joints which are discovered during the leakage test or tests, or at any time prior to the elapse of one year following the final acceptance by the S&WB of the entire work, will be repaired by and at the expense of the Contractor.

(g) Hydrostatic testing shall be performed by the Contractor under the direct supervision of and to the satisfaction of the S&WB Engineer, at no direct pay.

C741.05.2 CHLORINATION:

(a) The Contractor shall not proceed with the chlorination process until successfully passing the

hydrostatic pressure test and given authorization to proceed by the S&WB Engineer.

(b) The Contractor shall use the continuous feed method of chlorination as described in AWWA Standard C651. The tablet method and the slug method are not acceptable.

(c) The Contractor shall use either sodium hypochlorite or calcium hypochlorite to provide the disinfectant for the chlorination process. If calcium hypochlorite is used, the Contractor shall pre-mix the calcium hypochlorite into solution before application. All hypochlorite raw materials must be certified as suitable for the treatment of drinking water by an accredited certification organization in accordance with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals – Health Effects.

(d) The Contractor shall flush the mains prior to the chlorination. Flushing shall be done at flow rates sufficient to provide a velocity in the water main of at least 2.5 feet per second to remove particulate debris prior to disinfection. During this flushing process, the Contractor shall make sure there are no air pockets present within the system.

(e) The Contractor shall follow AWWA Standard C651, latest revision, these Special Specifications and shall meet the requirements of the Louisiana Department of Health and Hospitals (LA-DHH) for installation and disinfection of potable water mains. Transporting, storage, and handling of all disinfection products, utilized for chlorination, shall be performed in accordance with all applicable Federal, State, Local Laws and Regulations.

(f) The Contractor shall chlorinate the new water main system, including fire hydrants, fire hydrant leads, valves, and service connections, under the direct supervision of the S&WB, such that the minimum chlorine concentration throughout the system is 50 mg/l. The chlorinated water shall be retained in the pipe for 24 hours for water mains less than 30 inches in diameter, and for 48 hours for water mains greater than or equal to 30 inches in diameter. After the required retention time, the chlorinated residual shall be at least 5 mg/l free chlorine, as measured by the S&WB. If the residual is less than 5 mg/l at any point in the system, the initial flushing and disinfection procedure shall be repeated by the Contractor until a 5 mg/l free chlorine residual is obtained. The Contractor shall contact the S&WB Water Purification Department (504) 865-0572, a minimum of 48 hours prior to chlorinating the new main to schedule the sample collection.

(g) The maximum length of water piping that can be chlorinated at one time is 2,000 (two thousand) linear feet.

(h) The Contractor shall flush the chlorinated water from the new main using potable water. Disposal of chlorinated water shall be in accordance with AWWA Standard C651 and all federal, state, and local requirements. The Contractor's chlorination and flushing setup shall include provisions for the S&WB to collect a sample, via a ¾" faucet without hose bib threads, on the inlet and each discharge stand pipe.

(i) The S&WB shall collect and analyze samples for coliform bacteria, chlorine residual, and turbidity from all pipe extremities and from representative points. All samples must be free from contamination by coliform bacteria and have acceptable turbidity levels as determined by the S&WB. The Contractor shall be responsible for final flushing and coordinating sample collection

by the S&WB.

(j) Chlorination and flushing of water mains shall be performed by the Contractor, at no direct pay. Also, no additional payment will be allowed for providing taps for chlorine injection and/or flushing if necessary.

(k) In the event that a new water main tests positive for coliform bacteria following chlorination, the Contractor will be responsible for reflushing the main and coordinating resampling for coliform analysis. If the second set of coliform samples test positive, the Contractor shall be required to repeat the chlorination procedure. A fee may be imposed on the Contractor for the additional supervision, sampling, and analysis required of S&WB employees as the result of the necessity of resampling and/or re-chlorination.

C741.05.3 TIE-INS

(a) The Contractor shall tie-in the new water main within 72 hours of receiving notification of acceptable laboratory test results from the S&WB. If the Contractor fails to complete the tie-in within 72 hours, additional flushing and re-testing for coliform bacteria by S&WB shall be required. Under no circumstances will the Contractor be allowed to make a tie-in to the existing water distribution system until acceptable laboratory test results have been obtained by the S&WB. All tie-ins shall be performed under the direct supervision, and to the satisfaction, of the S&WB. A fee may be imposed on the Contractor for the additional supervision, sampling, and analysis required of S&WB employees as a result of the necessity of resampling and/or re-chlorination.

(b) The tie-in shall be configured in such a manner to require 16 linear feet of pipe or less. The S&WB does not allow installation of pipe runs greater than 16 linear feet without hydrostatic pressure testing and chlorination. All pipe used in the tie-in shall be thoroughly cleaned and swabbed with a 1-5 percent hypochlorite disinfecting solution just prior to being installed, as recommended by AWWA C651.

(c) The S&WB forces shall be responsible for the closure of all water valves. Contractors shall not operate S&WB valves. The S&WB cannot guarantee a water-tight closure. The Contractor must work continuously and without interruption until the new piping is tied into the existing system and services are restored.

(d) Before the water service is interrupted, the Contractor shall:

1. Expose the existing water main at the tie-in location and verify the type, size, location, and elevation of the existing facilities.

2. Have sufficient materials, equipment and manpower available at the job site.

3. Verify materials on hand will meet the job needs after uncovering the existing mains.

4. Request a water test closure through the S&WB Networks Department (942-3891) a minimum of seven (7) working days in advance of the scheduled tie-ins.

5. Have notified all residents and the New Orleans Fire Department a minimum of forty-eight (48) hours in advance of interruption of service.

(e) After the tie-in is completed, the new line will be refilled under normal S&WB water main pressure (approximately 60 pounds per square inch). Tie-in piping will then be visually inspected for leaks and if any leaks are discovered shall be repaired by the Contractor using only such methods as approved by the S&WB, at the Contractors expense.

(f) The Contractor shall perform a final flush on the newly installed water main under the supervision of the S&WB Engineer to flush out the remaining free chlorine residual and fill the line with water representative of the quality in the distribution system prior to hydraulically connecting the new main to the distribution system

(g) All tie-ins shall be made by the Contractor, at no direct pay.

C741.06 AS-BUILT DRAWINGS: Prior to final inspection and testing of the system, the Contractor shall submit to the S&WB "as-built" drawings, at no direct pay, showing any change in line or grade from the original drawings, location of house service connections.

C741.07 PAYMENT: Payment for the accepted quantities will be made at the contract unit price.

(a) Payment for furnishing and installing New Water Mains shall be made at the contract unit price per linear foot, including main line fittings (bends, tees, etc.), fire hydrant leads, tie-ins, excavation, removal of existing pipe (if any), pumping as necessary to prevent contaminating the existing system, bedding, complete shoring, backfilling material, hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for plugging and abandoning existing manholes and filling with flowable material (sand/cement mixture).

(b) Payment for furnishing and installing 1-inch through 2-inch Polyethylene Pipe for water house connections (adjustment/replacement) shall be made at the contract unit price per each, including excavation, backfilling, service saddles, corporation cock and removal of existing pipe (if any) and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for tie-ins to the main or meter. Minimum size of water house connections shall be 1".

(c) Payment for furnishing and installing 4-inch through 8-inch PVC pipe for water house connections shall be made at the contract unit price per each, including, excavation, backfilling, and removal of existing pipe (if any) and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for tie-ins to the main or meter. PVC pipe for house connections shall meet the requirements of Section C741.02.01.

(d) Payment for furnishing and installing New Fire Hydrant shall be made at the contract unit price per each. including, excavation, backfilling, and removal of existing pipe (if any), and any other related or incidental items required to complete this item of work for which separate payment is

not provided for under other items in the Uniform Bid Form.

(e) Payment for furnishing and Installing Water Valves up to and including 12-inch shall be made at the contract unit price per each. Payment for the installation of valves shall include furnishing and installing all ductile iron pipe, mechanical joint retainer glands, gaskets, including stainless steel tee bolts and nuts, etc. for a complete installation and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. The cost for valve boxes indicated on the plans shall be included in the bid price of the valves.

(f) Payment for furnishing and Installing Water Valves 16-inch and larger shall be made at the contract unit price per each. Payment for the installation of valves shall include furnishing and installing all ductile iron pipe, mechanical joint retainer glands, gaskets, including stainless steel tee bolts and nuts, etc. for a complete installation and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.

(g) Payment for furnishing and installing Water Main Offset shall be for offsets consisting of four (4) mechanical joint bends complete with retainer glands, stainless steel nuts and bolts and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form, and shall be made at the contract unit price per each. Water line offsets consisting of only two (2) bends will be paid for at one-half (1/2) the unit price bid. Offsets are paid when not indicated on the plans. There is no direct pay for offsets shown on the plans.

(h) Payment for Plug Existing Water Main and Fill With Flowable Material (sand/cement mixture) shall be made at the contract unit price per linear foot, shall include all necessary equipment to completely fill the abandon main with sand/cement and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.

(i) Payment for Construction of New Water Valve Manholes for 4-inch through 12-inch valves shall be made at the contract unit price per each, including excavation, granular bedding, foundation slab, manhole casting and cover and backfilling and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for plugging and abandoning existing manholes and filling with sand.

(j) Payment for Construction of New Water Valve Manholes for valves 16-inch and larger shall be made at the contract unit price per each, including excavation, granular bedding, foundation slab, manhole casting and cover, valve box, and backfilling and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for plugging and abandoning existing manholes and filling with sand.

(k) Payment for Remove Mud and Debris from Inside of Water Meter Box shall consist of the removal of all mud or debris within a meter box that does not need adjustment or replacement, and shall be made at the contract unit price per each.

(l) Payment for Adjust Complete Water Meter Box to Grade shall consist of adjusting the meter box to grade by placing bricks, slate, or similar material under the meter box pan, and shall be made at the contract unit price per each. There shall be no separation between the upper barrel and the lower meter box pan. Any mud or debris within the box shall be removed before the upper barrel and lower pan have been adjusted. There will be no additional payment for removal of mud and debris under another item. Meter boxes shall be adjusted to grade in areas where the grade of the curbs and/or sidewalks is changed or as directed by the Director. If the water house connection needs to be replaced from the meter to the property line in order to adjust the meter box, the new water house connection shall be paid under the item, “Remove and replace water house connection (from meter to property line) (all sizes)”.

(m) Payment for Replace Broken Water Meter Box (5/8” to 1”) shall be made at the contract unit price per each, shall include any meter box replacement or any new meter box required and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. Installation shall be as shown on S&WB Drawing. No. 7134-W.

(n) There shall be no direct payment for salvaging existing valves, fire hydrants, manhole castings and covers, etc.

(o) All other items of work necessary to the performance of the project, for which no specific unit price and/or lump sum pay item is established, shall be considered and designated part of the construction, and the existing pay items shall be full compensation. Items including but not limited to, trench safety, traffic control, contract closeout, shop drawings, submittals, and office support shall be merged into the prices bid.

(p) There will be no direct payment for temporary water mains, temporary water service connections, and any related work including temporary tie-ins, removal of temporary work after installation of permanent work, and other incidentals. The cost of all work shall be included in the unit bid prices of water mains and house connections.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C741(51)(B)	6” New Water Main with Main Line Fittings	Linear Foot
C741(51)(C)(1)	8” PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(C)(2)	8” Ductile Iron New Water Main w/ Main Line Fittings	Linear Foot
C741(51)(C)(3)	8” PVC New Water Main with Main Line Fittings by Directional Drilling	Linear Foot
C741(51)(E)(1)	12" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(E)(2)	12” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(51)(F)(1)	16" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(F)(2)	16” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(51)(H)(1)	20" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(H)(2)	20” Ductile Iron New Water Main w/Main Lin e Fittings	Linear Foot
C741(51)(I)(1)	24" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(I)(2)	24” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(51)(J)(1)	30" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(J)(2)	30” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(52)(A)	New 4" Valve	Each
C741(52)(B)	New 6" Valve	Each
C741(52)(C)	New 8" Valve	Each
C741(52)(E)	New 12" Valve	Each
C741(52)(F)	New 16" Valve	Each
C741(52)(H)	New 20" Valve	Each
C741(52)(I)	New 24" Valve	Each
C741(52)(J)	New 30" Valve	Each
C741(53)	Tapping Sleeve & Valve Assembly (Size)	Each
C741(54)	New Fire Hydrant	Each
C741(55)(A)	Replace 5/8’ to 1” Water House Connection with 1” Water House Connection (from Main to Meter)	Each
C741(55)(B)	Replace 1-1/2" Water House Connection (from Main to Meter)	Each
C741(55)(C)	Replace 2” Water House Connection (from Main to Meter)	Each
C741(55)(D)	Replace 4” Water House Connection (from Main to Meter)	Each
C741(55)(E)	Replace 6” Water House Connection (from Main to Meter)	Each
C741(55)(F)	Replace 8” Water House Connection (from Main to Meter)	Each
C741(55)(G)	Replace Water House Connection from meter to property line 5/8” to 1”	Each
C741(56)	Relocation of Fire Hydrant (In Existing Main)	Each
C741(70)	Additional Ductile Iron Fittings	Ton
C741(71)(B-01)	6” Water Line Offset up to 24”	Each
C741(71)(C-01)	8” Water Line Offset up to 24”	Each
C741(71)(C-02)	8” Water Line Offset over 24”	Each
C741(71)(E-01)	12” Water Line Offset up to 24”	Each
C741(72)(B-02)	6” Water Line Offset over 24”	Each
C741(72)(E-02)	12” Water Line Offset over 24”	Each
C741(73)	Adjust Water Valve Box	Each

C741(74)(A)	New Water Valve Manhole (4” through 12" Valves)	Each
C741(74)(B)	New Water Valve Manhole (16” through 20” Valves)	Each
C741(74)(C)	New Water Valve Manhole (24” through 30” Valves)	Each
C741(75)	Remove Mud and Debris from Inside Water Meter Box	Each
C741(76)	Adjust Complete Water Meter Box to Grade	Each
C741(77)	Replace Broken Water Meter Box (5/8”) to (1”)	Each
C741(78)(A)	Plug Existing Water Main 4” through 12” and Fill with Flowable Material (Sand/Cement Mixture)	Linear Foot
C741(78)(B)	Plug Existing Water Main greater than 12” and Fill with Flowable Material (Sand/Cement Mixture)	Linear Foot

SECTION C742
SEWER LINES

C742.01 SEWERAGE CONSTRUCTION: The work shall be in accordance with the Sewerage & Water Board Specifications and Standard Plans except as noted.

C742.02 GENERAL:

(a) The Contractor shall furnish all labor, materials, equipment and supervision required for:

- Restoration of existing sewer mains by point repair.
- Replacement of existing sewer mains between manholes including tie-in into existing system.
- Relocation of existing sewer mains because of conflicts.
- Installation of new sewer mains, sewer house connections and manholes.
- Replacement of damaged sewer house connections and manholes.
- Installation/rehabilitation of manholes and cleaning of new replaced or restored mains and manholes.

All work to be done on Sewerage Systems will be as shown on the plans and as directed by the Director. All workmanship, materials and tests shall conform with Section D of the General Specifications of the Sewerage & Water Board and Sewerage & Water Board Standard Drawing No. 7260-S, except as noted hereinafter. The Contractor shall notify the Chief of Network Engineering of the Sewerage & Water Board in writing not less than three or more than ten working days in advance of starting the job, in order to allow for scheduling the inspection of the work. Failure to do so prior to starting work will result in the Contractor being required to expose the bedding on all pipe previously installed without Sewerage & Water Board inspection.

(b) All workmanship and materials required to perform this work, shall conform to the current General Specifications of the Sewerage & Water Board and the Department of Public Works except as noted hereinafter.

(c) The Contractor performing work covered in this section shall be required to coordinate his operations with the Sewerage & Water Board (Chief of Network Engineering) and other utilities prior to making any excavation so that the location of their services can be identified. The Contractor shall exercise caution in making excavations to avoid damage to these services and other utilities.

(d) The Contractor will be furnished with a list of the locations of water and sewer house connections from the Sewerage & Water Board. It will be the Contractor's responsibility to verify the location of these so as to avoid damage. Furnishing this information should not be construed as a waiver of the Contractor's liability, but rather an attempt on the part of the S&WB to minimize the Contractor's hazard. The existing house connections submitted in the lists are from S&WB records and could vary from the actual location. Any damage to the existing water, sewer and drain connections resulting from negligence will be repaired by the S&WB at the expense of the Contractor. The Contractor is also responsible for damage to other utilities and the property of others.

(e) Sewer house connections shall be tied into the new mains and replaced with new connections where needed.

C742.03 INSTALLATION AND REHABILITATION OF SEWER MAINS:

(a) GENERAL: Work under this section shall consist of furnishing all labor and materials for the replacement, relocation and/or installation of sewer mains, installing new house connections, point repairs and performing all operations required for improving the sewer system. The Contractor shall provide the necessary dewatering and by-passing required during execution of this work at no direct pay.

(b) MATERIALS AND METHODS: Pipe material for sewer mains shall be solid wall polyvinyl chloride (PVC) pipe. The solid wall PVC pipe 6" through 15"shall be manufactured in accordance with ASTM D-3034 specifications for a special gravity sewer pipe dimensions ratio (SDR) of 26. The fittings (tees, wyes, etc.) and bell stock for truss and solid wall PVC pipe shall have a thickness not less than that of the SDR-35 solid wall PVC pipe of the same inside diameter. PVC Sewer Mains sizes 18" through 27" shall be solid wall, PVC pipe conforming to ASTM F-679, Class T-1. PVC pipe shall be type PSM Vinyl Chloride (PVC) standard lengths with integral cast bells and elastomeric gaskets as recommended by the manufacturer and ASTM D-3212.The Sewerage & Water Board reserves the right to approve the type of material.

The maximum allowed deflection for installed PVC sewer pipe is per the manufacturer recommendations. Newly installed pipe that exceeds this allowable deflection shall be removed and replaced with new pipe and reinstalled as per the above specifications at the Contractor's expense. The S&WB reserves the right to mandrel any and/or newly installed PVC sewer pipe. The Contractor will install the pull lines and pass the mandrel through the mains selected by the S&WB. The S&WB will provide the mandrels for all tests. The mandreling tests will occur after compacted backfill of the trenches. The Contractor shall bear the cost of mandreling re-testing if required and will be assessed $100.00 for each occurrence in each section between manholes. In addition, cleaning and TV/video of the new PVC sewer lines (either in-service or not) will occur during final inspection after all paving is completed to verify the absence of construction debris. The Contractor shall bear all costs of cleaning and TV/video test or re-testing. It is required that a S&WB representative and the Contractor witness the actual mandreling test(s) and witness the real-time cleaning and TV/video test(s). The S&WB does not desire a copy of the videotape.
Bedding and foundation for mains shall conform with S&WB Drawing No. 4697-E5-A except as noted below. Backfill and drainage fabric for mains shall be as noted below. Standard sheeting and bracing shall comply with DWG. 4697-E5A of the S&WB General Specifications. The same type and size pipe material must be installed between manholes.

Installation of the solid wall PVC pipe shall conform to Section D of the Sewerage & Water Board General Specifications, "The Construction of Sewer" and the Plastic Pipe Association Specification UNI-B 78, "Recommended Practice for the Installation of Polyvinyl Chloride (PVC) Sewer Pipe." The trench bottom shall be relatively smooth and free from rocks, roots, etc. After the sheeting and/or foundation lumber is placed, the pipe shall be laid on a smooth bed of approved bedding

material mentioned below, compacted to a density of not less than 95% relative density, six inches deep for the full width of the trench.

The bedding material shall be extended to six inches above the top of the pipe, well compacted (hand or mechanical) in six inch layers to not less than 95% relative density, as shown on the Standard Plans of the Department of Public Works. The bedding material shall be placed and consolidated under the pipe haunches to provide maximum side support to the pipe while avoiding displacement and misalignment of the pipe.

Bedding material shall be 100% crushed aggregate listed on Qualified Product of the Louisiana Department of Transportation and Development and conforming to ASTM D2321, class 1A Angular Material (1/4" to 1 ½") and ASTM No. 57. The Sewerage & Water Board reserves the right to approve the type of bedding material.

Backfill material shall be pumped sand and shall be placed at or near optimum moisture content and compacted according to one of the following procedures:

1. Backfill material shall be placed in layers not to exceed 12 inches. Each layer shall be compacted to a minimum of 95% of maximum density using approved mechanical compaction equipment. Or,

2. Backfill material may be placed in layers not exceeding 12 inches by thoroughly compacting each layer to 95% maximum density at or near optimum moisture content using approved mechanical compaction equipment, prior to placing a subsequent layer.

The above backfill material and the compaction procedures shall be applied also for any service connections, and point repairs.

Drainage fabric shall be installed around the bedding and under the sand backfill according to the Standard Plans. Fabric shall extend a minimum of twelve (12") inches on each side of the trench and shall be secured to each side in a manner acceptable to the Director.

The Contractor shall provide the Director a sample of the fabric to be used on the project along with a copy of the manufacturer's minimum requirement specifications prior to the start of construction.

The drainage fabric shall be installed around the bedding and under the sand backfill according to the Standard plans.

(c) REPLACEMENT AND RELOCATION OF EXISTING SEWER MAINS, INSTALLATION OF NEW SEWER MAINS BETWEEN MANHOLES: The Contractor shall furnish all materials, equipment and labor to remove the existing deteriorated main, (if any) install mains and fittings (wyes, tees, etc.), including appurtenances such as tie-ins to existing system, lumber foundation, bedding, backfilling, necessary dewatering and by-passing, during the execution of this work.

Where the sewer main is relocated, the existing abandoned main must be filled and plugged where shown on the plans. Sand shall be filled into the sewer line to avoid caving in of the sewer line.

All workmanship, materials and tests shall conform to Section D of the General Specifications of the S&WB, except as noted otherwise. The Contractor may use more than one crew in performing work in various sections of a system at a given time, provided he has the approval of the Director.

The new sewer mains and house connections shall be installed at the elevations and locations indicated on the plans, unless changed by the S&WB. The Contractor shall schedule his work so that the sewer mains and house service connections between two manholes are completed before moving to another location (this will minimize the spillage of raw sewage into an open trench). The Contractor shall isolate the block where the work is in progress by plugging the upstream and downstream manholes. Should the sewerage build up to within three feet of the upstream manhole, or if directed by the S&WB, the Contractor shall pump the sewer liquid to the downstream manhole through by-pass pumping. No mains or lines shall be left open overnight; a temporary tie-in shall be made between the end of the new main and the existing, and plugs at manholes shall be removed so as to allow flow to continue until work is resumed.

Where it is necessary to connect the sewers to existing manholes, the existing short bell pieces remaining in the wall of the manhole shall be broken out. A new short bell piece shall be inserted to the full thickness of the walls and permanently grouted in place (see S&WB Dwg. 6178-B6). The new short bell piece shall be a sand impregnated PVC stub grouted with a type three, high early strength cement, or quick setting EMBECO or similar material.

If a PVC pipe is to be connected to a manhole or other concrete or brick structure, the Contractor shall use a sand impregnated PVC stub, grouted with cement grout as specified above, for the manhole connection.

(d) POINT REPAIRS OF EXISTING SEWER MAINS: The Contractor shall make point repairs to the lines at specific locations shown on the drawings and as listed in the proposal.

Point repairs shall be made by either wet or dry type and shall conform to Section XII of NASSCO (National Association of Sewer Service Companies). The Contractor shall make an excavation to expose a base "ten (10') linear feet" of main, per point repair. Any additional footage of repair beyond the ten foot minimum for each point repair shall be approved by the Director.

The Contractor is required to have all materials and equipment on hand prior to the start of excavation so that there will be a minimum of inconvenience to the residents. All trenches must be backfilled at the end of the day.

(e) SEWER HOUSE CONNECTIONS: New or replacement sewer house connections, where required, shall be six inch pipe extended from the main to the back of curb or to a point directed by the Director. Bedding and foundations required under sewer mains are <u>not</u> required under six (6") inch sewer house connections.

The use of saddles to connect the house service to the main will not be permitted; all such connections shall be made using wye to tee fittings.

The need for replacing these house services beyond the wye or tee connection will be determined by the Director. If the pipe beyond the wye or tee is in good condition, a tie in will be made at the fitting (wyes, tees, etc.). If the pipe beyond the wye or tee is in poor condition, a new house service will be installed from the main to the back of curb or to a point directed by the Director and tied into the existing house service at the point. All pipe and fittings shall be of the same material as the main, unless approved by the S&WB. The connection of any two dissimilar materials shall be accomplished by the installation of a "No-Hub" coupling, consisting of a neoprene sleeve and bushing adaptor and two stainless steel bands with STAINLESS STEEL SCREWS. The coupling shall be manufactured in strict accordance with Cast Iron Soil Pipe Institute Specifications C-301, latest revision, as manufactured by Tyler Pipe Company, Mission Clay Products Corps., Fernco, or approved equal.

Where existing or proposed subsurface facilities conflict with existing sewer house connections, these same connections shall be adjusted to provide for adequate clearance in accordance with the S&WB Standard Specifications. No syphons will be permitted. Adjustment of sewer house connections shall comply with the above specifications for replacement of sewer house connections.

(f) SANITARY SEWER MANHOLE: New sanitary sewer manholes required when installing new sewer mains or relocating existing sewer mains shall be constructed in accordance with the applicable sections of the S&WB General Specifications and S&WB Standard Drawings No. 6178-B6, No. 6178-B-6A, and 3143-E-1.

(g) INSPECTION: At the completion of the point repair or installation of mains between manholes, and prior to final acceptance, the S&WB may inspect the mains with a remote control television unit. The Contractor shall assist by notifying the residents to refrain from use of these services during the inspection. The Contractor will be required to repair at his expense and in an approved manner, all defects in his workmanship disclosed by these tests and inspections before final acceptance.

C742.04 MEASUREMENT: Sewer mains will be measured in place and the length determined by measuring from center to center of manholes or other subsurface structures of which they form a part.

Depth of sewer mains for payment purposes shall be determined by measurement from the invert to the top of casting at original existing grades of connecting manholes. Depth of manholes shall be measured from invert to the top of casting.

C742.05 PAYMENT:

(a) Payment for relocation, replacement and restoration of existing sewer mains or installation of new sewer mains shall be made at the contract unit price per linear foot of the size and depth, which includes excavation, pumping, as necessary, complete shoring, foundation lumber, bedding, installation of new main, including fittings, backfill, drainage fabric and tie-ins. If the existing sewer main is to be replaced, the cost shall include removal of the existing sewer main.

(b) Payment for "install sewer manhole" shall be made at the contract unit price per foot high, including excavation, granular bedding and backfilling. If the existing manhole is to be replaced, the cost shall include removal of the existing sewer manhole.

(c) Payment for "replacing manhole casting and cover" shall be made at the contract unit price per each including removal of the existing sewer manhole casting, installing the new casting at the specified grade and backfilling the excavation with approved backfill material. Adjustment to grade of the manhole casting shall be included in the cost of replacement.

(d) Payment for "point repair of existing sewer mains" shall be made at the contract unit price per each of the size and depth specified, including excavation, foundation lumber, bedding, drainage fabric, backfill, complete shoring, pumping as necessary and tie-ins. Payment for point repair beyond ten (10') feet shall be made at the contract unit price per the linear foot, including the above works.

(e) Payment for "new sewer house connection from main to back of curb" shall be made at the contract unit price per each of the size specified including installation of a wye or tee in the main, PVC pipes, fittings, a cap behind the curb, excavation and backfill.

(f) Payment for "replacing existing sewer house connection from existing main to back of curb" shall be made at the contract unit price per each including the installation of PVC pipe, fittings, excavation, backfill, and tie-ins from the existing wye or tee to the existing sewer house connection back of curb.

(g) Payment for "reconnecting existing sewer house connection to new main" shall be made at the contract unit price per each including installation of a new tee or wye into the main, removal and rep1xcement of up to three feet of the existing, excavation and backfill.

(h) Payment for "reconnecting existing sewer house connection to new main and extend to back of curb" shall be made at the contract unit price per each including the installation of PVC pipe, fittings, excavation, backfill, tie-in, and installation of a new wye or tee in the new main, from the new wye or tee to the existing sewer house connection back of curb.

(i) "Replacing existing sewer house connection beyond back of curb." If directed by the Director to replace the sewer house connections in (f) or (h) beyond back of curb, payment for this item shall be made at the contract unit price per linear foot per any additional footage beyond back of curb.

(j) "Adjust Sewer House Connections" includes removing and replacing up to 15 feet of existing sewer house connection where required to avoid conflict with new water, drain, or other utility line, including tie-ins at both ends, fittings, excavation, installation, backfill, no siphon permitted. Payment for this item shall be made at the contract unit price per each.

(k) Payment for "pipe lining" shall be made at the contract unit price per linear foot of the size and method specified to; (1) clean and inspect the existing pipe to be sure that the liner can be properly installed, (2) install the liner in accordance with Special Specifications; and (3) clean up and restore any damage caused by the lining process.

(l) Payment for "cut liner to restore existing service connections" shall be made at the contract unit price per each of the size and the method specified. If the lining method for restoring service connections requires excavation, the price shall include all excavation, backfill and surface restoration.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C742(51)	Install Sewer Mains (Size & Depth)	Linear Foot
C742(55)	Install Sewer Manhole	Foot High
C742(56)	Replace Sewer Manhole Casting	Each
C742(57)	Sewer Point Repair up to Ten Feet (Size & Depth)	Linear Foot
C742(58)	Sewer Point Repair beyond Ten Feet (Size & Depth)	Linear Foot
C742(59)	New Sewer House Connections from Main to Back of Curb (Size)	Each
C742(60)	Replace Existing Sewer House Connection from Existing Main to Back of Curb	Each
C742(61)	Re-connect Existing Sewer House Connection to New Main up to Three Feet	Each
C742(62)	Re-connect Existing Sewer House Connection to New Main and Extend to back of Curb	Each
C742(63)	Replace Existing Sewer House Connection Beyond back of Curb	Linear Foot
C742(64)	Adjust Sewer House Connection	Each
C742(65)	Pipe Lining (Size & Method)	Linear Foot
C742(66)	Cut Liner to Restore Existing Sewer House Connection (Size & Method)	Each

SECTION C743
TESTING LABORATORY SERVICES

C743.01 GENERAL:

(a) An independent accredited testing laboratory shall be retained by the City of New Orleans for the purpose of sampling and testing materials or performing inspections on a given project.

(b) Cooperation of the Contractor: The Contractor shall cooperate with the designated testing laboratory and shall:

(1) Make available without cost, samples of all materials to be tested in accordance with applicable standard specifications.

(2) Furnish such nominal labor and sheltered working space as is necessary for designated testing laboratory to obtain samples at the project site.

(3) Advise the designated testing laboratory of the identity of material sources and instruct the suppliers to allow tests or inspections by the designated testing laboratory.

(4) Notify the designated testing laboratory sufficiently in advance of operations to allow for completion of initial tests and assignment of inspection personnel.

(5) Notify the designated testing laboratory sufficiently in advance of cancellation of required testing operations. The Contractor shall be responsible to the Director for charges due to failure to notify, if requirements for testing are cancelled. The Contractor shall also be responsible to the Director for charges due to failed tests. The Director can withhold payment to cover the cost of these charges.

(6) Provide curing facilities for initial curing of concrete cylinders at the job site in accordance with the requirements ASTMC-94.

(c) Test Methods: Tests and inspections shall be conducted in accordance with the latest applicable A.S.T.M., A.C.I., A.A.S.H.T.O., or La. D.O.T.D. requirements, or the requirements of other recognized authorities.

(d) Authority and Responsibility of the Testing Laboratory: The designated testing laboratory does not have the authority to accept or reject work for the Director. It is their duty to inform the Contractor and the Consulting Engineer's representative (CER) at the job site of any tests or conditions that do not meet the project specification requirements. The CER has the authority and duty to reject materials and/or workmanship that do not comply and to so notify the Director.

(e) Test Reports: The designated testing laboratory shall promptly submit written reports of each test and inspection made to the Director, Contractor and to such other parties that the Director may specify.

C743.02 PORTLAND CEMENT CONCRETE: Tests and Inspections:

(a) Mix Design:

(1) The designated testing laboratory shall review the contract mix design submitted for compliance within the General Specification requests and ACI 318-94, Chapter 5 or latest revision.

(2) Regardless of what method is employed, the following tests are required prior to use on a given project:

A.S.T.M. Sieve Analysis for Fine & Coarse Aggregates

(3) Certificates of Delivery which include test results shall be submitted by the concrete producer for cement, fly ash and additives to the designated testing laboratory for review. These certificates must certify that the material conforms to the specifications.

(b) Batch Plant:

(1) Prior to initial start-up of pavement operations for the project, the designated testing laboratory shall make themselves familiar with the concrete suppliers batch plant to determine if the operation substantially conforms to the requirements of A.S.T.M. C94. Any substandard conditions observed shall be immediately reported to the Director and the Contractor.

(2) Plant inspector is not required to be present at the plant during production. However, the Director may require an inspector be provided periodically at his discretion.

(3) The plant must be approved prior to beginning production for a given project. This approval will be given by the Director and/or his representative. The testing laboratory shall be responsible to inform the Director of any reasons or conditions that would adversely affect the plant's approval. Conditions for approval shall include but not be limited to the following:

(i) Ability to comply with A.S.T.M. C-94 (latest revision) Standard Specifications for Ready Mixed Concrete.

(ii) Whenever fly ash is used, the plant shall have a separate silo or bin to store the fly ash.

(iii) Whenever ground granulated blast-furnace GGBF slags are used, the plant shall have a separate silo or bin to store the slag.

(4) Prior to and periodically during construction, the designated testing laboratory shall sample and test aggregates proposed for use in concrete to determine their compliance with these specifications.

(c) Roadway Inspection:

(1) The designated testing laboratory shall provide a roadway technician at the job site during all times concrete is being placed. This roadway technician shall be responsible to perform the required field tests and promptly notify the Contractor and the CER of any sub-standard materials, workmanship or code violations being incorporated in the work.

(2) Samples of fresh concrete shall be gathered in accordance with A.S.T.M. C-172 (latest revision).

(3) Tests for slump - A.S.T.M. C-143 (latest revision) and air content - A.S.T.M. C-173 or C-231 (latest revisions) if applicable, must be performed whenever test cylinders are taken, and more frequently, when deemed necessary.

(4) The concrete temperature shall be measured and recorded when each set of cylinders are molded.

(5) Test cylinders shall be cast in accordance with A.S.T.M. C-31 (latest revision) as follows:

(i) Pavements: One set consisting of four (4) cylinders shall be cast for each one hundred (100) cubic yards or fraction thereof. An additional two (2) cylinders per set shall be cast for early strength determination.

(ii) Curbs, Driveways, and Sidewalks: One set of four (4) cylinders shall be cast in the a.m. (morning) and one set shall be cast in the p.m. (afternoon). A minimum of four (4) cylinders shall be cast per visit.

(iii) Combination Curb & Gutters: One set of four (4) cylinders shall be cast for each fifty (50) cubic yards or any fraction thereof. A minimum of four (4) cylinders shall be cast per visit.

(6) Test cylinders are to be tested in accordance with A.S.T.M. C-39 (latest revision) as follows:

2 @ 7 days of age.
2 @ 28 days of age.
1 @ 3 days of age (for verification of High Early Strength concrete).
1 @ 5 days of age (for verification of High Early Strength concrete).

(7) During production, if any truck of ready-mixed concrete fails to conform to specifications, the designated testing laboratory will immediately notify the Director and the Contractor and this material shall not be incorporated in the work.

(8) Re-tempering of concrete is not permitted.

(d) Cores for Thickness Verification:

(1) Cores shall be taken by the designated testing laboratory in accordance with Subsections C501.10 and C601.12 no later than fourteen (14) days after the conclusion of paving operations.

(2) Final locations of the cores shall be reported in a manner that is acceptable to the Director or his representative.

C743.03 ASPHALTIC CONCRETE MIXTURES:

(a) Tests and Inspections:

(1) The Contractor will be required to design the mixtures for optimum asphalt content and comply with all requirements of La. D.O.T.D. designation TR 303, Method A, however, Method B may be used when approved by the Director. Mixes which have been previously approved and are current within six (6) months may be submitted for approval subject to the same criteria as required by TR 303, Method A.

(2) The job mix formula shall be submitted for review by the designated testing laboratory and the Director supported by appropriate design data. No mixture shall be produced for the job until the Contractor's job mix formula has been approved by the Director. Approval or rejection of job mix formula shall be accomplished within seven (7) calendar days of submittal.

(b) Preliminary Tests: Prior to starting plant operations, the following materials will be sampled and/or tested by the designated testing laboratory:

(1) Obtain La. D.O.T.D. Certificates of Delivery covering asphalt cement in working tank. (Also to be obtained on a daily basis during production.)

(2) Obtain the refinery test report covering chemical and physical properties of the asphalt cement.

(3) Verify that the Anti-Stripping agent is included in the La. D.O.T.D. Qualified Products List.

(4) Other admixtures - La. D.O.T.D. Qualfied Products List.

(5) Aggregates - Verify that the source of aggregates to be used are included in the La. D.O.T.D. Qualified Products List.

(6) Sample the Contractor's fine sand. Test in accordance with A.A.S.H.T.O. T-90 to determine if plasticity index is four (4) or less. Visually inspect Contractor's stockpile to verify absence of clay balls and excessive clay coating.

(c) Tests Conducted at the Asphalt Plant: Tests to be conducted on the hot mix material at the asphalt plant will be conducted by the designated testing laboratory's plant technician. All tests will be conducted in accordance with La. D.O.T.D. specifications. Test results shall conform to the properties in Section 42. A sampling plan will be utilized such that samples are taken and tested as follows:

(1) 0 to 200 tons - Full sample is taken upon which the following tests are to be conducted:

Temperature - read to the nearest 5 degrees.

Extraction	
Extracted Gradation	TR 309
Per cent Extracted Asphalt Cement	TR 308
Per cent Crushed	TR 306
Marshall Stability & Flow	
(2 briquettes are made.)	TR 305
Unit Weight, Voids & Per cent	
V.F.A.	TR 304

Record Anti-strip content from meters and scales

(2) 201 to 400 tons - smaller sample is taken:

Temperature - read to the nearest 5 degrees.

Marshall Stability & Flow	
(1 briquette is made.)	TR 305

(3) 401 to 600 tons - Full sample is taken. Conduct tests as described for 0 to 200 tons.

(4) In excess of 600 tons - Smaller sample is taken. Conduct tests as described for 201 to 400 tons.

Mix temperatures at the time of molding the briquettes shall be within 15^{o}F of the mix temperature at the time of sampling.

In addition to the above, the temperature of the mix is to be taken at least once per hour, when the mix has been loaded into haul trucks and is ready to leave the plant.
If the test results during the production of a lot are outside the limits given in Table 1 of Section C501, the representative of the designated testing laboratory shall immediately notify the Contractor's qualified asphaltic concrete plant technician.

If the Contractor refuses to take appropriate corrective action, the designated testing laboratory representative shall recommend to the Director to discontinue the operation of the plant immediately and shall notify the Contractor of his action. The plant may resume production of mix

for the project only after the Contractor's qualified asphaltic concrete plant technician produces evidence to the designated testing laboratory representative that the problem has been corrected.

When an individual test or the average of tests representing the lot is outside acceptance limits shown in Table 1 of Section C501, an adjustment in unit price for the lot will be made in accordance with Table 2 of Section C501.

(d) Pavement Samples: The Contractor shall furnish samples at locations determined by the designated testing laboratory's roadway technician. These operations shall be witnessed by the designated testing laboratory's roadway technician.

(e) Pavement Density: Refer to subsection Table 2 of Section C501.

(f) Roadway Inspection.

(g) Inspection of roadway asphaltic concrete work at the job site shall be performed by the roadway technician furnished by the designated testing laboratory. His duties will include, but not be limited to, the following:

(1) Record locations, tonnage, type of mix, lot number, and other pertinent data in his daily report.

(2) Temperatures will be checked and recorded in accordance with these specifications during the production of each lot.

(3) Observe the general operations of the Contractor to assure compliance with all requirements.

(4) Observe and record the tack and prime coat operations. (Square yards covered number of gallons used.)

(5) Determine the location of cores to be taken by the Contractor for thickness and density.

(6) Witness the drilling or cutting of the roadway samples and deliver same to designated testing laboratory for further testing.

(7) Witness the surface finish testing performed by the Contractor and report the findings of such testing.

(8) Inspect all mix hauled to the roadway for any obvious deficiencies which may include uncoated aggregate, segregated mixtures, mixtures with lumps, mix which is not of the proper temperature, excessive moisture, color and general appearance of the mixtures. Any loads found deficient shall be brought to the attention of the Contractor and rejected by the Director. Also, no trucks will be accepted without a haul ticket.

(9) Observe weather conditions and advise the Contractor of weather limitations when they apply.

C743.04 ROADWAY BASE & SUB-BASE COURSES:

(a) Soil materials, whether from required excavation or borrow excavation, which are to be incorporated in the project as fill or backfill, shall have been tested and classified by the Testing Laboratory prior to their use. Tests shall be conducted in accordance with the latest applicable standards of A.S.T.M., A.A.S.H.T.O., or La. D.O.T.D., and shall comply with the requirements of Section C302.

(b) Tests.

(1) Obtain a composite sample of base and sub-base material at source in accordance with A.S.T.M. D75 or A.A.S.H.T.O. T2.

(2) Perform Laboratory tests as follows:

A.S.T.M. C136 Sieve analysis of fine and coarse aggregates.
A.S.T.M. D4318 Test for liquid limit and plasticity index of soils.
A.S.T.M. D698, D1557, A.A.S.H.T.O. T99, T180, La. D.O.T.D. TR-418E, TR 418G Moisture-Density relations of soils and soil-aggregate mixtures (Proctor).
A.S.T.M. D2922, D1556, A.A.S.H.T.O. T191, T238 Density of soils and soil aggregate mixtures in place by nuclear or sand-cone methods.

(c) Field density tests shall be made on the completed base or sub-base courses and the depth of test recorded.

Frequency for Soil tests shall be as follows:

Trenches - 1 per 100 linear feet.

Backfill is to be placed and tested in 12" lifts when sand is compacted with a mechanical device, and in 3 foot lifts when flooding method is used.

Base Course - Six (6) tests per block.

Concrete roadway - 3 per side evenly spaced Asphalt/Conc. Curb - 4 under curb (2/side) and 2 in the roadway (1/side).

Depth - One (1) at each density test

C743.05 PAYMENT: Payment for all testing shall be made at the unit prices as detailed in the testing Contract between the City and the testing laboratory.

SECTION C744
STREETLIGHTS

C744.01 DESCRIPTION: This work consists of providing and installing streetlights and establishing all lines and grades as provided on the plans or as directed. The Contractor shall be responsible for the accuracy of all measurements.

C744.02 REFERENCED SPECIFICATIONS:

Street Lighting Handbook, City of New Orleans
New Orleans Street Light Maps, City of New Orleans
Street Light System, City of New Orleans
Street Light Circuit Schematics, City of New Orleans

C744.03 COORDINATION WITH OTHER CONTRACTORS AND UTILITIES: The Contractor shall conduct his operations to work with other entities on the project site. The Contractor shall not delay, endanger, or avoidably interfere with the activities of others and shall provide access to the site as required by the Director.

C744.04 DAMAGE TO STRUCTURES: The Contractor shall save and hold harmless the City of any damage to structures resulting from activities under this contract. The Contractor shall take reasonable precautions (e.g. maintaining vibrations within state mandated limits) to reduce seismic stresses on building structures.

C744.05 SALVAGABLE MATERIALS: The City reserves the right to retain any demolished items that the Director deems salvageable prior to the Contractor removing any items from the site. The Contractor shall deliver all salvaged materials, at the Contractor's expense, to an approved City location.

C744.06 INSTALLING/REPLACING LUMINAIRES: The Contractor shall install Light Emitting Diodes (LED) fixtures for all new street light installations. If a mercury vapor ballast fails within a NEMA or Cobra Head fixture, the Contractor shall replace the luminaire and convert it to a comparable LED fixture.

C744.07 PAINTING STREET LIGHTS: All painting operations shall be conducted in accordance with the requirements of Section 811 of the LA DOTD Standard Specifications for Roads and Bridges, latest edition.

The Contractor shall be responsible for preparing and finishing all metal parts, fittings, pedestals, mast arms, and luminaires.

Type of Paint:

Primers:
Exterior rust inhibitive ferrous-metal primer for ferrous metal,
Exterior galvanized metal primer for zinc-coated metal,
Exterior aluminum primer under alkyd finishes for aluminum.

Finish Coat: Exterior full-gloss alkyd enamel. Gloss refers to high sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

Standard colors are Bronze, Black, and “Jungle Green” FSTT-C-595, Color No. 14036.

Substitute products must be equal to specified paints for all qualitative requirements applicable to their use and must be approved by the Director.

Application: The preparation for finishing of new equipment shall be as follows:

Remove any hardware that is not to be painted. If removal is impractical or impossible, provide surface applied protection before surface preparation and painting.

Before applying paint, clean and prepare surfaces to manufacturer’s written instructions for each particular substrate condition as specified. Remove grease, oil, mill scale, and loose and flaking paint back to solid substrate.

Provide barrier coats over incompatible primers or remove and reprime.

Standards and posts shall have at least one coat of primer (the greater of 2.0 mils minimum or as recommended by the manufacturer) and two finish coats (the greater of 2.0 mils per coat, or as recommended by the manufacturer). Sand standards and posts lightly between each succeeding enamel coat.

If a prime coat has been applied by the supplier, prime coat shall not be required.

Factory enameled equipment and materials shall be examined for damaged paint after installation, and such damaged surfaces shall be repainted to the satisfaction of the Director. Factory-applied enamel finish in good condition and of appropriate color will be acceptable.

Do not paint concealed surfaces, finished metal surfaces, operating parts, and labels. Finished metal surfaces include the following:

Anodized aluminum
Stainless steel
Chromium plate

At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from work area.

Provide Wet Paint signs to protect newly painted finishes.

Apply paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.

Do not apply paint in rain, fog, or mist; or when relative humidity exceeds 85 percent, or at a temperature less than 5 deg F above the dew point; or to a damp or wet surface. Painting may

continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

Provide primer and finish coat materials that are compatible with one another and with the substrates.

C744.08 TREE TRIMMING AROUND STREET LIGHTS: Tree trimmers shall be licensed arborists, authorized to perform tree trimming by the Department of Parks and Parkways. Tree trimming shall consist of pruning the foliage of one or more trees that restricts visible light of the luminaire. The upper branches shall be pruned a distance of three (3) feet from the top and sides of the luminaire. Branches and foliage below the luminaire shall be pruned below a 150-degree cone (75 degrees each side of a vertical line). No tree trimming shall be performed that will permanently damage the tree. All costs will be provided under C719(60) Tree Trimming.

PART VIII - STRUCTURES

This part shall conform to Part VIII of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, latest edition. In case of conflict, the City Specifications shall govern.

PART IX - PORTLAND CEMENT CONCRETE

This part shall conform to Part IX of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, latest edition. In case of conflict, the City Specifications shall govern.

PART X - MATERIALS

Unless otherwise stated and covered in previous sections and the following sections C1002, C1003 and C1018 of the Department of Public Works, City of New Orleans specifications, this part shall conform to Part X of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, latest edition.
In case of conflict, the City specifications shall govern**.**

SECTION C1002
ASPHALTIC MATERIALS AND ADDITIVES

C1002.01 GENERAL: Asphalt shall be prepared by the refining of petroleum. Asphalt shall be uniform in character, free from water, and shall not foam when heated to 350°F. Asphalt shall be from an approved source listed in the LaDOTD QPL 41.

Refinery or supplier storage tanks, piping, retorts, booster tanks and other equipment used in delivering, storing or handling asphaltic materials shall be kept clean and in good operating condition and shall be operated so as to avoid contamination of the contents with foreign materials.

Final test results for asphaltic materials will be applied to the proper table in this Section for conformance to specifications. Any deviation from the specifications will result in a payment adjustment as specified.

Samples taken at the refinery or supplier shall conform to specification requirements. When the refinery or supplier sample fails to meet these requirements, the material will be rejected and shall not be shipped to the jobsite.

When asphaltic materials sampled at the point of delivery do not conform to requirements for 100 percent pay, and in the opinion of the Director have resulted in an unsatisfactory product, the materials shall be removed and replaced or otherwise corrected at no direct pay. The adjustment in pay for asphaltic materials shall be applied only to samples taken at the point of delivery. When test results are such that a payment adjustment would result from more than one test value, the payment adjustment for the greatest reduction shall apply.

C1002.02 ASPHALTIC MATERIAL ADDITIVES:

(a) Anti-Strip: Anti-strip additives for asphaltic materials shall be approved products listed in QPL 57 and will be tested in accordance with DOTD TR 317.

(b) Silicone: Silicone additives for asphaltic materials shall be approved products listed in QPL 22.

SECTION C1003
AGGREGATES

C1003.01 GENERAL: Aggregates shall be from an approved source. For a source to be approved, each sample shall conform to the requirements specified and in the appropriate subsection. In addition to the test methods given in each subsection, the following methods shall be used in testing aggregates.

Property	Test Method
Deleterious materials	DOTD TR 119
Foreign Matter in Shell	DOTD TR 109
Unit Weight	AASHTO T 19
Sp1xific Gravity & Absorption of Fine Aggregate	AASHTO T 84
Specific Gravity & Absorption of Coarse Aggregate	AASHTO T 85
Polish Value	AASHTO T 278
Amount of Material Finer than the No. 200 Sieve	DOTD TR 112
Sieve Analysis (Gradation)	DOTD TR 113
Specific Gravity of Aggregate for Asphaltic Mixtures	DOTD TR 300
Liquid Limit and Plasticity Index	DOTD TR 428

When the No. 200 sieve is included in the gradation requirements, the results obtained by washing in accordance with DOTD TR 112 shall be added to that obtained by dry sieving in accordance with DOTD TR 113, unless otherwise specified.

(a) Source Approval:

(1) Soundness: The soundness loss of recycled portland cement concrete and aggregates listed in LaDOTD QPL 2 shall not exceed 15 percent when subjected to 5 cycles of the magnesium sulfate soundness test in accordance with AASHTO T 104.

(2) Abrasion: Coarse aggregate listed in LaDOTD QPL 2, and recycled portland cement concrete, except lightweight aggregate shall show an abrasion loss of not more than 40 percent when tested in accordance with AASHTO T 96.

Lightweight aggregate shall be expanded clay or expanded shale and shall show an abrasion loss of not more than 40 percent when tested in accordance with DOTD TR 111.

(3) Recycled portland cement concrete shall be approved in dedicated stockpiles and shall be free of asphaltic concrete overlay material, reinforcing steel, joint material and other debris. After processing, recycled portland cement concrete shall conform to the requirements specified in the appropriate Subsections. When a stockpile has been approved no other material shall be added without prior approval.

(4) Reclaimed asphaltic pavement shall be cold planed in accordance with Section C509 or crushed. Reclaimed asphaltic concrete shall be approved either at the time of removal from the roadway or in stockpiles. Stockpiled materials shall be uniform and reasonably free of lightweight aggregate, asphaltic concrete friction course, debris, soil, and other foreign matter.

(5) During source approval, aggregates for use in portland cement concrete will be tested in accordance with ASTM C 33 Appendix XI for alkali reactivity properties. Aggregates found to be potentially reactive with cement alkalies will be restricted for use with cement or a combination of cement and fly ash containing 0.6 percent or less alkalies (sodium oxide equivalent).

Fine aggregate for portland cement concrete that produces a color darker than the Organic Color No. 3 when tested in accordance with AASHTO T 21, will be subjected to the mortar strength test in accordance with AASHTO T 71. The minimum compressive strength shall be at least 95 percent of the reference mortar compressive strength.

(b) Acceptance Testing: Acceptance of aggregates shall be based on consistent conformation to the requirements for source approval in Heading (a).

C1003.02 AGGREGATES FOR ASPHALTIC MIXTURES: Aggregates for asphaltic mixtures shall conform to the requirements of Subsection C1003.01 except that reclaimed asphaltic pavement, recycled portland cement concrete, crushed shell, sand gravel and fine sand are not required to be from sources listed on LaDOTD QPL 2 but shall be from approved sources.

(1) Gravel, Stone and Crushed Slag: These aggregates shall conform to Subsection C1003.05 for deleterious substances.

These aggregates shall be assigned a Friction Rating as follows:

FRICTION RATING	DESCRIPTION
I	Aggregates that have a Polish Value of greater than 37 and demonstrate the ability to retain acceptable friction numbers for the life of the pavement.
II	Aggregates that have a Polish Value of 35 to 37 and demonstrate the ability to retain acceptable friction numbers for the life of the pavement.
III	Aggregates that have a Polish value of 30 to 34 and demonstrate that ability to retain acceptable friction numbers for the life of the pavement.
IV	Aggregates with a Polish Value of 20 to 29.

(2) Coarse Sand: Coarse sand shall be natural occurring sand processed to meet asphaltic mixture requirements, shall be graded from coarse to fine, and shall be free from vegetative and other foreign matter.

(3) Fine Sand: Fine sand shall be natural occurring sand processed to meet asphaltic mixture requirements, and shall be free from vegetative and other foreign matter.

The fine sand shall be non plastic and no clay balls or clay lumps shall be incorporated into the asphaltic mixture. The gradation shall have a maximum of 35 percent passing the No. 200 sieve. Clay lumps shall not exceed 1.00 percent by weight when sampled from the stockpile and tested in accordance with DOTD TR 119.

(4) Natural Sand: Natural sand shall be coarse sand or a combination of coarse sand and fine sand which is used in the asphaltic concrete mixture. Natural sand shall consist of clean, hard, durable, siliceous grains graded from coarse to fine and shall be reasonably free from vegetative matter or other deleterious materials.

The sand equivalent of the fraction passing the No. 4 sieve of the natural sand in the asphaltic concrete mixture shall be less than 35 when tested in accordance with DOTD TR 120.

(5) Crushed Shell: Shell material shall consist of clam or reef shell. Foreign matter (DOTD TR 109) such as silt and clay shall not exceed 5 percent, and such material shall be dispersed throughout the mass.

(6) Screenings: Screenings, when used, shall be made by crushing aggregates which conformed to the requirements for coarse aggregates in Subsection C1003.01. Screenings shall meet the following gradation requirements.

U.S. Sieve	Percent Passing
3/8"	100
No. 4	80 - 100

(7) Pit Run Sand-Gravel: Pit run sand gravel may be used in Type 5 mixes provided the material is separated into 2 sizes prior to final mixing. The separation shall be done by using a No. 4 screen or other approved sizes. For batch plants the screening process shall be adequate to satisfy this requirement. Pit run sand-gravel shall be non-plastic. No clay balls or clay lumps shall be incorporated into the asphaltic mixture. Clay lumps shall not exceed 1.00 percent by weight when tested in accordance with DOTD TR 119.

(8) Recycled Portland Cement Concrete: Recycled portland cement concrete source shall meet the requirements of Subsection C1003.02(b)(4). The maximum amount of deleterious materials shall conform to Subsection C1003.05.

(9) Reclaimed Asphaltic Pavement (RAP): Reclaimed asphaltic material shall conform to Subsection C1003.01.

(10) Mineral Filler: Mineral filler shall be an approved product listed on LaDOTD QPL 10 and shall consist of limestone dust, pulverized hydrated lime, shell dust, portland cement, or cement stack dust. Mineral dust collected in bag houses or by other dust collectors at asphaltic concrete plants is not classified as mineral filler. Cement stack dust shall consist of material collected form waste rotary kiln gases discharged through a collector of a cement plant. Mineral filler shall conform to the following gradation:

U.S. Sieve	Percent Passing
No. 30	100
No. 80	95 - 100
No. 200	70 - 100
No. 270	60 - 100

Mixtures of aggregate, filler and asphalt, in proportions to meet the requirements of mixes being used, shall have an index of retained Marshall Stability (DOTD TR 313) of at least 85 percent, and a maximum of 1.0 percent volumetric swell (DOTD TR 313).

SECTION C1018
MISCELLANEOUS MATERIALS

C1018.01: Lime shall be hydrated lime or quicklime from an approved source listed in QPL 34.

(a) Hydrated Lime shall conform to ASTM C 207, Type S, except that maximum free moisture shall be 1.5 percent.

(b) Quicklime shall conform to the following chemical requirements:

Minimum CaO + MgO: 90 percent by weight of total material.
Maximum MaO: 8 percent by weight of total material.

Quicklime shall be protected from contact with moisture prior to testing, shall be free flowing and graded so that 100 percent will pass a 3/8 inch sieve. When the quicklime is to be used in a slurry, the gradation shall be a minimum of 95 percent passing the 3/4 inch sieve.

C1018.02 FORM RELEASE AGENT: Form release agent for concrete shall be an approved product listed in QPL 29.

PART XI - SYSTEMS OF MEASUREMENT (FOR FUTURE USE)

PART XII - STANDARD BID ITEMS

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
	SECTION C201 CLEARING AND GRUBBING		
C201(01)	CLEARING AND GRUBBING	LUMP SUM	0
	SECTION C202 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS		
C202(52)(C)	REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT	SQUARE YARD	1
C202(52)(D)	REMOVAL AND DISPOSAL OF EXISTING SIDEWALK DRIVEWAY, FOOT LAP (CONCRETE, BRICK, ASPHALT, ETC.)	SQUARE YARD	1
C202(52)(E)	REMOVAL AND DISPOSAL OF EXISTING CURB (CONCRETE,ASPHALT,BRICK,ETC.)	LINEAR FOOT	1
C202(52)(F)	REMOVAL OF EXISTING CURB AND GUTTER BOTTOM	LINEAR FOOT	1
C202(52)(G)	REMOVAL AND DISPOSAL OE EXISTING GUTTER BOTTOM OR ROLLING STRIP	LINEAR FOOT	1
C202(52)(I)	REMOVAL AND DISPOSAL OF EXISTING ASPHALTIC CONCRETE PAVEMENT	SQUARE YARD	1
C202(53)(C)	REMOVAL AND DISPOSAL OF EXISTING CONCRETE BUS PAD	SQUARE YARD	1
C202(54)(A)	REMOVAL AND DISPOSAL OF CONCRETE. OR STONE HEADERS	LINEAR FOOT	1
C202(54)(B)	REMOVAL AND SALVAGE OF STONE HEADERS	LINEAR FOOT	1
C202(55)	SAW CUT CONCRETE CURB, PAVEMENT, SIDEWALK, DRIVEWAY, ETC. ACCORDING TO PLANS ("DEPTH)	LINEAR FOOT	0
C202(56)	SAW CUT, WHEEL CUT OR SPADE CUT EXISTING ASPHALT, ACCORDING TO PLANS	LINEAR FOOT	0
	SECTION C203 - PREPARATION OF ROADWAY PAVEMENT SUBGRADE		
C203(51)	ROADWAY EXCAVATION	CUBIC YARD (THEO. SECT.)	0
C203(53)	SHAPE DITCHES	LINEAR FOOT	0
C203(58)	UNSUITABLE SUBGRADE & EXCAVATION & FILLING	CUBIC YARD (TRUCK MEA.)	0
C203(59)	GEOTEXTILE FABRIC FOR STABILIZATION	SQUARE YARD	0
C203(60)	GEOGRID	SQUARE YARD	0
C204(01)	TEMPORARY SANDBAGGING	CUBIC YARD	0
C204(02)	TEMPORARY HAY OR STRAW BAILES	EACH	0
C204(03)	TEMPORARY SLOPE DRAINS	LINEAR FOOT	0
C204(04)	TEMPORARY SEDIMENT BASINS	EACH	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
C204(05)	TEMPORARY SEDIMENT CHECK DAMS	EACH	0
C204(06)	TEMPORARY SILT FENCING	LINEAR FOOT	0
C204(07)	TEMPORARY STONE CONSTRUCTION ENTRANCE	CUBIC YARD	0
C204(08)	CURB INLET DRAIN FILTER (9" Diam. X 8 Ft. Long)	EACH	0
C204(09)	CURB INLET DRAIN FILTER (6" Diam. X 6 Ft. Long)	EACH	0
	SECTION C302 - BASE AND SUBBASE COURSE		
C302(51)	BASE COURSE	CUBIC YARD (NET SECT.)	1
C302(53)	SUBBASE COURSE	CUBIC YARD (NET SECT.)	1
	SECTION C306 - SCARIFYING AND COMPACTING ROAD BED		
C306(52)	SCARIFYING AND COMPACTING ROAD BED	SQUARE YARD	0
	SECTION C402 - TRAFFIC MAINTENANCE AGGREGATE		
C402(51)	TRAFFIC MAINTENANCE AGGREGATE	CUBIC YARD (TRUCK MEA.)	0
	SECTION C501 - ASPHALTIC CONCRETE MIXTURES		
C501(51)	ASPHALTIC CONCRETE	TON	1
C501(52)	ASPHALTIC CONCRETE	CUBIC YARD	1
C501(53)	ASPHALTIC CONCRETE (___" THICK)	SQUARE YARD	1
C501(54)	GEOTEXTILE FABRIC FOR PAVING	SQUARE YARD	0
	SECTION C502 – SUPERPAVE ASPHALTIC CONCRETE PAVEMENT		
C502(51)	SUPERPAVE ASPHALTIC CONCRETE	TON	1
C502(52)	SUPERPAVE ASPHALTIC CONCRETE	CUBIC YARD	1
C502(53)	SUPERPAVE ASPHALTIC CONCRETE (___" THICK)	SQUARE YARD	1
	SECTION C506 - POROUS ASPHALTIC PAVEMENT		
C506(51)	POROUS ASPHALTIC CONCRETE	TON	1
C506(52)	POROUS ASPHALTIC CONCRETE	CUBIC YARD	1
C506(53)	POROUS ASPHALTIC CONCRETE (___" THICK)	SQUARE YARD	1
	SECTION C507 - ASPHALTIC BINDERS		
C507(51)	ASPHALTIC BINDER	SQUARE YARD	1
	SECTION C509 - COLD PLANING ASPHALTIC PAVEMENT		
C509(51)	COLD PLANING ASPHALTIC PAVEMENT (___" AVERAGE THICK)	SQUARE YARD	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
	SECTION C601 - PORTLAND CEMENT CONCRETE PAVEMENT		
C601(54)	REINFORCED CONCRETE PAVEMENT (___" THICK)	SQUARE YARD	1
C601(55)	SURCHARGE FOR HIGH EARLY STRENGTH	SQUARE YARD	1
C601(56)	REINFORCED CONCRETE BUS PAD (___" THICK)	SQUARE YARD	1
	SECTION C604 - PERVIOUS CONCRETE PAVEMENT		
C604(54)	PERVIOUS CONCRETE PAVMENT (___" THICK)	SQUARE YARD	1

Letter designations for pavement thickness shall be:

A..... 5"	F ....7-1/2"	K..... 10"	P .....12-1/2"
B..... ..5-1/2"	G.....8"	L ..... 10-1/2"	Q.....13"
C ..... 6"	H..... ..8-1/2"	M ..... 11"	R.....13-1/2"
D ....6-1/2"	I.....9"	N ..... 11-1/2"	S .....14"
E..... 7"	J..... ..9-1/2"	O ..... 12"	T .....14-1/2"

Example:

C601(03)(K) PORTLAND CEMENT CONCRETE 25.4 C.M. THICK (10" THICK)

	SECTION C701 - CULVERTS AND STORM DRAINS		
C701(53)	REINFORCED CONCRETE PIPE (SIZE)	LINEAR FOOT	0
C701(54)	REINFORCED CONCRETE ARCH PIPE (SIZE)	LINEAR FOOT	0
C701(57)	YARD DRAIN SERVICE LINE (SIZE & TYPE)	LINEAR FOOT	0
C701(58)	RESET CULVERT PIPE (SIZE)	LINEAR FOOT	0
C701(59)	REINFORCED CONCRETE WYE OR ARCH EQUIVALENT - NEW (SIZE)	EACH	0
C701(65)	REINFORCED CONCRETE WYE OR ARCH EQUIVALENT - EXISTING (SIZE)	EACH	0
C701(66)	CONCRETE TEE (SIZE).	EACH	0
C701(67)	CLEAN AND FLUSH CULVERT	LINEAR FOOT	0
C701(68)	POINT REPAIR OF EXISTING DRAIN LINES UP TO 10 FEET (SIZE)	EACH	0
C701(69)	POINT REPAIR OF EXISTING DRAIN LINES BEYOND 10 FEET	LINEAR FOOT	0
C701(70)	DRAIN HOUSE CONNECTIONS (SIZE & TYPE)	EACH	0
C701(72)	COLLECTOR LINE TO CATCH BASINS FOR DRAIN HOUSE CONNECTIONS (SIZE)	LINEAR FOOT	0
C701(73)	ABANDONING EXISTING DRAINAGE PIPES IN PLACE AND FILL WITH FLOWABLE MATERIAL (SIZE)	LINEAR FOOT	0
C701(74)	REMOVAL AND DISPOSAL OF EXISTING DRAIN LINES NOT IN SAME TRENCH) INCLUDING	LINEAR FOOT	0

BACKFILING WITH RIVER SAND AND COMPATION

Letter Designations shall be used for the various pipe sizes as follows:

Circular Pipe (Inches)	
4 ...A	60 ...Q
6 ...B	66 ...R
8 ...C	72 ...S
10 ...D	78 ...T
12 ...E	84 ...U
15 ...F	90 ...V
18 ...G	96... W
21 ...H	102 ...X
24 .. I	108 ...Y
27 ... J	114 ...Z
30 ...K	120....1
33 ... L	126....2
36 .. M	132....3
42 ...N	138....4
48 ...O	144....5
54 ...P	

Arch Pipe (Inches)		
Concrete (RCPA)	**Equivalent Diameter**	**Letter Designation**
18 X 11	15	F
22 X 13	18	G
26 X 15	21	H
28 X 18	24	I
36 X 22	30	K
43 X 26	36	M
51 X 31	42	N
58 X 36	48	O
65 X 40	54	P
73 X 45	60	Q
-	66	R
88 X 54	72	S
-	78	T
102 X 62	84	U
115 X 72	90	V
122 X 77	96	W
-	102	X
138 X 87	108	Y
-	114	Z
154 X 96	120	1

Examples:

C701(54)(Y) Reinforced Concrete Arch Pipe (138 X 87).

C701(57)(C) PVC Yard Drain service line (8").

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
	SECTION C702 - MANHOLES, CATCH BASINS, DROP INLETS AND CLEAN OUTS		
C702(52)(J)	NO. 1 STANDARD DRAIN MANHOLE...	FOOT HEIGHT	1
C702(52)(K)	NO. 1 STANDARD DRAIN MANHOLE...	FOOT HEIGHT	1
C702(52)(L)	NO. 3 STANDARD DRAIN MANHOLE...	FOOT HEIGHT	1
C702(52)(M)	SPECIAL DRAIN MANHOLE	EACH	0
C702(52)(N)	SPECIAL CONFLICT MANHOLE...	EACH	0
C702(52)(J)	TYPE A CATCH BASINS ADJUSTMENT	EACH	0
C702(53)(K)	TYPE B CATCH BASINS ADJUSTMENT	EACH	0
C702(53)(L)	TYPE C CATCH BASINS ADJUSTMENT	EACH	0
C702(53)(M)	NO. 1 STANDARD CATCH BASIN	EACH	0
C702(53)(N)	DOUBLE NO. 1 CATCH BASIN	EACH	0
C702(53)(O)	NO. 2 STANDARD CATCH BASIN	EACH	0
C702(53)(P)	NO. 3 STANDARD CATCH BASIN	EACH	0
C702(53)(Q)	NO. 4 STANDARD CATCH BASIN	EACH	0
C702(53)(R)	NO. 5 STANDARD CATCH BASIN	EACH	0
C702(53)(S)	24" X 30" CLEAR OPENING STANDARD DROP INLET.....	EACH	0
C702(53)(T)	SINGLE MOUNTABLE CATCH BASINS	EACH	0
C702(53)(U)	DOUBLE MOUNTABLE CATCH BASINS	EACH	0
C702(53)(V)	REHABILITATE EXISTING CATCH BASIN	EACH	0
C702(54)(I)	REHABILITATE EXISTING MANHOLE..	FOOT HEIGHT	1
C702(54)(K)	TAP-IN TO EXISTING DRAINLINE	EACH	0
C702(54)(A)(1)	ADJUST MANHOLE OR DROP INLET UP TO 6" WITH BRICK AND MORTAR	EACH	0
C702(54)(A)(2)	ADJUST MANHOLE WITH RINGS UP TO 4"	EACH	0
C702(54)(A)(3)	ADJUST MANHOLE OR DROP INLET OVER 6" WITH BRICK AND MORTAR	EACH	0
C702(55)(C)	6" DRAIN CLEAN OUT FOR ROOF DRAINS.	EACH	0
C702(56)	CLEAN OUT BOX EXISTING CULVERT	EACH	0
C702(57)	CLEAN OUT BOX NEW CULVERT	EACH	0
	SECTION C706 - DRIVEWAYS AND SIDEWALKS		
C706(51)	CONCRETE SIDEWALK (___" THICK)..	SQUARE YARD	1
C706(52)	CONCRETE DRIVEWAY (___" THICK)	SQUARE YARD	1
C706(54)	SIDEWALK AT INTERSECTION INCLUDING HANDICAPPED RAMPS (___" THICK)	SQUARE YARD	1
C706(55)	SIDEWALK IN MEDIAN INCLUDING..... .... HANDICAPPED RAMPS	SQUARE YARD	1
C706(56)	HANDICAPPED RAMP (SPECIFY CONCRETE .... BRICK OR STONE)	SQUARE YARD	1
C706(57)	BRICK SIDEWALK.	SQUARE YARD	1
C706(58)	RELAYING BRICK SIDEWALK.....	SQUARE YARD	1
C706(59)	STONE SIDEWALK	SQUARE YARD	1
C706(60)	RELAYING STONE SIDEWALK	SQUARE YARD	1
C706(61)	LETTER OR NUMBER FOR TILE STREET NAME	EACH	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
C706(62)	RESETTING TILE STREET NAME	EACH	0

Letter Designations for various thickness shall be used as follows:

4"...A 7"..D
5"...B 8"..E
6"...C 9"..F

Example: ITEM C706(52)(E) CONCRETE DRIVEWAY 8"

SECTION C707 - CURBS AND GUTTERS

C707(54)	ASPHALTIC CURB	LINEAR FOOT	1
C707(55)	CONCRETE MOUNTABLE CURB WITH OR. WITHOUT DOWELS (STRAIGHT, CIRCULAR OR DEPRESSED)	LINEAR FOOT	1
C707(56)	6" CONCRETE BARRIER CURB WITH OR... WITHOUT DOWELS (STRAIGHT, CIRCULAR OR DEPRESSED)	LINEAR FOOT	1
C707(57)	8" CONCRETE BARRIER CURB WITH OR... WITHOUT DOWELS (STRAIGHT, CIRCULAR OR DEPRESSED)	LINEAR FOOT	1
C707(58)	CONCRETE GUTTER BOTTOM OR ROLLING STRIP	LINEAR FOOT	1
C707(59)	MOUNTABLE CURB AND GUTTER BOTTOM	LINEAR FOOT	1
C707(60)	6" BARRIER CURB & GUTTER BOTTOM OR ROLLING STRIP	LINEAR FOOT	1
C707(61)	8" BARRIER CURB & GUTTER BOTTOM OR ROLLING STRIP	LINEAR FOOT	1
C707(62)	STONE CURB INCLUDING BASE (STRAIGHT, CIRCULAR OR DEPRESSED)	LINEAR FOOT	1
C707(63)	RESET EXISTING CURB (PRECAST CONCRETE, STONE, ETC.) INCLUDING BASE	LINEAR FOOT	1
C707(64)	TIMBER CURB	MBFM	2

SECTION C713 - TEMPORARY SIGNS, BARRICADES AND PAVEMENT MARKINGS

C713(51)	TEMPORARY SIGNS, BARRICADES AND PAVEMENT MARKINGS	LUMP SUM	0

SECTION C714 - SODDING

C714(51)	SODDING	SQUARE YARD	1

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
	SECTION C717 - SEEDING		
C717(51)	SEEDING	LUMP SUM	0
	SECTION C719 - LANDSCAPING		
C719(55)	GRAVEL BED AND FILTER CLOTH OVER TREE ROOTS	SQUARE YARD	1
C719(56)	TREE PROTECTION	LINEAR FOOT	0
C719(57)	TREE REMOVAL (DBH SIZE, TYPE)	EACH	0
C719(58)	TREE REPLACEMENT (DBH SIZE, TYPE)	EACH	0
C719(59)	TREE RELOCATION (DBH SIZE TYPE)	EACH	0
C719(60)	TREE TRIMMING	LUMP SUM	0
C719(61)	ROOT PRUNING	EACH	0
C719(62)	ROOT TRENCHING	EACH	0
	SECTION C723 - GRANULAR MATERIAL		
C723(52)	BATTURE SAND FOR DRESSING, GRANULAR MATERIAL FOR OTHER ADJUSTMENTS	CUBICYARD (T.M.)	0
	SECTION C724 - PAVEMENT REPAIR, JOINT REPAIR AND CRACK REPAIR		
C724(51)(A)	ASPHALTIC CONCRETE REPAIR	SQUARE YARD	0
C724(51)(B)	CONCRETE FOUNDATION REPAIR WITH ASPHALT OVERLAY	SQUARE YARD	0
C724(51)(C)	CONCRETE PAVEMENT REPAIR	SQUARE YARD	0
C724(53)(A	CONCRETE JOINT REPAIR.	SQUARE YARD	0
C724(53)(B)	JOINT RESEALING	LINEAR FOOT	0
C724(54)(A)	CRACK REPAIR BETWEEN 1/8" AND 1/2" WIDE	LINEAR FOOT	0
C724(54)(B)	CRACK REPAIR GREATER THAN 1"	LINEAR FOOT	0
C724(55)	POT HOLE REPAIR ON ACCESS ROUTE	TON	1
	SECTION C727 - MOBILIZATION		
C727(51)	MOBILIZATION	LUMP SUM	0
	SECTION C728 - JACKED AND BORED PIPE		
C728(51)	JACKED OR BORED PIPE (SIZE, TYPE, CLASS OR THICKNESS)	LINEAR FOOT	0
	SECTION C729 - TRAFFIC SIGNS AND DEVICES		
C729(51)	TRAFFIC SIGN	EACH	0
C729(54)	DELINEATOR ASSEMBLY	EACH	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
C729(66)	OBJECT MARKER ASSEMBLY	EACH	0
C729(71)(A)	STREET NAME SIGN ON EXISTING POST	EACH	0
C729(71)(B)	STREET NAME SIGN ON NEW POST	EACH	0
C729(72)	PROJECT SIGN	EACH	0

SECTION C731 - RAISED PAVEMENT MARKERS

C731(52)	REFLECTORIZED RAISED PAVEMENT MARKERS	EACH	0

SECTION C732 - PLASTIC PAVEMENT MARKINGS

C732(52)	PLASTIC PAVEMENT STRIPING (SOLID LINE)	LINEAR FOOT	0
C732(53)	PLASTIC PAVEMENT STRIPING (BROKEN LINE)	LINEAR FOOT	0
C732(54)	PLASTIC PAVEMENT LEGENDS & SYMBOLS	EACH	0
C732(55)	PLASTIC PAVEMENT STRIPING REMOVAL	LINEAR FOOT	0

Letter designations for various widths shall be used as follows:

4"...A, 6"...B, 8"...C, 12"...D, 24"...E

SECTION C736 - RESTORATION OF TRAFFIC SIGNAL LOOP DETECTORS

C736(59)	LOOP DETECTOR	LINEAR FOOT	0

SECTION C740 – CONSTRUCTION LAYOUT

C740(51)	Construction Layout	LUMP SUM	0

SECTION C741 - WATER MAINS UP TO 12" IN DIAMETER

C741(51)	(SIZE) (MATERIAL) NEW WATER MAIN WITH MAIN LINE FITTINGS	LINEAR FOOT	0
C741(51)	8” PVC NEW WATER MAIN WITH MAIN LINE FITTINGS BY DIRECTIONAL DRILLING	LINEAR FOOT	0
C741(52)	NEW (SIZE)" VALVE	EACH	0
C741(53)	TAPPING SLEEVE & VALVE ASSEMBLY TO NEW MAIN (SIZE)	EACH	0
C741(54)	NEW FIRE HYDRANT	EACH	0
C741(55)(A)	REPLACE 5/8" TO 1” WATER HOUSE WITH 1” WATER HOUSE CONNECTION (FROM MAIN TO METER)	EACH	0
C741(55)	REPLACE (SIZE) WATER HOUSE CONNECTION (FROM MAIN TO METER)	EACH	0
C741(55)(G)	REMOVE AND REPLACE WATER HOUSE CONNECTION FROM METER TO PROPERTY LINE 5/8” TO 1”	EACH	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
C741(56)	RELOCATION OF FIRE HYDRANT (IN EXISTING MAIN)	EACH	0
C741(70)	ADDITIONAL CAST IRON FITTINGS	TON	2
C741(71)(B-01)	6" WATER LINE OFFSET UP TO 24"	EACH	0
C741(71)(C-01)	8" WATER LINE OFFSET UP TO 24"	EACH	0
C741(71)(E-01)	12" WATER LINE OFFSET UP TO 24"	EACH	0
C741(72)(B-02)	6" WATER LINE OFFSET OVER 24"	EACH	0
C741(72)(C-02)	8" WATER LINE OFFSET OVER 24"	EACH	0
C741(72)(E-02)	12" WATER LINE OFFSET OVER 24"	EACH	0
C741(73)	ADJUST WATER VALVE BOX	EACH	0
C741(74)	NEW WATER VALVE MANHOLE (SIZE)	EACH	0
C741(75)	REMOVE MUD AND DEBRIS FROM INSIDE OF WATER METER BOX	EACH	0
C741(76)	ADJUST COMPLETE WATER METER BOX TO GRADE	EACH	0
C741(77)	REPLACE BROKEN WATER METER BOX (5/8") TO (1")	EACH	0
C741(78)	PLUG EXISTING WATER MAIN (SIZE) AND.FILL WITH FLOWABLE MATERIAL (SAND/CEMENT MIXTURE)	LINEAR FOOT	0
C741(79)	(SIZE) WATER MAIN CHLORINATIN	LINEAR FOOT	0

SECTION C742 - SEWER LINES

C742(51)	INSTALL SEWER MAINS (SIZE & DEPTH)	LINEAR FOOT	0
C742(55)	INSTALL SEWER MANHOLE	FOOT HIGH	1
C742(56)	REPLACE SEWER MANHOLE CASTING	EACH	0
C742(57)	SEWER POINT REPAIR UP TO 10 FEET (SIZE & DEPTH).	EACH	0
C742(58)	SEWER POINT REPAIR BEYOND 10 FEET(SIZE & DEPTH)	LINEAR FOOT	0
C742(59)	NEW SEWER HOUSE CONNECTIONS FROM MAIN TO BACK OF CURB (SIZE)	EACH	0
C742(60)	REPLACE EXISTING SEWER HOUSE CONNECTION FROM EXISTING MAIN TO BACK OF CURB	EACH	0
C742(61)	RE-CONNECT EXISTING SEWER HOUSE CONNECTION TO NEW MAIN UP TO 3 FEET	EACH	0
C742(62)	RE-CONNECT EXISTING SEWER HOUSE CONNECTION TO NEW MAIN AND EXTEND TO BACK OF CURB	EACH	0
C742(63)	REPLACE EXISTING SEWER HOUSE CONNECTION BEYOND BACK OF CURB	LINEAR FOOT	0
C742(64)	ADJUST SEWER HOUSE CONNECTION	EACH	0
C742(65)	PIPE LINING (SIZE & METHOD)	LINEAR FOOT	0
C742(66)	CUT LINER TO RESTORE EXISTING SEWER HOUSE CONNECTION (SIZE & METHOD)	EACH	0

Letter designations shall be used for various pipe sizes as follows:

4". .....A	15" .....F
6". .....B	18" .....G
8". C	21" .....H
10".....D	24" I
12".....E	27" .....J

Letter designations shall be used for various depth brackets, as follows:

0' - 6.0' ..... A
6.1' - 8.0' ..... B
8.1' - 10.0'..... C
10.1' - 12.0'..... D
12.1' - 14.0'..... E
14.1' - 16.0'..... F

INTENTIONALLY LEFT BLANK