SEWERAGE and WATER BOARD

of

NEW ORLEANS

SPECIFICATIONS

FOR

CONTRACT 8174

REPAIRS TO THE ENGINEERING BUILDING

Proposals To Be Opened

11:00 O'Clock A.M., Local Time on, **Thursday, January 29th, 2026**

VOLUME II OF II

DISCLAIMER: The official and legally recognized set of Bidding and Construction Documents shall be the set of Documents that are on file in the Engineer/Architect's office labeled "Office Set".

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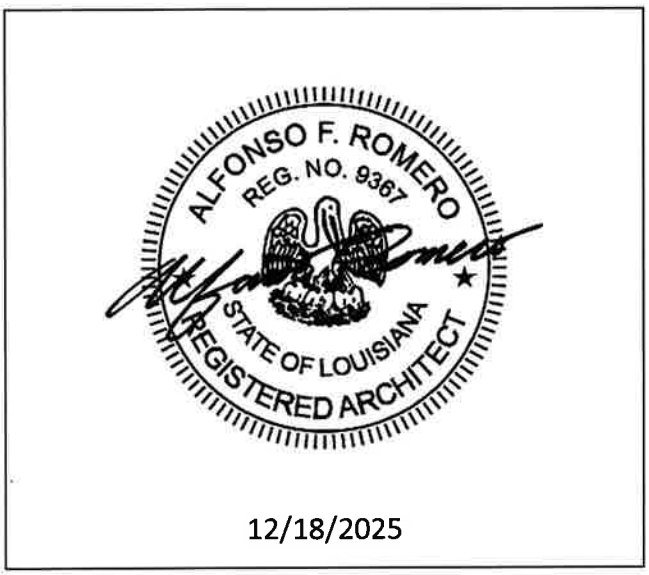
SECTION 00007: PROFESSIONAL SEALS

Project Name: **REPAIRS TO ENGINEERING BUILDING FOR SEWERAGE AND WATER BOARD OF NEW ORLEANS**

Date: **DECEMBER 18, 2025**

ARCHITECTURAL SPECIFICATIONS: The following specification sections were prepared by me or under my direct personal supervision:



Division 1 – General Requirements

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Meyer Engineers, LTD.
Engineer & Architect
Alfonso Romero, NCARB

SECTION 01011: INSURANCE

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract, (General, Special and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Provisions: A/E shall be named as an additional insured on all policies except as applied to Worker's Compensation Coverage. Contractor shall provide A/E with a Certificate of Insurance. A/E shall be listed as Certificate Holder.

1.3 Submittals: A sample Certificate of Insurance is attached.

ACORD. CERTIFICATE OF INSURANCE

DATE (MM/DD/YY)

PRODUCER

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A

INSURED

Sample

COMPANY B

COMPANY C

COMPANY D

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY				GENERAL AGGREGATE	$
	☐ COMMERCIAL GENERAL LIABILITY				PRODUCTS-COMP/OP AGG	$
	☐ CLAIMS MADE ☐ OCCUR				PERSONAL & ADV INJURY	$
	☐ OWNER'S & CONT PROT				EACH OCCURRENCE	$
	☐ _____				FIRE DAMAGE (Any one fire)	$
					MED EXP (Any one person)	$
	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT	$
	☐ ANY AUTO					
	☐ ALL OWNED AUTOS				BODILY INJURY (Per person)	$
	☐ SCHEDULED AUTOS					
	☐ HIRED AUTOS				BODILY INJURY (Per accident)	$
	☐ NON-OWNED AUTOS					
	☐ _____				PROPERTY DAMAGE	$
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	☐ ANY AUTO				OTHER THAN AUTO ONLY:	
	☐ _____				EACH ACCIDENT	$
					AGGREGATE	$
	EXCESS LIABILITY				EACH OCCURRENCE	$
	☐ UMBRELLA FORM				AGGREGATE	$
	☐ OTHER THAN UMBRELLA FORM					$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				☐ STATUTORY LIMITS	
	THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: ☐ INCL ☐ EXCL				EACH ACCIDENT	$
					DISEASE - POLICY LIMIT	$
					DISEASE - EACH EMPLOYEE	$
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

All required insurance includes Owner and Meyer Engineers, Ltd. as an additional insured except as applied to Worker's Compensation coverage.

CERTIFICATE HOLDER

Meyer Engineers, Ltd.
P.O. Box 763
Metairie, LA 70004

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ACORD 25-S (3/93)

* * *

SECTION 01100: SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes:
   1. Project information.
   2. Wok covered by contract.
   3. Access to site.
   4. Coordination with occupants.
   5. Work restrictions.

1.3 PROJECT INFORMATION:

A. Project Identification: Repairs to Engineering Building for Sewerage and Waterboard of New Orleans (SWBNO)
   1. Project Location: 8800 S. Claiborne Avenue, New Orleans, LA 70118.

B. Owner: SWBNO
   1. Owner's Representative: Ryan Battaglia, P.E., Phone: (504) 529-2837, Email: rbattaglia@swbno.org

C. A/E: Meyer Engineers, Ltd.
   1. A/E's Representative: Connie Billedeau, Phone: (504) 885-9892.

1.4 WORK COVERED BY CONTRACT DOCUMENTS:

A. The Work of the Project is defined by the Contract Documents and consists of the following:
   1. Base Bid:
      a. Remove and Replace all existing standing seam metal roof panels with new matching construction, including all gutters, trim flashing, and accessories at roof and wall junctions over building annex.
      b. Remove and replace the modified bitumen roofing assembly and repair skylight over main stain E2.
      c. Remove and replace all flat roofing with new modified bitumen roofing construction, including all gutters, trim flashing and accessories at room and wall junctions over engineering building.
      d. Miscellaneous interior and exterior repairs.
   2. Alternates: Refer to Section 01230 for Description.
   3. Unit Prices – Refer to Section 01220 for Description.

1.5 ACCESS TO SITE:

A. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of the Project site beyond areas in which the Work is indicated.
   1. Limits: Confine construction operations to scope of work in Construction Documents.
   2. Limits: Limit site disturbance, including earthwork and clearing of vegetation, to 40 feet (12.2 m) beyond building perimeter; 10 feet (3 m) beyond surface walkways, patios, surface parking, and utilities less than 12 inches (300 mm) in diameter; 15 feet (4.5 m) beyond primary roadway curbs and main utility branch trenches; and 25 feet (7.6 m) beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities, and playing fields) that require additional staging areas in order to limit compaction in the constructed area.
   3. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
      a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
      b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

B. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations as stated in the General and Supplementary Conditions of this Contract.

1.6 COORDINATION WITH OCCUPANTS:

A. Full Owner Occupancy: Owner will occupy site and existing building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
   1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
   2. Notify the Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.7 WORK RESTRICTIONS:

A. Work Restrictions, General: Comply with restrictions on construction operations.
   1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of **<Insert time>** a.m. to **<Insert time>** p.m., Monday through Friday, except as otherwise indicated.
   1. Weekend Hours: **<Insert restrictions on times permitted for weekend work>**.
   2. Early Morning Hours: **<Insert restrictions or references to regulations by authorities having jurisdiction for restrictions on noisy work>**.
   3. Hours for Utility Shutdowns: **<Insert Owner's restrictions>**.
   4. Hours for [**Core Drilling**] **<Insert noisy activity>**: **<Insert Owner's restrictions>**.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
   1. Notify Owner not less than two (2) days in advance of proposed utility interruptions.
   2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
   1. Notify Owner not less than two (2) days in advance of proposed disruptive operations.
   2. Obtain Owner's written permission before proceeding with disruptive operations.

E. Nonsmoking Building: Smoking and vaping is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor air intakes.

F. Controlled Substances: Use of tobacco products and other controlled substances on the Project site is not permitted.

G. Employee Identification: Provide identification tags for Contractor personnel working on the Project site. Require personnel to utilize identification tags at all times.

1.8 SPECIFICATION AND DRAWING 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. Specification requirements are to be performed by the Contractor unless specifically stated otherwise.

B. Division 1 General Requirements: Requirements of Sections in Division 1 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications.

One or more of the following are used on the 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 scheduled on Drawings.

1.9 MISCELLANEOUS PROVISIONS:

A. Onsite parking for Contractor's personnel shall not be limited to the construction site. Parking on any other of parts of the project site will not be permitted.

B. Confine work to the area of the project site. Other portions of the building and project site beyond areas in which the Contractor's operations are indicated are not to be used or disturbed.

C. Waste Material: Dispose of regulated waste materials in accordance with Federal and State regulations. All other waste materials shall be disposed of in a trash dumpster that is provided by and paid for by the General Contractor. Locate trash dumpster as directed by Owner.

D. Use of the toilet rooms in the building is strictly prohibited. Contractor shall provide self-contained portable toilet units for use by the work force.

E. Permits: The A/E shall apply for the building permit and shall apply to the State Fire Marshal. The Contractor shall pick up and pay for the building permit and any other required permits.

F. Prior Approvals: Bidders wishing to have their product approved as a substitute shall submit their product to the A/E not less than fourteen (14) working days prior to the bid opening. Any proposed substitutes received within fourteen (14) working days of the bid opening shall not be considered for approval and shall be returned to the bidder without action. The burden of proof is upon the bidder to show that the product he is proposing as a substitute is equal to the product specified. Bidder shall use the form attached at the end of this section when submitting his request for prior approval of his product.

G. CAD Drawings: All bidders are advised that the A/E's CAD drawings will not be available for use during construction. The A/E's insurance carrier does not allow his office to share electronic media. This includes all drawings and any variation thereof for piling and foundation location, sprinkler heads, etc. In his bid the cost of drafting from scratch of any drawing shall be included in the cost of his bid.

H. Schedule

1. Contractor shall submit a detailed construction schedule to the A/E ten (10) days after receipt of Notice of Award.
2. Contractor shall submit a revised construction schedule at the pre-construction conference.
3. Contractor shall submit revised construction schedules to the A/E monthly thereafter.
4. All construction schedules shall be prepared using the latest version of Oracle Primavera Project Management Software or Microsoft Project. Schedules shall clearly show the critical path of the construction project. Contractor is advised that the A/E will not

approve Applications for Payment that do not include updated project schedules.

l. Successful contractor is advised that the A/E will not make any color selections until samples of all items requiring color selection are submitted. Contractors are encouraged to submit all colors samples as early as possible after contract award so as not to cause a delay in the color selection process and ultimately a delay in the overall project. It is the contractor's responsibility to submit all colors samples in a timely manner. A/E shall consult with the owner regarding color selection to make a final decision. After a final decision has been made the A/E shall notify the contractor of color selections. A/E shall not take more than thirty consecutive calendar days after receipt of last color sample to submit final color selections to contractor.

END OF SECTION 01100

SECTION 01200: MOBILIZATION

PART 1: GENERAL

1.1 Description:

A. Description of Work: The work to be performed in accordance with this section includes the movement of personnel, equipment, supplies and incidentals to the project site; for the establishment of offices, buildings and other facilities necessary for work on the project; for premiums on bonds and insurance for the project and for all other work and operations which must be performed or costs incurred before beginning work on the various contract items.

PART 2: MATERIALS

2.1 General: Materials shall consist of equipment, buildings, and tools necessary to move to the project site to perform work. Material for bid items shall not be included in mobilization.

2.2 Mobilization must be listed as a line item in the schedule of values which must be approved by A/E and cannot exceed the percentage based on the following table.

Construction	Mobilization
0 – 250,000	10%
250,000 – 500,000	8%
500,000 – 1,000,000	5%
1,000,000 – 2,000,000	3%
Over 2,000,000	2%

PART 3: EXECUTION

3.1 General:

A. Setting up offices and the use of private property for storage or work area shall be executed in a legal manner in accordance with local and state codes and ordinances.

Use of private property will require a signed agreement with the property owner and shall be submitted to A/E for approval prior to use. Sign off from property owner regarding restored property conditions will be required prior to closeout.

PART 4: MEASUREMENT AND PAYMENT

4.1 Measurement: No measurement will be made.

4.2 Payment:

Payment for mobilization will made as follows:

A. When 5 % of the total original contract amount is earned from other Bid Items, 50% of the amount bid for Mobilization, will be paid.
B. When 10% of the total original contract amount is earned from other Bid Items, 100% of the amount bid for Mobilization, will be paid.

Refer to Section 00310 Bid Schedule for Bid Items.

* * *

SECTION 01220 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes administrative and procedural requirements for unit prices.

B. Related Sections:

1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
2. Division 01 Section "Quality Requirements" for general testing and inspecting requirements.

1.3 DEFINITIONS:

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES:

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES:

A. Unit Price No. 1 – All Work Shown Within Construction Documents (Interior and Exterior) Excluding Work Within Unit Prices 2 – 9:

1. Scope of Work: Base Bid

2. Description: Removal and replacement of exterior and interior work at Engineering and Annex Buildings as shown within construction documents, (excluding work individually itemized within Unit Prices 2 – 9 described herein).
3. Quantity: One (1)
4. Unit of Measurement: Lump Sum (LS)

B. Unit Price No. 2 – Removal Gravel/ Built-Up Roof Assembly/ Replacement Modified Bitumen Roof Assembly:

1. Scope of Work: Base Bid
2. Description: Removal of gravel/ built-up roof assembly down to concrete deck substrate on Engineering Building. Replace with new modified bitumen roof assembly system as indicated within construction documents.
3. Quantity: One (1)
4. Unit of Measurement: Lump Sum (LS)

C. Unit Price No. 3 – Removal/ Replacement of Modified Bitumen Roof Assembly:

1. Scope of Work: Base Bid
2. Description: Removal/ replacement of modified bitumen roof assembly down to steel deck substrate on Engineering Building as indicated within construction documents.
3. Quantity: One (1)
4. Unit of Measurement: Lump Sum (LS)

D. Unit Price No. 4 – Patch Modified Bitumen Roof Assembly/ New Cold Applied Liquid Membrane Coating System:

1. Scope of Work: Base Bid
2. Description: Patch existing modified bitumen roofing assembly on Skylight/ Vestibule roof area. Roof area to receive new cold applied liquid membrane coating system as indicated on construction documents.
3. Quantity: One (1)
4. Unit of Measurement: Lump Sum (LS)

E. Unit Price No. 5 – Removal/ Replacement of Standing Seam Metal Roof Assembly:

1. Scope of Work: Base Bid
2. Description: Removal/ replacement of standing seam metal roof system on Annex Building as indicated on construction documents.
3. Quantity: One (1)
4. Unit of Measurement: Lump Sum (LS)

F. Unit Price No. 6 – Removal of Additional Damaged Rooftop and Fume Hood Equipment:

1. Scope of Work: Base Bid
2. Description: Removal of damaged and abandoned two (2) rooftop units and five (5) fume hood equipment units. Cap and flash equipment curbs in new roofing system. Cut ductwork and support in place. Patch/ replace metal wall panels to match existing. Refer to Roof Plan and associated roof details for scope of work.
3. Quantity: One (1)
4. Unit of Measurement: Lump Sum (LS)

G. **Unit Price No. 7 – Copper Gutter:**
   1. Scope of Work: Base Bid
   2. Description: Removal and replacement of 253 LF of copper gutter on Engineering Building. Gutter shall match existing in all respects to include but not limited to gauge, profile, and anchorage. Refer to roof plan, elevations, and associated roof details for scope of work.
   3. Quantity: Two Hundred Fifty-Three (253)
   4. Unit of Measurement: Linear Foot (LF)

H. **Unit Price No. 8 – Gypsum Board Replacement:**:
   1. Scope of Work: Base Bid
   2. Description: Removal and replacement of 274 SF damaged gypsum board, wall insulation, paint to match existing, and wall base. Refer to floor plans for scope of work.
   3. Quantity: One Hundred Seventy-Four (274)
   4. Unit of Measurement: Square Foot (SF)

I. **Unit Price No. 9 – Acoustical Ceiling Tiles**:
   1. Scope of Work: Base Bid
   2. Description: Removal and replacement of 31 each damaged 2'-0" x 4'-0" acoustical ceiling tile. Refer to floor plans for scope of work. Match existing in all respects.
   3. Quantity: Thirty-One (31)
   4. Unit of Measurement: Each (EA)

J. **Unit Price No. 10 – Pressure-Treated 1x4 Wood Battens (Alternate No. 1)**:
   1. Scope of Work: Alternate No. 1
   2. Description: Removal of Thirty (30) damaged wood batten strips secured to existing metal wall panels. Patch/ repair holes in existing metal panels with silicone sealant. Provide pressure-treated 1 inch by 4 inch wood batten (stained and sealed finish) secured with two (2) stainless steel fasteners with neoprene washer at every hat channel, full height wall. See roof plan for scope and locations of work.
   3. Quantity: Thirty (30)
   4. Unit of Measurement: Each (EA)

END OF SECTION 01220

SECTION 01230 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS:

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES:

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES:

A. Additive Alternate No.1: Pressure-Treated 1x4 Wood Battens

1. Base Bid: No work to be performed.
2. Alternate: Contractor to remove Thirty (30) damaged wood batten strips secured to existing metal wall panels. Patch / repair holes in metal panels with sealant. Provide pressure-treated 1 inch by 4 inch wood batten (stained and sealed finish) secured with two (2) stainless steel fasteners with neoprene washer at every hat channel, full height wall.

END OF SECTION 01230

SECTION 01252: WEATHER DELAYS

PART 1: GENERAL

1.1 Related Documents: The general conditions of the Contract, including (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the work specified in this Section.

1.2 Extensions of Contract Time:

A. If the basis exists for an extension of time in accordance with the General Conditions, an extension of time on the basis of weather may be granted only for the number of weather delay days in excess of the number of days listed as the standard baseline for that month.

1.3 Standard Baseline for Average Climatic Range:

A. The Louisiana Department of Transportation Department has reviewed weather data available from the U.S. National Weather Service (NWS) and defined a Standard Baseline average climatic range for the State of Louisiana.

B. The standard baseline is defined as the normal number of anticipated calendar days for each month during which construction activity exposed to weather conditions is expected to be prevented and suspended by cause of adverse weather. Suspension of construction activity for the number days each month as listed in the standard baseline is included in the contract time allotted and is not eligible for extension of Contract Time.

C. Standard baseline is as follows:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
11	10	8	7	5	6	6	5	4	3	5	8

D. The contractor's request shall be considered only for days over the allowable number of days stated above.

1.4 Adverse Weather and Weather Delays Days:

A. Adverse weather is defined as the occurrence of one or more of the following conditions within a twenty-four (24) hour day that prevents construction activity exposed to weather conditions or access to the site:

1. Precipitation (rain, snow, or ice) in excess of 1/2 inch (0.5") liquid measure.
2. Sustained wind in excess of thirty-five (35) m.p.h.

B. Adverse weather may include, if appropriate, "dry-out" or "mud" days:

1. Resulting from precipitation days that occur beyond the standard baseline;

2. Only if there is a hindrance to site access or sitework and Contractor has taken all reasonable accommodations to avoid such hindrance; and,
3. At a rate no greater than 1 make-up day for each day or consecutive days of precipitation beyond the standard baseline that total 1/2 inch or more, liquid measure, unless specifically recommended otherwise by the Designer.

C. A weather delay day may be counted if adverse weather prevents work on the project for fifty percent (50%) or more of the contractor's scheduled work day and critical path construction activities were included in the day's schedule.

D. Contractor shall take into account that certain construction activities are more affected by adverse weather and seasonal conditions than other activities, and that "dry-out" or "mud" days are not eligible to be counted as a weather delay day until the standard baseline is exceeded. Hence, Contractor should allow for an appropriate number of additional days associated with the standard baseline days in which such applicable construction activities are expected to be prevented and suspended.

E. If adverse weather conditions are the basis for a claim for additional time, the Contractor shall document that weather conditions had an adverse effect on the scheduled construction. An increase in the contract time due to weather shall not be cause for an increase in the contract sum. At the end of each month, the Contractor shall make one Claim for any adverse weather days occurring within the month. The Claim must be accompanied by sufficient documentation evidencing the adverse days and the impact on construction. Failure to make such Claim within **twenty-one (21) days** from the last day of the month shall prohibit any future claims for adverse days for that month. No additional adverse weather days shall be granted after the original or extended contract completion date, except those adverse weather days associated with a NWS named storm or federally declared weather related disaster directly affecting the project site.

1.5 Documentation and Submittals:

A. Submit daily jobsite work logs showing which and to what extent critical path construction activities have been affected by weather on a monthly basis.

B. Submit actual weather data to support claim for time extension obtained from nearest NWS station.

C. Use standard baseline data provided in this section when documenting actual delays due to weather in excess of the average climatic range.

D. Organize claim and documentation to facilitate evaluation on a basis of calendar month periods and submit to the A/E.

E. If an extension of the Contract Time is appropriate, such extension shall be made by Change Order.

* * *

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)

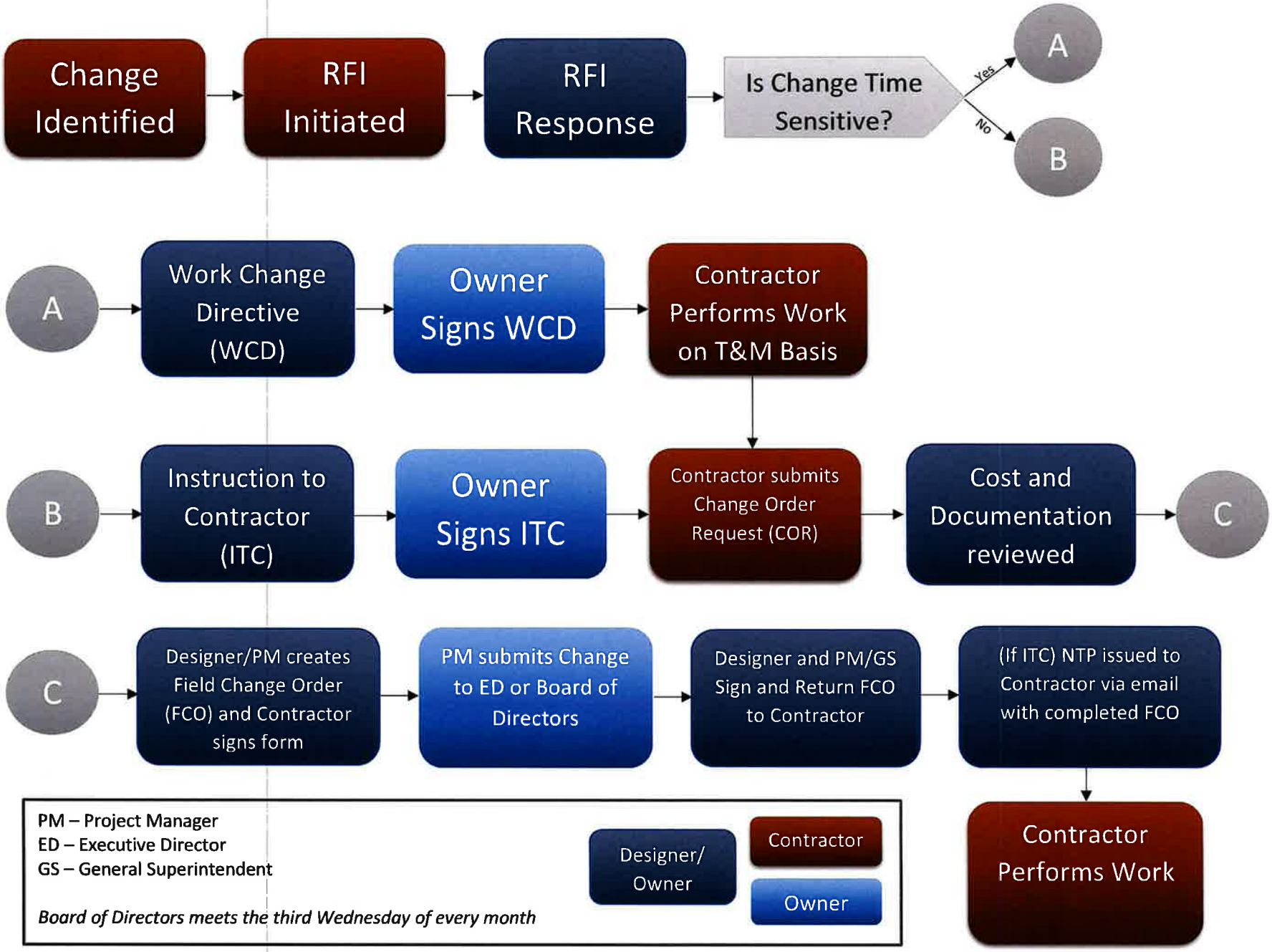
PART 3 EXECUTION (NOT USED)

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

Contract Name

SWBNO Contract No.: _____

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 01290: PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 DEFINITIONS:

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES:

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
   1. Correlate line items in the schedule of values with other required administrative forms and schedules, including the following:
      a. Application for Payment forms with continuation sheets.
      b. Submittal schedule.
      c. Items required to be indicated as separate activities in Contractor's construction schedule.
   2. Submit the schedule of values to A/E at earliest possible date but no later than 10 days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
   1. Identification: Include the following Project identification on the schedule of values:
      a. Project name and location.
      b. Name of A/E.
      c. A/E's project number.
      d. Contractor's name and address.
      e. Date of submittal.
   2. Arrange schedule of values consistent with format of AIA Document G703.
   3. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
      a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.

4. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
5. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
6. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT:

A. Each Application for Payment shall be consistent with previous applications and payments as certified by A/E and paid for by Owner.
   1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
   2. All Applications for Payment shall include a current and updated project construction schedule. Contractor is advised that the A/E will not approve Applications for Payment that do not include updated project schedules. All construction schedules shall be prepared by the contractor using the latest version of Oracle Primavera Project Management Software. Schedules shall clearly show the critical path of the construction project and shall indicate original task duration, revised task duration and final task duration.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. A/E will return incomplete applications without action.
   1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
   2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
   3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
   1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
   2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
   3. Provide summary documentation for stored materials indicating the following:
      a. Materials previously stored and included in previous Applications for Payment.
      b. Work completed for this Application utilizing previously stored materials.
      c. Additional materials stored with this Application.
      d. Total materials remaining stored, including materials with this Application.

F. Transmittal: Submit five (5) signed and notarized original copies of each Application for Payment to A/E by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of values.
   3. Contractor's construction schedule (preliminary if not final).
   4. Products list (preliminary if not final).
   5. Submittal schedule (preliminary if not final).
   6. List of Contractor's staff assignments.
   7. List of Contractor's principal consultants.
   8. Copies of building permits.
   9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
   10. Initial progress report.
   11. Report of preconstruction conference.

H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01290

SECTION 01310: PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. General project coordination procedures.
   2. Administrative and supervisory personnel.
   3. Coordination drawings.
   4. Requests for Information (RFIs).
   5. Project meetings.

1.3 DEFINITIONS:

A. RFI: Request from Owner, A/E, or Contractor seeking information from each other during construction.

1.4 COORDINATION:

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
   1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of Contractor's construction schedule.
   2. Preparation of the schedule of values.
   3. Installation and removal of temporary facilities and controls.
   4. Delivery and processing of submittals.

5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1.5 KEY PERSONNEL:

A. Key Personnel Names: Within fifteen (15) days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
   1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.6 REQUESTS FOR INFORMATION (RFIs):

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
   1. A/E will return RFIs submitted to A/E by other entities controlled by Contractor with no response.
   2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
   1. Project name.
   2. Project number.
   3. Date.
   4. Name of Contractor.
   5. Name of A/E.
   6. RFI number, numbered sequentially.
   7. RFI subject.
   8. Specification Section number and title and related paragraphs, as appropriate.
   9. Drawing number and detail references, as appropriate.
   10. Field dimensions and conditions, as appropriate.
   11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
   12. Contractor's signature.

13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Form bound in the Project Manual.

D. A/E's Action: A/E will review each RFI, determine action required, and respond. Allow seven (7) working days for A/E's response for each RFI. RFIs received by A/E after 1:00 p.m. will be considered as received the following working day.
    1. The following RFIs will be returned without action:
        a. Requests for approval of submittals.
        b. Requests for approval of substitutions.
        c. Requests for coordination information already indicated in the Contract Documents.
        d. Requests for adjustments in the Contract Time or the Contract Sum.
        e. Requests for interpretation of A/E's actions on submittals.
        f. Incomplete RFIs or inaccurately prepared RFIs.
    2. A/E's action may include a request for additional information, in which case A/E's time for response will date from time of receipt of additional information.
    3. A/E's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures."
        a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify A/E in writing within ten (10) days of receipt of the RFI response.

E. On receipt of A/E's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify A/E within seven (7) days if Contractor disagrees with response.

F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log bi-weekly. Use CSI Log Form 13.2B.
    1. Project name.
    2. Name and address of Contractor.
    3. Name and address of A/E.
    4. RFI number including RFIs that were dropped and not submitted.
    5. RFI description.
    6. Date the RFI was submitted.
    7. Date A/E's response was received.

1.7 PROJECT MEETINGS:

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
    1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and A/E of scheduled meeting dates and times.

2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, and A/E, within three (3) days of the meeting.

B. Preconstruction Conference: Contractor will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and A/E, but no later than seven (7) days after execution of the Agreement.
1. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise A/E of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   a. Contract Documents.
   b. Options.
   c. Related RFIs.
   d. Related Change Orders.
   e. Submittals.
   f. Review of mockups.
   g. Possible conflicts.
   h. Compatibility problems.
   i. Time schedules.
   j. Weather limitations.
   k. Manufacturer's written recommendations.
   l. Warranty requirements.
   m. Compatibility of materials.
   n. Acceptability of substrates.
   o. Space and access limitations.
   p. Regulations of authorities having jurisdiction.
   q. Testing and inspecting requirements.
   r. Installation procedures.
   s. Coordination with other work.
   t. Required performance results.
   u. Protection of adjacent work.
   v. Protection of construction and personnel.
3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.

5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Project Closeout Conference: Schedule and conduct a Project closeout conference, at a time convenient to Owner and A/E, but no later than fifteen (15) days prior to the scheduled date of Substantial Completion.
   1. Conduct the conference to review requirements and responsibilities related to Project closeout.
   2. Attendees: Authorized representatives of Owner, A/E, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
   3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
      a. Preparation of record documents.
      b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
      c. Submittal of written warranties.
      d. Requirements for preparing operations and maintenance data.
      e. Requirements for demonstration and training.
      f. Preparation of Contractor's punch list.
      g. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
      h. Submittal procedures.
      i. Owner's partial occupancy requirements.
      j. Installation of Owner's furniture, fixtures, and equipment.
      k. Responsibility for removing temporary facilities and controls.
   4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

E. Progress Meetings: Conduct progress meetings at biweekly intervals.
   1. Coordinate dates of meetings with preparation of payment requests.
   2. Attendees: In addition to representatives of Owner and A/E, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
   3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
      a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure

commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Progress cleaning.
10) Quality and work standards.
11) Status of correction of deficient items.
12) Field observations.
13) Status of RFIs.
14) Status of proposal requests.
15) Pending changes.
16) Status of Change Orders.
17) Pending claims and disputes.
18) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310

Advancement of Construction Technology

REQUEST FOR INFORMATION

Project: _____ R.F.I. Number: _____

_____ From: _____

To: _____ Date: _____

_____ A/E Project Number: _____

Re: _____ Contract For: _____

Specification Section: Paragraph: Drawing Reference: Detail:

Request: _____

Signed by: Date:

Response:

☐ Attachments

Response From: To: Date Rec'd: Date Ret'd:

Signed by: Date:

Copies: ☐ Owner ☐ Consultants ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ File

SECTION 01320 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Start-up construction schedule.
   2. Contractor's construction schedule.
   3. Daily construction reports.
   4. Material location reports.
   5. Field condition reports.
   6. Special reports.

B. Related Sections:
   1. Division 01 Section "Multiple Contract Summary" for preparing a combined Contractor's Construction Schedule.
   2. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
   3. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS:

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
   1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
   2. Predecessor Activity: An activity that precedes another activity in the network.
   3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum, unless otherwise approved by A/E.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of the Project.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS:

A. Format for Submittals: Submit required submittals in the following format:
1. PDF electronic file.
2. One (1) paper copy.

B. Start-up construction schedule.
1. Approval of cost-loaded start-up construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Start-up Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
3. Total Float Report: List of all activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

F. Daily Construction Reports: Submit at monthly intervals.

G. Material Location Reports: Submit at monthly intervals.

H. Field Condition Reports: Submit at time of discovery of differing conditions.

I. Special Reports: Submit at time of unusual event.

J. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE:

A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of A/E's request.

B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:
   1. Review software limitations and content and format for reports.
   2. Verify availability of qualified personnel needed to develop and update schedule.
   3. Discuss constraints, including work stages and area separations.
   4. Review delivery dates for Owner-furnished products.
   5. Review schedule for work of Owner's separate contracts.
   6. Review time required for review of submittals and resubmittals.
   7. Review requirements for tests and inspections by independent testing and inspecting agencies.
   8. Review time required for completion and startup procedures.
   9. Review and finalize list of construction activities to be included in schedule.
   10. Review submittal requirements and procedures.
   11. Review procedures for updating schedule.

1.6 COORDINATION:
A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
B. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from entities involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL:
A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion and final completion.
   1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
   1. Activity Duration: Define activities so no activity is longer than twenty (20) days, unless specifically allowed by A/E.
   2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
      a. Major items or pieces of equipment.

b. Building structure and metal siding.
c. Flooring

3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
4. Startup and Testing Time: Include not less than fifteen (15) days for startup and testing.
5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for A/E's administrative procedures necessary for certification of Substantial Completion.
6. Punch List and Final Completion: Include not more than thirty (30) days for punch list and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work under More Than One Contract: Include a separate activity for each contract.
3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
6. Work Restrictions: Show the effect of the following items on the schedule:
   a. Coordination with existing construction.
   b. Limitations of continued occupancies.
   c. Uninterruptible services.
   d. Partial occupancy before Substantial Completion.
   e. Use of premises restrictions.
   f. Provisions for future construction.
   g. Seasonal variations.
   h. Environmental control.
7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
   a. Subcontract awards.
   b. Submittals.
   c. Purchases.
   d. Mockups.
   e. Fabrication.
   f. Sample testing.
   g. Deliveries.
   h. Installation.
   i. Tests and inspections.

j. Adjusting.
k. Curing.
l. Startup and placement into final use and operation.

8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
   a. Structural completion.
   b. Permanent space enclosure.
   c. Completion of mechanical installation.
   d. Completion of electrical installation.
   e. Substantial Completion.
9. Other Constraints: As Needed.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

E. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.
   1. Refer to Division 01 Section "Payment Procedures" for cost reporting and payment procedures.

F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
   1. Unresolved issues.
   2. Unanswered RFIs.
   3. Rejected or unreturned submittals.
   4. Notations on returned submittals.

G. Recovery Schedule: When periodic update indicates the Work is one (1) or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
   1. Utilize Microsoft Project or Oracle Primavera Software as specified in Division 01 Section "Summary of Work, for Windows XP, Windows Vista and Macintosh OS X operating system.

2.2 START-UP CONSTRUCTION SCHEDULE:

A. Bar-Chart Schedule: Submit start-up horizontal bar-chart-type construction schedule within 7 days of date established for the Notice of Award.

B. All construction schedules shall be prepared using the latest version of Oracle Primavera Project Management Software or Microsoft Project. Schedules shall clearly show the critical path of the construction project. Contractor is advised that the A/E will not approve Applications for Payment that do not include updated project schedules.

C. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first ninety (90) days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE):

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Start-up Network Diagram: Submit diagram within fourteen (14) days of date established for the Notice to Proceed. Outline significant construction activities for the first ninety (90) days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's construction schedule using a cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than sixty (60) days after date established for the Notice to Proceed.
   a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of A/E's approval of the schedule.
2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to correlate with Contract Time.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the start-up network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
   a. Preparation and processing of submittals.
   b. Mobilization and demobilization.
   c. Purchase of materials.
   d. Delivery.
   e. Fabrication.
   f. Utility interruptions.
   g. Installation.
   h. Work by Owner that may affect or be affected by Contractor's activities.
   i. Testing and commissioning.
   j. Punch list and final completion.
   k. Activities occurring following final completion.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
   a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain A/E's approval prior to assigning costs to fabrication and delivery activities. Assign costs under principal subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents, and demonstration and training (if applicable), in the amount of five (**5%**) percent of the Contract Sum.
   a. Each activity cost shall reflect an appropriate value subject to approval by A/E.
   b. Total cost assigned to activities shall equal the total Contract Sum.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Principal events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.
10. Dollar value of activity (coordinated with the schedule of values).

G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

2.4 REPORTS:

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
   1. List of subcontractors at Project site.
   2. List of separate contractors at Project site.
   3. Approximate count of personnel at Project site.
   4. Equipment at Project site.
   5. Material deliveries.
   6. High and low temperatures and general weather conditions, including presence of rain or snow.
   7. Accidents.
   8. Meetings and significant decisions.
   9. Unusual events (refer to special reports).
   10. Stoppages, delays, shortages, and losses.
   11. Meter readings and similar recordings.
   12. Emergency procedures.
   13. Orders and requests of authorities having jurisdiction.
   14. Change Orders received and implemented.
   15. Construction Change Directives received and implemented.
   16. Services connected and disconnected.
   17. Equipment or system tests and startups.
   18. Partial completions and occupancies.
   19. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.5 SPECIAL REPORTS:

A. General: Submit special reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE:

A. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.

1. In-House Option: Owner may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.

B. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one day before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

C. Distribution: Distribute copies of approved schedule to A/E, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01320

SECTION 01322 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes administrative and procedural requirements for the following:
   1. Preconstruction photographs.
   2. Periodic construction photographs.
   3. Final completion construction photographs.

B. Related Sections:
   1. Division 01 Section "Submittal Procedures" for submitting photographic documentation.
   2. Division 01 Section "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.

1.3 INFORMATIONAL SUBMITTALS:

A. Qualification Data: Digital camera or cell phone photography is acceptable.

B. Digital Photographs: Submit image files within three (3) days of taking photographs.
   1. Digital Camera: Minimum sensor resolution of 8 megapixels.
   2. Format: Minimum 1600 by 1200 pixels, 400 dpi minimum, in unaltered original files, with same aspect ratio as the sensor, uncropped, date- and time- stamped, in folder named by date of photograph, accompanied by key plan file.
   3. Identification: Provide the following information with each image description in file metadata tag:
      a. Name of Project.
      b. Name and contact information for photographer.
      c. Name of Architect .
      d. Name of Contractor.
      e. Date photograph was taken.
      f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
      g. Unique sequential identifier keyed to accompanying key plan.

1.4 USAGE RIGHTS:

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA:

A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 1600 by 1200 pixels and 400 dpi.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS:

A. Photographer: Engage a qualified photographer to take construction photographs.

B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in file name for each image.
2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.

D. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.

1. Flag construction limits before taking construction photographs.
2. Take twenty (20) photographs to show existing conditions adjacent to property before starting the Work.
3. Take twenty (20) photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

E. Periodic Construction Photographs: Take twenty 20 photographs weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

F. Architect-Directed Construction Photographs: From time to time, Architect will instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.

G. Final Completion Construction Photographs: Take twenty (20) color photographs after date of Substantial Completion for submission as project record documents. Architect will inform photographer of desired vantage points.
   1. Do not include date stamp.

END OF SECTION 01322

SECTION 01330 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 DEFINITIONS:

A. Action Submittals: Written and graphic information and physical samples that require A/E's responsive action. Action submittals, as they are implied are those submittals indicated in individual Specification Sections.

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals, as they are implied are those submittals indicated in individual Specification Sections.

C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS:

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the A/E and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal: Submit concurrently with start-up construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work those required early because of long lead time for manufacture or fabrication, and all submittals that require color/material selections.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
   a) Submit revised submittal schedule to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:

a) Scheduled date for first submittal.
b) Specification Section number and title.
c) Submittal category: Action, informational.
d) Name of subcontractor.
e) Description of the Work covered.
f) Scheduled date for A/E's final release or approval.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS:

A. A/E's Digital Data Files: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by A/E for Contractor's use in preparing submittals.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

C. A/E reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

D. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on A/E receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow fifteen (15) days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. A/E will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow fifteen (15) days for review of each resubmittal.

E. Identification and Information: Place a permanent label or title block on each paper copy submittal item for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by A/E.
3. Include the following information for processing and recording action taken:
a) Project name.
b) Date.

c) Name of Construction Manager.
d) Name of Contractor.
e) Name of subcontractor.
f) Name of supplier.
g) Name of manufacturer.
h) Revise first subparagraph below to suit Project and office practice.
i) Number and title of appropriate Specification Section.
j) Drawing number and detail references, as appropriate.
k) Location(s) where product is to be installed, as appropriate.
l) Other necessary identification.

F. Additional Paper Copies: Unless additional copies are required for final submittal, and unless A/E observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to A/E.

G. Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. A/E will return submittals, without review, received from sources other than Contractor.
1. Transmittal Form: Use Submittal Transmittal form included in Project Manual.
a) Project name.
b) Date.
c) Destination (To:).
d) Source (From:).
e) Names of subcontractor, manufacturer, and supplier.
f) Category and type of submittal.
g) Submittal purpose and description.
h) Specification Section number and title.
i) Indication of full or partial submittal.
j) Drawing number and detail references, as appropriate.
k) Transmittal number.
l) Remarks.
m) Signature of transmitter.
2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by A/E on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

H. Resubmittals:
1. Make resubmittals in same form and number of copies as initial submittal.
a) Note date and content of previous submittal.
b) Note date and content of revision in label or title block and clearly indicate extent of revision.
c) Resubmit submittals until they are marked with approval notation from A/E's action stamp.

I. Shop Drawings: Revise initial drawings as required and resubmit as specified for initial submittal. Indicate on drawings any changes which have been made other than those requested by A/E.

J. Project Data and Samples: Submit new data and samples as required for initial submittal.

K. Contractor shall accept full responsibility for the completeness of each submission, and, in the case of a resubmission, shall verify that all exceptions previously noted by A/E have been taken into account. In the event that more than one (1) resubmission is required because of failure of Contractor to account for exceptions previously noted, Contractor shall reimburse the Owner for the charges of the A/E for review of the additional resubmissions.

L. Any need for more than one (1) resubmission, or any other delay in obtaining A/E's review of submittals, will not entitle Contractor an extension of the Contract Time unless delay of the Work is directly caused by a change in the Work authorized by a Change Order or by failure of A/E to return any submittal within a reasonable time after its receipt in A/E's office.

M. When the drawings and data are returned marked SUBMIT SPECIFIED ITEM the Contractor shall do so. When the drawings and data are returned marked REVISE AND RESUBMIT, the corrections shall be made as noted thereon and as instructed by the A/E and the required number of corrected copies (or one corrected reproducible copy) resubmitted.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Use only final submittals that are marked with approval notation from A/E's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES:

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Action Submittals: Submit five (5) paper copies of each submittal, unless otherwise indicated. A/E will return two (2) copies.
2. Informational Submittals: Submit two (2) paper copies of each submittal, unless otherwise indicated. A/E will not return copies.
3. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 1 Section "Closeout Procedures."
4. Certificates and Certifications Submittals: Provide 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.
   a) Provide a notarized statement on original paper copy certificates and certifications where indicated.

5. Test and Inspection Reports Submittals: Comply with requirements specified in Division 1 Section "Quality Requirements."

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
   1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
   2. Mark each copy of each submittal to show which products and options are applicable.
   3. Include the following information, as applicable:
      a) Manufacturer's catalog cuts.
      b) Manufacturer's product specifications.
      c) Standard color charts, unless otherwise specified. (printed copies are not acceptable)
      d) Statement of compliance with specified referenced standards.
      e) Testing by recognized testing agency.
      f) Application of testing agency labels and seals.
      g) Notation of coordination requirements.
      h) Availability and delivery time information.
   4. For equipment, include the following in addition to the above, as applicable:
      a) Wiring diagrams showing factory-installed wiring.
      b) Printed performance curves.
      c) Operational range diagrams.
      d) Clearances required to other construction, if not indicated on accompanying Shop Drawings.
   5. Submit Product Data before or concurrent with Samples.
   6. Submit Product Data in the following format:
      a) PDF electronic file.
      b) Five (5) paper copies of Product Data, unless otherwise indicated. A/E will return two (2) copies.

C. Shop Drawings (Action Submittal): Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
   1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
      a) Identification of products.
      b) Schedules.
      c) Compliance with specified standards.
      d) Notation of coordination requirements.
      e) Notation of dimensions established by field measurement.
      f) Relationship and attachment to adjoining construction clearly indicated.
      g) Seal and signature of professional engineer if specified.
   2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1067 mm).
   3. Submit Shop Drawings in the following format:

a) Five (5) opaque copies of each submittal. A/E will retain two (2) copies; remainder will be returned.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
   a) Generic description of Sample.
   b) Product name and name of manufacturer.
   c) Sample source.
   d) Number and title of applicable Specification Section.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a) Number of Samples: Submit one (1) full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. A/E will return submittal without options selected. Once all submittals requiring color/material selections are submitted, the A/E will make selections per Owners approval. Upon Owners approval A/E will provide a finish selection schedule to Contractor indicating selected finishes.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a) Number of Samples: Submit one (1) set of Samples. A/E will retain one (1) Sample set when deemed necessary, until the completion of construction. Contractor must indicate if sample needs to be returned prior to construction completion.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three (3) sets of paired units that show approximate limits of variations.

E. Contractor's Construction Schedule: Comply with requirements specified.

F. Application for Payment: Comply with requirements specified in General Conditions and Division 1 Section "Payment Procedures."

G. Schedule of Values: Comply with requirements specified in General Conditions and Division 1 Section "Payment Procedures."

H. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

I. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

J. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

K. Research Reports: Submit written evidence that product complies with the current version of International Building Code. Include the following information:
   1. Name of evaluation organization.
   2. Date of evaluation.
   3. Time period when report is in effect.
   4. Product and manufacturers' names.
   5. Description of product.
   6. Test procedures and results.
   7. Limitations of use.

L. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

M. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

N. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

O. Field Test Reports: Submit reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

P. Maintenance Data: Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."

Q. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES:

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to A/E.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit three (3) paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

C. Design professional must be licensed in the State of Louisiana.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW:

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to A/E.

B. Project Closeout and Maintenance/Material Submittals: Refer to requirements in Division 1 Section "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 A/E'S ACTION:

A. General: A/E will not review submittals that do not bear Contractor's approval stamp and will return them without action. Additionally, if during review the A/E determines that the Contractor has not sufficiently reviewed the submittal the A/E shall return the submittal to the Contractor without any action for a more complete and adequate review by the Contractor.

B. Shop Drawings (Action Submittals): A/E will review each submittal for general compliance, and return it. A/E will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
   1. Review submittals with reasonable promptness.
   2. Review for a design concept of project and information given in Contract Documents.
   3. Review of a separate item does not constitute review of an assembly in which the item functions.
   4. Affix stamp and initials or signature certifying to review of submittal.
   5. Return reproducible Shop Drawings and other submittals to Contractor for distribution, or for resubmission. Contractor is responsible for obtaining the number of opaque prints from the reproducible shop drawing as necessary for distribution.
   6. The Design Professional shall review Contractor submittals, such as shop drawings, product data, samples and other data, as required by the Design Professional, but only for the limited purpose of checking for conformance with the design conception and the information expressed in the contract documents. This review shall not include review of the accuracy or completeness of details, such as quantities, dimensions, weights or gauges, fabrication processes, construction means or methods, coordination of the work with other trades or construction safety precautions, all of which are the sole responsibility of the Contractor. The Design Professional's review shall be conducted with reasonable promptness while allowing sufficient time in the Design Professional's judgement to permit an adequate review. Review of a specific item shall not indicate that the Design Professional has reviewed the entire assembly of which the item is a component. The Design Professional shall not be responsible for any deviations of the contract documents not brought to the attention of the Design Professional in writing by the Contractor. The Design Professional shall not be required to review partial submissions or those for which submissions or correlated items have not been received.

C. Informational Submittals: A/E will review each submittal and will not return it, or will return it if it does not comply with requirements. A/E will forward each submittal to appropriate party.

D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from A/E.

E. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

F. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

* * *

Advancement of Construction Technology

SUBMITTAL TRANSMITTAL

Project: _____ Date: _____

_____ A/E Project Number: _____

TRANSMITTAL A To (Contractor): _____ Date: _____ Submittal No. _____

From (Subcontractor): _____ By: _____ ☐ Resubmission

Qty.	Reference / Number	Title / Description / Manufacturer	Spec. Section Title and Paragraph / Drawing Detail Reference

☐ Submitted for review and approval
☐ Resubmitted for review and approval
☐ Complies with contract requirements
☐ Will be available to meet construction schedule
☐ A/E review time included in construction schedule

☐ Substitution involved - Substitution request attached
☐ If substitution involved, submission includes point-by-point comparative data or preliminary details
☐ Items included in submission will be ordered immediately upon receipt of approval

Other remarks on above submission:

☐ One copy retained by sender

TRANSMITTAL B To (A/E): _____ Attn: _____ Date Rec'd by Contractor: _____

From (Contractor): _____ By: _____ Date Trnsmt'd by Contractor: _____

☐ Approved
☐ Approved as noted

☐ Revise / Resubmit
☐ Rejected / Resubmit

Other remarks on above submission:

☐ One copy retained by sender

TRANSMITTAL C To (Contractor): _____ Attn: _____ Date Rec'd by A/E: _____

From (A/E): _____ ☐ Other By: _____ Date Trnsmt'd by A/E: _____

☐ Approved
☐ Approved as noted
☐ Not subject to review
☐ No action required
☐ Revise / Resubmit
☐ Rejected / Resubmit
☐ Approved as noted / Resubmit

☐ Provide file copy with corrections identified
☐ Sepia copies only returned

☐ Point-by-point comparative data required to complete approval process

☐ Submission Incomplete / Resubmit

Other remarks on above submission:

☐ One copy retained by sender

TRANSMITTAL D To (Subcontractor): _____ Attn: _____ Date Rec'd by Contractor: _____

From (Contractor): _____ By: _____ Date Trnsmt'd by Contractor: _____

Copies: ☐ Owner ☐ Consultants ☐ _____ ☐ _____ ☐ _____ ☐ One copy retained by sender

SECTION 01400: QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by A/E, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS:

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by A/E.

C. Preconstruction Testing: Tests and inspections performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

E. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
   1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade or trades.

I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five (5) previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS:

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to A/E for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to A/E for a decision before proceeding.

1.5 ACTION SUBMITTALS:

A. Shop Drawings: For mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
   1. Indicate manufacturer and model number of individual components.
   2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 INFORMATIONAL SUBMITTALS:

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Contractor's Quality-Control Manager Qualifications: For supervisory personnel.

C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Entity responsible for performing tests and inspections.
   3. Description of test and inspection.

4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

1.7 REPORTS AND DOCUMENTS:

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.

4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.8 QUALITY ASSURANCE:

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329 and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:
   a. Provide test specimens representative of proposed products and construction.
   b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
   d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
   e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
   f. When testing is complete, remove test specimens, assemblies, mockups; do not reuse products on Project.
2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to A/E, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.9 QUALITY CONTROL:

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.
3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
   a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. On-Site Project Representative (OSPR) Responsibilities: When these services are contracted for the construction phase of the project by the A/E, Owner or other third party, the following duties shall be performed by the On-Site Project Representative.
1. Obtain all project Contract Documents required for the construction and inspection available from the A/E and Contractor. Thoroughly review this information, make a list of all documents required for the project, and obtain the latest edition of each at the time of the Pre-Construction Meeting. Become completely familiar with all the documents necessary for observation of the construction of the project prior to the commencement of construction. Generate a list of all testing that is required for the project per the Contract Documents.
2. Keep a contact list containing the name, company name, address, telephone number, and e-mail address of all contact persons involved in the project provided by the Contractor.
3. After the Contract Documents have been reviewed, and in advance of construction, visit the project site and become familiar with the existing site conditions. Perform an on-site field check of the project with the project Construction Documents and note locations of key elements including designated site access and staging areas for the contractor's use.
4. During construction, the OSPR shall be on site at times as designated in their contract to review the work in progress.
5. Attend all scheduled construction meetings with the A/E, Owner, Contractor, etc. and any additional meetings at the project site as necessary to perform the on-site representation services as described herein.
6. Periodically review the Contractor's construction schedule, in particular, the milestone dates and critical path, and alert the A/E to conditions and on-site events that may affect the Contractor's ability to complete the work in accordance with the schedule.
7. Obtain a list of all submittals and shop drawings required for the project. This list should be all-inclusive and note the approving

authority for each submittal. During construction, refer to this list to make certain proper submittals have been made and approved prior to installation. Receive copies (digital access is acceptable) of all approved submittals and shop drawings and confirm that the materials and equipment on-site match the approved submittals.

8. At the Owner's request, observe materials and equipment located off site, but only for the limited purpose of checking for conformance with the design concept and approved submittals and/or evaluating such materials and equipment for a Certificate of Payment.
9. Observe all tests and inspections (as required in the Contract Documents) and report observations to the A/E and Owner.
10. Periodically review documents (i.e. as-builts) and samples the Contractor is required to maintain at the site and report observations to the A/E and Owner.
11. Keep a written log of activities that occur at the project site for each day that the OSPR is present at the site. The daily logs will capture the information necessary to create monthly reports (i.e. weather conditions, tests or inspections performed, personnel and visitors on site, photographs, etc.). On a monthly basis, or as otherwise agreed to by the A/E and/or Owner, submit a written progress report to the A/E and/or Owner.
12. The OSPR shall not:
    a. Authorize any deviation from the Contract Documents or substitution of materials or equipment.
    b. Exceed limitations of OSPR authority as set forth in their agreement with the Owner or A/E as outlined in the Construction Documents.
    c. Undertake any of the responsibilities of the Contractor, sub-contractors, suppliers, etc.
    d. Advise on, issue direction relative to, or assume control over any aspect of the means, methods, techniques, sequences, or procedures of the project.
    e. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of the Owner or Contractor.
    f. Participate in specialized field or laboratory tests or inspections conducted off-site by others unless as specifically authorized by the A/E or Owner.
    g. Accept shop drawings or sample submittals for review or approval.
    h. Authorize the Owner to occupy the project in whole or in part.

D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

E. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions,

verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

F. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

G. Testing Agency Responsibilities: Cooperate with A/E, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Notify A/E and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
   3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
   4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
   5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
   6. Do not perform any duties of Contractor.

H. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
   1. Access to the Work.
   2. Incidental labor and facilities necessary to facilitate tests and inspections.
   3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
   4. Facilities for storage and field curing of test samples.
   5. Delivery of samples to testing agencies.
   6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
   7. Security and protection for samples and for testing and inspecting equipment at Project site.

I. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION:

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 1 Section "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400

SECTION 01500: TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.3 USE CHARGES:

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to testing agencies, and authorities having jurisdiction.

B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS:

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage, including delivery, handling, and storage provisions for materials subject to water absorption or water damage, discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water damaged Work.

1. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.

C. Dust-Control and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust-control and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:

1. Locations of dust-control partitions at each phase of the work.
2. HVAC system isolation schematic drawing.

3. Location of proposed air filtration system discharge.
4. Other dust-control measures.
5. Waste management plan.

1.5 QUALITY ASSURANCE:

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS:

A. Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide **galvanized steel** bases for supporting posts.

B. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10 mils (0.25 mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84.

C. Dust Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).

2.2 TEMPORARY FACILITIES:

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, A/E, and construction personnel office activities and to accommodate project meetings specified in other Division 1 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
   1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
   2. Coffee machine and supplies.

C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
   1. Store combustible materials apart from building.

2.3 EQUIPMENT:

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL:

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION:

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

C. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Prior to commencing work, isolate the HVAC system in area where work is to be performed in accordance with approved coordination drawings.

a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.

b. Maintain negative air pressure within work area using HEPA-equipped air filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust containment devices.

3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

D. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

3.3 SUPPORT FACILITIES INSTALLATION:

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.

2. Maintain support facilities until A/E schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
   1. Protect existing site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

D. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
   1. Identification Signs: Provide Project identification signs as indicated on Drawings.
   2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
      a. Provide temporary, directional signs for construction personnel and visitors.
   3. Maintain and touchup signs so they are legible at all times.
   4. Provide Job Sign per Section 015800.

E. Waste Disposal Facilities: Comply with requirements of authorities having jurisdiction.

F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 1 Section "Execution" for progress cleaning requirements.

G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
   1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

H. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
   1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION:

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

C. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
   1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.

D. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
   1. Construct dustproof partitions with two layers of 6-mil (0.14-mm) polyethylene sheet on each side. Cover floor with two layers of 6-mil (0.14-mm) polyethylene sheet, extending sheets 18 inches (460 mm) up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant treated plywood.
   2. Protect air-handling equipment.
   3. Provide walk-off mats at each entrance through temporary partition.

3.5 MOISTURE AND MOLD CONTROL:

A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.

B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
   1. Protect porous materials from water damage.
   2. Protect stored and installed material from flowing or standing water.
   3. Keep porous and organic materials from coming into prolonged contact with concrete.
   4. Remove standing water from decks.
   5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
   1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
   2. Keep interior spaces reasonably clean and protected from water damage.
   3. Periodically collect and remove waste containing cellulose or other organic matter.
   4. Discard or replace water-damaged material.
   5. Do not install material that is wet.
   6. Discard, replace or clean stored or installed material that begins to grow mold.

7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
   1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
   2. Use permanent HVAC system to control humidity.
   3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

3.6 OPERATION, TERMINATION, AND REMOVAL:

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
   2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
   3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION 01500

SECTION 01580: JOB SIGN

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 General:

A. Comply with Federal, State, and Local codes and regulations and with utility company requirements.

B. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

1.3 Job Conditions: Install, maintain and protect sign in a manner and at location which will be safe, non-hazardous, and protective of persons and property, and free of deleterious effects.

1.4 Job Sign:

A. Construct and maintain job sign as detailed. All lumber shall be treated pine. Signs shall be 3/4 inch thick exterior grade plywood with "B" or better face.

B. See Project Manual Title Sheet for text of Project Title and Owner's Name(s). Consult A/E for specific requirements within seven (7) days of execution of contract.

C. Locate one (1) job sign where directed by A/E at the site.

D. Lettering and layout on sign shall be done by a professional sign painter. (Helvetica Style).

E. 4 x 4 Treated Pine Posts. Brace as required.

F. Job Sign shall be painted with first coat primer, with second and third coats exterior semi-gloss enamel, as per Painting Specification Section. Colors as selected by A/E.

G. Job Sign shall be erected within two weeks of Notice to Proceed and shall be maintained through duration of project.

H. At his option, Contractor may provide and maintain a separate job sign, approved by the A/E, for listing of subcontractors. If approved, paint by professional sign painter in identical colors as project sign.

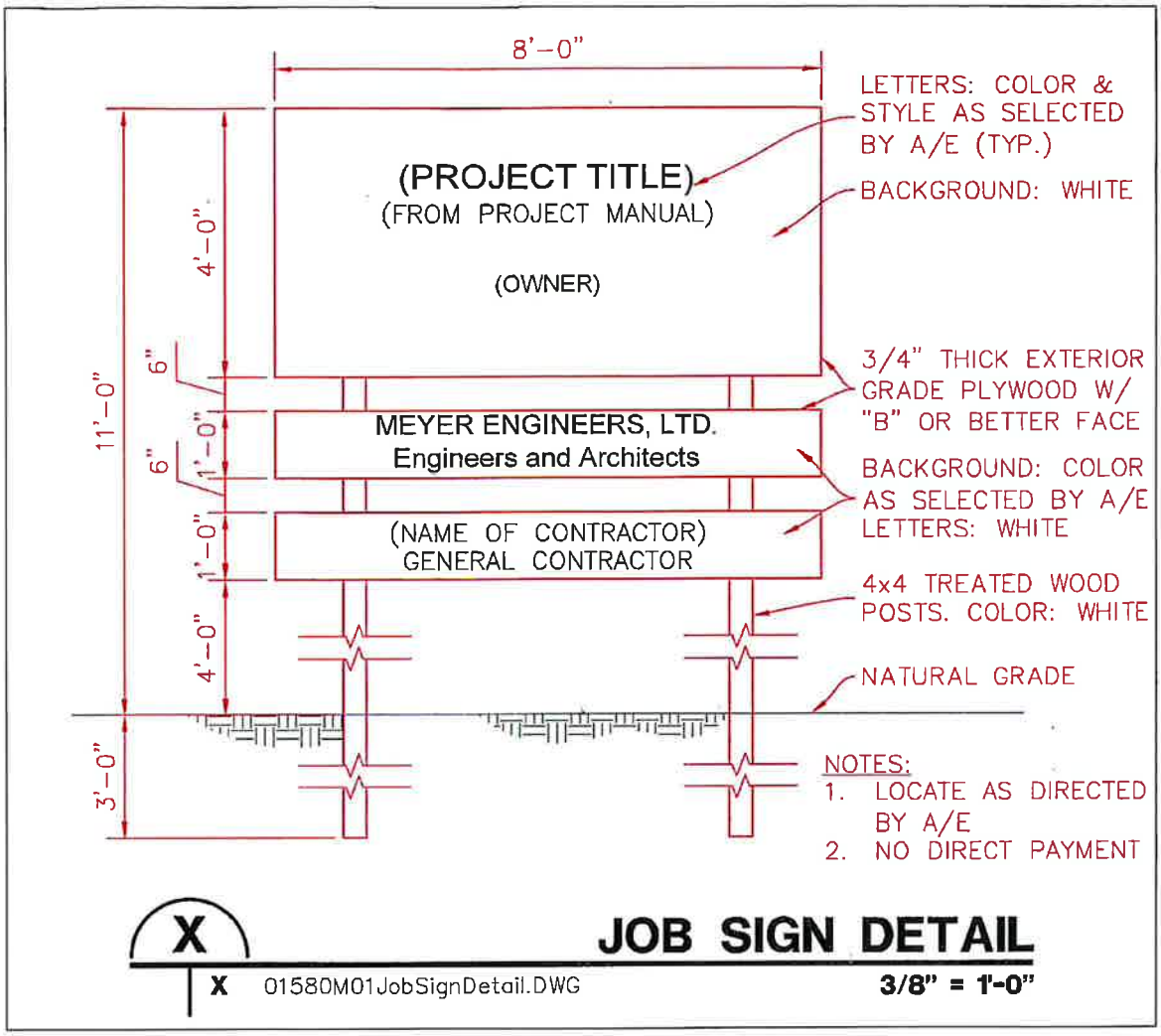
I. Do not allow other signs or advertisements at or near the project site.

1.5 Removal:

A. Completely remove temporary materials and equipment at completion of job or when notified by A/E. Clean and repair damage caused by temporary installations or use of temporary facilities.

B. Restore existing facilities used for temporary services to specified, or to original condition.

C. Restore any permanent facilities used for temporary services to specified condition.


8'-0"
LETTERS: COLOR & STYLE AS SELECTED BY A/E (TYP.)
(PROJECT TITLE)
(FROM PROJECT MANUAL)
BACKGROUND: WHITE
(OWNER)
4'-0"
6"
11'-0"
3/4" THICK EXTERIOR GRADE PLYWOOD W/ "B" OR BETTER FACE
MEYER ENGINEERS, LTD.
Engineers and Architects
1'-0"
6"
BACKGROUND: COLOR AS SELECTED BY A/E
LETTERS: WHITE
(NAME OF CONTRACTOR)
GENERAL CONTRACTOR
1'-0"
4x4 TREATED WOOD POSTS. COLOR: WHITE
4'-0"
NATURAL GRADE
3'-0"
NOTES:
1. LOCATE AS DIRECTED BY A/E
2. NO DIRECT PAYMENT
X
JOB SIGN DETAIL
X 01580M01JobSignDetail.DWG
3/8" = 1'-0"

* * *

SECTION 01600: PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 DEFINITIONS:

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS:

A. Comparable Product Requests: Shall be submitted in accordance with the General and Supplementary Conditions and Division 1.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.

2. A/E's Action: If necessary, A/E will request additional information or documentation for evaluation within one week of receipt of a comparable product request. A/E will notify Contractor of approval or rejection of proposed comparable product request within fifteen (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later.
   a. Form of Approval: As specified in Division 1 Section "Submittal Procedures."
   b. Use product specified if A/E does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE:

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING:

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:
   1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
   2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
   3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
   4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:
   1. Store materials in a manner that will not endanger Project structure.
   2. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
   3. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
   4. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
   5. Protect stored products from damage and liquids from freezing.

6. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES:

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. **In accordance with Louisiana State Law (LSA-R.S. 9:2774) the commencement date for ALL warranties or guarantees of every nature or kind shall be the date of Substantial Completion as certified by the A/E. It shall be the Contractor's sole responsibility to ensure that all written warranties include this commencement time. Also, in accordance with LSA-R.S. 9:2774 the provision of this Section shall not be subject to waiver by contract.**
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. Refer to Divisions 2 through 49. Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES:

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

4. Where products are accompanied by the term "as selected," A/E will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:
1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
3. Products:
   a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered in accordance with General and Supplementary Conditions and Division 1.
   b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
4. Manufacturers:
   a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered in accordance with General and Supplementary Conditions and Division 1.
   b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match A/E's sample", provide a product that complies with requirements and matches A/E's sample. A/E's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 1 Section "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by A/E from manufacturer's full range" or similar phrase, select a product that complies with requirements. A/E will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS:

A. Conditions for Consideration: A/E will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, A/E may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of A/E's and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01600

SECTION 01635 - SUBSTITUTION PROCEDURES

PART 1: GENERAL

1.1 Related Documents: Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 Summary:

A. Section includes administrative and procedural requirements for substitutions.

B. Related Sections:

1. Division 1 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
2. Division 2 through 16 sections for specific requirements and limitations for substitutions.

1.3 Definitions:

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 Submittals:

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use copy of form provided in the Project Manual.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable. The burden of proof of the merit of the proposed substitute is upon the proposers.
   a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
   b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
   c. Detailed comparison (point by point) of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific

features and requirements indicated. Indicate deviations, if any, from the Work specified.

1) Detailed comparison (point by point) must be included in all substitution request documentation submitted for review by the A/E.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.

f. Certificates and qualification data, where applicable or requested.

g. List of similar installations for completed projects with project names and addresses and names and addresses of A/Es and owners.

h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

i. Research reports evidencing compliance with building code in effect and indicated UL or documented testing methods.

j. Construction Schedule (After Contract Execution): Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

k. Construction Schedule (After Contract Execution): Cost information, including a proposal of change, if any, in the Contract Sum.

l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. A/E's Action:

a. Prior to the Bid Date: If necessary, A/E will request additional information or documentation for evaluation within ten (10) working days of receipt of a request for substitution. The A/E will notify the contractor/supplier of acceptance or rejection of proposed substitution within ten (10) working days after receipt. All submittal requests that have been submitted properly and accepted will be included in an addendum.

1) Forms of Acceptance: Signed "Contractor/Supplier Substitution Required Form, Addendum, Change Order, Construction Change Directive, or A/E's supplementary instructions for minor changes in the work.

2) The A/E's decision of approval or disapproval will be final.

b. After Contract Execution: A/E will notify Contractor of acceptance or rejection of proposed substitution during construction within fifteen (15) working days of receipt of request, or seven (7) working days of receipt of additional information or documentation, whichever is later.

1) Forms of Acceptance: Signed "Contractor/Supplier Substitution Required Form, Addendum, Change Order, Construction Change Directive, or A/E's supplementary instructions for minor changes in the work.

2) Use product specified if A/E does not issue a decision on use of a proposed substitution within time allocated.

3) The A/E's decision of approval or disapproval will be final.

1.5 Quality Assurance

A. The contractor represents that he has personally investigated the proposed substitution and determined that it is equal or superior in all respects to that specified.

B. The contractor represents that he will provide the same warranty for the substitution that he would for that specified.

C. The contractor certifies that the cost data presented is complete and includes all related costs under this Contract but excludes costs under separate contracts, and any additional A/E redesign costs, as well as waives all claims for additional costs related to the substitution which subsequently become apparent.

D. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

E. Bidders/Contractor is advised that any acceptable substitution that requires a change or modifications to other parts of the project shall be his responsibility including any additional cost required thereof. Any cost associated for other parts of the projects due to a substitution shall be the responsibility of the Contractor.

1.6 Procedures: Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2: PRODUCTS

2.1 Substitutions – Pre-Bid

A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than fourteen (14) working days prior to the date for receipt of bids.

1. Conditions: A/E will consider Supplier's / Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, A/E will return requests without action, except to record noncompliance with these requirements:

a. Request submitted through a general contractor that has picked up a complete set of bidding documents for the project. Substitutions by a sub-contractor, material supplier, manufacturer's representative, etc. not submitted through a general contractor will be returned without action.
b. Requested substitution is consistent with the Contract Documents and will produce indicated results.
c. Substitution request is fully documented as outlined under submittals and properly submitted on required form.
d. Requested substitution is compatible with other portions of the Work.
e. Requested substitution provides specified warranty.

B. Substitutions for Convenience: A/E will consider requests for substitution if received within fourteen (14) working days prior to the date for receipt of bids. Requests received after that time will be rejected.

1. Conditions: A/E will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, A/E will return requests without action, except to record noncompliance with these requirements:
a. Request submitted through a general contractor that has picked up a complete set of bidding documents for the project. Substitutions by a sub-contractor, material supplier, manufacturer's representative, etc. not submitted through a general contractor will be returned without action.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented as outlined under submittals and properly submitted on required form.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution provides specified warranty.

2.2 Substitutions – After Contract Execution

A. In the interest of keeping the project on schedule, the A/E will not continuously and exhaustively review proposed substitutes for each specification section. The A/E will review **only one (1)** proposed substitution per product per specification section. If that proposed substitution is rejected for any reason, the contractor shall use the product specified.

B. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than fifteen (15) days prior to time required for preparation and review of related submittals.

1. A/E will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, A/E will return requests without any action, except to record noncompliance with these requirements.
a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented as outlined under submittals herein and properly submitted on required form.

c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approval of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

C. Substitutions for Convenience: A/E will consider requests for substitution.
1. Conditions: A/E will consider the Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, A/E will return requests without action, except to record noncompliance with these requirements.
a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to A/E for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented as outlined under submittals and properly submitted on the required form.
e. Requested substitution will not adversely affect Contractor's construction schedule.
f. Requested substitution has received necessary approvals of authorities having jurisdiction.
g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified warranty.
j. If the requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

* * *

CONTRACTOR / SUPPLIER SUBSTITUTION REQUEST FORM

(Section to be completed by Contractor / Supplier)

Project: _____ Substitution Request Number: _____

_____ From: _____

To: _____ Date: _____

_____ A/E Project Number: _____

Re: _____ Contract For: _____

Specification Title: _____ Description: _____

Section: _____ Page: _____ Article/Paragraph : _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: _____ Model No.: _____

Installer: _____ Address: _____ Phone: _____

History: ☐ New product ☐ 2-5 years old ☐ 5-10 yrs old ☐ More than 10 years old

Differences between proposed substitution and specified product: _____

_____

_____

☐ Point-by-point comparative data attached - **REQUIRED BY A/E FOR REVIEW OF THE REQUEST.**

Reason for substitution request: _____

_____

Similar Installation:

Project: _____ Architect: _____

Address: _____ Owner: _____

_____ Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain _____

_____

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

CONTRACTOR / SUPPLIER SUBSTITUTION REQUEST FORM

(Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to the specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

_____

Telephone: _____

Fax: _____

Email: _____

Attachments: _____

_____

_____

_____

SECTION TO BE COMPLETED BY A/E:

A/E's REVIEW AND ACTION

☐ Substitution approved - Provided all Contract Documents requirements are met.
☐ Substitution approved as noted.
☐ Substitution rejected - Does not meet Contract Documents - Use specified materials.
☐ Substitution Request received too late – Not Approved. Received less than fourteen (14) working days prior to Bid Date. Insufficient time in accordance with R.S. 38:2295.
☐ Substitution rejected – Insufficient information submitted to make determination.
  ☐ Submit model or catalog numbers.
  ☐ Submit information following Specification format in enough detail to make comparison to product specified.

Signed by: Date:

Additional Comments: _____

_____

_____

_____

_____

_____

SECTION 01730: EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
   1. Construction layout.
   2. Installation of the Work.
   3. Cutting and patching.
   4. Coordination of Owner-installed products.
   5. Progress cleaning.
   6. Starting and adjusting.
   7. Protection of installed construction.
   8. Correction of the Work.

1.3 DEFINITIONS:

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 INFORMATIONAL SUBMITTALS:

A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

1.5 QUALITY ASSURANCE:

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
   1. Structural Elements: When cutting and patching structural elements, notify A/E of locations and details of cutting and await directions from the A/E before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
   2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in A/E's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

1.6 WARRANTY:

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

1. In accordance with Louisiana State Law (LSA-R.S. 9:2774) the commencement date for ALL warranties or guarantees of every nature or kind shall be the date of Substantial Completion as certified by the A/E. It shall be the Contractor's sole responsibility to ensure that all written warranties include this commencement time. Also, in accordance with LSA-R.S. 9:2774 the provision of this Section shall not be subject to waiver by contract.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to the A/E for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
   a. Description of the Work.
   b. List of detrimental conditions, including substrates.
   c. List of unacceptable installation tolerances.
   d. Recommended corrections.
2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION:

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to A/E according to requirements in Division 01 Section "Project Management and Coordination."

E. Surface and Substrate Preparation: Comply with manufacturer's recommendations for preparation of substrate to receive subsequent work.

3.3 INSTALLATION:

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
   3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
   4. Maintain minimum headroom clearance of 96 inches (2440 mm) in occupied spaces.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by A/E.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 CUTTING AND PATCHING:

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Temporary Support: Provide temporary support of work to be cut.

C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

D. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements of Division 1 Section "Summary."

E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to **minimize** interruption to occupied areas.

F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
   a. Clean piping, conduit, and similar features before applying paint or other finishing materials.

b. Restore damaged pipe covering to its original condition.

3. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 PROGRESS CLEANING:

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
a. Utilize containers intended for holding waste materials of type to be stored.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in accordance with the law and authorities having jurisdiction.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.6 PROTECTION OF INSTALLED CONSTRUCTION:

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.7 CORRECTION OF THE WORK:

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01730

SECTION 01741: CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes administrative and procedural requirements for the following:
   1. Salvaging nonhazardous demolition and construction waste.

1.3 DEFINITIONS:

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

D. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SALVAGING DEMOLITION WASTE:

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until installation.
   4. Protect items from damage during transport and storage.
   5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale: Not permitted on Project site.

C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.
E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
F. Lighting Fixtures: Separate lamps by type and protect from breakage.
G. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

END OF SECTION 01741

SECTION 01770: CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS: Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Substantial Completion procedures.
   2. Final Completion procedures.
   3. Warranties.
   4. Final cleaning.

1.3 DEFINITIONS:

A. Substantial Completion: When the valuated punch list equals less than one percent (1%) of the contract value, including all additive change orders.

1.4 SUBSTANTIAL COMPLETION:

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.
   1. Contractor and Architect / Engineer shall prepare a list of items to be completed and corrected (punch list). The A/E punch list shall include the value of items on the list, and reasons why the Work is not complete.
      a. All public works contracts shall contain a clause stating that any punch list generated during a construction project shall include the cost estimates for the particular items of work the design professional has developed based on the mobilization labor material and equipment costs of correcting each punch list item. The design professional shall retain his working papers used to determine the punch list items cost estimates should the matter be disputed later. The contracting agency shall not withhold from payment more than the value of the punch list. Punch list items completed shall be paid upon the expiration of the forty-five-day (45) lien period. The provisions of this section shall not be subject to waiver, nor shall these provisions apply to the Department of Transportation and Development.
   2. Advise Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

5. Prepare and submit Project Record Documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, A/E will either proceed with inspection or notify Contractor of unfulfilled requirements. A/E will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by A/E on the valued punch list, that must be completed or corrected before final payment will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.5 FINAL COMPLETION:

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of A/E's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by A/E. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, A/E will either proceed with inspection or notify Contractor of unfulfilled requirements. A/E will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.6 LIST OF INCOMPLETE ITEMS (PUNCH LIST):

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
   a. Project name.
   b. Date.
   c. Name of A/E.
   d. Name of Contractor.
   e. Page number.
4. Submit list of incomplete items in the following format:
   a. PDF electronic file.
   b. Three (3) paper copies of product schedule or list, unless otherwise indicated. A/E, will return two (2) copies.

1.7 WARRANTIES:

A. Submittal Time: Submit written warranties on request of A/E for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

1. **In accordance with Louisiana State Law (LSA-R.S. 9:2774) the commencement date for ALL warranties or guarantees of every nature or kind shall be the date of Substantial Completion as certified by the A/E. It shall be the Contractor's sole responsibility to ensure that all written warranties include this commencement time. Also, in accordance with LSA-R.S. 9:2774 the provision of this Section shall not be subject to waiver by contract.**

B. Partial Occupancy: Submit properly executed warranties within fifteen (15) days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide table of contents at beginning of document.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.3 MATERIALS:

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.3 FINAL CLEANING:

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
   a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
   b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   d. Remove tools, construction equipment, machinery, and surplus material from Project site.
   e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
   f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   g. Sweep concrete floors broom clean in unoccupied spaces.
   h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.

i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

j. Remove labels that are not permanent.

k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.

l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

m. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter upon inspection.

q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

r. Leave Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.

3.4 **The A/E shall be responsible for calling for the final Louisiana State Fire Marshal Inspection, NOT THE CONTRACTOR. Additionally, the Louisiana State Fire Marshal Inspection shall not take place until the project has been declared substantially complete. If the contractor calls for the Louisiana State Fire Marshal inspection, the Contractor is advised that the A/E will not attend the inspection and will not prepare or sign the Louisiana State Fire Marshal's Certificate of Completion.**

END OF SECTION 01770

SECTION 01782: OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory.
   2. Emergency manuals.
   3. Operation manuals for systems, subsystems, and equipment.
   4. Product maintenance manuals.
   5. Systems and equipment maintenance manuals.

1.3 DEFINITIONS:

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS:

A. Manual Content: Operations and maintenance manual content is specified in individual specification sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
   1. Where applicable, clarify and update reviewed manual content to correspond to modifications and field conditions.

B. Format: Submit operations and maintenance manuals in the following format:
   1. PDF electronic file. Assemble each manual into a composite electronically-indexed file. Submit on digital media acceptable to A/E.
      a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically-linked operation and maintenance directory.
      b. Enable inserted reviewer comments on draft submittals.
   2. Binders:
      a. Size: 8 1/2 inches x 11 inches.
      b. Paper: White, for typed pages.
      c. Text: Manufacturer's printed data, or neatly typewritten.
      d. Drawings: Provide reinforced punched binder tab, bind in with text. Fold larger drawings to the size of the text pages.

e. Provide fly-leaf for each separate product, or each piece of operating equipment. Provide typed description of product; and major component parts of equipment. Provide indexed tabs.

f. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS". List title of Project, identity of separate structure as applicable, identity of general subject matter covered in the manual.

C. Initial Manual Submittal: Submit draft copy of each manual at least thirty (30) days before commencing demonstration and training. A/E will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least fifteen (15) days before commencing demonstration and training. A/E will return copy with comments.

1. Correct or modify each manual to comply with A/E's comments. Submit copies of each corrected manual within fifteen (15) days of receipt of A/E's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY:

A. Organization: Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS:

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
   1. Title page.
   2. Table of contents.
   3. Manual contents.

B. Title Page: Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.
   3. Name and address of Owner.
   4. Date of submittal.
   5. Name and contact information for Contractor.
   6. Name and contact information for Construction Manager.
   7. Name and contact information for A/E.
   8. Names and contact information for major consultants to the A/E that designed the systems contained in the manuals.
   9. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
   1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
   2. File Names and Bookmarks: Enable bookmarking of individual documents based upon file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel upon opening file.

F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
   1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
   a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
   b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS:

A. Content: Organize manual into a separate section for each of the following:
   1. Type of emergency.
   2. Emergency instructions.
   3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
   1. Fire.
   2. Flood.
   3. Gas leak.
   4. Water leak.
   5. Power failure.
   6. Water outage.
   7. System, subsystem, or equipment failure.
   8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:
   1. Instructions on stopping.
   2. Shutdown instructions for each type of emergency.

3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.4 OPERATION MANUALS:

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
   1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
   2. Performance and design criteria if Contractor is delegated design responsibility.
   3. Operating standards.
   4. Operating procedures.
   5. Operating logs.
   6. Wiring diagrams.
   7. Control diagrams.
   8. Piped system diagrams.
   9. Precautions against improper use.
   10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
   1. Product name and model number. Use designations for products indicated on Contract Documents.
   2. Manufacturer's name.
   3. Equipment identification with serial number of each component.
   4. Equipment function.
   5. Operating characteristics.
   6. Limiting conditions.
   7. Performance curves.
   8. Engineering data and tests.
   9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:
   1. Startup procedures.
   2. Equipment or system break-in procedures.
   3. Routine and normal operating instructions.
   4. Regulation and control procedures.
   5. Instructions on stopping.
   6. Normal shutdown instructions.
   7. Seasonal and weekend operating instructions.
   8. Required sequences for electric or electronic systems.
   9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUALS:

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Color, pattern, and texture.
   4. Material and chemical composition.
   5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
   1. Inspection procedures.
   2. Types of cleaning agents to be used and methods of cleaning.
   3. List of cleaning agents and methods of cleaning detrimental to product.
   4. Schedule for routine cleaning and maintenance.
   5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.
   2. In accordance with Louisiana State Law (LSA-R.S. 9:2774) the commencement date for ALL warranties or guarantees of every nature or kind shall be the date of Substantial Completion as certified by the A/E. It shall be the Contractor's sole responsibility to ensure that all written warranties include this commencement time. Also, in accordance with LSA-R.S. 9:2774 the provision of this Section shall not be subject to waiver by contract.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS:

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
   1. Standard maintenance instructions and bulletins.
   2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
   3. Identification and nomenclature of parts and components.
   4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
   1. Test and inspection instructions.
   2. Troubleshooting guide.
   3. Precautions against improper maintenance.
   4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   5. Aligning, adjusting, and checking instructions.
   6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
   1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
   2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.
   2. In accordance with Louisiana State Law (LSA-R.S. 9:2774) the commencement date for ALL warranties or guarantees of every nature or kind shall be the date of Substantial Completion as certified by the A/E. It shall be the Contractor's sole responsibility to ensure that all written warranties include this commencement time. Also, in accordance with LSA-R.S. 9:2774 the provision of this Section shall not be subject to waiver by contract.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION:

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals with A/E prior directory preparations.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
   1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
   1. Do not use original project record documents as part of operation and maintenance manuals.
   2. Comply with requirements of newly prepared record Drawings in Division 1 Section "Project Record Documents."

G. Comply with Division 1 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01782

SECTION 01783: PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section includes administrative and procedural requirements for project record documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.
   4. Miscellaneous record submittals.

1.3 CLOSEOUT SUBMITTALS:

A. Record Drawings: Comply with the following:
   1. Number of Copies: Submit one (1) set of marked-up record prints.
   2. Number of Copies: Submit copies of record Drawings as follows:
      a. Final Submittal: Submit PDF electronic files of marked-up record prints. Print each Drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit two (2) copies and one (1) annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.
   1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: Refer to other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

E. Reports: Submit written report weekly indicating items incorporated in Project record documents concurrent with progress of the Work, including modifications, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS:

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an acceptable drawing technique.
   c. Record data as soon as possible after obtaining it.
   d. Record and check the markup before enclosing concealed installations.
2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations below first floor.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order or Construction Change Directive.
   k. Changes made following A/E's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file.
3. Identification: As follows:
   a. Project name.
   b. Date.

c. Designation "PROJECT RECORD DRAWINGS."
d. Name of A/E.
e. Name of Contractor.

2.2 RECORD SPECIFICATIONS:

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file.

2.3 RECORD PRODUCT DATA:

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as annotated PDF electronic file.
1. Include record Product Data directory organized by specification section number and title, electronically linked to each item of record Product Data.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE:

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and modifications to project record documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for A/E's reference during normal working hours.

END OF SECTION 01783

SECTION 06057: FIRE-RETARDANT WOOD TREATMENT

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Scope of Work: Furnish all necessary materials, labor, and equipment for the complete installation of fire retardant treatment for wood. Provide all necessary supplementary items for a complete installation as intended by the documents.

1.3 Summary:

A. Section includes: Fire retardant treatment for wood, including framing, decking, sheathing and other wood construction, not exposed to weather.

B. Related Sections: Section(s) related to this section include:

1. Section 06112: Wood Framing and Rough Carpentry.

1.4 References:

A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title, or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation. Most recent editions should be used.

B. American Society for Testing and Materials (ASTM):

1. ASTM D 5516 Standard Test Method for Evaluating the Flexural Properties of Fire Retardant Treated Softwood Plywood Exposed to Elevated Temperatures.
2. ASTM D 5664 Standard Test Method for Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber.
3. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building

a. Materials.

C. American Wood Protection Association (AWPA):

1. AWPA Standard P25 Standard for Waterborne Preservatives.
2. AWPA Standard P49 Fire Retardant Formulations.
3. AWPA Standard U1, Use Category System.

D. National Fire Protection Association (NFPA):

1. NFPA 255 Standard Test Method for Surface Burning Characteristics of Building Materials.

E. Underwriters Laboratories, Inc. (UL):

1. UL 723 Test for Surface Burning Characteristics of Building Materials.
2. UL Building Materials Directory.

1.5 Performance Requirements: Provide fire retardant treatment which will perform in accordance with manufacturer's stated performance criteria without defects, damage or failure.

1.6 Submittals:

A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

B. Product Data: Submit product data, including manufacturer's product sheet, for specified products.

C. Quality Assurance Submittals: Submit the following:

1. Test Report: Certified test report showing compliance with specified performance characteristics and physical properties. Include in test report certification that fire retardant solution does not contain ammonium phosphate.

a. Evaluation Report: National Evaluation Report ESR-1626 indicating flamespread, strength, corrosion and hygroscopic properties.

2. Certificate: Certification from treatment plant certifying wood treatment applied complies with fire retardant treatment as specified.

D. Closeout Submittals: Submit the following:

1. Warranty: Warranty documents specified herein.

1.7 Quality Assurance:

A. Wood Treatment Plant Qualifications: Wood treatment plant experienced in performing work of this section which has specialized in the treatment of wood similar to that required for this project and a plant licensed by the fire retardant manufacturer.

1. Certificate: When requested, submit certificate indicating qualification.

1.8 Delivery, Storage & Handling

A. General: Comply with Division 1 Product Requirements Sections.

B. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.9 Warranty:

A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.

1. Warranty Period: 40 years commencing on Date of Substantial Completion.

PART 2: PRODUCTS

2.1 Acceptable Manufacturer:

A. For purposes of designating type and quality for the work under this section, drawings and specifications are based on products manufactured or furnished by Arch Wood Protection, 5660 New Northside Dr. NW, Suite 1100, Atlanta, GA 30328, Telephone: (678) 627-2000

B. Substitutions: Subject to compliance with the requirements of this section proposed substitutions maybe submitted in accordance with Division 1.

2.2 Fire Retardant Product:

A. Type: Dricon fire retardant treatment for wood is produced by licensed treatment plant.

B. Chemical: Fire retardant chemical shall provide protection against termites and fungal decay, shall be registered for use as a wood preservative by the U.S. Environmental Protection Agency (EPA), shall comply with formulation FR-1 of the current edition of AWPA Standard P49, and shall be free of halogens, sulfates and ammonium phosphate.

C. Flame Spread: Treated wood shall have a flamespread of less than 25 when tested in an extended 30-minute tunnel test in accordance with ASTM E 84, NFPA 255 or UL 723.

D. Corrosion Properties: Fire retardant treated wood in contact with carbon steel, galvanized steel, aluminum, copper and red brass shall exhibit corrosion rates less than 1 mil (0.025 mm) per year when tested in accordance with Fed. Spec. MIL-L-19140, Paragraph 4.6.5.2.

E. Testing: Testing on fire performance, strength and corrosion properties of fire-retardant treated wood shall be recognized by issuance of a National Evaluation Services Report.

F. Fire Retardant Treatment: Manufacturer's solution for fire retardant treatment of wood.

1. Treatment Standard: Comply with AWPA Standard U1.

2.3 Related Wood Materials:

A. General: Refer to Division 6 for related wood materials specified herein.

B. Moisture Content: Provide fire retardant treated wood with moisture content as follows:

1. Lumber: Dried to a maximum moisture content of 19% after treatment.

C. Lumber: Dressed lumber, S4S, unless otherwise indicated.

1. Light Framing:
   a. Studs
   b. Blocking
   c. Hailers

2.4 Source Quality:

A. Source Quality: Obtain fire retardant treatment from a single manufacturer.

B. Tests, Inspections: Specify special plant and jobsite testing where required.

PART 3: EXECUTION

3.1 Manufacturer's Instructions:

A. Compliance: Comply with manufacturer's product data, including product technical bulletins, for fire retardant treatment installation.

3.2 Application:

A. Fire Retardant Treatment: Apply a fire-retardant treatment in accordance with requirements of applicable codes and manufacturer's requirements.

3.3 Protection:

A. Protection: Protect fire retardant treated wood from damage during construction.

END OF SECTION 06057

SECTION 06 10 12: WOOD FRAMING AND ROUGH CARPENTRY

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Scope of Work: This section includes framing lumber, rough carpentry, rough and miscellaneous hardware and accessories indicated on drawings and specifications. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Quality Assurance:

A. Lumber Grading Rules and Wood Species to be in conformance with Voluntary Product Standard PS 20. Grading rules of the Southern Pine Inspection Bureau (SPIB) apply to materials furnished under this Section.
B. Grade Marks: Identify all lumber by official grade mark.
C. Requirements of Regulatory Agencies, Pressure Treated Material: American Wood Preservers Association (AWPA).
D. Plywood Product Standards: Comply with PS 1 (ANSI A 199.1) or, for products not manufactured under PS 1 provisions, with applicable APA performance standard for type of panel indicated.

1.4 Submittals:

A. Submit shop drawings and manufacturer's literature for all items fabricated for this Project, showing sizes of items, finishes, methods of construction, and mounting details.
B. Pressure Treated Wood: Submit certification by treating plant stating chemicals and process used, net amount of preservative retained, and conformance with AWPA Standards. Submit certification that moisture content was reduced to 19% maximum, after treatment.
C. Submit in accordance with the requirements of Division 1.
D. Submit manufacturer's specifications and installation instructions for materials specified herein.

1.5 Product Delivery, Storage, and Handling: Immediately upon delivery to job site, place materials in area protected from weather. Store materials a minimum of six (6") inches above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation or ventilation. Do not store seasoned materials in wet or damp portions of building. Remove damaged items that cannot be restored to like-new condition and replace at no additional cost to the Owner.

PART 2: PRODUCTS

2.1 Lumber, General:

A. Acceptable Manufacturers: For purpose of designating type and quality, Specifications are based on products manufactured by Louisiana Pacific, or approved equal.

B. Dimensions: Specified lumber dimensions are nominal. Actual dimensions conform to industry standards established by the American Lumber Standards Committee and the rules writing agencies.

C. Moisture Content: Unseasoned to 19% maximum at time of permanent closing in of building.

D. Surfacing: Surface four sides (S4S), unless specified otherwise.

2.2 Framing Lumber: Rafters, joists, studs and non-structural light framing: SPIB species, No. 2 Southern Yellow Pine.

2.3 Preservative or Pressure Treated Wood Products: Pressure treated with Micronized Copper Azole (MCA). Submit certificates indicating that all preservative Treated Wood Products have been treated with MCA. NOTE: USE STAINLESS STEEL FASTENERS AND CONNECTORS when using MCA treated lumber. Additionally, any metal that will be in contact with the treated wood shall be stainless steel. Re-dry and clean lumber after treatment, to maximum moisture content of 19%.

2.4 Sheathing, General: Trademark: Identify each plywood panel with appropriate APA trademark. All plywood roof and wall sheathing shall be marine grade. Marine Grade Plywood shall not be "Wolmanized" or simply Pressure Treated (P.T.) plywood. Marine Grade Plywood shall be gap and void-free in all layers and laminated together with water-proof glue to hold the layers together when immersed in water and so that it will not delaminate, bubble, buckle, or warp. Marine Grade Plywood shall be fabricated from hard woods such as Douglas Fir or Western Larch. Plywood identified on the drawings as "treated" shall mean "Marine Grade."

2.5 Plywood Roof Sheathing:

A. DFPA Standard Sheathing grade with exterior glue, CD or better, 1/2-inch-thick plywood (unless otherwise indicated on drawings) with an identification index 24/0.

B. Exposure Durability Classification: Exterior Marine Grade.

C. Span Rating: As required to suit rafter spacing indicated.

D. See paragraph 2.4 above for plywood treatment.

2.6 Rough and Miscellaneous Hardware:

A. Nails: Common wire, galvanized for exterior work, FS FF-N-105.

B. Screws: Standard domestic manufacture, bright steel, except galvanized for exterior use and of brass, bronze, aluminum, or stainless steel when used to attach items made of those materials.

C. Connectors, Anchors, and Accessories: Provide fabricated ASTM A 36 steel shapes, plates, and bars, welded into assemblies of types and sizes indicated.

D. Bolts, Nuts, Washers, Iron and Steel Hardware:

1. Bolts: ASTM A 307 Grade A, hexagon head.
2. Toggle Bolts: FS FF-B-588.
3. Lag Bolts: FS FF-B-561, square head.
4. Washers: Round carbon steel, FS FF-S-325.
5. Anchor Bolts: Hot- dipped galvanized steel, square head machine bolts with square nuts and malleable iron or steel plate washers or carriage bolts with square nuts and cut washers where applicable. "J" hooked anchor bolts shall be used where imbedded in concrete.
7. Expansion Shields, Lag Screws and Bolts: FS FF-B-561
8. Lag Screws, Shear Plates, Split Ring Connectors, Connector Plates: Conform to the requirements of NFPA.
9. Joist Hangers: Simpson, U Series 16 gauge galvanized standard joist hangers. Use where beams are in plane of joists.
10. Hurricane Clips: Simpson Seismic and Hurricane Ties, H Series.
11. Ply-Clips: Simpson Extruded Aluminum Plywood Sheathing Clips.
12. Screw Fasteners: Corrosion resistant, bugle head, self-drilling screws at appropriate length.

E. Wet-Use Finish: Where wet-use work is indicated, provide ASTM A 153 Hot-dip zinc coating, for all rough and miscellaneous steel hardware.

PART 3: EXECUTION

3.1 Inspection: Verify that surfaces to receive rough carpentry materials are prepared to exact grades and dimensions and are free of irregularities and debris.

3.2 Installation: Comply with applicable recommendations contained in "APA Design Construction Guide" for types of plywood products specified.

3.3 Joist Framing:

A. Install joists with crown edge up. Support ends of each member with minimum of 1-1/2 inches of bearing on wood.

B. Notches: Do not notch in middle third of joists. Notches in top or bottom of joists, maximum of 1/6 depth of member. Notched ends, maximum of 1/3 depth of member.

C. Bored Holes: Maximum 1/3 depth of member, two (2") inches minimum distance to top or bottom of joists.

D. Erect wood framing members level and plumb

3.4 Rafters:

A. Notch to fit exterior wall plates and toe nail to plates. Provide hurricane clips at every rafter.

B. Double rafters at openings in roof framing to provide headers and trimmers, and support with metal hangers.

C. At ridge, place rafter directly opposite each other and nail to ridge member or support with metal hangers. At valleys, bevel ends of rafters for bearing against valley rafters. At hips, bevel ends of rafters for bearing against hip rafters.

3.5 Plates: Provide continuous treated plate at top of all concrete masonry unit walls as indicated. Anchor into masonry bond beam with anchor bolts spaced four (4') feet o.c. maximum.

3.6 Pressure Treated Wood Products:

A. Provide pressure-treated wood for all framing, blocking, and nailing strips that are in contact with masonry or concrete; nailers for metal flashing and fascias; any wood exposed to weather conditions; and as indicated.

B. Apply two brush coats of the same preservative used in original treatment to all sawed or cut surfaces of treated lumber.

3.7 Plywood Roof Sheathing:

A. Install Plywood with face grain perpendicular to supports, using panel with continuous end joints over two or more spans staggered between panels and locate over supports.

B. Allow minimum space of 1/8 inch between end joints and 1/4 inch between edge joints for expansion and contraction of panels. Support edge joints by using ply-clips.

C. Nail 6 inches o.c. along panel edges and 12 inches o.c. at intermediate supports.

D. Use 8d Common, corrosion resistant, smooth, ring-shank or spiral-thread nails.

3.8 Cleaning: Remove all excess materials and debris from site.

* * *

SECTION 070150.19: PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. Section Includes:
   1. Modified bitumen and built-up roofing with gravel tear-off.
   2. Roof re-cover preparation.
   3. Removal of base flashings and perimeter edge trim flashings.
   4. Metal roof panels, removal, preparation, and replacement.

B. Related Sections:
   1. Division 01 Section "Summary" for use of the premises and phasing requirements.
   2. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for reroofing preparation.

1.3 MATERIALS OWNERSHIP:

A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DEFINITIONS:

A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Existing Membrane Roofing System: B.U.R. and Modified bitumen roofing membrane and components and accessories between deck and roofing membrane.

C. Existing Standing Seam Roof: Metal roof panels, underlayment, and plwood above steel purlins.

D. Roof Tear-Off: Removal of both membrane roofing systems and accessories from deck metal roof panels and underlayment, plywood decking if required.

E. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

F. Existing to Remain: Existing items of construction that are not indicated to be removed.

1.5 SUBMITTALS:

A. Product Data: For each type of product indicated.

B. Fastener pull-out test report.

C. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

1.6 QUALITY ASSURANCE:

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Reroofing Conference: Conduct conference at Project site.

1. Meet with Owner; Architect; Owner's insurer if applicable; roofing system manufacturer's representative; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing system tear-off and replacement including, but not limited to, the following:
   a. Reroofing preparation, including membrane roofing system and metal roof panels manufacturer's written instructions.
   b. Temporary protection requirements for existing roofing system that is to remain during and after installation.
   c. Existing expansion joint during each stage of reroofing.
   d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   e. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
   f. Structural loading limitations of deck during reroofing.
   g. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect reroofing.
   h. HVAC shutdown and sealing of air intakes.
   i. Governing regulations and requirements for insurance and certificates if applicable.
   j. Existing conditions that may require notification of Architect before proceeding.

1.7 PROJECT CONDITIONS:

A. Owner occupies building immediately below reroofing area. Conduct reroofing so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.

1. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.

B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

D. Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.
E. Limit construction loads on roof to 100 psf rooftop equipment wheel loads and 20 psf for uniformly distributed loads.
F. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION:
A. Protect existing membrane roofing system that is indicated not to be reroofed.
B. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
C. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
D. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
E. Verify that rooftop utilities and service piping have been shut off before beginning the Work.
1. Prior to cutting any pipe or conduit penetrating from roof surface, verify that remainder of pipe or conduit does not pose a threat to the occupants inside the building. Secure such items back to roof framing if they are to remain.
F. Verify that all exposed electrical conduits are grounded properly. Notify Owner if electrical conditions may pose a hazard to workers or operations.

3.2 ROOF TEAR-OFF:
A. Roof Tear-Off: Where indicated, remove existing roofing membrane and other membrane roofing system components down to the existing deck. Inspect existing deck (metal or concrete prior to installing new work.
B. Metal Roof Tear-Off: Where indicated remove existing metal panels, clips, and underlayment down to existing plywood decking. Inspect existing decking prior to installing new work. Remove and replace any damaged plywood with similar material of exact thickness and dimensions.

C. Remove perimeter roof edge trim and nailers to expose structure below as indicated on documents.
D. Roof/wall flashings to be removed. Prepare new flashing assemblies to accept new roofing membrane.

3.3 DECK PREPARATION:
A. Inspect deck after partial tear-off of all roofing systems.
B. If deck surface is not suitable for receiving new retrofit roof assembly or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.

3.4 FASTENER PULL-OUT TESTING:
A. Perform fastener pull-out tests according to SPRI FX-1 and submit test report to Architect before installing new roofing system.
1. Obtain Architect's approval to proceed with specified fastening pattern. Architect may furnish revised fastening pattern commensurate with pull-out test results.

3.5 DISPOSAL:
A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
1. Storage or sale of demolished items or materials on-site is not permitted.
B. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION 070150.19

SECTION 07 22 00: ROOF INSULATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 SCOPE OF WORK: Furnish all necessary materials, labor, and equipment for the complete installation of roof insulation, as shown on the drawings and specified herein. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 SUMMARY

A. Work shall include, but is not limited to, the following:
   1. Preparation of existing steel and concrete roof decks and all flashing substrates.
   2. Insulation
   3. Cover-board
   4. All related materials and labor required to complete specified roofing necessary to receive specified manufacturer's warranty.

1.4 RELATED SECTIONS

A. Division 011000 – Summary of Work
B. Division 075216 – Styrene-Butadiene-Styrene (SBS) Modified Bitumen Membrane Roofing
C. Division 076000 –Flashing and Sheet Metal

1.5 DEFINITIONS

A. ASTM D 1079-Definitions of Term Relating to Roofing and Waterproofing.
B. The National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual, Fifth Edition Glossary.

1.6 REFERENCES

A. AMERICAN SOCIETY OF CIVIL ENGINEERS - Reference Document ASCE 7, Minimum Design Loads for Buildings and Other Structures.
B. AMERICAN STANDARD OF TESTING METHODS (ASTM):
   1. ASTM C 726 - Standard Specification for Mineral Wool Roof Insulation Board.
   2. ASTM C 728 - Standard Specification for Perlite Thermal Insulation Board.
   3. ASTM C 1177/C 1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
   4. ASTM C 1278 - Standard Specification for Fiber-Reinforced Gypsum Panel.
   5. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Insulation Board.
   6. ASTM C 1325 – Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units.

7. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Damp proofing, and Waterproofing.

C. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)::
   1. ANSI/SPRI FX-1, Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners.
   2. ANSI/SPRI IA-1, Standard Field Test Procedure for Determining the Mechanical Uplift Resistance of Insulation Adhesives over Various Substrates.
   3. ANSI/FM 4474- American National Standard for Evaluating the Simulated Wind Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures.
   4. Prefabricated, and Reinforced for Roofing.

D. FACTORY MUTUAL (FM):
   1. FM 4450 - Approval Standard - Class I Insulated Steel Roof Decks.
   2. FM 4470 - Approval Standard - Class I Roof Covers.

E. FLORIDA BUILDING CODE (FBC):
   1. 2021 Florida Building Code (FBC).

F. INTERNATIONAL CODES COUNCIL (ICC):
   1. 2021 International Building Code (IBC).

G. NATIONAL ROOFING CONTRACTORS' ASSOCIATION (NRCA).

H. UNDERWRITERS LABORATORY (UL):
   1. UL 790 Standard Test Methods for Fire Tests of Roof Coverings.
   2. UL 1256 – Fire Test of Roof Deck Constructions.

1.7 ACTION SUBMITTALS

A. Product Data Sheets: Submit manufacturer's product data sheets, installation instructions and/or general requirements for each component.

B. Safety Data Sheets: Submit manufacturer's Safety Data Sheets (SDS) for each component.

C. Sample/Specimen Warranty from the manufacturer and contractor.

D. Shop Drawings: Provide roof plan and applicable roof system detail drawings.

1.8 INFORMATIONAL SUBMITTALS

A. Contractor Certification: Submit written certification from roofing system manufacturer certifying that the applicator is authorized by the manufacturer to install the specified materials and system.

1.9 CLOSEOUT SUBMITTALS

A. Warranty: Provide manufacturers and contractor's warranties upon substantial completion of the roofing system.

1.10 QUALITY ASSURANCE

A. MANUFACTURER QUALIFICATIONS:
   1. Manufacture shall have 20 years of experience manufacturing roofing materials.
   2. Trained Technical Field Representatives, employed by the manufacturer, independent of sales.
   3. Provide reports in a timely manner of all site visit reports.
   4. Provide specified warranty upon satisfactory project completion.

B. CONTRACTOR QUALIFICATIONS:

1. Contractor shall be authorized by the manufacturer to install specified materials prior to the bidding period through satisfactory project completion.
2. Applicators shall have completed projects of similar scope using same materials as specified herein.
3. Contractor shall provide full time, on-site superintendent or foreman experienced with the specified roof system through satisfactory project completion.
4. Applicators shall be skilled in the application methods for all materials.
5. Contractor shall maintain a daily record, on-site, documenting material installation and related project conditions.
6. Contractor shall maintain a copy of all submittal documents, on-site, available always for reference.

1.11 DELIVERY, STORAGE AND HANDLING

A. Refer to each product data sheet or other published literature for specific requirements.

B. Deliver materials and store them in their unopened, original packaging, bearing the manufacturer's name, related standards, and any other specification or reference accepted as standard.

C. Protect and store materials in a dry, well-vented, and weatherproof location. Only materials to be used the same day shall be removed from this location.

D. When materials are to be stored outdoors, store away from standing water, stacked on raised pallets or dunnage, at least 4 in or more above ground level. Carefully cover storage with "breathable" tarpaulins to protect materials from precipitation and to prevent exposure to condensation.

E. Properly dispose of all product wrappers, pallets, cardboard tubes, scrap, waste, and debris. All damaged materials shall be removed from job site and replaced with new, suitable materials.

1.12 SITE CONDITIONS

A. SAFETY:

1. The contractor shall be responsible for complying with all project-related safety and environmental requirements.
2. Refer to NRCA CERTA recommendations, local codes and building owner's requirements for hot work operations.
3. The contractor shall review project conditions and determine when and where conditions are appropriate to utilize the specified liquid-applied, or semi-solid roofing materials. When conditions are determined by the contractor to be unsafe or undesirable to proceed, measures shall be taken to prevent or eliminate the unsafe or undesirable exposures and conditions, or equivalent approved materials and methods shall be utilized to accommodate requirements and conditions.

4. The contractor shall review project conditions and determine when and where conditions are appropriate to utilize the specified hot asphalt-applied materials. When conditions are determined by the contractor to be unsafe or undesirable to proceed, measures shall be taken to prevent or eliminate the unsafe or undesirable exposures and conditions, or equivalent approved materials and methods shall be utilized to accommodate requirements and conditions.
5. The contractor shall refer to product Safety Data Sheets (SDS) for health, safety, and environment related hazards, and take all necessary measures and precautions to comply with exposure requirements.

B. ENVIRONMENTAL CONDITIONS:
1. Monitor substrate temperature and material temperature, as well as all environmental conditions such as ambient temperature, moisture, sun, cloud cover, wind, humidity, and shade. Ensure conditions are satisfactory to begin work and ensure conditions remain satisfactory during the installation of specified materials. Materials and methods shall be adjusted as necessary to accommodate varying project conditions. Materials shall not be installed when conditions are unacceptable to achieve the specified results.
2. Precipitation and dew point: Monitor weather to ensure the project environment is dry before, and will remain dry, during the application of roofing materials. Ensure all roofing materials and substrates remain above the dew point temperature as required to prevent condensation and maintain dry conditions.

1.13 PERFORMANCE REQUIREMENTS

A. FIRE CLASSIFICATION:
1. Roof construction performance testing shall be in accordance with UL 1256, FM 4450, or FM 4470 to meet the specified requirements for interior flame spread and fuel contribution.
a. Roof construction meets requirements of UL 1256, or FM Class 1.

B. ROOF SLOPE:
1. Finished roof slope shall be 1/8 or ¼-inch per foot minimum for roof drainage.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. SINGLE SOURCE MANUFACTURER: All roofing materials shall be provided by a single supplier with 20 years or more manufacturing history in the US.
1. Comply with the Manufacturer's requirements as necessary to provide the specified warranty.

B. PRODUCT QUALITY ASSURANCE PROGRAM: Manufacturer shall be an ISO 9001 registered company.

C. ACCEPTABLE MANUFACTURER:
1. Soprema
2. Garland
3. Prior Approved Equal

2.2 THERMAL INSULATION SYSTEM

A. RIGID INSULATION

1. POLYISOCYANURATE INSULATION:

a. Closed cell polyisocyanurate foam core bonded on each side to a glass fiber-reinforced felt facer.

i Thickness: in minimum board thickness. Total thickness to meet specified insulation system thermal resistance 'R' value

ii Dimensions: Concrete = 4 x 4 foot and Steel =4 x 8 foot boards

iii Meets or exceeds ASTM C1289, Type II, Class 1, Grade 2 (20 psi)

b. Tapered: Closed cell polyisocyanurate foam core bonded on each side to a glass fiber-reinforced felt facer, tapered to provide slope.

i Taper: Steel 1/8 in and Concrete ¼ in with 1/2 in Crickets per foot. Insulation, crickets, and saddles provided with taper as required for positive roof slope.

ii Dimensions: 4 x 4 ft boards

iii Meets or exceeds ASTM C1289, Type II, Class 1, Grade 2 (20 psi)

B. COVER-BOARD:

1. ASPHALTIC ROOF BOARD:

a. ¼ IN SOPREMA SOPRABOARD: Mineral fortified, asphaltic roof substrate board with glass fiber facers. For use as roof cover-board and for vertical flashing substrate. ASPHALTIC ROOF BOARD shall be manufactured by the membrane supplier.

i Thickness: 1/4 in

ii Dimensions: 4 x 8 ft acceptable for mechanical attachment, insulation adhesive or asphalt application.

iii Water absorption: Less than 1 percent per ASTM D994.

iv Impact resistance: Included in FM Approvals per 4450/4470 for FM Severe Hail (SH) rating.

v Compressive strength, psi (kPa) measured at 50 percent compression, per ASTM C472:

a) ¼ in board: 1,320 (9,100)

vi Puncture resistance, lbf (N) per ASTM E154:

a) ¼ in board: 100 (445)

2. GYPSUM ROOF BOARD

a. National Gypsum Company, DEXcell FA Glass Mat Roof Board:

i Gypsum core, glass fiber-faced, roof board:

ii Thickness: 1/2 in

iii Dimensions: 4 x 4 ft or 4 x 8 ft boards

iv Facer: Glass fiber.

v Meets or exceeds ASTM C1177/C1177M.

b. Georgia Pacific Gypsum LLC, DensDeck Prime Roof Board:

i Gypsum core, glass fiber-faced, factory primed, roof Cover-board.
ii Thickness: 1/2 in
iii Dimensions: 4 x 4 ft or 4 x 8 ft boards
iv Facer: Factory primed, glass fiber.
v Meets or exceeds ASTM C1177/C1177M.

C. INSULATION CANT AND TAPERED STRIP
1. CANT STRIP, MODIFIED BITUMEN
a. Modified bitumen cant strips for use with heat-welded SBS modified bitumen.
i Length: 39.4 in sections.
ii Cross-section dimensions: Size as required for flashing conditions.
2. CANT STRIP, RIGID MINERAL WOOL
a. High density, mineral wool, bitumen coated cant strips.
i Length: 4 ft sections.
ii Cross-section dimensions: Size as required for flashing conditions.
iii Surface: Bitumen coated, sanded.
iv Meets or exceeds ASTM C726.
3. TAPERED EDGE STRIP AND BOARDS:
a. Polyiso Insulation or Expanded perlite, blended with binders and fibers.
i Dimensions: Size as required.
ii Meets or exceeds ASTM C728.

D. INSULATION ADHESIVE
1. POLYURETHANE FOAM INSULATION ADHESIVE
a. Two-component, polyurethane foam insulation adhesive, applied in ribbons from cartridges or two-component bulk packaging with pump-driven delivery system.
i Ribbon size: 1/2 in to 3/4 in wide.
ii Ribbon spacing: As required to meet specified wind uplift resistance performance.
a) Field of Roof (Zone 1'): 12 in on-centers
b) Field of Roof (Zone 1): 12 in on-centers
c) Perimeter of Roof (Zone 2): 6 in on-centers
d) Corners of Roof (Zone 3): 4 in on-centers
b. Two-component, polyurethane foam insulation adhesive, applied in ribbons from two-component compressed cylinders.
i Ribbon size: 2-1/2 to 3-1/2 in wide.
ii Ribbon spacing: As required to meet specified wind uplift resistance performance.
a) Field of Roof (Zone 1'): 12 in on-centers
b) Field of Roof (Zone 1): 12 in on-centers
c) Perimeter of Roof (Zone 2): 6 in on-centers
d) Corners of Roof (Zone 3): 4 in on-centers

iii Application Rate: Full coverage, applied at EVT for a nominal rate of 23-25 lbs/square.

2.3 ACCESSORIES

A. PRIMERS:

1. Asphalt cut-back primer. Primer for the preparation of substrates for asphalt applications.
   a. Meets or exceeds ASTM D41
   b. VOC content: 350 g/L or less.

B. INSULATION FASTENERS AND PLATES

1. #14 FASTENERS and 3 IN INSULATION PLATE: Insulation system fasteners and metal stress plates.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examination includes visual observations, qualitative analysis, and quantitative testing measures as necessary to ensure conditions remain satisfactory throughout the project.

B. Conduct qualitative insulation adhesive adhesion tests, or quantitative bonded pull tests as necessary to ensure satisfactory adhesion is achieved.

C. The contractor shall examine all roofing substrates including, but not limited to: insulation materials, roof decks, walls, curbs, rooftop equipment, fixtures, and wood blocking.

D. The applicator shall not begin installation until conditions have been properly examined and determined to be clean, dry and, otherwise satisfactory to receive specified roofing materials.

E. During the application of specified materials, the applicator shall continue to examine all project conditions to ensure conditions remain satisfactory to complete the specified roofing system.

3.2 PREPARATION

A. Before commencing work each day, the contractor shall prepare all roofing substrates to ensure conditions are satisfactory to proceed with the installation of specified roofing materials. Preparation of substrates includes, but is not limited to, substrate repairs, securement of substrates, eliminating all incompatible materials, and cleaning.

B. Where conditions are found to be unsatisfactory, work shall not begin until conditions are made satisfactory to begin work. Commencing of work shall indicate contractor's acceptance of conditions.

3.3 PRIMER APPLICATION

A. Apply the appropriate specified primer to dry, compatible substrates as required to enhance adhesion of new specified roofing materials.

B. Apply primer using brush, roller, or sprayer at the rate published on the product data sheet.

C. Asphalt Primer: Apply primer to dry compatible masonry, metal, wood, and other required substrates before applying asphalt.

D. Project conditions vary throughout the day. Monitor changing conditions, monitor the drying time of primers, and monitor the adhesion of the membrane plies. Adjust primer and membrane application methods as necessary to achieve the desired results.

3.4 INSULATION FASTENER APPLICATION

A. Fasten Insulation layers and Cover-board to the deck using specified insulation fasteners and plates.

B. Evenly distribute fasteners as required by the board manufacturer's published requirements.

C. Fasten the insulation to meet the specified wind uplift resistance performance requirements and warranty requirements.

D. Minimum insulation fastening requirement:

1. Field of Roof (Zone 1'): 16 fasteners per 4x8 ft board.
2. Field of Roof (Zone 1): 16 fasteners per 4x8 ft board.
3. Perimeter of Roof (Zone 2): 24 fasteners per 4x8 ft board.
4. Corners of Roof (Zone 3): 32 fasteners per 4x8 ft board.

E. For insulation and Cover-boards located partially within the defined perimeter and/or corners, install fastening for the entire board as specified herein.

3.5 INSULATION ADHESIVE APPLICATION

A. Apply the specified two-component insulation adhesive to adhere Insulation Layers and Cover-board to the deck and insulation substrate(s).

B. Follow insulation adhesive product data sheets and published general requirements for installation requirements.

C. Apply insulation adhesive in uniform ribbons, 1/2 in to 3/4 in wide.

D. Immediately install insulation components into insulation adhesive and apply weight to ensure the materials maintain full contact with all ribbons for complete adhesion. Do not allow insulation adhesive to skin-over before placing the insulation materials into the adhesive.

E. Adhere the insulation system to meet the specified wind uplift resistance performance and specified warranty requirements.

F. Minimum insulation adhesive ribbon spacing:

1. Field of Roof (Zone 1'): 12 in on-centers.
2. Field of Roof (Zone 1): 12 in on-centers.
3. Perimeter of Roof (Zone 2): 6 in on-centers.
4. Corners of Roof (Zone 3): 4 in on-centers.

3.6 INSULATION SYSTEM APPLICATION

A. Follow insulation system component product data sheets, published general requirements and, approvals.

B. Install all insulation system components on clean, dry, uniform and, properly prepared substrates.

C. All insulation system boards shall be carefully installed and fitted against adjoining sheets to form tight joints.

D. Insulation system boards that must be cut to fit shall be saw-cut or knife-cut in a straight line, not broken. Chalk lines shall be used to cut insulation components. Uneven or broken edges shall not be accepted. Remove dust and debris that develops during cutting operations.

E. Stagger successive layers of insulation 12 in vertically and laterally to ensure board joints do not coincide with joints from the layers above and below.

F. Crickets, saddles, and tapered edge strips shall be installed before installing Cover-boards.

G. Install tapered insulation, saddles and crickets as required to ensure positive slope for complete roof drainage.

H. Cover-boards shall be installed to fit tight against adjacent boards. When required by the Cover-board manufacturer, a uniform gap shall be provided between Cover-boards using a uniform guide placed between board joints to form a gap between all boards during installation.

I. The finished insulation system surface shall be tight to, and flush with, adjacent substrates to form a satisfactory substrate to install specified roof membrane and flashings.

J. Install specified cants where required for membrane flashing transitions.

3.7 CLEAN-UP

A. Clean-up and properly dispose of waste and debris resulting from these operations each day as required to prevent damages and disruptions to operations.

END OF SECTION

SECTION 07222: RIGID INSULATION BOARD - ROOF

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Scope of Work: This section includes rigid insulation board, tape, mechanical fasteners and accessories indicated on drawings and in specifications. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Definition: R-Value designation is the thermal resistance of insulation only, not including alleged air spaces or other factor assumed to result in higher R-values.

1.4 Quality Assurance:

A. Provide manufacturer's certification or literature indicating that products intended for use meet specified requirements.

B. Submit literature or certification that flame spread tested by ASTM E-84 is 25 or less, smoke developed factor at 450 or less.

1.5 Requirements of Regulatory Agencies: Install rigid insulation to meet requirements of state and local building codes.

1.6 Submittals:

A. Manufacturer's Literature: Manufacturer's recommended installation instructions.

B. Certificates: Manufacturer's certification or literature indicating that materials meet specification requirements.

C. Submit in accordance with requirements of Division 1.

1.7 Product Delivery, Storage and Handling: Deliver materials to project site in manufacturer's original unopened packaging. Identify contents, manufacturer, brand name, thermal values, and applicable standards. Store materials in area protected from weather, moisture, and open flame or sparks. Protect from cutting and welding operations. Remove damaged material from site.

1.8 Environmental Requirements: Do no install insulation when temperature is 40° F or below, during rain or wet weather, or when surfaces are wet.

PART 2: PRODUCTS

2.1 Acceptable Manufacturers:

A. For purposes of designating type and quality for the work under this section, Drawings and Specifications are based on products manufactured by Owens/Corning Fiberglass Corporation.

B. Subject to compliance with requirements acceptable manufacturers include Manville or approved equal.

2.2 Rigid Insulation: Owens-Corning, Foam Roof Insulation Board, or approved equal. UL listed and Factory Mutual approved meeting Federal Specification HH-I-1972. Manufacturer's standard size X 3/4" thick, board, between top insulation and bottom skin of asphalt-impregnated polyisocyanurate foam roofing felt.

2.3 Tapered Fiberglass Insulation:

A. SIBO tapered fiberglass roof insulation.

B. UL listed and Factory Mutual approved meeting Federal Specifications HH-I-526 and ASTM 6726.

2.4 Tape: Owens-Corning, Fiberglass Roof Tape or as approved in writing by roofing membrane manufacturer.

2.5 Mechanical Fasteners: Owens-Corning, glasfast fastening system or as approved in writing by roofing membrane manufacturer.

PART 3: EXECUTION

3.1 Inspection: Examine areas to receive rigid insulation to insure work of preceding trades is completed. Check surfaces to receive rigid insulation to assure they are in uniform plane; and free of debris, grease, oil, or other items detrimental to installation. Proceed with application insulation only when conditions are satisfactory.

3.2 Installation:

A. Apply wood nailers of same thickness as insulation board at eaves, curbs, penetrations, and drains.

B. The roof insulation shall be installed in 2 layers with the joints staggered in one direction, unless roof tape is specified in which case the joints shall be continuous in both directions. The joints of the type shall be offset a minimum of 6" from those of the bottom layer.

C. Where more than one layer of insulation is specified, the top surface of the first layer shall be coated with hot asphalt using 20 to 25 lb/100 ft2 of surface, and successive layers of insulation shall be applied using offset joints, so that each layer breaks joints to a minimum of 6" both ways with the preceding layer. The roof insulation must be secured, attached to the roof deck and/or vapor retarder and must be securely adhered to the roof deck and/or vapor retarder and must be securely adhered between layers. Application must comply with insurance and code requirements.

D. Spacing of mechanical fasteners shall comply with roofing manufacturers' requirements.

E. Cut panels as required at areas of conduit runs, and to assure uniform and complete coverage of entire roof area.

F. Seal all joints and penetrations in sheathing with 6 inches width of fiberglass tape.

G. Install no more insulation at one time than will be protected from wetting, or other damage by the elements, by the installation of roofing membrane on the same day or prior to rain or dew. Provide temporary water cut-offs at completion of each day's work and remove upon resumption of work.

H. Insulation, which has become wet after installation shall be removed and replaced.

l. Prior to beginning of roofing operations, insulation board shall be dry, swept free of dirt and debris, and kept clean of foreign materials.

3.4 Clean Up: Remove debris from project site: Leave work areas in clean condition.

* * *

SECTION 07411: STANDING-SEAM METAL ROOFING PANELS - PRE-FINISHED

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions) and Division 1 as appropriate, apply to the Work specified in the Section.

1.2 Scope of Work: Furnish all necessary materials, labor and equipment for the complete installation of a standing seam metal roof panel assembly including all flashing, trim, closures, fasteners, sealants, roof accessories, hips, valleys, ridges, eaves, corners, rakes, gutters attaching devices and other items, as shown on the drawings and specified herein. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Quality Assurance:

A. Manufacturer Qualifications: Company specializing in architectural sheet metal products.

B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by the manufacturer.

1.4 Standards: Meet requirements and recommendations of the applicable portions of the latest editions of all local governing codes including the following standards:

A. American Society for Testing Materials (ASTM)
B. Metal Building Manufacturers Association (MBMA)
C. American Iron and Steel Institute (AISI)
D. ASTM A-525, A-653 & ASTM A-924 Steel Sheet, Zinc Coated (Galvanized)
E. ASTM E-283
F. ASTM E-331
G. ASTM E-330 (Modified)
H. Spec Data Sheet - Galvalume Sheet Metal by Bethlehem Corp.
I. SMACNA - Sheet Metal and Air Condition Contractors National Association, Inc.
J. Building Materials Directory - Underwriters Laboratories, Test Procedure 580.
K. International Building Code (IBC)

1.5 Action Submittals:

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:
   1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim flashings, closures, and accessories; and special details.
   2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 3 inches per 12 inches (1:5).

C. Calculations:
   1. Include calculations with registered engineer in the State of Louisiana seal, verifying roof panel and attachment method resist wind pressures imposed on it pursuant to design wind loads and Construction Documents.

D. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.
   1. Include similar trim samples and accessories involving color selection.

1.6 Informational Submittals:

A. Qualification Data: For manufacturer and installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.7 Closeout Submittals: Maintenance Data, for metal panels to include in maintenance manuals.

1.8 Preinstallation Meetings:

A. Preinstallation Conference: Conduct conference at project site.
   1. Meet with Owner, A/E, metal panel installer, metal panel manufacturer's representative, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
   2. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
   4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
   5. Review structural loading limitation of purlins and rafters during and after roofing.
   6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
   7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
   8. Review temporary protection requirements for metal panel systems during and after installation.
   9. Review procedures for repair of metal panels damaged after installation.
   10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.9 Delivery, Storage and Handling:

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, wrapping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with a positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels until installation. Remove as panels are being installed. Verify film is not left on installed panels.

1.10 Field Conditions:

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturer's written instructions and warranty requirements.

1.11 Coordination:

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.12 Warranty:

A. Special Galvalume Substrate Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Structural failures including rupturing, or perforating.
   b. Deterioration of metals and other materials beyond normal weathering.
2. Warranty Period: 20 years and 6 months from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
   a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
   b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
   c. Cracking, chipping, peeling, or failure of paint to adhere to bare metal.
2. Finish Warranty Period: 20 years from date of Substantial Completion.

C. Special Watertightness Warranty: Manufacturer's no dollar limit form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain watertight, including leaks, within specified warranty period.
   1. Warranty Period: 20 years from date of Substantial Completion.
   2. Shop drawings must be provided to, reviewed, and approved by the panel manufacturer prior to panel system installation.
   3. Inspections by panel system manufacturer technical representative are required. Perform first inspection when underlayment and flashing are in place and second inspection when the roof is complete.

D. Special Installer Warranty: Furnish a written warranty signed by the Panel Applicator guaranteeing materials and workmanship for watertightness of the roofing system, flashings, penetrations, and against all leaks.
   1. Warranty Period: 2 years from date of Substantial Completion.

PART 2: PRODUCTS

2.1 Acceptable Manufacturers:

A. For purposes of designating type and quality for the Work under this Section, Drawings and Specifications are based on products manufactured or furnished by Berridge Manufacturing Company, Houston, Texas or approved equivalent.

B. All acceptable manufacturers' panels must meet these Specifications and submitted for approval in accordance with Sections 01635 and 01635A.

2.2 Performance Requirements:

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to UL 580.
   1. Wind Loads: As indicated on drawings.
   2. Other Design Loads: As indicated on Drawings.
   3. Deflection Limits: For wind loads, no greater than 1/180 of the span.

B Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested according to ASTM E 1680 and ASTM E 283 at the following test-pressure difference:
   1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).

C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 1646 and ASTM E 331 at the following test-pressure difference:
   1. Test-Pressure Difference: 15 lbf/sq. ft. (718.2 Pa).

D. Hydrostatic Head Resistance: No water penetration when tested according to ASTM E2140.

E. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

2.3 Standing-Seam Metal Roof Panels:

A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
   1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1514.

B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and panel striations, between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide Berridge Manufacturing Company; **Double-Lock Zee-lock (180° seam)** or approved equal.
   2. Metallic-Coated Steel Sheet: Aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
      a. Nominal Thickness: 0.024 inch (0.61 mm).
      b. Exterior Finish: Two-coat fluoropolymer.
      c. Painted materials shall have a removable plastic film to protect the paint during roll forming, shipping and handling.
      d. Color: Antique Copper-Cote
   3. Clips: Continuous Zee-rib to accommodate thermal movements.
      a. Material: 0.024-inch (0.61-mm) nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
      b. Material: 0.064-inch (1.63-mm) nominal thickness, zinc-coated (galvanized) base with 0.033 inch (0.84 mm) stainless-steel top.
   4. Joint Type: Double folded.
   5. Panel Coverage: 16 inches (406 mm).
   6. Panel Height: 2.0 inches (51 mm).

2.4 Miscellaneous Materials:

A. Miscellaneous Metal Sub-framing and Furring: ASTM C645; cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 (2275 hot-dip galvanized) coating designation or ASTM A792/A792M, Class AZ50 (Class AZM150) coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
   1. Closures: Provide closures at eaves and ridges, fabricated of the same metal as the roof panels.
   2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent to metal panels.

D. Gutters: Formed from the same material as roof panels, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch (2400 mm) long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 36 inches (914 mm) o.c., fabricated from the same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match roof fascia and rake trim.

E. Downspouts: Formed from the same material as roof panels. Fabricate in 10-foot (3-m) long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.

F. Panel Fasteners: Zinc-coated steel, corrosion resisting steel, zinc cast head, or nylon capped steel, type and size as approved for the applicable loading requirements.

G. Panel Sealants: Provide sealant types recommended by the manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Joint Sealant: Silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.

2.5 Fabrication:

A. General: Fabricate and finish metal panels and accessories at the factory, but manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panel may be fabricated on-site using factory set, non-adjustable, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back for form hems.

2. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.

3. Fabricate cleats and attachment devices from same material an accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
   a. Size: as recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.6 Finishes:

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:
   1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat applied by panel manufacturer on a continuous coil coating line, with a top side dry film thickness of 0.75± 0.05 mil (0.0013 mm) over 0.2± 0.05 mil (0.0013 mm) primer coat, to provide a total dry film thickness of 0.95± 0.10 mil (0.024 mm). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions.
   2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.35 mil (0.009 mm).

PART 3: EXECUTION

3.1 Examination:

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the work.
   1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by the metal roof panel manufacturer.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Preparation:

A. Miscellaneous Supports: Install sub-framing, furring and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 Metal Panel Installation:

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the work surely in place, with provisions for thermal and structural movement.
   1. Shim or otherwise plumb substrates receiving metal panels to be level to 1/4 inch in 20 ft. (6 mm in 6.1 m)
   2. Flash and seal metal panels at perimeter of all openings. Do not begin installation until air-or water-resistive barriers and flashings that will be concealed by metal panels are installed.
   3. Locate and space fastenings in uniform vertical and horizontal alignment.
   4. Install flashing and trim as metal panel work proceeds.
   5. Panels should be continuous without end laps.
   6. Align bottoms of metal panels and fasten.
   7. Provide weathertight escutcheons for pipe-and conduit-penetrating panels.

B. Fasteners:
   1. Steel Panels: use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
   2. Aluminum Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use stainless steel fasteners for surfaces exposed to the interior.

C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

E. Standing -Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.
   1. Install clips to supports with self-tapping fasteners.
   2. Install pressure plates, if required, at locations indicated in manufacturer's written installation instructions.
   3. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied vinyl weatherseal are completely engaged.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
   1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by the metal roof panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
   1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
   2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

H. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches (914 mm) o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight and weather resistant.

I. Downspouts: Existing downspouts to remain in place where identified on Construction Documents. Patch and repair to accept new gutters. Install separation material of connections to avoid galvanic corrosion.

J. Roof Curbs: Install flashing around bases where they meet metal roof panels.

K. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by the manufacturer.

3.3 Erection Tolerances:

A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4-inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3 mm) offset of adjoining faces and of alignment of matching profiles.

3.4 Field Quality Control:

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.

B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.

C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

D. Prepare test and inspection reports.

3.5 Cleaning and Protection:

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain a clean condition during construction.

B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

* * *

SECTION 07 52 16: STYRENE-BUTADIENE-STYRENE (SBS) MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 GENERAL

1.1 RELATED DOCUMENTS: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 SCOPE OF WORK: This section includes roof replacement indicated on drawings and in specifications. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 SUMMARY:

A. Work shall include, but is not limited to, the following:
   1. Preparation of existing concrete and steel roof decks, and all flashing substrates.
   2. SBS-modified bitumen base ply heat-welded.
   3. SBS-modified bitumen cap sheet, heat-welded.
   4. SBS-modified bitumen membrane flashings.
   5. Liquid-applied, reinforced flashings.
   6. Refer to related Sections for Insulation, Coverboard and Roof Edge Systems
   7. All related materials and labor required to complete specified roofing necessary to receive specified manufacturer's warranty.

1.4 RELATED SECTIONS:

A. Division 011000 – Summary of Work
B. Division 076000 – Sheet Metal Flashing and Trim

1.5 DEFINITIONS:

A. ASTM D 1079-Definitions of Term Relating to Roofing and Waterproofing.
B. The National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual, Fifth Edition Glossary.

1.6 REFERENCES:

A. AMERICAN SOCIETY OF CIVIL ENGINEERS - Reference Document ASCE 7, Minimum Design Loads for Buildings and Other Structures.
B. AMERICAN STANDARD OF TESTING METHODS (ASTM):
   1. ASTM C836 - Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.
   2. ASTM C920 - Standard Specification for Elastomeric Joint Sealants
   3. ASTM D41 - Standard Specification for Asphalt Primer Used in Roofing, Damp proofing, and Waterproofing.
   4. ASTM D312- Standard Specification for Asphalt Used in Roofing.
   5. ASTM D1863 – Standard Specification for Mineral Aggregate Used on Built-Up Roofs.

6. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
7. ASTM D2178 - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
8. ASTM D3019 - Standard Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, Asbestos-Fibered, and Non-Asbestos-Fibered.
9. ASTM D3746 - Standard Test Method for Impact Resistance of Bituminous Roofing System.
10. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
11. ASTM D4601 - Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing.
12. ASTM D5147 - Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material.
13. ASTM D5849 - Standard Test Method for Evaluating Resistance of Modified Bituminous Roofing Membrane to Cyclic Fatigue (Joint Displacement)
14. ASTM D 6162 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
15. ASTM D6163 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
16. ASTM D6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
17. ASTM D6298 - Standard Specification for Fiberglass Reinforced Styrene-Butadiene-Styrene (SBS) Modified Bituminous Sheets with a Factory Applied Metal Surface.
18. ASTM D7379 - Standard Test Methods for Strength of Modified Bitumen Sheet Material Laps Using Cold Process Adhesive.
19. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings.
20. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

C. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
1. ANSI/SPRI/FM 4435/ES-1 Wind Design Standard for Edge System Used with Low Slope Roofing System.
2. ANSI/SPRI FX-1, Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners.
3. ANSI/SPRI IA-1, Standard Field Test Procedure for Determining the Mechanical Uplift Resistance of Insulation Adhesives over Various Substrates.
4. ANSI/FM 4474- American National Standard for Evaluating the Simulated Wind Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures.

D. FACTORY MUTUAL (FM):
1. FM 4450 - Approval Standard - Class I Insulated Steel Roof Decks.
2. FM 4470 - Approval Standard - Class I Roof Covers.

E. FLORIDA BUILDING CODE (FBC):
   1. 2021 Florida Building Code (FBC).
F. INTERNATIONAL CODES COUNCIL (ICC):
   1. 2021 International Building Code (IBC).
G. NATIONAL ROOFING CONTRACTORS' ASSOCIATION (NRCA).
   1. UL 790 Standard Test Methods for Fire Tests of Roof Coverings.
   2. UL 1256 – Fire Test of Roof Deck Constructions.

1.7 ACTION SUBMITTALS:
A. Product Data Sheets: Submit manufacturer's product data sheets, installation instructions, and/or general requirements for each component.
B. Safety Data Sheets: Submit manufacturer's Safety Data Sheets (SDS) for each component.
C. Sample warranty from the manufacturer and contractor.
D. Provide roof plan and representative detail drawings.

1.8 INFORMATIONAL SUBMITTALS:
A. Submit a letter from the roofing manufacturer indicating the contractor is an authorized applicator.

1.9 CLOSEOUT SUBMITTALS:
A. Warranty: Provide manufacturers and contractor's warranties upon project completion.

1.10 QUALITY ASSURANCE:
A. MANUFACTURER QUALIFICATIONS:
   1. Manufacturer shall have 20 years of manufacturing experience.
   2. Manufacturer shall have trained technical service representatives employed by the manufacturer, independent of sales.
   3. Manufacturer shall provide site visit reports in a timely manner.
B. CONTRACTOR QUALIFICATIONS:
   1. Contractor shall be authorized by the manufacturer to install specified materials prior to the bidding period through satisfactory project completion.
   2. Applicators shall have completed projects of similar scope using same or similar materials specified.
   3. Contractor shall provide full time, on-site superintendent or foreman experienced with the specified roofing from beginning through satisfactory project completion.
   4. Applicators shall be skilled in the application methods for all materials.
   5. Contractor shall maintain a daily record, on-site, documenting material installation and related project conditions.
   6. Contractor shall maintain a copy of all submittal documents, on-site, available always for reference.

1.11 DELIVERY, STORAGE AND HANDLING:
A. Refer to each product data sheet or other published literature for specific requirements.

B. Deliver materials and store them in their unopened, original packaging, bearing the manufacturer's name, related standards, and any other specification or reference accepted as standard.

C. Protect and store materials in a dry, well-vented, and weatherproof location. Only materials to be used the same day shall be removed from this location. During cold weather, store materials in a heated location, removed only as needed for immediate use.

D. When materials are to be stored outdoors, store away from standing water, stacked on raised pallets or dunnage, at least 4 in or more above ground level. Carefully cover storage with "breathable" tarpaulins to protect materials from precipitation and to prevent exposure to condensation.

E. Carefully store roof membrane materials delivered in rolls on-end with selvage edges up. Store and protect roll storage to prevent damage.

F. Properly dispose of all product wrappers, pallets, cardboard tubes, scrap, waste, and debris. All damaged materials shall be removed from job site and replaced with new, suitable materials.

1.12 SITE CONDITIONS:

A. SAFETY:

1. The contractor shall be responsible for complying with all project-related safety and environmental requirements.
2. Heat-welding shall include heating the specified membrane ply using propane roof torches or electric hot-air welding equipment. The contractor shall determine when and where conditions are appropriate to utilize heat-welding equipment. When conditions are determined by the contractor to be unsafe to proceed, equivalent SBS-modified bitumen materials and methods shall be utilized to accommodate requirements and conditions.
3. Refer to NRCA CERTA recommendations, local codes and building owner's requirements for hot work operations.
4. The contractor shall review project conditions and determine when and where conditions are appropriate to utilize the specified liquid-applied or semi-solid roofing materials. When conditions are determined by the contractor to be unsafe or undesirable to proceed, measures shall be taken to prevent or eliminate the unsafe or undesirable exposures and conditions, or equivalent approved materials and methods shall be utilized to accommodate requirements and conditions.
5. The contractor shall review project conditions and determine when and where conditions are appropriate to utilize the specified hot asphalt-applied materials. When conditions are determined by the contractor to be unsafe or undesirable to proceed, measures shall be taken to prevent or eliminate the unsafe or undesirable exposures and conditions, or equivalent approved materials and methods shall be utilized to accommodate requirements and conditions.
6. The contractor shall refer to product Safety Data Sheets (SDS) for health, safety, and environment related hazards, and take all necessary measures and precautions to comply with exposure requirements.

B. ENVIRONMENTAL CONDITIONS:

1. Monitor substrate temperature and material temperature, as well as all environmental conditions such as ambient temperature, moisture, sun, cloud cover, wind, humidity, and shade. Ensure conditions are satisfactory to begin work and ensure conditions remain satisfactory during the installation of specified materials. Materials and methods shall be adjusted as necessary to accommodate varying project conditions. Materials shall not be installed when conditions are unacceptable to achieve the specified results.
2. Precipitation and dew point: Monitor weather to ensure the project environment is dry before, and will remain dry, during the application of roofing materials. Ensure all roofing materials and substrates remain above the dew point temperature as required to prevent condensation and maintain dry conditions.
3. Heat-Welding Application: Take all necessary precautions and measures to monitor conditions to ensure all environmental conditions are safe to use roof torches and hot-air welding equipment. Combustibles, flammable liquids, and solvent vapors that represent a hazard shall be eliminated. Flammable primers and cleaners shall be fully dry before proceeding with heat-welding operations. Prevent or protect wood, paper, plastics, and other such combustible materials from direct exposure to open flames from roof torches. Refer to NRCA CERTA recommendations.

1.13 PERFORMANCE REQUIREMENTS:

A. WIND UPLIFT RESISTANCE:

1. Performance testing shall be in accordance with ANSI/FM 4474, FM 4450, FM 4470, UL 580, or UL 1897.
   a. Roof System Design Pressures: Calculated in accordance with ASCE 7, or applicable standard, for the specified roof system attachment requirements.
   b. Design Pressures: As indicted on Construction Documents.

B. FIRE CLASSIFICATION:

1. Performance testing shall be in accordance with UL 790, ASTM E108, FM 4450 or FM 4470 to meet the 1/8 and 1/4:12 roof slope requirement.
   a. Meets requirements of UL Class A or FM Class A.
2. Performance testing shall be in accordance with UL 1256, FM 4450, or FM 4470 to meet the specified requirements for interior flame spread and fuel contribution.
   a. Meets requirements of UL 1256, or FM Class 1.

C. ROOF SLOPE:

1. Finished roof slope for SBS modified bitumen surfaces shall be ¼ and 1/8 inch per foot minimum for roof drainage.

D. IMPACT RESISTANCE:

1. Performance testing for impact resistance shall be in accordance with FM 4450, FM 4470, ASTM D3746 or CGSB 37-GP 56M to meet the specified impact resistance requirements.

a. Meets requirements for FM-SH (Severe Hail), ASTM D3746, or CGSB 37-GP 56M.

E. CYCLIC FATIGUE:

1. The roof system shall pass ASTM D5849 Standard Test Method for Evaluating Resistance of Modified Bituminous Roofing Membrane to Cyclic Fatigue (Joint Displacement). Passing results shall show no signs of cracking, splitting, or tearing over the joint.

a. Roof system shall pass Test Condition 4, tested at 14°F (-10°C) in accordance with ASTM D5849. Polyester Membranes.

1.14 WARRANTY:

A. Manufacturer's 20 Year No Dollar Limit (NDL) Total System Warranty. The manufacturer shall provide the owner with the manufacturer's warranty providing labor and materials for 20-years from the date the warranty is issued.

B. The contractor shall guarantee the workmanship and shall provide the owner with the contractor's warranty covering workmanship for a period of 2-years from completion date.

PART 2 PRODUCTS

2.1 MANUFACTURER:

A. SINGLE SOURCE MANUFACTURER: All SBS modified bitumen membrane, flashing and accessories shall be manufactured by a single supplier with 20 years or more manufacturing history in the US.

1. Comply with the Manufacturer's requirements as necessary to provide the specified warranty.

B. PRODUCT QUALITY ASSURANCE PROGRAM: Manufacturer shall be an ISO 9001 registered company. A 'Quality Compliance Certificate (QCC) for reporting/confirming the tested values of the SBS-Modified Bitumen Membrane Materials will be supplied upon request.

C. ACCEPTABLE MANUFACTURER:

1. Soprema
2. Siplast
3. Garland
4. Prior approved equal

2.2 ROOFING SYSTEM:

A. The roof membrane assembly shall consist of a multi-ply, prefabricated, reinforced, homogeneous Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane, secured to a prepared substrate. Reinforcement mats shall be impregnated (saturated) and coated with a high quality SBS modified bitumen blend. The cross section of the sheet material shall contain no oxidized or non-SBS modified bitumen.

2.3 SBS-MODIFIED BITUMEN MEMBRANES:

A. BASE PLY:

1. BASE PLY, HEAT-WELDED:

a. SOPRALENE FLAM 180: SBS-modified bitumen membrane with plastic burn-off film on top and bottom surfaces. Non-woven polyester reinforcement. Meets or exceeds ASTM D6164, Type I, Grade S, per ASTM D5147 test methods:
   i Thickness: 118 mils (3.0 mm)
   ii Width: 39.4 inches (1 m)
   iii Length: 32.8 feet (10 m)
   iv Roll weight: 81 lb (36.7 kg)
   v Net mass per unit area, lb/100 sq ft (g/sq m): 75 lb (3662 g)
   vi Peak load @ 0°F (-18°C), lbf/in (kN/m): MD 115 lbf/in (20.1 kN/m), XMD 90 lbf/in (15.8 kN/m)
   vii Elongation at peak load @ 0°F (-18°C), lbf/in (kN/m): MD 35%, XMD 40%
   viii Peak load @ 73.4°F (23°C), lbf/in (kN/m): MD 85 lbf/in (14.9 kN/m), XMD 65 lbf/in (11.4 kN/m)
   ix Elongation at peak load @ 73.4°F (23°C), lbf/in (kN/m): MD 55%, XMD 60%
   x Ultimate Elongation @ 73.4°F (23°C), lbf/in (kN/m): MD 65%, XMD 80%
   xi Tear Strength @ 73.4°F (23°C), lbf (N): MD 125 lbf (556 N), XMD 85 lbf (378 N)
   xii Low temperature flexibility, °F (°C): MD/XMD: -15°F (-26°C)
   xiii Dimensional stability, %: MD/XMD: Less than 0.5%
   xiv Compound stability, °F (°C): MD/XMD: 240°F (116°C)

B. FLASHING BASE PLY
   1. FLASHING BASE PLY, HEAT-WELDED:
      a. SOPRALENE FLAM 180: SBS-modified bitumen membrane with plastic burn-off film on top and bottom surfaces. Non-woven polyester reinforcement. Meets or exceeds ASTM D6164, Type I, Grade S, per ASTM D5147 test methods:
         i Thickness: 118 mils (3.0 mm)
         ii Width: 39.4 inches (1 m)
         iii Length: 32.8 feet (10 m)
         iv Roll weight: 81 lb. (36.7 kg)
         v Net mass per unit area, lb/100 sq ft (g/sq m): 75 lb. (3662 g)
         vi Peak load @ 0°F (-18°C), lbf/in (kN/m): MD 115 lbf/in (20.1 kN/m), XMD 90 lbf/in (15.8 kN/m)
         vii Elongation at peak load @ 0°F (-18°C), lbf/in (kN/m): MD 35%, XMD 40%
         viii Peak load @ 73.4°F (23°C), lbf/in (kN/m): MD 85 lbf/in (14.9 kN/m), XMD 65 lbf/in (11.4 kN/m)
         ix Elongation at peak load @ 73.4°F (23°C), lbf/in (kN/m): MD 55%, XMD 60%
         x Ultimate Elongation @ 73.4°F (23°C), lbf/in (kN/m): MD 65%, XMD 80%

xi Tear Strength @ 73.4°F (23°C), lbf (N): MD 125 lbf (556 N), XMD 85 lbf (378 N)
xii Low temperature flexibility, °F (°C): MD/XMD: -15°F (-26°C)
xiii Dimensional stability, %: MD/XMD: Less than 0.5%
xiv Compound stability, °F (°C): MD/XMD: 240°F (116°C)

C. CAP SHEET:
1. CAP SHEET, HEAT-WELDED:
a. SOPRALENE FLAM 180 FR GR: SBS-modified bitumen membrane Cap Sheet with a burn-off film bottom surface and mineral granule top surface. Non-woven polyester reinforced. UL Class A for specified roof slope requirements. Meets or exceeds ASTM D6164, Type I, Grade G, per ASTM D5147 test methods:
i Thickness: 157 mils (4.0 mm)
ii Width: 39.4 inches (1 m)
iii Length: 32.8 feet (10 m)
iv Roll weight: 118 lb. (53.5 kg)
v Net mass per unit area, lb/100 sq ft (g/sq m): 110 lb (5371 g)
vi Peak load @ 0°F (-18°C), lbf/in (kN/m): MD 115 lbf/in (20.1 kN/m), XMD 90 lbf/in (15.8 kN/m)
vii Elongation at peak load @ 0°F (-18°C), lbf/in (kN/m): MD 35%, XMD 40%
viii Peak load @ 73.4°F (23°C), lbf/in (kN/m): MD 85 lbf/in (14.9 kN/m), XMD 65 lbf/in (11.4 kN/m)
ix Elongation at peak load @ 73.4°F (23°C), lbf/in (kN/m): MD 55%, XMD 60%
x Ultimate Elongation @ 73.4°F (23°C), lbf/in (kN/m): MD 65%, XMD 80%
xi Tear Strength @ 73.4°F (23°C), lbf (N): MD 125 lbf (556 N), XMD 85 lbf (378 N)
xii Low temperature flexibility, °F (°C): MD/XMD: -15°F (-26°C)
xiii Dimensional stability, %: MD/XMD: Less than 0.5%
xiv Compound stability, °F (°C): MD/XMD: 240°F (116°C)
xv Granule Surfacing:
a) White mineral granules.

D. FLASHING CAP SHEET
1. FLASHING CAP SHEET, HEAT-WELDED:
a. SOPRALAST 50 TV ALU: SBS-modified bitumen membrane Cap Sheet with a plastic burn-off film bottom surface and aluminum foil-clad top surface. Glass grid reinforced. UL Class A for specified roof slope requirements. All SBS modified bitumen foil-clad membrane and flashing sheets shall be manufactured by the supplier. Meets or exceeds ASTM D6298
i Thickness: 157 mils (4.0 mm)
ii Width: 39.4 inches (1 m)

iii Length: 32.8 feet (10 m)
iv Roll weight: 94 lb (42.7 kg)
v Net mass per unit area, lb/100 sq ft (g/sq m): 87.5 lb (4273 g)
vi Peak load @ 0°F (-18°C), lbf/in (kN/m): MD 200 lbf/in (35.2 kN/m), XMD 175 lbf/in (30.8 kN/m)
vii Elongation at peak load @ 0°F (-18°C), lbf/in (kN/m): MD 10%, XMD 10%
viii Peak load @ 73.4°F (23°C), lbf/in (kN/m): MD 95 lbf/in (16.7 kN/m), XMD 95 lbf/in (16.7 kN/m)
ix Elongation at peak load @ 73.4°F (23°C), lbf/in (kN/m): MD 20%, XMD 20%
x Ultimate Elongation @ 73.4°F (23°C), lbf/in (kN/m): MD 50%, XMD 50%
xi Tear Strength @ 73.4°F (23°C), lbf (N): MD 190 lbf (845 N), XMD 205 lbf (912 N)
xii Low temperature flexibility, °F (°C): MD/XMD: -15°F (-26°C)
xiii Dimensional stability, %: MD/XMD: Less than 0.2%
xiv Compound stability, °F (°C): MD/XMD: 230°F (110°C)

2.4 ACCESSORIES:

A. PRIMERS:

1. Asphalt cut-back primer. Primer for the preparation of membrane substrates for asphalt, heat-welded, applications.
   a. Meets or exceeds ASTM D41
   b. VOC content: 350 g/L or less.
2. ALSAN RS 222 PRIMER: Rapid curing, polymethyl methacrylate (PMMA) liquid resin used to promote adhesion of PMMA/PMA membranes over asphaltic substrates, wood, concrete and approved waterproofing board substrates.
   a. VOC content: 2.5 g/L
   b. Color: Clear
3. ALSAN RS METAL PRIMER: Solvent-based primer used to improve the adhesion of PMMA/PMA membranes to metal substrates.
   a. VOC content: 550 g/L
   b. Color: Off White

B. GENERAL PURPOSE ROOFING CEMENT AND MASTIC:

1. SBS Mastic. Fiber-reinforced, roofing cement, packaged in 5-gallon pails. General purpose roofing cement for low-slope roofing used for sealing membrane T-joints and membrane edges along terminations, transitions and at roof penetrations.
   a. VOC Content: 190 g/L or less.
   b. Meets or exceeds ASTM D4586, Type I, Class II.
2. SBS Mastic. Fiber-reinforced, roofing cement, packaged in 10.4 oz caulk tubes. General purpose roofing cement for low-slope roofing used for sealing membrane T-joints and membrane edges along terminations, transitions and at roof penetrations.

a. VOC Content: 190 g/L or less.
b. Meets or exceeds ASTM D4586, Type I, Class II.

C. GENERAL PURPOSE SEALANT
1. SOPRAMASTIC SP1: General purpose, paintable, gun-grade, elastomeric, polyether moisture curing sealant for sealing SBS membrane terminations, Kynar 500 PVDF, horizontal and vertical construction joints.
a. VOC Content: 20 g/L or less.
b. Meets or exceeds ASTM C920, Type S, Grade NS, Class 50.
c. Standard color
2. SOPRAMASTIC ALU: Modified bitumen mastic, aluminum hued for application to membrane edge and perimeter metal.
a. VOC Content: 270 g/L or less.
b. Standard color.

D. LIQUID-APPLIED REINFORCED FLASHING SYSTEM:
1. ALSAN FLASHING: Single-component, polyurethane-bitumen resin with polyester reinforcing fleece fabric fully embedded into the resin to form roof system flashings.
a. VOC Content: 250 g/L.
b. SOPREMA ALSAN FLASHING: Liquid resin, Meets or exceeds ASTM C836.
c. SOPREMA ALSAN POLYFLEECE: Non-woven polyester reinforcement.
d. Surfacing: SOPREMA ALSAN FLASHING with mineral granules broadcast into wet SOPREMA ALSAN FLASHING to match adjacent SBS-modified bitumen cap sheet.
2. ALSAN RS 230 FLASH: Rapid curing, polymethyl methacrylate (PMMA) liquid resin with an embedded polyester reinforcement fabric used for monolithic waterproofing flashing membranes. Not for use over SBS cap sheets adhered with solvent based SOPREMA COLPLY adhesive or flashing cement.
a. VOC content: 4.2 g/L
b. SOPREMA ALSAN RS CATALYST POWDER: Reactive agent added to the PMMA liquid resin to induce curing.
c. SOPREMA ALSAN RS FLEECE: Polyester reinforcement fabric.
d. Color: White or Grey

E. MINERAL GRANULES:
1. Granules: No. 11, mineral coated colored granules, color to match cap sheet, supplied by membrane cap sheet manufacturer.
a. GRANULES

F. WALKWAY PROTECTION:
1. SOPRAWALK: Polyester reinforced SBS modified bitumen walkway protection with a granule surface and sanded underside.
a. Thickness: 200 mils (5.0 mm)
b. Width: 39.4 inches (1 m)
c. Roll Length: 26 feet (7.9 m)
d. Granule Surfacing:
i Color: Grey

PART 3 EXECUTION

3.1 EXAMINATION:

A. Examination includes visual observations, qualitative analysis, and quantitative testing measures as necessary to ensure conditions remain satisfactory throughout the project.

B. The contractor shall examine all roofing substrates including, but not limited to insulation materials, roof decks, walls, curbs, rooftop equipment, fixtures, and wood blocking.

C. The applicator shall not begin installation until conditions have been properly examined and determined to be clean, dry and, otherwise satisfactory to receive specified roofing materials.

D. During the application of specified materials, the applicator shall continue to examine all project conditions to ensure conditions remain satisfactory to complete the specified roofing system.

3.2 PREPARATION:

A. Before commencing work each day, the contractor shall prepare all roofing substrates to ensure conditions are satisfactory to proceed with the installation of specified roofing materials. Preparation of substrates includes, but is not limited to, substrate repairs, securement of substrates, eliminating all incompatible materials, and cleaning.

B. Where conditions are found to be unsatisfactory, work shall not begin until conditions are made satisfactory to begin work. Commencing of work shall indicate contractor's acceptance of conditions.

3.3 PRIMER APPLICATION:

A. Examine all substrates, and conduct adhesion peel tests as necessary, to ensure satisfactory adhesion is achieved.

B. Apply the appropriate specified primer to dry, compatible substrates as required to enhance adhesion of new specified roofing materials.

C. Apply primer using brush, roller, or sprayer at the rate published on the product data sheet. Lightly prime for uniform coverage, do not apply heavy or thick coats of primer.

D. Asphalt Primer: Apply primer to dry compatible masonry, metal, wood, and other required substrates before applying asphalt and heat-welded membrane plies. Primer is optional for solvent based solvent based SBS adhesives and cements. Refer to product data sheets.

E. Project conditions vary throughout the day. Monitor changing conditions, monitor the drying time of primers, and monitor the adhesion of the membrane plies. Adjust primer and membrane application methods as necessary to achieve the desired results.

3.4 HEAT WELDING:

A. The Contractor is responsible for project safety. Where conditions are deemed unsafe to use open flames, manufacturer's alternate membrane application methods shall be used to install SBS modified bitumen membrane and flashings. Acceptable alternate installation methods include hot asphalt, cold adhesive-applied, self-adhered membranes, and mechanically fastened plies. Hot-air welding equipment may be used in

lieu of roof torches to seal membrane side and end laps where heat welding the laps is necessary. Refer to NRCA CERTA, local codes and building owner's requirements for hot work operations.

B. Single or multi-nozzle, hand-held propane roof torches shall be used to install heat-welded membrane and flashing plies. Multi-nozzle carts (dragon wagons) may also be utilized to install membrane plies. Seven (7) nozzle carts are recommended for more uniform heat application in lieu of five (5) nozzle carts.

3.5 SBS MASTIC AND GENERAL-PURPOSE ROOFING CEMENT APPLICATION

A. Apply general purpose SBS mastic and roofing cement to seal drain leads, metal flanges, seal along membrane edge at terminations, and where specified and required in detail drawings.

B. Do not use general purpose SBS mastics and roofing cement where flashing cement applications are required. Do not use SBS mastics and roofing cement beneath SBS-modified bitumen membrane and flashing plies.

C. Apply general purpose SBS mastic and elastic roofing cement using caulk gun, or notched trowel at 2.0 – 2.5 gallons per square on each surface. Application rates vary based on substrate porosity and roughness. Tool-in as necessary to seal laps.

D. Embed matching granules into wet cement where exposed.

3.6 HEAT-WELDED, FULLY ADHERED MEMBRANE APPLICATION:

A. Follow material product data sheets and published general requirements for installation instructions.

B. Ensure environmental conditions are safe and satisfactory, and will remain safe and satisfactory, during the application of the heat-welded membrane and flashings.

C. Ensure all primers are fully dry before beginning heat-welding operations.

D. Unroll membrane onto the roof surface and allow time to relax prior to heat welding.

E. Starting at the low point of the roof, lay out the membrane to ensure the plies are installed perpendicular to the roof slope, shingled to prevent back-water laps.

F. Ensure all roofing and flashing substrates are prepared and acceptable to receive the heat-welded membrane.

G. Cut membrane to working lengths and widths to conform to rooftop conditions and lay out to always work to a selvage edge.

H. Ensure specified side-laps and end-laps are maintained. End-laps should be staggered 3 ft apart.

I. Direct roof torch on the roll as necessary to prevent overheating and damaging the membrane and substrates.

J. As the membrane is unrolled, apply heat to the underside of the membrane until the plastic burn-off film melts away. Continuously move the torch side-to-side across the underside of the roll to melt the bitumen on the underside of the sheet, while continuously unrolling membrane.

K. While unrolling and heating the sheet, ensure approximately ¼- to ½- inch of hot bitumen flows ahead of the roll as it is unrolled, and there is 1/8 to 1/4 in bleed out at all laps.

L. Adjust the application of heat to the underside of the membrane and to substrate as required for varying substrates and environmental conditions.

M. At the 6 in end-laps, melt the plastic burn-off film from the top surface or embed granules and remove surfacing, where present, using a torch or hot-air welder.

N. At end-laps where T-Joints exist, cut a 45-degree dog-ear away from the selvage edge.

O. Each day, physically inspect all side and end-laps, and ensure the membrane is sealed watertight. Where necessary, use a torch or hot-air welder and a clean trowel to ensure all laps are fully sealed.

P. Inspect the installation each day to ensure the plies are fully adhered. Repair all voids, wrinkles, open laps, and all other deficiencies.

Q. Offset cap sheet side and end-laps away from the base ply laps so that cap sheet laps are not located within 18 inches of base ply laps.

3.7 FLASHING APPLICATION, HEAT WELDED:

A. Refer to SBS manufacturer's membrane application instructions, flashing detail drawings, and follow product data sheets and other published requirements for installation instructions. Refer to manufacturer's membrane flashing detail drawings.

B. The contractor is responsible for project safety. Refer to NRCA CERTA recommendations and building owner requirements for hot work operations.

C. Where required to seal substrates for fire safety, install specified adhered, self-adhered or fastened backer ply to the substrate. Ensure backer-ply covers and seals all substrates requiring protection from exposure to torch operations.

D. Ensure all flashing substrates that require primer are primed, and the primer is fully dry.

E. Unroll the flashing base ply and flashing cap sheet onto the roof surface to their complete length. Once relaxed, cut the membrane to the required working lengths to accommodate the flashing height, cants, and the required over-lap onto the horizontal roof surface.

F. Cut the flashing membrane from the end of the roll to always install flashings to the side-lap line or selvage edge line.

G. Lay out the flashing base ply and flashing Cap Sheet to offset all side-laps a minimum of 12 inches so that side-laps are never aligned on top of the ply beneath. Shingle the flashing ply laps to prevent back-water laps.

H. Install non-combustible cant strips at transitions where required.

I. Ensure correct membrane and flashing sequencing to achieve redundant, multi-ply, watertight flashings.

J. ROOF MEMBRANE BASE PLY:

1. Before installing flashings, install the roof membrane base ply in the horizontal field of the roof, and extend the base ply up to the top of the cant, where present, at roof terminations, transitions, and penetrations.

K. FLASHING BASE PLY:
   1. Install the flashing base ply starting at the top leading edge of the vertical flashing substrate, down over the cant and onto the horizontal surface of the roof a minimum of 3 inches beyond the of base of the cant onto the roof. Cut the base ply at corners to form 3-inch side-laps. Install gussets to seal corner transitions.
   2. Install one or more flashing base ply(s) at all roof terminations, transitions, and penetrations.

L. ROOF MEMBRANE CAP SHEET:
   1. Install the roof membrane Cap Sheet in the horizontal field of the roof over the flashing base ply up to the roof termination, transition, or penetration, and up to the top of cants where present.
   2. Using a chalk line, mark a line on the membrane cap sheet a minimum of 4 inches from the base of the cant onto the roof. Where granules are present, embed the cap sheet granules using a torch and trowel or granule embedder to prepare the surface to receive the flashing cap sheet.

M. FLASHING CAP SHEET:
   1. Install the flashing Cap Sheet starting at the top leading edge on the vertical substrate, over the cant and onto the roof surface 4 inches from the base of the cant onto the roof.
   2. Install the flashing Cap Sheet to ensure a minimum two (2) ply flashing system is present at all roof terminations, transitions, and penetrations.

N. During the membrane and flashing installation, ensure all plies are completely adhered into place, with no bridging, voids, or openings. Ensure bitumen or flashing cement bleed-out is present at all flashing side and end-laps.

O. Use a damp sponge float or damp rag to press-in the heat-welded flashing plies during installation.

P. Where sufficient bitumen bleed-out is not present, and for all self-adhered plies, apply specified gun-grade sealant or mastic to seal the membrane termination along all roof terminations, transitions, and penetrations. These include gravel stop edge metal, pipe penetrations, along the top edge of curb and wall flashing, and all other flashing terminations where necessary to seal flashings watertight.

Q. Fasten the top leading edge of the flashing 8 in on-centers with appropriate 1 in metal cap nails or other specified fasteners and plates. Seal fastener penetrations watertight using specified sealant or mastic.

R. Manufacturer's liquid-applied, reinforced flashing systems shall be installed where conditions are not favorable to install SBS modified bitumen flashings. Such conditions include irregular shapes penetrating roof surfaces (I-beams), confined areas, and low flashing heights. Manufacturer's liquid-applied, reinforced flashing systems are recommended in lieu of pitch pans and lead pipe flashings.

3.8 LIQUID-APPLIED, SINGLE-COMPONENT, BITUMEN-URETHANE FLASHING SYSTEM APPLICATION:

A. Refer to manufacturer's details drawings, product data sheets and published general requirements for application rates and specific installation instructions

B. Pre-cut polyester reinforcing fleece to conform to roof terminations, transitions and penetrations being flashed. Ensure a minimum 2 in overlap of fleece at side and end-laps. Ensure the completed liquid-applied flashing membrane is fully reinforced.

C. Apply the base coat of liquid-applied flashing resin onto the substrate using a brush or roller, working the material into the surface for complete coverage and full adhesion at 2.0 gallons per square.

D. Immediately apply the reinforcing into the wet base coat of resin. Using a brush or roller, work the into the wet resin while applying the second coat of resin to completely encapsulate the fleece at 2.0 gallons per square, and extend the liquid resin 1 inch beyond the fleece.

E. Apply a finish coat of resin at 2.0 gallons per square within 2-3 hours. When applying the finish coat more than 24 hours, the surface may need to be cleaned using acetone or MEK to ensure satisfactory adhesion.

F. Broadcast mineral granules into the wet finish coat as required to match the adjacent cap sheet.

3.9 LIQUID-APPLIED, PMMA MEMBRANE AND FLASHING SYSTEM APPLICATION:

A. Refer to manufacturer's details drawings, product data sheets and published general requirements for application rates and specific installation instructions.

B. Pre-cut polyester reinforcing fleece to conform to roof terminations, transitions and penetrations being flashed. Ensure a minimum 2 in overlap of fleece at side and end-laps. Ensure the completed liquid-applied flashing membrane is fully reinforced.

C. Apply the base coat of catalyzed resin onto the substrate using a brush or roller, working the material into the surface for complete coverage and full adhesion.

D. Immediately apply the reinforcing into the wet base coat of resin. Using a brush or roller, work the reinforcing fabric into the wet resin while applying the second coat of catalyzed resin to completely encapsulate the fleece.

E. Refer to reinforced, polymethyl-methacrylate (PMMA) specification section and application instructions, details drawings, product data sheets and published general requirements for installation instructions.

3.10 WALKWAYS:

A. At areas outlined on the drawings, and around the perimeter of all rooftop equipment and at all door and stair landings, install walkway protection.

B. Cut walkway from end of rolls. No piece shall be less than 24 in and no more than 60 in.

C. Remove foil/film or embed granules where present on cap sheet.

D. Provide a 4 in space between sheets for drainage.

E. Locate walkway membranes a minimum of 2 in from side-laps, end-laps and flashing membranes.

F. Fully adhere walkway protection by heat welding or adhering with cold adhesive.

3.11 CLEAN-UP:

A. Clean-up and properly dispose of waste and debris resulting from these operations each day as required to prevent damages and disruptions to operations.

END OF SECTION 075216

SECTION 07 56 00: SILICONE ROOF COATING (At Skylight Roof Only)

PART 1 GENERAL

1.1 RELATED DOCUMENTS: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 SCOPE OF WORK: This section includes roof coating system and accessories indicated on drawings and specifications. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 SUMMARY:

A. Work shall include, but is not limited to, the following:
   1. Repair existing roofing and flashings using compatible materials to ensure the coating substrates are clean, dry, and watertight prior to coating application.
   2. Clean existing modified bitumen roofing and flashing substrates to be coated.
   3. Primer/Surface treatment:
      a. Modified Bitumen Roofing and flashings:
         i To prevent bitumen bleed-through, apply ALSAN COATING ASPHALT BLEED BLOCKING PRIMER.
   4. Seal all exposed fasteners, roof seams and rooftop penetrations as specified.
   5. MODIFIED BITUMEN ROOFING:
      a. 20 year - Apply one coat of ALSAN COATING SIL 402 at 40 wet mils (approximately 2.5 gals/100 ft^2). Finished roof coating shall consist of 38 mils dry film thickness.
   6. Contractor shall provide all related materials and labor required to complete specified roof coating necessary to receive the specified manufacturer's warranty.

1.4 RELATED SECTIONS:

A. 011000 - Summary of Work
B. 072200 - Roof Insulation
C. 075216 - SBS Modified Bitumen Roofing
D. 076000 - Flashing and Sheet Metal

1.5 DEFINITIONS:

A. ASTM D 1079-Standard Terminology Relating to Roofing and Waterproofing.
B. The National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual, Fifth Edition Glossary

1.6 REFERENCES:

A. AMERICAN STANDARD OF TESTING METHODS (ASTM):
   1. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.

2. ASTM C1193 – Standard Guide for Use of Joint Sealants
3. ASTM D412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
4. ASTM D471 - Standard Test Method for Rubber Property – Effects of Liquids
5. ASTM D522 - Standard Test Methods for Mandrel Bend of Attached Organic Coatings.
6. ASTM D562 - Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer.
7. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
8. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
9. ASTM D1644 – Standard Test Methods for Nonvolatile Content.
10. ASTM D1653 - Standard Test Method for Water Vapor Transmission of Organic Coating Films.
11. ASTM D2196 - Standard Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational Viscometer.
12. ASTM D2370 - Standard Test Method for Tensile Properties of Organic Coatings.
13. ASTM D2697 – Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings
14. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
15. ASTM D4799 – Standard Test Method for Accelerated Weathering Test Conditions and Procedures for Bituminous Materials (Fluorescent UV and Condensation Method)
16. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings.
17. ASTM G21 - Standard Practice for Determining resistance of Synthetic Polymeric Materials to Fungi.
18. ASTM G155 - Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.
19. ASTM G4798 - Standard Practice for Accelerated Weathering Test Conditions and Procedures for Bituminous Materials (Xenon-Arc Method).

B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
   1. ANSI/FM 4474 - American National Standard for Evaluating the Simulated Wind Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures.

C. COOL ROOF RATING COUNCIL (CRRC)

D. EPA ENERGYSTAR

E. FLORIDA BUILDING CODE (FBC):

F. INTERNATIONAL CODES COUNCIL (ICC):

G. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA).

H. ROOF COATINGS MANUFACTURERS ASSOCIATION (RCMA).

I. UNDERWRITERS LABORATORIES (UL):
   1. UL 790 Standard Test Methods for Fire Tests of Roof Coverings.

1.7 ACTION SUBMITTALS:

A. Product Data Sheets: Submit manufacturer's product data sheets, installation instructions, and/or general requirements for each component.

B. Safety Data Sheets: Submit manufacturer's Safety Data Sheets (SDS) for each component.

C. Sample/Specimen Warranty from the manufacturer and contractor.

1.8 INFORMATION SUBMITTALS:

A. Contractor Certification: Submit written certification from protective coating and waterproofing system manufacturer certifying that the applicator is authorized by the manufacturer to install the specified materials and system.

1.9 CLOSEOUT SUBMITTALS:

A. Warranty: Provide manufacturers and contractor's warranties upon substantial completion of the waterproofing system.

1.10 QUALITY ASSURANCE:

A. MANUFACTURER QUALIFICATIONS:

1. Manufacture shall have 20 years of experience manufacturing roofing and waterproofing materials.
2. Manufacturer shall have trained technical service representatives employed by the manufacturer, independent of sales.
3. Manufacturer shall provide site visit reports in a timely manner.
4. Manufacturer shall provide specified warranty upon satisfactory project completion.

B. CONTRACTOR QUALIFICATIONS:

1. Contractor shall be authorized by the manufacturer to install specified materials prior to the bidding period through satisfactory project completion.
2. Applicators shall have completed projects of similar scope using the same materials as specified herein.
3. Contractor shall provide full time, on-site superintendent or foreman experienced with the specified waterproofing system through satisfactory project completion.
4. Applicators shall be skilled in the application methods for all materials.
5. Contractor shall maintain a daily record, on-site, documenting material installation and related project conditions.
6. Contractor shall maintain a copy of all submittal documents, on-site, available always for reference.

C. SUBSTRATE EVALUATION:

1. Contractor shall evaluate the acceptability of existing substrates to ensure roof surfaces have positive slope and adequate drainage, clean surfaces free of incompatible materials, dry materials and surfaces free of moisture contamination, and otherwise satisfactory to apply the specified coating and coating accessories.

2. Contractor shall not proceed with the application of the coating and coating accessories until substrate deficiencies have been repaired or replaced as necessary to successfully complete the specified coating.
3. Contractor shall evaluate adhesion of the coating and coating accessories to substrates throughout the work area and record the results using digital photos or other means each day as necessary to demonstrate satisfactory adhesion is achieved and maintained throughout the project.

1.11 DELIVERY, STORAGE AND HANDLING:

A. Refer to each product data sheet or other published literature for specific requirements.
B. Refer to product Safety Data Sheets (SDS) for storage and handling related hazards and take all necessary measures and precautions to comply with storage and handling requirements.
C. Deliver materials and store them in their unopened, original packaging, bearing the manufacturer's name, related standards, and any other specification or reference accepted as standard.
D. Store coating and accessory materials in a dry, well ventilated, weather tight area, with temperatures maintained between 55°F (12.8°C) and 80 °F (26.7°C). Protect materials to prevent damages due to environmental exposures.
E. During cold weather, ensure water-based materials are properly stored in heated areas, and protect materials as necessary to prevent exposure to freezing conditions.
F. Store and dispose of materials in accordance with building owner requirements, site conditions, and the requirements of local jurisdictions.
G. Properly dispose of all product wrappers, pallets, cardboard tubes, scrap, waste, and debris.
H. All damaged materials shall be removed from job site and replaced with new, suitable materials.

1.12 PERFORMANCE REQUIREMENTS:

A. FIRE CLASSIFICATION:
   1. Coating shall meet ASTM E108 and or UL Classified per UL 790.
B. FM Approval:
C. Coating shall be FM Approved.
D. Florida Building Code approved:
   1. Product shall be approved for use in the State of Florida, with an Evaluation Report indicating compliance with the FBC, 6th Edition, 2017.
E. NSF International:
   1. NSF P151 Rainwater catchment certified for rainwater runoff.

1.13 SITE CONDITIONS:

A. SAFETY:
   1. The contractor shall be responsible for complying with all project-related health, safety, and environmental requirements.

2. The contractor shall review project conditions and determine when and where conditions are appropriate to utilize the specified coatings and accessories. When conditions are determined by the contractor to be unsafe or undesirable to proceed, measures shall be taken to prevent or eliminate the unsafe or undesirable exposures and conditions, or equivalent approved materials and methods shall be utilized to accommodate project requirements and conditions.
3. The contractor shall refer to product Safety Data Sheets (SDS) for health, safety, and environment related hazards, and take all necessary measures and precautions to comply with exposure requirements.

B. ENVIRONMENTAL CONDITIONS:
1. Monitor substrate and material temperature, as well as all environmental conditions such as ambient temperature, moisture, sun, cloud cover, wind, humidity, and shade.
2. Ensure conditions are satisfactory to begin work and ensure conditions remain satisfactory during the installation of specified materials. Materials and methods shall be adjusted as necessary to accommodate varying project conditions. Materials shall not be installed when conditions are unacceptable to achieve the specified results.
3. Precipitation and dew point: Monitor weather to ensure the project environment is dry before and will remain dry during the application of the specified coating and accessories. Ensure all materials and substrates remain above the dew point temperature as required to prevent condensation and maintain dry conditions.
4. Ambient temperature should be between 40°F (4.4°C) and 95°F (35°C), and well above the dew point temperature, with no dew, fog, or condensation present.
5. During preparation, cleaning, and application of specified materials, follow all health, safety and environmental requirements related to applicable materials involved with the work and related exposures. Properly handle and dispose of all cleaning materials, waste and debris associated with the specified work.

1.14 WARRANTY:

A. Manufacturer's Warranty. The manufacturer shall provide the owner with the manufacturer's roof coating warranty for 20 years from the date the warranty is issued.

B. The contractor shall guarantee the workmanship and shall provide the owner with the contractor's warranty covering workmanship for a period of 2 years from completion date.

PART 2 PRODUCTS

2.1 MANUFACTURER:

A. SINGLE SOURCE MANUFACTURER: All coating materials shall be manufactured by a single supplier with 20 years or more roofing and waterproofing manufacturing history in the US.

1. Comply with the manufacturer's requirements as necessary to provide the specified warranty.

B. ACCEPTABLE MANUFACTURER:
1. Soprema
2. Siplast
3. Garland
4. Tropical Coatings
5. Prior approved equal

2.2 SILICONE ROOF COATING SYSTEM

A. FIELD COATING:
1. Low VOC compliant, high solids, single component, fabric reinforced silicone roof coating, and protective barrier for a variety of low slope roof surfaces and substrates.
a. SOPREMA ALSAN COATING SIL 402:
i Solids by volume, % (ASTM D2369): 95 +/- 3
ii Solids by weight, % (ASTM D1644): 96 +/- 3
iii Tensile strength, psi (ASTM D412): >240
iv Elongation, % (ASTM D412): >270
v VOC, g/l (ASTM D3950): <50
vi Permeability, perms (ASTM E96): 3.4
vii Shelf life, months: 18
viii Clean-up; Mineral spirits.
ix Containers: 5 gal (18.9 L)
x Tack free: <8 hours.
xi Fully cured; 8-72 hours.

B. FLASHING GRADE:
1. VOC compliant, high solids, single component, low sag, silicone mastic used to prepare seams, penetrations, and fasteners for coating with ALSAN COATING SIL 402.
a. SOPREMA ALSAN COATING SIL 402 FLASHING:
i Solids by volume, % (ASTM D2697-3): 91 +/- 2
ii Solids by weight, % (ASTM D1644): 97 +/- 2
iii Tensile strength, psi (ASTM D412): >305 +/- 10
iv Elongation, % (ASTM D412): >60 +/- 10
v Standard color: White
vi Shelf life: 18
vii VOC, g/l (ASTM D3950): <50
viii Clean-up; Mineral spirits.
ix Containers: 2 gal (7.6 L).
x Tack free: 2 hours.
xi Dry to touch: 6 hours.

C. WALKWAY COATING:
1. VOC compliant, high solids, single component, moisture curing, silicone coating used to enhance impact resistance where required at walkways and around mechanical equipment.
a. SOPREMA Inc. ALSAN COATING SIL 402 WALKWAY GRADE:
i Solids by volume, % (ASTM D2697-3): >95
ii Solids by weight, % (ASTM D1644): >96
iii Tensile strength, psi (ASTM D412): >240

iv Elongation, % (ASTM D412): >270
v VOC, g/l (ASTM D3950): <50
vi Tack free: 8 hours.
vii Standard color: Safety yellow
viii Shelf life, months: 18
ix Walkable, hours: 24
x Fully cured, hours: >72

2.3 ACCESSORIES:

A. PRIMERS:

1. MODIFIED BITUMEN ROOFING

a. Modified bitumen and asphalt roofing pre-treatment/primer to block bitumen bleed-through.

i SOPREMA Inc. ALSAN COATING ASPHALT BLEED BLOCKING PRIMER.

B. REINFORCING FABRIC:

1. Proprietary, non-woven polyester reinforcement used with ALSAN COATING SIL 402 and ALSAN COATING SIL 402 FLASHING:

a. SOPREMA Inc. POLYFLEECE:

i Thickness: 37 mils (0.9 mm)
ii Fabric Weight: 0.18 oz/ft^2 (55 g/m^2)
iii Width: 4 inches (10 cm) minimum
iv Length: 50 feet (15.2 m)

C. ROOF CLEANER:

1. Highly versatile industrial cleaner and degreaser and is a safer alternative to toxic cleaners, bleaches, and solvents.

a. TROPICAL ROOF PRODUCTS Inc. #652 ULTRAGREEN ROOF WASH ALL PURPOSE CLEANER.

i VOC compliant
ii Shelf life, years: 5

PART 3 EXECUTION

3.1 EXAMINATION:

A. GENERAL:

1. Examination includes visual observations, qualitative analysis, and quantitative testing measures necessary to ensure conditions are satisfactory to begin and remain satisfactory throughout the project.
2. Ensure all roof surfaces have positive slope with no less than 1/8 inch per foot.
3. Examine substrates to ensure all roof areas have positive slope, adequate drainage and contain no standing water from HVAC condensation or other sources.
4. The applicator shall not begin installation until conditions have been properly examined and determined to be clean, dry and, otherwise satisfactory to apply the specified coating and accessory materials.

B. MOISTURE SURVEY:
   1. Complete a moisture survey of existing roofing and flashing materials to be coated. This includes using all necessary means such as infrared cameras, capacitance meters, moisture probes, nuclear gages, and test cuts to ensure all wet materials are identified for removal and replacement.
   2. Examine roofing membrane edges/laps, metal laps, foam closures, fastener seals, and other surface conditions. Eliminate trapped and concealed moisture before applying specified coating and accessories.

C. ADHESION TESTS:
   1. Prior to beginning work, the contractor shall examine adhesion between specified coating materials and all prepared substrates using the following qualitative method:
      a. Ensure the new coating materials will properly adhere to all substrates.
      b. Conduct 180-degree peel tests to examine adhesion.
      c. Choose three (3) or more representative substrate areas to test.
      d. Clean and prepare the substrates as specified and indicated herein, allow too fully dry.
      e. Cut minimum 1 inch (2.54 cm) wide by 12 inch (30.48 cm) long strips of POLYFLEECE fabric.
      f. Apply primer where required, allow primer to fully dry.
      g. Embed an 8 to 9 inch (20.32 to 22.86 cm) long section of the strip into ALSAN COATING SIL 402 silicone coating. Leave a 3 to 4 inch (7.62 to 10.16 cm) long portion un-adhered to grip and pull.
      h. ALSAN COATING SIL 402 silicone coating may require 2 days or more.
      i. Grip the un-adhered portion of the sample and pull 180 degrees, parallel with the surface. Use a small scale to measure results in pounds of resistance where quantitative results are desired.
      j. Results should demonstrate strong resistance to peel. A strong bond will result in significant residual coating materials remaining on the substrate.
      k. Samples that peel away easily from the substrate may indicate further preparation is needed, or alternate materials and/or application methods may be necessary.
      l. Where quantitative measurements of peel resistance are desired, peel resistance of 1 in wide samples should exceed 2lb/in (0.35 N/mm) when tested. Wider fabric samples over 1 in wide should measure no less than 2 pounds per lineal inch of fabric width. 180-degree peel test. Basis of test is ASTM C794.

3.2 PREPARATION

A. GENERAL:

1. Before commencing work, the contractor shall prepare all work areas to ensure conditions are satisfactory to proceed with the installation of specified materials.
2. Route all HVAC condensate lines to roof edges or into roof drains to prevent moisture contamination and damage.
3. Eliminate ponding water conditions. All roof surfaces shall have positive roof slope, no less than 1/8 inch per foot. All roof surfaces to be coated shall be free of standing water.
4. Protect all adjacent areas from damage, overspray, and spillage of coating materials.

B. MODIFIED BITUMEN ROOFING PREPARATION:

1. Use low pressure power washer and cleaner as approved by the local jurisdiction, to remove loose granules, dirt, biological growth, and other residue as necessary to produce clean roof surfaces.
2. Remove all residual cleaner using clean water.

3.3 PRIMER APPLICATION:

A. MODIFIED BITUMEN ROOFING PRIMING:

1. Evenly apply ALSAN COATING ASPHALT BLEED BLOCKING PRIMER using a heavy-duty sprayer, paint roller, or brush.
2. Apply at the nominal rate of 1.5 gal/100 ft^2.
3. Do not leave primed substrates exposed during periods of dew, precipitation, or other inclement weather within 72 hours of application.
4. Apply the ALSAN coating to primed substrates during the same day or within 24 hours after priming.

3.4 ROOF FLASHING APPLICATION:

A. GENERAL:

1. Apply specified flashing grade materials and sealants prior to roof coating application. Ensure all flashing grade materials and sealants are cured prior to applying the specified coating.

B. MODIFIED BITUMEN ROOFING:

1. If primed, ensure ALSAN COATING UNIVERSAL PRIMER is dry before applying new coating and flashing materials.
2. Pre-treat all side and end-laps with ALSAN COATING SIL 402 FLASHING using a brush or roller.
3. Apply ALSAN COATING SIL 402 FLASHING at membrane terminations such as roof penetrations and edge metal.

3.5 SILICONE ROOF COATING APPLICATION:

A. ALSAN COATING SIL 402 is applied using rollers, brushes, or single-component sprayers.

1. BRUSH APPLICATION:

a. Disposable brushes are generally needed for small/confined areas, seams, touch-up work, and flashings.

2. ROLLER APPLICATION:
   a. Rollers include heavy-duty hand-held rollers and natural roller-covers with ½ to 1 inch nap.
   b. Apply ALSAN COATING SIL 402 to ensure an even, uniform coating thickness.
   c. Roll side-to-side, up-and-down. Always roll into the seams.
   d. Profile rollers are recommended for metal roofing to conform to metal rib and seam profiles.
3. SQUEEGEE AND ROLLER APPLICATION:
   a. Dispense coating onto the roof, then use a flat blade squeegee to apply the coating to the desired thickness, then back-roll the coating using a roller as indicated herein.
4. SPREADER CART AND ROLLER APPLICATION:
   a. Tank spreader carts are used to dispense coating onto the roof surface, then rollers are used to back-roll the coating as indicated herein.
5. T-BAR AND ROLLER APPLICATION:
   a. Using spray pumps to deliver coating to T-bar at low pressure to dispense coating onto the roof surface.
   b. Rollers are used to back-roll the coating as indicated herein.
6. SPRAY APPLICATION:
   a. Refer to Coating Preparation, Weather and Environmental Conditions, for acceptable weather conditions.
   b. When spraying ALSAN COATING SIL 402, the spray tip should be located approximately 12-inch above the roof substrate to ensure a 12-inch spray fan pattern. Spray perpendicular to the surface, moving steady in one direction.
   c. Spray techniques vary for each substrate. Ensure the minimum coating thickness is achieved at membrane laps, standing seams, metal panel ribs, roof penetrations, at fasteners, etc.
   d. Hose size, length, weather conditions, ALSAN COATING SIL 402 material temperature and other variables will affect spray pattern. Adjust application techniques as necessary to accommodate varying conditions to produce a uniform coating and meet minimum thickness requirements.
   e. To avoid runs and sag on steep slopes and vertical surfaces, multiple coats may be required.
   f. Spray equipment options for ALSAN COATING SIL 402 include the following:
      i Dedicated equipment for silicone roof coatings only.
      ii Recommended sprayers: Graco 933 or Graco King X-70, fed by a 5:1 transfer pump.
      iii Recommended pump output: 3 gpm, 7,000 psi (483 bar).
      iv Hoses: High-pressure, moisture-resistant, ¾ in diameter minimum.
      v Recommended minimum pressure at spray gun: 4,000 psi (276 bar) at spray gun head.
      vi Tip: Heavy Duty 529 to 635

B. MODIFIED BITUMEN ROOFING COVERAGE:
1. 20 year - Apply one coat of ALSAN COATING SIL 402 at 40 wet mils (approximately 2.5 gals/100 ft^2). Finished roof coating shall consist of 38 mils dry film thickness.

3.6 WALKWAYS:
A. After the roof coating has cured, mark areas to receive walkways.
B. LIGHT TRAFFIC AREAS:
1. Brush or roll ALSAN COATING SIL WALKWAY GRADE at designated walkway area at a rate of 2.0 gals/100ft2.
2. If non-skid surfacing is desired, immediately broadcast ALSAN COATING SIL WALKWAY GRANULES in the wet walkway coat until refusal and allow to cure.
3. Remove loose granules.
C. HEAVY TRAFFIC AREAS SURROUNDING SKYLIGHT:
1. Brush or roll a base layer) of ALSAN COATING SIL WALKWAY GRADE at designated walkway area at a rate of 2.0 gals/100ft2.
2. Install POLYFLEECE into wet base layer followed by a top layer of ALSAN COATING SIL WALKWAY GRADE at a rate of 2.0 gals/100ft2 and allow to cure.
3. Brush or roll an additional layer of ALSAN COATING SIL WALKWAY GRADE at designated walkway area at a rate of 2.0 gals/100ft2.
4. If non-skid surfacing is desired, brush or roll an additional layer of ALSAN COATING SIL WALKWAY GRADE at designated walkway area at a rate of 2.0 gals/100ft2 and immediately broadcast ALSAN COATING SIL WALKWAY GRANULES in the wet walkway coat until refusal and allow to cure.
5. Remove loose granules.

3.7 CLEAN UP:
A. Clean up and properly dispose of waste and debris resulting from these operations each day as required to prevent damages and disruptions to operations.

END OF SECTION 075600

SECTION 07 60 00: FLASHING AND SHEET METAL

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Scope of Work: Furnish all necessary materials, labor, and equipment for the complete installation of flashing and sheet metal, including but not limited to masonry through-wall flashing; metal counter-flashing; metal expansion joints; exposed metal trim units; copings; and other miscellaneous sheet metal accessories, as shown on the drawings and specified herein. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Contractor shall comply with the flashing and sheet metal requirements specified in the applicable roofing sections and with the flashing and requirements specified in the weather barrier/membrane section of these specifications.

1.4 Submittals:

A. Submit shop drawings and manufacturer's literature for all items fabricated for this Project, showing sizes and gauges of items, finishes, profiles, methods of construction, and mounting details.

B. Submit in accordance with requirements of Division 1.

1.5 Product Handling: Carefully handle and store all items of this Section to prevent damage to surfaces, edges, and finishes. Remove damaged items that cannot be restored to like-new condition and replace at no additional cost to the Owner.

1.6 Quality Assurance: Comply with governing codes, regulations, and pertinent recommendations contained in current edition of "Architectural Sheet Metal Manual" published by the Sheet Metal and Air-conditioning Contractors National Association (SMACNA). Provide products of acceptable manufactures, which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2: PRODUCTS

2.1 Materials: Flashing:

A. Steel: 24-gauge galvanized steel, G90 galvanizing, ASTM A525 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) By The Hot-Dip Process, General Requirements.

B. Aluminum: .032 thick alloy 3003 clear anodized aluminum, ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

C. Laminated copper/fabric flashing for masonry flashing: 5 oz. copper sheet laminated between two (2) sheets of polymer fabric; "Multi-Flash 500" by York Flashings or approved equal. ASTM B370 Standard Specification for Copper Sheet and Strip for Building Construction.

D. PVC: 40 mil sheet; "Flex-Flash Flashing" by Hohman & Barnard, Inc. or approved equal.

E. Stainless Steel: 26-gauge type 304 stainless steel.

2.2 Other Materials:

A. Comply with pertinent provisions of Division I.

B. Provide solder and fasteners recommended by the producer of, and compatible with, the metal sheets.

PART 3: EXECUTION

3.1 Installation Requirements

A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations, and with SMACNA "Architectural Sheet Metal Manual." Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams, which will be permanently watertight and weatherproof. Coordinate with work of other sections.

B. Underlayments: Where stainless steel or aluminum is to be installed directly on cementitious or wood substrates, install a slip sheet of red rosin paper and a course of polyethylene underlayment.

C. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.

D. Install elastic flashing in accordance with manufacturer's recommendations. where required, provide for movement at joints by forming loops or bellows in width of flashing. Locate cover or filler strips at joints to facilitate complete drainage of water from flashing. Seam adjacent flashing sheets with adhesive, seal, and anchor edges in accordance with manufacture's recommendations.

E. Nail flanges of expansion joint units to curb nailers, at maximum spacing of 6". Fabricated seams at joints between units with minimum 3" overlap, to form a continuous waterproof system.

3.2 Cleaning and Protection:

A. Clean exposed metal surfaces, removing substances, which might cause corrosion of metal or deterioration of finishes. Restore damaged components and finishes.

B. Protection: Installer shall advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction, to ensure that work will be without damage or deterioration, other than natural weathering, at time of substantial completion.

* * *

SECTION 07631: GUTTERS (REPLACEMENT)

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to Work specified in this Section.

1.2 Scope of Work: Furnish all necessary materials, labor and equipment for the complete installation of flashing, trim, enclosures, fasteners, and other items necessary for gutters, as shown on the drawings and specified herein. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Standards: Conform to requirements of Architectural Sheet Metal Manual, Sheet Metal and Air Conditioning Contractors' National Association, Inc. (SMACNA) and National Roofing Contractors Association Roofing Manual (NRCA).

1.4 Submittals:

A. Submit Shop Drawings for all gutters, etc., showing joints, fasteners, metal gauges, roof installation details.
B. Submit manufacturer's recommended installation instructions.
C. Samples: Submit color chips on metal for selection and approval of A/E. Provide additional samples, full size accessories, fasteners if requested by A/E.
D. Coordinate all roof and wall conditions, structural steel, wood blocking, other like items and indicate on shop drawings.
E. Submit in accordance with requirements of Division 1.

1.5 Product Handling: Carefully handle materials to prevent damage and store at the site above ground in a covered, dry location. Remove and replace damaged items that cannot be restored to like-new condition.

1.6 Guarantee:

A. Prior to acceptance of Work, furnish written guarantee, co-executed by Contractor and subcontractor, for two (2) years, which covers repairs required to maintain flashing in watertight condition. Limit to ordinary wear and tear by the elements or defects due to faulty materials and workmanship. Make repairs, within 24 hours of notification, at no expense to Owner.

PART 2: PRODUCTS

2.1 Materials:

A. Sheet Copper: ASTM Specification B370 – Standard Specification for Copper Sheet and Strip for Building Construction, cold rolled temper, weighing not less than 16 ounces per sq. ft.
B. Nails and Fasteners including rivets, screws and bolts shall be of hard copper, brass, or bronze.
    1. Nails for wood and nailing concrete shall be flathead, barbed, wire slating nails, not less than No. 12 gauge, 1" long.
    2. Screws and bolts shall have round heads.
    3. Expansion shields shall be lead sleeves.

C. Solder: ASTM Specification B-32, composition 50% tin and 50% lead. 60/40 for lead coated copper.
D. Flux: Rosin, muriatic acid neutralized with zinc or approved equal.
E. Roofing Felt: Asphalt or coal tar saturated felt weighing not less than 15 pounds per 100 square feet.
F. Sealant: Approved type of butyl, polysulfide, silicone, or urethane.

2.2 Samples:
A. Submit the following samples in accordance with the Contract requirements for the Architect's approval. Obtain approval before delivery or fabrication.

2.3 Shop Drawings:
A. Submit the following shop drawings for sheet metal work in accordance with the Contract requirements for the Architect's approval. Indicate thickness and dimensions of all other parts, fastenings and anchoring methods, expansion joints and other pertinent information.

2.4 General Requirements:
A. Cleats: 2" wide by 3" long copper, spaced not over 12" on center unless otherwise specified. Secure one end with two nails and fold back over nail heads. Lock free end of cleat into seam or into folded edge of copper sheet.
B. Tinning: Tin edges of plain copper sheets to be soldered for a width of 1-1/2" both sides with solder. Tinning of lead-coated copper is not required prior to soldering; however, wire brush lead in contact with solder to produce a bright surface.
C. Soldering: Perform slowly with well heated coppers, so as to heat thoroughly the seam and sweat the solder through its full width. When soldering lead-coated copper, brush a liberal amount of flux into the seam.
D. Seams:
1. Standing seams shall finish not less than 1" high unless otherwise specified.
2. Flat-Lock Seams: Finish not less than 3/4" wide.
3. Lap seams where soldered: finish not less than 1" wide.
4. Lap seams: Not soldered overlap 3" unless otherwise noted.
5. Seams: make in direction of flow.
E. Dissimilar Metals: Place sheet lead between copper and iron, or steel, or paint the mating surfaces of copper and aluminum, iron or steel with asphaltum paint.
F. Preparation of Surfaces: Surfaces to which sheet metal is to be applied shall be smooth, sound, clean, dry and free from defects that might affect the application. Apply a layer of roofing felt followed by a layer of building paper to surfaces receiving copper roofing, valleys and gutter linings. Lap each ply 2" with the slope and nail with large flathead copper nails.

PART 3: EXECUTION

3.1 Inspection: Verify that substrates are smooth and clean to extent needed for sheet metal work. Verify that nails, cants, and blocking to receive sheet metal are installed and free of concrete and soil. Do not start sheet metal work until conditions are satisfactory.

3.2 Preparation: Before installation, verify shapes and dimensions of surfaces to be covered.

3.3 Hung Molded Gutters:

A. Size: Form hung molded gutters of the cross sectional profile shown of 16 ounce copper sheets 8'-0" or 10'-0" long. Lap ends 1" in direction of flow and solder and rivet seams. Rivets, 3/16" in diameter, shall be spaced 2" on centers.

B. Outer Edges: Reinforce outer edge with a 3/4" x 3/16" brass stiffening bar. Extend roof edge 6" up under roofing and attach by cleats on 12" centers.

C. Expansion Joints: Locate expansion joints midway between outlet tubes and not over 30'-0" apart. Loose lock expansion joints and fill with sealant to allow 1/2" movement.

D. Braces: Form transverse-gutter braces of 16 ounce copper, bent to form a channel 1-1/2" wide with 3/4" legs. Attach braces by riveting and soldering to top edges of gutter and space 36" on centers.

E. Hangers: Support gutter with 3/4" x 3/16" brass bars riveted or bolted to outer edge, spaced 36" on centers, and extending up 6" under roofing. Secure straps with two brass screws at roof.

F. Outlet Tubes: Outlet tubes shall be riveted and soldered to gutters and shall extend 3" into leaders or downspouts.

3.4 Cleaning:

A. Remove all flux, scraps, and dirt immediately. Excess flux shall be neutralized with a 5 to 10% solution of washing soda, then drenched with clean water.

3.5 Coloring of Copper:

A. Natural weathering mill finished copper. No applied finish.

3.6 Guarantee:

A. The contractor shall guarantee all workmanship and materials for a period of 2 years from the date of completion and acceptance of the work as provided for under the General Conditions, and at his own expense, make good all defects which may develop during the warranty period.

* * *

SECTION 07714: PREFABRICATED ROOF RELIEF VENTS

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Work Included: Coordinate all Work of this Section with Roofing, Flashing and Sheet Metal Sections.

1.3 Standards: Conform to requirements of Architectural Sheet Metal Manual. Sheet Metal and Air Conditioning Contractor's National Association, Inc. (SMACNA) and National Roofing Contractors Association Roofing Manual (NRCA).

1.4 Submittals:

A. Submit manufacturer's recommended installation and maintenance instructions, specified guarantees.

B. Submit in accordance with requirements of Division 1.

1.5 Product Handling: Carefully handle materials to prevent damage and store at the site above ground in a covered, dry location. Remove and replace damaged items that cannot be restored to like-new condition.

1.6 Guarantee: Prior to acceptance of Work, furnish written guarantee, co-executed by Contractor and subcontractor, for two (2) years, which covers repairs required to maintain roof accessories in watertight condition. Make repairs, within 24 hours of notification, at no expense to Owner.

PART 2: PRODUCTS

2.1 Acceptable Manufacturers:

A. For purposes of designating type and quality for the Work under this Section, Drawings and Specifications are based on Manville Building Materials Corp.

B. Subject to compliance with requirements acceptable manufacturers include; Lexsuco OWV, Marathon XL, or approved equal.

2.2 Pressure Relief Vents: Manville FP-10, one way roof vent, 4-1/2 inch diameter and 6-inch height minimum. Cover with weather proof cap which maintains free area of vent. Extend base flange six (6") inches minimum outward from vent onto roof.

PART 3: EXECUTION

3.1 Inspection: Verify that substrates are smooth and clean to extent needed for proper installation of roof accessories. Do not start work until conditions are satisfactory.

3.2 Installation:

A. Install accessories in accordance with roofing and equipment manufacturer's recommendations, NRCA, and SMACNA.

B. Install work watertight, plumb, level, and true to line without warp or rack. Anchor securely to surrounding construction.

C. At all new roofing over lightweight insulating fill, provide pressure relief vents in strict accordance with roofing manufacturers recommendations. Locate vents at 30 feet o.c. maximum, one per 1000 square feet. Exercise care that surface of insulating fill is exposed to vent tube and is not covered with bitumen or felt.

3.3 Cleaning: Clean all surfaces in accordance with manufacturer's instructions. Remove debris from work site.

* * *

SECTION 07920A: SEALANTS AND CAULKING

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Scope of Work: Furnish all necessary materials, labor and equipment for the complete installation of sealants and caulking, as shown on the drawings and specified herein. Provide all necessary supplementary items as required for a complete installation.

1.3 Guarantee:

A. Guarantee work for a period of two (2) years against defective materials and workmanship, warranting the air tightness and water tightness of the exterior sealant installation. Make repairs or replace material after proper notice at no additional cost to Owner.

B. Submit written guarantee co-executed by Contractor and subcontractor in accordance with Warranties and Bonds Section.

1.4 Product Handling: Handle to prevent inclusion of foreign matter or damage of materials by water or breakage. Procure and store in original containers until ready for use.

PART 2: PRODUCTS

2.1 General Purpose Interior Caulking: Siliconized acrylic-latex gun grade caulk for use in general purpose interior applications. Characteristics shall exceed those of oil based and butyl caulks. Color shall be as selected by A/E. Approved products: Sika Corporation, MasterSeal NP 520 and Pecora Corporation, AC-20. All others require prior approval.

2.2 Interior Silicone Caulking: For all toilet rooms, bathrooms, shower rooms, locker rooms, concession stand, kitchens and any other wet areas with sink toilets, lavatories, mop sinks, etc. Caulk around all plumbing fixtures, against walls, floors, and joints between laminate plastic counter tops and walls. Color shall be as selected by A/E. Approved products: GE Sanitary SCS 1700 Silicone Sealant. All others require prior approval.

2.3 Exterior Sealant Materials:

A. Approved Manufacturers: For the purposes of designating type and quality for the work under this section, drawings, and specifications are based on products manufactured or furnished by Sika Corporation, 201 Polito Avenue, Lyndhurst, New Jersey, 07071, Website: www.usa.sika.com. All others require approval.

B. Sealant: A premium, high-performance, very low-modulus, high-movement, non-sag, fast-curing, designed to adhere to low energy surfaces, one-component silyl-terminated polyether hybrid sealant. Tint base is a multi-component formulation that can be tinted to multiple colors to meet aesthetic needs.

1. Product: Sikaflex HY 150 Sealant or HY 150 Tinit Base Sealant
2. Compliance:
   a. ASTM C920, Type S, Grade NS, Class 50, Use NT, M, A, and O, capable of +100/-50 in normal field conditions.
   b. ASTM C 1382 for use with EIFS wall systems at 100% extension
   c. Federal Specification TT-S-001543A, Type II, Class A, Type Non-sag.
   d. Federal Specification TT-S-00230C, Type II, Class A.
   e. Corps of Engineers CRD-C-541, Type II, Class A.
   f. CFI accepted.
   g. USDA complaint for use in areas that handle meat and poultry.
   h. SWR Institute validated.
3. Service Temperature Range: Minus 40 to 180 degrees F (minus 40 to 82 degrees C)
4. Shrinkage: None.
5. Movement Capability, ASTM C719: Plus or minus 50 percent
6. Extension, ASTM C 1382: 100%
7. 100% Modulus, ASTM C 412: 35 psi.
8. Tensile Strength, ASTM D412: 140-180 psi.
9. Tear Strength, ASTM D1004: 40 pli.
10. Ultimate Elongation at Break, ASTM D412: 800-1000 percent.
11. Rheological, ASTM C639, sag in vertical displacement, 120 degrees F (49 degrees C): No sag.
12. Extrudability, ASTM C 1183: 2-3 sec.
13. Hardness, ASTM C661, Shore A: 17
14. Weight Loss, ASTM C 1246, after heat aging: less than 10 percent
15. Tack-Free Time, ASTM C 1246: 90 minutes.
16. Stain and Color Change, ASTM C 510: Passes, no visible stain.
17. Bond Durability, ASTM C719, on aluminum and concrete: Passes, plus or minus 50 percent movement.
18. Adhesion in Peel, ASTM C794:
   a. Aluminum: 35 pli
   b. Concrete: 36 pli
19. Artificial Weathering, ASTM G155, Xenon arc, 2,000 hours: No Cracking.

20. VOC Content:
    a. Sikaflex HY 150: 13.6 g/L, less water and exempt solvents.

C. Design Requirements:
1. Design number of joints and joint widths for maximum of plus of minus 50 percent movement.
2. Design depth of sealant to be 1/2 width of joint.
    a. Maximum Depth: 1/2 inch (13 mm).
    b. Minimum Depth: 1/4 inch (6 mm).
    c. Maximum Recommended Width" 1-1/2 inches (38 mm).

D. Accessories:
1. Sika, MasterSeal 921 – soft backer-rod.
2. Sika, MasterSeal 920 – low moisture absorption – below grade.
3. Porous Substrate Primer: Sikaflex Primer - 179
4. Cleaner: Sika, MasterSeal 990 or Xylene.

2.4 Color as selected by A/E from manufacturer's full standard range of colors.

2.5 Joint Backing: Round, flexible, closed cell polyurethane material, non-reactive with caulking materials and non-oily, approved by sealant manufacturer. Minimum density 3.24 lbs./cu.ft. Use no asphalt or bitumen-impregnated material with sealants.

PART 3: EXECUTION

3.1 Examination: Examine subsurface to receive work and report any conditions detrimental. Failure to observe this injunction constitutes a waiver to any subsequent claims to the contrary and will make this Contractor responsible for any corrections A/E may require. Commencement of work will be construed as acceptance of all subsurfaces.

3.2 Preparation:

A. Thoroughly clean all joints; blow out or vacuum loose particles from joints. Joint sides to be dry, fully cured, free of laitance, loose aggregate, form release agents, curing compounds, water repellents, and other surface treatments. Surface cleaning must be done in accordance with manufacturers recommendations. Comply with sealant manufacturer's recommendations.

B. Install joint backing or bond breaker in all joints to receive sealant. Size backing to require 30-50% insertion compression and depress 1/2 joint width. Do not insert backing material with a sharp implement that can puncture the surface.

C. Mask or otherwise protect adjacent surfaces. Apply tape in continuous strips in alignment with joint edge and remove immediately after joints have been sealed and tooled.

D. Prime as specified by manufacturer of sealant. Where primer is required, it shall be done by brush, uniformly on contact surfaces of the joint. Allow sufficient drying time before caulking.

3.3 Sealant:

A. Application: In strict accordance with manufacturer's instructions.

B. Tooling: Immediately after application, tool beads of sealant. Tooling can be done with a spatula of wood or metal, or finger, either dry or with water. Avoid solvents.

C. Apply sealant and caulking material under pressure to fill joints completely, preventing air pockets or voids.

3.4 Locations:

A. Single-Component Sealant: Apply single-component sealant in joints in vertical surfaces, exterior walls, around exterior perimeter of door and window frames, louvers and vents, in control joints and expansion joints at interior or exterior vertical surfaces, and at other similar exterior locations noted on the Drawings. Set exterior door frames and thresholds in full bed of sealant.

B. Caulking Compound: Apply caulking compound at interior locations, around penetrations of piping, conduits, duct work and similar items through walls and partitions, around interior perimeter of door frames, louvers, vents, in interior control joints at floors, walls, ceilings, and at other interior locations as noted on the Drawings.

3.5 Curing: Allow sealant to cure in accordance with manufacturer's instructions.

3.6 Inspection:

A. During work of the section, inspect work to ensure compliance with manufacturer's instructions, specifications, and drawings.

1. Evaluate adhesion of sealant in accordance with ASTM c1521.
2. Allow inspections of work and assist in testing requested by manufacturer's representative and A/E.

B. Non-Compliant Work: If inspections reveal non-compliant work or work that was not installed in accordance with Specifications, and/or manufacturer requirements, remove adjacent Work until a location is reached where installation was performed properly. Assist in spot-checking of remainder of Work.

3.5 Cleaning: Clean adjacent surfaces of sealant as work progresses in accordance with manufacturer's recommendations, using solvent or cleaning agent recommended by the manufacturer. Leave all finished work in a neat, clean condition. Clean discolored sealant with solvents approved by manufacturer and a clean rag. Avoid staining the surrounding surfaces.

3.6 Protection: Protect sealant from damage during construction.

END OF SECTION 07920A

SECTION 08710: FINISH HARDWARE

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in the Section.

1.2 Scope of Work: Furnish all necessary materials, labor and equipment for the complete installation of door hardware, thresholds, gasketing and accessories, as shown on the drawings and specified herein. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Qualifications:

A. Contractor shall select only a supplier who has in his employ qualified Architectural Hardware Consultants, who shall manage and coordinate the complete hardware contract. This consultant shall also be available to visit the job in order to solve or correct any conditions affecting proper hardware installation or adjustments as required.

B. Hardware Supplier to accumulate and hold to ship in one shipment when requested by the Contractor. Direct shipments from factories to job site will not be permitted.

1.4 Standards:

A. All items provided under this Section shall comply with all requirements of ANSI A117.1 "Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People", the "Americans with Disabilities Act" (ADA), the "Architectural Barriers Act" (ABA), International Building Code (IBC) latest edition, and "National Fire Protection Association" (NFPA) latest edition. It is the hardware supplier's responsibility to make sure all doors comply with the above codes.

B. Hardware shall comply with specified pressures and wind loading requirements indicated by IBC latest edition and ASCE 7 latest edition.

1.5 Submittals:

A. Submit the hardware schedule showing the quantities, types, catalog numbers, and locations of the various items of finish hardware required.

B. At the completion of the job all of the tools, instructions, and maintenance information shall be turned over to the Owner for his use in maintaining the hardware.

C. Comply with the requirements of Division 1.

1.6 Product Handling: Deliver hardware to the project site in the manufacturer's original packages. Neatly wrap and individually pack each article of hardware in a substantial carton or other container, properly marked or labeled so as to be readily identifiable with the schedule. Furnish a secure area for delivery by hardware supplier of finish hardware and storage of same.

PART 2: PRODUCTS

2.1 General Requirements: The hardware schedule is intended to cover doors and other movable parts of the building and establish type and standard of quality. Examine Drawings and Specifications and furnish proper hardware for all openings whether listed or not. Notify A/E of any omissions in hardware groups prior to bid opening, otherwise list will be considered complete. No extras will be allowed for omissions, changes, or corrections necessary to facilitate proper installation.

2.2 Type and Sizes:

A. Provide hardware of the types and sizes selected.

B. Templates: Application of hardware on metal shall be made to standard templates. Provide samples or templates as required for the proper manufacture and application. Frame manufacturer shall provide reinforcing for hardware.

C. Modification to hardware required by reasons of construction characteristics shall provide the same operation of functional features.

2.3 Keying: Hardware Consultant shall prepare key layout with the Owner and A/E. Set cylinders to Owner's masterkey and grand masterkey system as established by Owner. Deliver all permanent keys to the Owner in key cabinet showing the key set, key cut, and location. Furnish three (3) change keys per lockset and six (6) master keys for each master system, six (6) grandmaster keys for each grandmaster system, ten (10) construction master keys and five (5) control keys for interchangeable core series. Furnish fifty extra blanks for each keyway used. Deliver keys to Owner.

2.4 Characteristics:

1. Comply with Owner's instructions for master keying and, except as otherwise indicated, provide individual change key for each lock that is not designated to be keyed alike with a group of related locks.
   a. Permanently inscribe each key with number of lock that identifies cylinder manufacturer's key symbol, and notation, "DO NOT DUPLICATE."
2. Key Material: Provide keys of nickel silver only.
3. Existing System: Great Grandmaster key the locks to the Owner's existing system, with a new grand master key for the Project.

2.5 Key Control Software:

Provide to Owner Windows based software to work on currently offered windows operating systems, single license with network upgrade available. Software must come preloaded with factory bitting, door numbers, and keysets per instructions. Software must also have the capability of importing all future system additions, must not require manual additions to factory systems. Software will also have pinning chart capability.

PART 3: EXECUTION

3.1 Hardware Location:

A. Provide schedule of mounting heights for all items of hardware in the hardware schedule. Coordinate with door and frame supplier.

B. Hardware Consultant shall establish degree of opening for doors with holders, closers, etc. and include in hardware schedule.

3.2 Installation:

A. Application: Apply hardware with fasteners of proper size, quantity and finish, in accordance with manufacturer's instructions and templates. All items of hardware shall fit and operate properly.

B. All hardware shall be installed by mechanics skilled in the application of institutional grade hardware. Read and understand all instructions sheets, installation details, etc. packed with hardware before attempting to install.

3.3 Adjust and Clean: Adjust all hardware, specialties, and accessories for proper operation. Clean and polish all exposed surfaces. Deliver all keys and instruction sheets to Owner. Remove waste materials and debris from site.

3.4 Maintenance Instructions: After final acceptance, Hardware Consultant shall arrange for a maintenance meeting with the Owner. Instruct Owner's delegated personnel in the proper use, servicing, adjusting, and maintaining all items and hardware.

3.5 Hardware Schedule:

A. Furnish hardware set for doors indicated in accordance with the schedule. For the purpose of setting the specification quality and type, the manufacturers are listed below or approved equal. Quantities indicated are per set. Furnish complete set for each door listed for that set. Furnish all items or components of hardware required for completion of Work.

B. Provide top of the line products as manufactured by one of the manufacturers list below for each item list below:

1. Hinges & Pivots: Stanley, Bommer, Hager, Ives, McKinney
2. Continuous Hinges: Select, Roton
3. Panics Devices/Exit Devices: Von Duprin, Monarch, DORMA
4. Locksets & Padlocks: Marshal Best, Stanley
5. Closers: LCN, Sargent
6. Kickplates: Trimco, Ives Rockwood
7. Stops: Ives, Rockwood, Trimco
8. Weatherstripping & Thresholds: National Guard, Reese
9. Flush Bolts: Trimco
10. Push & Pull Sets: Trimco, Ives, Rockwood
11. Rim Bolts, Keeper and Coat Hook: Bommer

C. Products of other manufacturers will be considered with prior approval per Division 1.

3.6 Cores and Cylinders:

A. Permanent cores to be provided directly to owner for final installation.

B. Once permanent keying has been installed the contractor may sign out keys as needed, failure to return signed out keys will result in replacement of entire GGMK system at contractors expense.

C. Supply cylinder cams and cylinder rings as required per application.

3.7 Schedule:

A. Hardware Set 01 - Pair of Existing Store Front Doors
Each door shall have hardware to match existing.

3 EA Butt Hinges
1 EA Closer
1 EA Existing Lockset to Remain
1 EA Weatherstripping
1 EA Threshold
1 EA Bottom Door Sweep

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SECTION 08 80 00: GLAZING

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Scope of Work: Furnish all necessary materials, labor and equipment for the complete installation of glazing, as shown on the Drawings and specified herein. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Quality Assurance:

A. All glazing shall comply with the Safety Standard for Architectural Glazing Materials (16CFR Part 1201) issued by the U.S. Consumer Product Safety Commission.
B. Reference to "Safety Glass" in Drawings shall indicate Laminated Safety Glass. Install Safety Glass in all windows within four (4') feet of an exterior door.
C. Prime Glass Standard: FS DD-G-451D.
D. Safety Glass Standard: CPSC 16 CFR 1201.

1.4 Submittals:

A. Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
B. Provide data on glazing sealant. Identify colors available.
C. Provide two (2) samples, 12-inch square of each glass product, except for clear single pane units.
D. Submit in accordance with requirements of Division 1.

1.5 Job Conditions: Pre-Installation: Meet with Glazer and other trades affected by glass installation, prior to beginning of installation. Do not perform work under adverse weather or job conditions. Install liquid sealants when temperatures are within lower or middle third of temperature range recommended by manufacturer.

PART 2: PRODUCTS

2.1 Acceptable Manufacturers: Regularly engaged in the manufacture of glass and glass products.

2.2 Glass Products, General:

A. Provide primary glass, which complies with FS DD-G-451 requirements, including those indicated by reference to type, class, quality, and form.
B. Fabricate glass to size required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer. Provide thicknesses as indicated on the Drawings, or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.

2.3 Sealants: 1-Part Silicone Rubber Glazing Sealant. Elastomeric silicone sealant complying with FS TT-S-001543, Class A, non-sag. Provide acid type recommended by manufacturers where only non-porous bond surfaces are contacted; provide non-acid type recommended by the manufacturer where one or more porous bond surfaces are contacted. G.E. Silicone or approved equal.

2.4 Miscellaneous Glazing Materials:

A. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.

B. Setting Blocks: Neoprene or EPDM, 70-90 durometer hardness, with proven compatibility with sealants used.

PART 3: EXECUTION

3.1 Standards and Performance:

A. Watertight and airtight installation of each glass product is required, except as otherwise shown. Each installation must withstand normal temperature changes, wind loading, impact loading (for operating sash and doors), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glazing materials and other defects in the work.

B. Protect glass from edge damage during handling and installation, and subsequent operation of glazed components of the work. During installation, discard units with significant edge damage or other imperfections.

C. Glazing channel dimensions as shown are intended to provide for necessary bite on glass, minimum edge clearance, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at the time of installation.

D. Comply with combined recommendations and technical reports by manufacturers of glass and glazing products as used in each glazing channel, and with recommendations of Flat Glass Marketing Association "Glazing Manual," except where more stringent requirements are indicated.

3.2 Preparation for Glazing:

A. Clean glazing channel and other framing members to receive glass, immediately before glazing. Remove coatings, which are not firmly bonded to substrate. Remove lacquer from metal surfaces where elastomeric sealants are used.

B. Apply primer or sealant to joint surfaces where recommended by the sealant manufacturer.

3.3 Glazing:

A. Install setting blocks of proper size in sill rabbet, located 1/4 of glass width from each corner. Set blocks in thin course of heel-bead compound, if any.

B. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.

C. Force sealants into channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

D. Tool exposed surfaces of glazing liquids and compounds to provide a substantial "wash" away from glass.

E. Clean and trim excess glazing materials from glass and stops or frames promptly after installation and eliminate stains and discolorations.

3.4 Cure, Protection and Cleaning:

A. Protect exterior glass from breakage immediately upon installation, by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove non-permanent labels and clean surfaces. Cure sealants for high early strength and durability.

B. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

C. Wash and polish glass on both faces not more than four (4) days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Comply with the glass product manufacturer's recommendations for final cleaning.

* * *

SECTION 09201: FURRING AND LATHING

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Scope of Work: Furnish all necessary materials, labor and equipment for the complete installation of furring and lathing and other accessories indicated on drawings and in specifications. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Quality Assurance:

A. Design Criteria: Ceiling support system shall limit deflection of finished ceiling to less than 1/360 of span.

B. Accomplish interior furring and lathing in accordance with requirements of ANSI/ASTM C841.

1.4 Requirements of Regulatory Agencies: Conform to local building code for fire resistance ratings of walls, ceilings, column protection and smoke partition requirements.

1.5 Submittals: Furnish manufacturer's literature, written instructions for installation or partition and ceiling suspension systems. Submit in accordance with requirements of Division 1.

1.6 Product Handling:

A. Deliver products and materials in original unopened packages, containers, or bundles with manufacturer's label intact and legible.

B. Remove items delivered in broken, damaged, rusted, or unlabeled condition from project site immediately.

C. Protect metal items from dampness or wetting. Store metallic materials and accessories indoors, off floor.

PART 2: PRODUCTS

2.1 Acceptable Manufacturers: Furnish metal framing, furring, and accessories from Dale Industries, Gold Bond, Milcor Division Inryco, Inc., U.S. Gypsum, or approved equal.

2.2 Ceiling/Wall/Partition Framing and Furring Channels: Conform to requirements of Ceiling Suspension Systems.

2.3 Metal Lath:

A. Fabricate from cold rolled steel. Furnish galvanized.

B. Diamond Mesh: 3.6 pounds/square yard.

2.4 Metal Accessories:

A. General: Shapes used as grounds to be sized and dimensioned to provide for required plaster thickness. Flanges designed to permit complete embedment of accessory in plaster and to provide for alignment and attachment to underlying surface.

B. Corner Beads: Minimum 26 gage galvanized steel, small nose type, expanded flanges.

C. Casing Beads: Minimum 24 gage galvanized steel, square end type.

D. Cornerite: Minimum 2.5 pounds/square yard flat expanded metal lath. Shape to fit 90 degree internal corner with minimum 3 inch legs each side.

E. Striplath: Minimum 2.5 pounds/square yard expanded metal lath, 4 inch minimum width.

F. Soffit Vents: Fry Reglet Corp. PCS-75-V-300 Vented Drip-Screed, white finish.

G. Plaster Molding: Fry Reglet Corp. "J" Plaster Molding, white finish.

H. Base Screed: Minimum 26 gage galvanized steel, expanded flanges.

I. Expansion Joints: Minimum 26 gage galvanized steel or zinc alloy. Provide with double stops, expanded flanges.

PART 3: EXECUTION

3.1 Installation of Suspended Ceilings: Conform to requirements of Ceiling Suspension System.

3.2 Installation of Metal Lath:

A. Install with long dimension running perpendicular to supports. Lap diamond-mesh lath minimum 1/2 inch at sides. Lap metal lath 1 inch at ends. Stagger end laps from row to row. Lap ends over supports.

B. Diamond mesh lath installed on both ceilings and walls or partitions: bend into corner and lap adjoining lath 6 inches or butt lath into corners and apply cornerite over abutting lath.

C. Secure Lath to Supports: Maximum spacing of fasteners, 6 inches o.c. At metal supports and adjacent lath, use tie wires or self-tapping screws. At wood supports, use barbed roofing nails. At steel joints, wire-tie with ends of loops twisted together.

D. Secure Lath to Masonry: Maximum spacing of fasteners, 6 inches o.c.; nails driven into masonry joints or attached to tie wires previously embedded.

E. Do not continue lath across control or expansion joints.

3.3 Installation of Metal Accessories:

A. General:

1. Fasten in place using wire ties, galvanized staples, or hardened concrete nails as required to prevent dislodging or misalignment by subsequent operation. Fasten at both ends and maximum 12 inches o.c. along sides.

2. Bring grounding edge of accessories to true lines, plumb, level and straight. Install to provide required depth of plaster and to bring plaster surface to required plane.

3. Connect lengths of accessories as recommended by manufacturer to assure a continuous line.
4. Where plaster abuts dissimilar materials, terminate with plaster casing bead if not covered by trim.
5. Install accessory beads to provide minimum 1/8 inch clearance between structural units and termination point of surface to receive plaster finish.

B. Cornerite: Install at plastered interior angles where both converging surfaces are plastered. Fasten along outer edges of lath only to secure firmly in position. Fasten to lath only, not to structural framing.

C. Corner Beads: Provide at plastered external angles where plastered on both sides of angles.

D. Expansion Joints and Soffit Vents: Install at locations indicated on Drawings and in accordance with manufacturer's recommendations.

3.4 Access Panel: Install in accordance with manufacturer's instructions, and to meet UL and code requirements.

3.5 Cleaning: Remove access materials and debris from site.

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SECTION 09220: PORTLAND CEMENT PLASTER

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this section.

1.2 Scope of Work: Furnish all necessary materials, labor and equipment for the complete installation of portland cement plaster and all accessories indicated on drawings or specified herein. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Quality Assurance:

A. Allowable Tolerances: Maximum deviation from true plane 1/8 inch 10 feet as measured by straight edge placed at any location on surface.

B. Sample Panel: 2 feet square sample panel of same materials as for project. Show texture and workmanship of finished work. Do not proceed with work until sample plaster finish is reviewed by A/E. Maintain sample panel on project site for duration of project for comparison purposes. Remove upon project completion, or when directed by A/E.

C. Apply cement plaster in accordance with ASTM C926, ASTM C1063 and Portland Cement Association - Plaster (Stucco) Manual.

1.4 Submittals: Manufacturer's certificate that materials meet specifications requirements if requested by A/E. Furnish manufacturer's written recommendations, proportion mixes, and installation instructions. Submit in accordance with requirements of Division 1.

1.5 Product Handling: Deliver manufactured materials in original unopened packages or containers, with manufacturer's label intact and legible. Keep cement and lime dry, stored off ground, under cover, and away from damp surfaces. Remove wet and deteriorated materials from project site.

1.6 Job Conditions:

A. Environmental Requirements: Do not use frozen materials in cement plaster mixes. Do not apply cement plaster to frozen surfaces or surfaces containing frost. Do not apply cement plaster unless minimum ambient temperature of 50 degrees F has been and continues to be maintained for minimum of 48 hours prior to application and until plaster is cured. Do no apply plaster when substrate or ambient air temperature is more than 80 degrees F. Protect cement plaster from uneven and excessive evaporation during hot, dry weather.

B. Protection: Protect finished surfaces installed prior to plastering by covering with plastic sheets, non-staining kraft paper, or removable masking tape. Maintain protection in place until completion of work.

PART 2: PRODUCTS

2.1 Materials:

A. Portland Cement: ASTM C 150, Type 1 or 1A.

B. Masonry Cement: ASTM C 91.

C. Aggregate: Sand, conforming to ASTM C 144.

D. Water: Clean and free from substances harmful to plaster.

E. Finish Coat: May be factory prepared plaster approved by A/E, at Contractor's option.

2.2 Mixes:

A. Mixing, General:

1. Accurately proportion materials for each plaster batch with measuring devices of known volume. Size batches for complete use within maximum of one hour after mixing.

2. Re-temper plaster stiffened from evaporation, but do not use or re-temper partially hydrated cement plaster. Do not use frozen, caked, or lumping materials and remove such materials from job site immediately.

3. Mix factory prepared cement plaster in accordance with manufacturer's written instructions.

4. Use moist, loose, sand in mix proportions. Withhold 10% of mixing water until mixing is almost complete, then add as needed to produce necessary consistency.

B. Mechanical Mixing: Clean mixer of set or hardened materials before loading for new batch. Maintain mixer in continuous operation while adding materials. Conform to mixing sequence, cycle of operations, and time recommended by manufacturer of plaster materials.

C. Hand Mixing: Do not hand mix unless authorized by A/E (for small quantities only). Use waterproof mixing boxes and water barrels when mixing in building.

D. Mix Proportions: Scratch coat - 1 part portland cement, 1 part masonry cement, 3 parts sand per sum of cementitious materials. Brown and finish coats - 1 part portland cement 2 parts masonry cement, 3 parts sand per sum of cementitious materials.

PART 3: EXECUTION

3.1 Inspection:

A. Verify that surfaces to be plastered are free of dust, loose particles, oil and other foreign matter, which would affect bond of plaster coats.

B. Examine construction, grounds, and accessories to insure that finished plaster surfaces will be true to line, level, and plumb, without requiring additional thickness of plaster.

3.2 Application:

A. General:

1. Interrupt cement plaster only at junctions of plaster planes, at openings, or at control joints. Tool through second and finish coats to produce "V" joint at intersection of frames or other items of metal or wood which act as plaster grounds.

2. Apply second coat to first coat, bringing out to grounds, flat to true surface, and free of imperfections, which would reflect in finish coat. Reconsolidate second coat by floating, and roughen to assure bond with finish coat.

3. Nominal Plaster Thickness: Maximum 7/8 inch from back of lath.

B. Base Coats: Apply with sufficient material to form keys through metal lath. Embed and fill all spaces of lath and scratch vertical surfaces horizontally. Scratch horizontal surfaces in one direction only.

C. Finish Coats: Apply plaster to nominal thickness and fill out to true even plane. Trowel or float finish to true even surface after moisture has left surface. Provide sand texture as directed by Architect.

D. Curing: Maintain moist conditions by fine fog spray or vapor barrier. Cure base coats minimum of 48 hours after application. Cure finish coat for minimum of 7 days or in accordance with manufacturer's instructions.

3.3 Adjust and Clean:

A. Patching: Upon completion, point-up plaster around trim and other locations where plaster meets dissimilar materials. Cut out and patch defective or damaged plaster. Match patch of defective or damaged plaster to existing work in form and texture.

B. Cleaning: Remove plaster and protective materials from expansion beads, perimeter beads, and adjacent surfaces. Remove stains from plaster surfaces that would adversely affect subsequent finishes.

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SECTION 09260: GYPSUM WALLBOARD SYSTEMS - STEEL STUDS

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Scope of Work: Furnish all necessary materials, labor and equipment for the complete installation of gypsum wallboard systems - steel studs, for walls and ceilings as shown on the Drawings and specified herein. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Quality Assurance:

A. Requirements of Regulatory Agencies: Underwriters Laboratories Inc.; Fire Hazard Classification (40U822) and Fire Resistance Classification (40U18). Conform to local building code for fire resistance ratings and smoke partition requirements.

B. Testing: Fire resistance, ASTM E 119. Flame spread, ASTM E 84. Sound transmission, ASTM E 90.

C. Perform work in accordance with recommendations of ASTM C 754 and Gypsum Association GA-216.

1.4 Submittals:

A. Test Reports: Submit copies of fire test report on fire-rated gypsum wallboard assemblies. Submit copies of evidence of fire hazard classification for gypsum wallboard. Certified test reports of other acceptable testing agencies which perform testing in accordance with ASTM E 119 and E 84 and E 90 are acceptable.

B. Certificates: Furnish manufacturer's certification or literature indicating that materials meet or exceed specification requirements.

C. Manufacturer's Instructions: Furnish manufacturer's printed instructions for installation of the assemblies.

D. Submit in accordance with requirements of Division 1.

1.5 Product Handling:

A. Delivery and Handling: Deliver materials to the project site with manufacturer's labels intact and legible. Handle with care to prevent damage. Deliver fire-rated materials bearing testing agency label and required fire classification number.

B. Storage: Store materials inside under cover, stack flat, off floor. Stack wallboard so that long lengths are not over short lengths. Avoid overloading floor system. Store adhesives in dry area, providing protection against freezing at all times.

C. Protect metal items from dampness or wetting. Store metallic materials and accessories indoors, off floor.

1.6 Job Conditions:

A. Temperature: During cold weather, in areas receiving wallboard installation, maintain temperature range between 55-70 degrees F for 24 hours before, during, and after gypsum wallboard and joint treatment application.

B. Ventilation: Provide ventilation during and following adhesives and joint treatment applications. Use temporary air circulators in enclosed areas lacking natural ventilation. Under slow drying conditions, allow additional drying time between coats of joint treatment. Protect installed materials from drafts during hot, dry weather.

C. Protection: Protect adjacent surfaces against damage and stains.

PART 2: PRODUCTS

2.1 Acceptable Manufacturers: For purposes of designating type and quality for the work under this section, Drawings and specifications are based on products manufactured by U.S. Gypsum, Dietrich, MBA Metal Framing or approved equal.

2.2 Gypsum Wallboard:

A. Fire Rated Gypsum Board: ASTM C 36; Type X UL Rated, size as indicated on the Drawings, beveled taper or tapered edges.

2.3 Fasteners: Self-drilling, self-tapping, bugle head, for use with power driven tool, Type S for wallboard to sheet metal application. Length; one (1") inch at single layer or base layer application, 1 5/8 inch at face layer of two layer application.

2.4 Joint Treatment Materials:

A. Joint Tape: ASTM C 475, perforated tape.

B. Joint Compounds: ASTM C 475, powdered or ready-mixed, taping and topping or all purpose compound.

2.5 Edge Trim: Galvanized steel, 26 gage, with knurled surfaces for bedding cement.

2.6 Corner Beads: Provide corner beads with perforated flanges at all exposed external corners and channel type casing bead at edges meeting dissimilar materials if not covered by trim.

2.7 Drywall Suspension System:

A. Check framing for accurate spacing and alignment. Verify that spacing of installed framing does not exceed maximum allowable for thickness of wallboard to be used.

B. Verify that frames are set for thickness of wallboard to be used.

C. Do not proceed with installation of wallboard until deficiencies are corrected and surfaces to receive wallboard are acceptable.

D. Protrusions of framing, twisted framing members, or unaligned members must be repaired before installation of wallboard is started.

PART 3: EXECUTION

3.1 Inspection:

A. Check framing for accurate spacing and alignment. Verify that spacing of installed framing does not exceed maximum allowable for thickness of wallboard to be used.

B. Verify that frames are set for thickness of wallboard to be used.

C. Do not proceed with installation of wallboard until deficiencies are corrected and surfaces to receive wallboard are acceptable.

D. Protrusions of framing, twisted framing members, or unaligned members must be repaired before installation of wallboard is started.

3.2 Application, General:

A. Wallboard of maximum lengths to minimize end joints. Stagger end joints when they occur. Locate end joints as far as possible from center of wall or ceiling.

B. Abut wallboards without forcing. Neatly fit ends and edges. Do not place butt ends against tapered edges.

C. Support ends and edges of wallboard panels on framing or furring members except for face layer of double layer and where ends are back blocked and floated.

3.3 Single Layer Application:

A. Ceilings: Apply wallboard with long dimension at right angles to framing. Back block ends and edges of wallboard.

B. Walls: Apply wallboard horizontally where ceilings are eight (8') feet in height or less, vertically elsewhere. When installing wallboard horizontally, attach upper wallboard first. Stagger end joints to occur on different framing members on opposite sides of partition.

C. Fasteners:

1. Attach single layer of wallboard to metal framing with Type S screws. Minimum edge clearance from mechanical fasteners: 3/8 inch.
2. Stagger mechanical fasteners opposite each other on adjacent ends or edges.
3. Sand abutting ends or edges over support surface.
4. Space screws 12 inches o.c. along supports at ceilings. Space screws 12 inches o.c. along ends and edges and field of wallboards at walls.
5. Drive screws with positive clutch electric screwdriver.

3.4 Double Layer Application:

A. Base Layer, Ceilings: Apply wallboard base layer with long dimension at right angles to framing. Apply wallboard face layer perpendicular to edges of base layer. Provide 10 inch minimum offset of joints in base layer from parallel joints in face layer.

B. Base Layer, Walls: Apply wallboard base layer vertically. Stagger vertical joints of base layer on opposite side of partition to occur on different framing members. Apply face layer horizontally. Minimum 10 inch offset of joints in face layer from parallel joints in base layer.

C. Screws:
   1. Center abutting ends or edges over center of the board surface. Space screws as required for fire-rated ceilings and walls.
   2. Ceilings: 16 inches o.c. along abutting end or edges and 16 inches o.c. in field of base layer and as required for fire rating.
   3. Walls, Horizontal Application: 12 inches o.c. along abutting ends in field of base layer and as required for fire rating.
   4. Walls, Vertical Application: Eight (8") inches o.c. staggering along abutting edges, 12 inches o.c. in field of base layer and as required for fire rating.

D. Face Layer:
   1. Attach face layer of double layers with Type S screws annual ring nails. Attach starting from center of wallboard and proceed toward outer ends and edges.
   2. Walls and Ceilings:
      a. Eight (8") inches o.c. at walls; seven (7") inches o.c. at ceilings;
      b. Twelve (12") inches o.c. along ends and edges and in field of wallboard and as required for fire rating.
   3. Set screws with positive clutch electric screwdriver maximum 1/32 inch dimple in board surface. Do not fracture wallboard faceboard.
   4. Do not fasten along overlapping ends or edges at inside corners.

3.5 Fire Rated Walls and Ceilings: Install fire-rated board in accordance with manufacturer's and U.L. requirements to provide ratings as indicated on the Drawings.

3.6 Joint System:

A. Taping or Embedding Joints:
   1. Apply compound in this uniform layer to all joints and angles to be reinforced.
   2. Apply reinforcing tape immediately. Center tape over joint, and seat tape into compound. Leave approximately 1/64 to 1/32 inch compound under tape to provide bond.
   3. Apply skim coat immediately following tape embedment but not to function as fill or second coat.
   4. Fold tape and embed in angles to provide true angle.
   5. Dry embedding coat prior to application of fill coat.

B. Filling:
   1. Apply joint compound over embedding coat. Fill taper flush with surface. Apply fill coat to cover tape.
   2. Feather out fill coat beyond tape and previous joint compound line.
   3. Do not apply fill coat on interior angles.
   4. Allow fill coat to dry prior to application of finish coat.

C. Finishing:
   1. Spread joint compound evenly over and beyond fill coat on all joints. Feather to smooth uniform finish.
   2. Apply finish coat to taped angles to cover tape and taping compound.

3. Sand final application of compound to provide surface ready for decoration.

D. Filling and Finishing Depressions: Apply joint compound as first coat to fastener depressions. Apply at least two (2) additional coats of compound after first coat is dry. Leave filled and finished depressions level with plane of surface.

E. Finishing Beads and Trim:
   1. First Fill Coat: Apply joint compound to bead and trim. Feather out from ground to plane of surface. Dry compound prior to application of second fill coat.
   2. Second Fill Coat: Apply joint compound in same manner as first fill coat. Extend beyond first coat onto face of wallboard. Dry compound prior to application of finish cat.
   3. Finish Coat: Apply joint compound to bead and trim. Extend beyond second fill coat. Feather finish coat from ground to plane of surface. Sand finish coat to provide flat surface ready for decoration.

F. Where paneling or hardboard is to be installed over wallboard, tape and float wallboard to assure a smooth surface. Final finishing is not required.

G. Where wallboard is installed in a non-exposed location, tape and float wallboard to assure compliance with fire resistance and smoke partition classifications. Final finishing is not required.

H. Assure tight seal around all penetrations through walls and ceilings such as plumbing lines, vents, electrical items, etc. Fire tape around penetrations.

3.7 Adjust and Clean:

A. Defective Fastening: When face paper is punctured, drive new screw approximately 1-1/2 inches from defective fastening and remove defective fastening. Fill damaged surface with compound.

B. Ridging: Do not repair ridging until condition has fully developed; approximately six (6) months after installation or one heating season. Sand ridges to reinforcing tape without cutting through tape. Fill concave areas on both sides of ridge with topping compound. After fill is dry, blend in topping compound over repaired area.

C. Fill cracks with compound and finish smooth and flush.

D. Remove all excess materials and debris from project site. Clean all soiled surfaces.

* * *

SECTION 09510: ACOUSTICAL CEILINGS

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Scope of Work: Furnish all necessary materials, labor and equipment for the complete installation of acoustical ceilings and other accessories, as shown on the drawings and specified herein. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Quality Assurance:

A. Qualifications of Installer: Minimum of three project installations of comparable extent as proposed project and acceptable to ceiling systems manufacturer.

B. Tolerances: Surface to receive acoustical treatment shall be free from irregularities and level to within 1/4 inch in 12 feet. Suspension system components, hangers, and fastening devices supporting light fixtures, ceiling grilles, and acoustical units shall have maximum deflection of 1/360 of the span as per ASTM C 635. Finished acoustical ceiling system shall be level within 1/8 inch in 12 feet.

1.4 Submittals:

A. Samples: Submit samples of all ceiling units, suspension system, and accessories.

B. Manufacturer's Literature: Submit for review of A/E, the manufacturer's recommendations for installation of suspension system and acoustical units.

C. Certificates: Furnish literature or certification that materials and systems conform to specification requirements including fire endurance rating, flame spread index, structural classification of suspension system.

D. Maintenance Material: Furnish extra materials equal to 5% of each type of ceiling material supplied. Furnish suspension system components in amount sufficient to install extra ceiling units.

E. Submit in accordance with requirements of Division 1.

1.5 Product Delivery, Storage and Handling:

A. Deliver materials in original, unopened, protective packaging, with manufacturer's labels indicating brand name, pattern, size, thickness and fire rating as applicable, legible and intact.

B. Store materials in original protective packaging to prevent soiling, physical damage or wetting. Store cartons open at each end to stabilize moisture content and temperature.

C. Do not begin installation until sufficient materials to complete a room are received.

1.6 Environmental Requirements: Complete installation of dampening materials before beginning work. Maintain humidity of 65-75% in area where acoustical materials are to be installed, 25 hours before, during, and 25 hours after installation. Maintain a uniform temperature in the range of 55-70 degrees F prior to and during installation of materials.

PART 2: PRODUCTS

2.1 Acceptable Manufactures:

A. For purpose of designating type and quality for the Work under this Section, Drawings and Specifications are based on products manufactured or furnished by Armstrong.

B. Subject to compliance with requirements, acceptable manufacturers include U.S.G. or approved equal.

2.2 Suspension System:

A. Type: Lay-In Tile Square, ASTM C 635, structural classification - intermediate duty system. All components of system from one manufacturer.

B. Main, Cross, and Concealed Members: Single or double web design, cold-rolled steel, minimum thickness of 0.020 inch for single web, 0.015 inch for double web, electric-zinc coated and factory painted low sheen satin white finish, 15/16 inch width exposed flange.

C. Edge Molding: Minimum 0.020 inch steel, channel or angle shaped, with minimum flange width of 15/16 inch.

D. Hold Down Clips: Type as supplied by suspension system manufacturer.

E. Hanger Wire: Minimum 12-gage, galvanized, soft- annealed, mild steel wire.

F. Color: As selected from manufacturer's standard colors.

2.3 Acoustical Units:

A. Type I:

1. Style: Fine Fissured, Lay-In.
2. Size: 24" x 48" x 5/8"
3. Composition: Mineral Fiber
4. Light Reflect Range: LR-1; 0.82 or more light reflectance
5. NRC Range: 0.55
6. STC Range: 35
7. Fire Hazard Classification: Class A.
8. Edge: Square
9. Surface Finish: Factory applied vinyl latex paint finish.
10. Surface Color: As selected from manufacturer's standard colors.

PART 3: EXECUTION

3.1 Condition of Surfaces: Examine surfaces scheduled to receive suspended acoustical units for unevenness, irregularities, dampness that would affect quality and execution of work.

3.2 Installation:

A. Suspension Systems: ASTM C 636.

B. Rough Suspension:

1. Hangers: Space hanger wires four (4) feet on center, each direction. Install additional hangers at ends of each suspension member and at light fixtures, six (6) inches from vertical surfaces. Do not splay wires more than five (5) inches in a four (4) foot vertical drop. Wrap wire a minimum of three times horizontally, turning ends upward.

2. Main and Cross Runners: Space main runners at four (4) feet on center, leveled square to adjacent walls. Space cross runners at two (2) feet on center.
3. Wall Molding: Install at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps. Attach to vertical surface with mechanical fasteners.
4. Install impact at damage resistant ceiling units in accordance with manufacturer's instructions.

C. Ceiling Units: Install in level plane in straight line courses. Place materials to bear all around on suspension members. Minimum width of border tiles, one-half unit dimension unless otherwise indicated on Drawings. Install units surrounding recessed troffer lights with hold-down clips to prevent movement or displacement of units.

3.3 Cleaning: Clean soiled or discolored unit surfaces after installation. Touch up scratches, abrasions, voids, and other defects in painted surfaces. Remove and replace damaged or improperly installed units.

* * *

SECTION 09678: RESILIENT BASE AND ACCESSORIES

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Scope of Work: Furnish all necessary materials, labor and equipment for the complete installation of resilient base and other accessories, as shown on the drawings and specified herein. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Submittals:

A. Submit samples of type and color of base material. Upon completion and prior to acceptance of the work, furnish 3 copies of a list of recommended maintenance products, methods, and procedures.

B. Submit in accordance with requirements of Division 1.

1.4 Product Delivery and Storage: Deliver materials to project site in manufacturer's original unopened containers with labels indicating brand names, colors and patterns, and quality designations legible and intact. Do not open containers or remove markings until materials are inspected and accepted. Store and protect in accordance with manufacturer dictions and recommendations.

1.5 Environmental Requirements: Maintain temperature in space to receive base between 70 and 90 degrees F for not less than 24 hours before and 48 hours after installation. Following this period, maintain minimum temperature of 55 degrees after base is installed.

PART 2: PRODUCTS

2.1 Acceptable Manufacturers:

A. For purposes of designating type and quality for work under this section, Drawings and Specifications are based on products manufactured by Armstrong.

B. Subject to compliance with requirements acceptable manufacturers include Kentile, or approved equal.

2.2 Base Materials:

A. Uniform in thickness. As long lengths as practicable to suit conditions of installation.

B. Base: FS SS-W-4D, Type II, 4 inch high rubber coved base.

C. Base Accessories: Pre-molded end stops and external corners of same material, size, and color as base.

D. Color: As selected by A/E from manufacturer's standard colors.

2.3 Application Materials: Provide type and brands of adhesive as recommended by manufacturer of covering material for the conditions of the installation.

PART 3: EXECUTION

3.1 Inspection of Surfaces: Examine substrates for excessive moisture content and unevenness which would prevent execution and quality of resilient base specified.

3.2 Preparation: Remove dirt, oil, grease, or other foreign matter from surfaces to receive base materials. Prime surfaces if recommended by base covering manufacturer.

3.3 Application of Adhesives: Mix and apply adhesives in accordance with manufacturer's instructions. Apply uniformly over surfaces. Cover only that amount of area which can be covered by base material within the recommended working time of the adhesive. Remove any adhesive which dries or films over. Do not soil adjacent areas. Promptly remove any spillage.

3.4 Installation of Base:

A. Install base around perimeter of room or space and at toe-space of cabinets, shelves, etc. Unroll base material and cut into accurate lengths as required for minimum number of joints. Match edges of all seams or double cut adjoining lengths. Install with tight butt joints.

B. Apply adhesive and firmly adhere to wall surfaces. Press down so that bottom cove edge follows floor profile. Form external corners by coping and bending sufficient length around corner for anchorage. Form internal corners by mitering. Do not use pre-molded interior corners. Scribe base accurately to abutting materials.

3.5 Finishing and Cleaning: Upon completion of the installation of base, adjacent work, and after materials have set, clean surface with a neutral cleaner as recommended by the floor covering manufacturer. Protect completed work from damage until acceptance by Owner.

* * *

SECTION 09910A: EXTERIOR PAINTING

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Scope of Work: Furnish all necessary materials, labor and equipment for the complete painting of exposed surfaces, as shown on the drawings and specified herein. Complete coverage of all new exposed surfaces within areas affected by work of this contract is intended unless otherwise indicated. Examine the Specifications for the various trades and materials and be thoroughly familiar with all provisions regarding painting. Paint all new exposed piping, conduit, etc. directly related to work included in this Contract. Color code exposed piping, ducts, conduit, etc., as directed by A/E. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Quality Assurance:

A. Include on label of containers: Manufacturer's name, type of paint, manufacturer' stock number, color, and instructions for reducing, where applicable.

B. Field Quality Control: Request review of first finished room, space, or item of each color scheme required by A/E for color, texture, and workmanship. Use first acceptable room, space, or item as project standard for each color scheme.

C. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List".

2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

1.4 Submittals:

A. Furnish tests and samples of materials as acceptable to the A/E. Submit manufacturer's analysis of paint if requested. Pigment percentage shall be not less than that in specified coatings.

B. Submit manufacturer's color chips if requested by A/E for preparation of a color selection and location schedule. A/E may vary colors after inspecting sample room, space, or item.

C. Submit in accordance with requirements of Division 1.

1.5 Product Delivery, Storage, and Handling: Deliver sealed containers with labels legible and intact. Store only acceptable project materials on project site, in a suitable location. Restrict storage to paint materials and related equipment. Comply with health and fire regulations.

1.6 Job Conditions: Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied. Do not apply finish in areas where dust is being generated. Cover or otherwise protect finished work of other trades and surfaces not being painted concurrently or not to be painted.

1.7 Extra Stock: Turn over to the Owner at final inspection one (1) gallon of each type and final color of finish used on this project.

PART 2: PRODUCTS:

2.1 Acceptable Manufacturers: Drawings and specifications are based on products manufactured by Sherwin Williams, Pittsburgh Paints or Benjamin Moore.

2.2 Materials: Materials selected for coating systems for each type surface shall be the product of a single manufacturer. Only first-line architectural grade coatings will be acceptable.

2.3 Colors: Colors of paints shall match color chips submitted to the A/E for selection and shall match approved shades in sample areas.

2.4 Mixing and Tinting: Deliver paints ready-mixed to job site. Accomplish job mixing and tinting only when acceptable to the A/E. Mix only in mixing pails placed in suitably sized non-ferrous or oxide resistant metal pans. Use tinting colors recommended by manufacturer for the specific type of finish. Fungicidal agent shall be incorporated into the paint by the manufacturer.

2.5 No paint shall contain more than 0.06% lead by weight calculated as lead metal in the total non-volatile content of liquid paints or in the dried film of paint already applied.

PART 3: EXECUTION

3.1 Inspection: Examine surfaces scheduled to receive paint and finishes for conditions that will adversely affect execution permanence, or quality of condition through preparatory work as included in Article 3.2 Preparation. Do not proceed with surface preparation or coating application until conditions are suitable.

3.2 Surface Preparation:

A. Strictly follow paint manufacturer's surface preparation recommendations for all surfaces.
B. Protect items not to be painted or removed prior to painting. If required to be removed, reposition after painting.
C. Make any exposed miscellaneous metal items, such as steel supports, anchors, bucks, hollow metal frames and the like clean, free of rust, dust, grease and dirt.
D. Wash any unprimed galvanized metal with a solution of "Galva-Clean"; allow to dry.
E. Make any wood and plywood surfaces clean, smooth, dry, and fully sanded. Knots and pitch pockets under paint finish shall be sealed with knot sealer.

Fill joints, cracks, nail holes, disfigurations, etc. with wood filler after priming; then sand smooth.

F. Seal any concrete, masonry, plaster and similar surfaces to be painted and fill to smooth, even surfaces after neutralizing with a wash of 4 lbs. sulphate of zinc and one (1) gallon water. Concrete block to be filled with manufacturer's recommended block filler except where noted herein. Remove grease or oil with benzine.

G. Comply strictly with manufacturer's instructions for preparation of previously painted surfaces.

3.3 Workmanship:

A. Do all work under supervision of capable foreman.

B. Thoroughly cover with uniform color and finish; the number of coats specified being a minimum, provide any additional coats to produce Work satisfactory to A/E.

C. Any air registers and grilles, flanges around ceiling fixtures, exposed electrical panel boards, primed hardware, etc., shall be painted to match adjacent surfaces, unless otherwise directed.

3.4 Application:

A. Strictly follow paint manufacturer's application recommendations and information.

B. Do not apply initial coating until moisture content of surface is within limitations recommended by paint manufacturer. Test with moisture meter (Delmhorst or equal). At concrete block, reading shall be not more than 15 degrees before block fill is applied. Do not apply finish coats over block fill unless reading is less than 15 degrees. Notify A/E to be present when readings are taken.

C. Apply finishes with suitable brushes or rollers. Rate of application shall not exceed that as recommended by paint manufacturer for the surface involved less ten percent allowance for losses. Keep brushes and rollers clean, dry, free from contaminates, and suitable for the finish required.

D. Comply with recommendation of product manufacturer for drying time between succeeding coats. Vary slightly the color of successive coats.

E. Sand and dust between each coat to remove defects visible from a distance of five (5') feet. Finish coats shall be smooth, free of brush marks, streaks, laps, or pile up of paints, and skipped or missed areas. Finished metal surfaces shall be free of skips, voids, or pinholes in any coat when tested with a low voltage detector.

F. Do no apply additional coats until completed coat has been inspected by the A/E. Only inspected coats of paint will be considered in determining number of coats applied.

G. Leave all parts of molding and ornaments clean and true to details with no undue amount of paint in corners and depressions. Make edges of paint adjoining other materials or colors clean and sharp with no overlapping.

H. Apply primer and first coat on all new glass frames and stops before glazing.

I. Provide tops, bottoms, edges and sides of all doors with complete number of specified coats. Note that hardware is to be removed from doors prior to painting.

J. Refinish whole wall where portion of finish has been damaged or is not acceptable.

3.5 Cleaning: Touch-up and restore finish where damaged. Remove spilled, splashed, or splattered paint from all surfaces. Do not mar surface finish of item being cleaned. Leave storage space clean and in condition required for equivalent spaces in project.

3.6 Painting Schedule:

A. Surfaces Not To Be Painted:
   1. Pre-finished wall, ceiling, and floor coverings.
   2. Items of aluminum, stainless steel, other plated finish.
   3. Concealed ducts, pipes, and conduit.
   4. All other surfaces shall be painted. Contractor shall submit painting schedule to A/E as a shop drawings for review.
   5. All new surfaces and their adjacent surfaces corner to corner shall painted.

B. Miscellaneous Materials: Thinners, cleaners, other materials shall be only as recommended by coatings manufacturer.

C. Exterior Painting Schedule:
   1. Galvanized Steel and Non-Ferrous Metals:
      a. Surface Preparation: Solvent Cleaning (SSPC-SPI).
      b. First and Second Coats: SW Macropoxy 646 Fast Cure Epoxy.
   2. Ferrous Materials:
      a. Touch-Up: SW Pro-Cryl Universal Metal Primer.
      b. First Coat: SW Sher-Cryl HPA Acrylic.
      c. Second Coat: SW Sher-Cryl HPA Acrylic.
   3. Portland Cement Plaster – Elastomeric System, Flat Finish
      a) 1st Coat: S-W Loxon Concrete & Masonry Primer Sealer, A24W8300, (8 mils wet, 3.2 mils dry).
      b) 2nd Coat: S-W ConFlex XL Elastomeric High Build Coating, A5-400 Series.
      c) 3rd Coat: S-W ConFlex XL Elastomeric High Build Coating, A5-400 Series, (16 mils wet, 7.5 mils dry per coat).
   4. Pressure-Treated Exposed Wood:
      a) 1st Coat: Super Deck Exterior Waterborne Semi-Transparent Stain, SD3T00025.
      b) 2nd Coat: Super Deck Exterior Waterborne Clear Sealer, SD1T00100, Clear.
      c) 3rd Coat: Super Deck Exterior Waterborne Clear Sealer, SD1T00100, Clear.

D. Verify Existing Coatings: Contractor shall verify that new coatings are compatible with existing coatings. Obtain written verification from new coating manufacturer. Existing surfaces that have an existing coating shall be prepared, cleaned and primed in strict accordance with new coating manufacturer's instructions. Provide recommended primers and finish coats to obtain desired finishes. Verify any incompatible coatings with new coating manufacturer.

E. Locations:

1. All other ferrous metal within spaces where the walls are to have epoxy finish shall have epoxy finish also; where walls are painted, provide painted finish.
2. Exterior plaster repair to match adjacent existing.

* * *

SECTION 09920A: INTERIOR PAINTING

PART 1: GENERAL

1.1 Related Documents: The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions, Division 0) and Division 1 as appropriate, apply to the Work specified in this Section.

1.2 Scope of Work: Furnish all necessary materials, labor and equipment for the complete finish painting of exposed surfaces, as shown on the Drawings and specified herein. Complete coverage of all new exposed surfaces within areas affected by work of this contract is intended unless otherwise indicated. Examine the Specifications for the various trades and materials and be thoroughly familiar with all provisions regarding painting. Paint all new exposed piping, conduit, panels, roof vents, etc. in finished spaces. Refer to Mechanical and Electrical Divisions for any required color coding of piping, ducts, etc. Color code exposed piping, ducts, conduit, etc. as directed by A/E. Provide all necessary supplementary items for a complete installation intended by documents.

1.3 Quality Assurance:

A. Include on label of containers: Manufacturer's name, type of paint, manufacturer's stock number, color, and instructions for reducing, where applicable.

B. Field Quality Control: Request review of first finished room, space, or item of each color scheme required by A/E for color, texture, and workmanship. Use first acceptable room, space, or item as project standard for each color scheme.

1.4 Submittals:

A. Furnish tests, samples of materials as acceptable to the A/E. Submit manufacturer's analysis of paint if required. Pigment % shall be not less than in specified sections.

B. Submit manufacturer's color chips if requested by A/E for preparation of a color selection and location schedule. A/E may vary colors after inspecting sample room, space, or site.

C. Submit in accordance with requirements of Division 1.

1.5 Product Delivery, Storage, and Handling: Deliver sealed containers with labels legible and intact. Store only acceptable project materials on project site, in a suitable location. Restrict storage to paint materials and related equipment. Comply with health and fire regulations.

1.6 Job Conditions: Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied. Do not apply finish in areas where dust is being generated. Cover or otherwise protect finished work of other trades and surfaces not being painted concurrently or not to be painted.

1.7 Extra Stock: Turn over to the Owner at final inspection one (1) gallon of each type and final color of finish used on this project.

1.8 Surfaces to be Coated:

A. Concrete: Poured, Pre-cast, Tilt-Up, Cast-in-Place, Cement Board, Plaster
B. Concrete: Floors
C. Masonry: (CMU – Concrete, Split face, Scored, Smooth, etc)
D. Metal: Aluminum, Galvanizing
E. Metal: (Structural Steel, Joists, Trusses, Beams, Partitions, etc.) All metal duct work exposed to view.
F. Wood: Walls, Ceilings, Doors, Trim, etc.
D. Drywall: Walls, Ceilings, Soffits.

PART 2: PRODUCTS

2.1 Acceptable Manufacturers:

A. For purposes of designating type and quality for the work under this section, Drawings and specifications are based on products manufactured by Sherwin Williams, unless otherwise indicated.
B. Subject to compliance with requirements, acceptable manufacturers include Sherwin Williams, Pittsburg Paints, Benjamin Moore or approved equal.

2.2 Lead Content: No paint shall contain more than 0.06% lead by weight calculated as lead metal in the total non-volatile content of liquid paints or in the dried film of paint already applied.

2.3 Materials selected for coating systems for each type surface shall be the product of a single manufacturer. Only first-line Architectural grade coatings will be acceptable.

2.4 Colors: Colors of paints shall match color chips submitted to the A/E for selection and shall match approved shades in sample areas.

2.5 Mixing and Tinting: Deliver paints ready-mixed to job site. Accomplish job mixing and tinting only when acceptable to the A/E. Mix only in mixing pails placed in suitably sized non-ferrous or oxide resistant metal pans. Use tinting colors recommended by manufacturer for the specific type of finish. Fungicidal agent shall be incorporated into the paint by the manufacturer.

PART 3: EXECUTION

3.1 Inspection: Examine surfaces scheduled to receive paint and finishes for conditions that will adversely affect execution permanence, or quality of work and which cannot be put into an acceptable condition through preparatory work as included in Article 3.2 Preparation. Do not proceed with surface preparation or coating application until conditions are suitable.

3.2 Surface Preparation:

A. Strictly follow paint manufacturer's surface preparation recommendations for all surfaces.

B. Protect items not to be painted or remove prior to painting. If required to be removed, reposition after painting.

C. Make any exposed miscellaneous metal items, such as steel supports, anchors, bucks, hollow metal frames and the like clean, free of rust, dust, grease and dirt.

D. Wash any unprimed galvanized metal with a solution of "Galva-Cleane"; allow to dry.

E. Make any wood and plywood surfaces clean, smooth, dry, and fully sanded. Knots and pitch pockets under paint finish shall be sealed with knot sealer. Fill joints, cracks, nail holes, disfigurations, etc. with wood filler after priming; then sand smooth.

F. Seal any concrete, masonry, plaster and similar surfaces to be painted and fill to smooth even surfaces after neutralizing with a wash of four (4) pounds sulphate of zinc and one (1) gallon of water. Concrete block to be filled with manufacturer's recommended block filler except where noted herein. Remove grease or oil wit benzine.

G. Clean thoroughly any wallboard surfaces to be painted. Spackle any nail holes after primer has dried. Sand smooth all rough surfaces.

H. Comply strictly with manufacturer's instructions for preparation of previously painted surfaces.

3.3 Workmanship:

A. Do all Work under supervision of capable foreman.

B. Thoroughly cover with uniform color and finish; the number of coats specified being a minimum, provide any additional coats to produce Work satisfactory to A/E.

C. Any air registers and grilles, flanges around ceiling fixtures, exposed electrical panelboards, primed hardware, etc., shall be painted to match adjacent surfaces, unless otherwise directed.

3.4 Application:

A. Strictly follow paint manufacturer's application recommendations and information.

B. Do not apply initial coating until moisture content of surface is within limitations recommended by paint manufacturer. Test with moisture meter (Delmhorst or equal). At concrete block, reading shall be not more than 15 degrees before block fill is applied. Do not apply finish coats over block fill unless reading is less than 15 degrees. Notify A/E to be present when readings are taken.

C. Apply finishes with suitable brushes or rollers. Rate of application shall not exceed that as recommended by paint manufacturer for the surface involved less 10 percent allowance for losses. Keep brushes and rollers clean, dry, free from contaminates and suitable for the finish required.

D. Comply with recommendation of product manufacturer for drying time between succeeding coats. Vary slightly the color of successive coats.

E. Sand and dust between each coat to remove defects visible from a distance of five (5') feet. Finish coats shall be smooth, free of brush marks, streaks, laps, or pile up of paints, and skipped or missed areas. Finished metal surfaces shall be free of skips, voids, or pinholes in any coat when tested with a low voltage detector.

F. Do not apply additional coats until completed coat has been inspected by the A/E. Only inspected coats of paint will be considered in determining number of coats applied.

G. Leave all parts of moldings and ornaments clean and true to details with no undue amount of paint in corners and depressions. Make edges of paint adjoining other materials or colors clean and sharp with no overlapping.

H. Apply primer and first coat on all new glass frames and stops before glazing.

I. Provide tops, bottoms, and sides of all new doors with complete number of specified coats. See Division 8; note that hardware is to be removed from doors prior to painting.

J. Refinish whole wall where portion of finish has been damaged or is not acceptable.

3.5 Cleaning: Touch-up and restore finish where damaged. Remove spilled, splashed, or splattered paint from all surfaces. Do not mar surface finish of item being cleaned. Leave storage space clean and in condition required for equivalent spaces in project.

3.6 Verify Existing Coatings: Contractor shall verify that new coatings are compatible with existing coatings. Obtain written verification from new coating manufacturer. Existing surfaces that have an existing coating shall be prepared, cleaned and primed in strict accordance with new coating manufacturer's instructions. Provide recommended primers and finish coats to obtain desired finishes. Verify any incompatible coatings with new coating manufacturer.

3.7 Painting Schedule (Sherwin Williams Paints unless otherwise noted.)

A. Surfaces Not To Be Painted:
   1. Pre-finished wall, ceiling, and floor coverings.
   2. Items of aluminum, stainless steel, other plated finish.
   3. Concealed ducts, pipes, and conduit.
   4. All other surfaces shall be painted. Contractor shall submit painting schedule to A/E as a shop drawings for review painting schedule to A/E as a shop drawings for review.
   5. **EDIT AS APPROPRIATE FOR RENOVATION PROJECTS.** All new surfaces and their adjacent surfaces corner to corner shall painted.

B. Miscellaneous Materials: Thinners, cleaners, other materials shall be only as recommended by coatings manufacturer.

C. Interior Painting Schedule:
   1. Ferrous Metals (Painted):
      a. First Coat: SW Pro-Cryl Universal Metal Primer.
      b. Second and Third Coats: SW Pro-Mar Alkyd Egg-Shell, B33.
   2. Ferrous Metals (Epoxy):

a. First Coat: SW Pro-Cryl Universal metal Primer.
b. Second and Third Coats: SW Pro Industrial Hi-Build Waterbased Catalyzed Epoxy.

3. Gypsum Board (Epoxy):
   a. First coat: SW Pro Mar 200 Wall Primer.
   b. Second and third coats: SW Pro Industrial Hi-Build Waterbased Catalyzed Epoxy.
4. Gypsum Board Walls (Latex):
   a. Texture: Orange Peel
   b. First Coat: SW Prom Mar 200 Wall Primer.
   c. Second and Third Coats: SW Pro Mar 200 Latex, Egg-Shell.
5. Gypsum Board Ceilings (Latex):
   a. Texture: Orange Peel
   b. First Coat: SW Hi-Build Primer.
   c. Second and Third Coats: SW Pro Mar 400 Latex, Flat.

D. Locations:
   1. See Finish Schedule on the Drawings for wall and ceiling finishes.
   2. All ferrous metal within spaces where the walls are to have epoxy finish shall have epoxy finish; where walls are painted, provide painted finish.

E. Verify Existing Coatings: Contractor shall verify that new coatings are compatible with existing coatings. Obtain written verification from coating manufacturer. Provide recommended primers and finish coats to obtain desired finishes. Verify any incompatible coatings with coating manufacturer.

* * *

Matt Kuhlman

Midsouth Specialty Products

Aug 22, 2025 | 27 Photos

ROOFING INSPECTION

BUR Gravel Side of Expansion Joint

ROOF CORE #1 (Next to expansion Joint)

Roof deck = Structural Concrete

Existing Roof = 2" poly iso base layer mopped to concrete/Tapered Perlite/ BUR Gravel asphalt

Thickness from Deck to top of Roof 7"

Drainage = Roof Drains

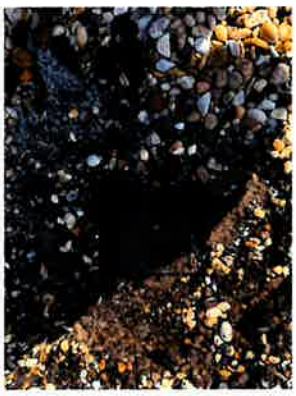
ROOF CORE #4 (next to wall panels)

Roof deck = Structural Concrete

Existing Roof = 2" poly iso base layer mopped to concrete/Tapered Perlite/ BUR Gravel asphalt

Thickness from Deck to top of Roof =8"

1



Roof Core #1 (BUR Gravel Surface Asphalt)

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:15 AM
Creator: Matt Kuhlman

2

Roof Core #1 Top of Perlite Tapered

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:16 AM
Creator: Matt Kuhlman

3

Roof Core #1 down to top of Polyiso Insulation

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:19 AM
Creator: Matt Kuhlman

4

Roof Core #1 depth of Tapered Perlite =5"

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:19 AM
Creator: Matt Kuhlman

5

Roof Core #1 depth to concrete deck = 7"

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:22 AM
Creator: Matt Kuhlman

6

Roof Core #1 Water on concrete deck

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:22 AM
Creator: Matt Kuhlman

7

Wall Panel with Wood Strips over Joints

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 10:01 AM
Creator: Matt Kuhlman

8

Roof Core #4 Flashing Height at Wall =5-1/2"

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 10:01 AM
Creator: Matt Kuhlman

9

Roof Core #4 (at wall BUR SIDE)

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 10:03 AM
Creator: Matt Kuhlman

10

Roof Core #4 top of Tapered Perlite

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 10:04 AM
Creator: Matt Kuhlman

11

Roof Core #4

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 10:07 AM
Creator: Matt Kuhlman

12

Roof Core #4 Depth to top of Polyiso Insulation =6"

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 10:08 AM
Creator: Matt Kuhlman

13

Roof Core #4 Depth from Concrete to top of roof 8"

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 10:09 AM
Creator: Matt Kuhlman

14

Copper Standing Seam and Flashing
(New roof should run under the existing Copper Standing Seam)

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:11 AM
Creator: Matt Kuhlman

15

Existing Square Penetrations
(Can get rid of pitch pocket and install liquid flashing)

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:11 AM
Creator: Matt Kuhlman

16

Square penetrations

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:12 AM
Creator: Matt Kuhlman

SBS Roof Side of Expansion Joint

ROOF CORE #2 (Next to expansion Joint)

Roof deck = FLAT STEEL DECK

Existing Roof = 2" poly iso base layer mech attached to Steel/Tapered Perlite/ 2 ply SBS (Copper Clad Flashing)

(Note: Copper Clad flashing no longer available)

Thickness from Deck to top of Roof 9" at expansion Joint

Drainage = Perimeter edge

ROOF CORE #3 (back near gutter edge)

2" poly iso base layer mech attached to Steel/Tapered Perlite/ 2 ply SBS

Thickness from Deck to top of Roof 3-1/2"-4" near gutter

1

Roof Core #2 next to expansion joint

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:24 AM
Creator: Matt Kuhlman

2

Roof Core #2 Top of Tapered Perlite

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:24 AM
Creator: Matt Kuhlman

3

Roof Core #2 Depth to top of 2" Polyiso =7"

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:31 AM
Creator: Matt Kuhlman

4

Roof Core #2 Depth to Steel Deck =9"

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:36 AM
Creator: Matt Kuhlman

5

Roof Core #2 down to steel deck

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:37 AM
Creator: Matt Kuhlman

6

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:12 AM
Creator: Matt Kuhlman

7

Expansion Joint Height above roof =7"

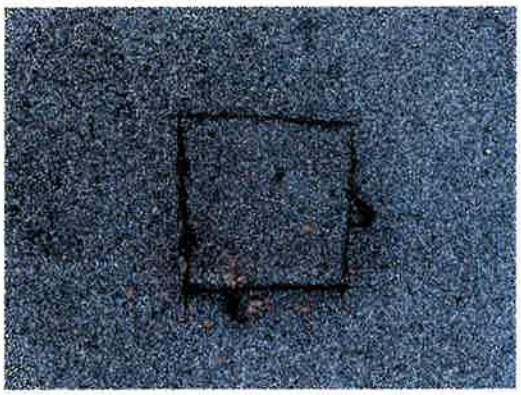
Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:24 AM
Creator: Matt Kuhlman

8

Roof Core #3 Location

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:50 AM
Creator: Matt Kuhlman

9



Roof Core #3

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:50 AM
Creator: Matt Kuhlman

10

Roof Core #3 Top of Tapered Perlite

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:50 AM
Creator: Matt Kuhlman

11

Roof Core #3 =2" Iso and 1-1/2 Tapered Perlite

Project: Sewage And Water Board Engineering Bldg
Date: Aug 19, 2025, 9:52 AM
Creator: Matt Kuhlman