# Specification

(PROJECT MANUAL)

## University of Louisiana at Lafayette

## Agnes Edwards Hall
## Re-Roof

**110 Rex St.**
**Lafayette, LA 70503**

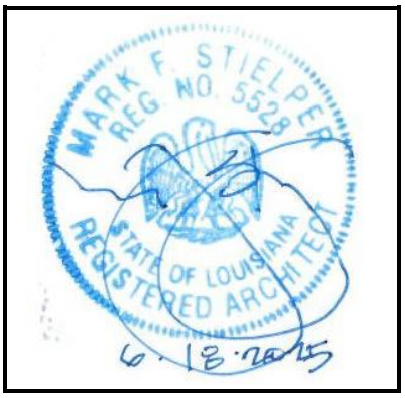
Architect's Project Number
2024-017.00

The MBSB Group
A R C H I T E C T S

June, 2025

DOCUMENT 000107 - SEALS PAGE
DESIGN PROFESSIONALS OF RECORD

ARCHITECT Mark Stielper
5528
Divisions 0-7




END OF DOCUMENT 000107

# INDEX

**DIVISION 08 – OPENINGS**

084113 Aluminum Storefronts
088000 Glazing

**DIVISION 9 – FINISHES**

099113 Exterior Painting

# Document 000115 - List of Drawing Sheets

1.1 LIST OF DRAWINGS

A. List of Drawings: Drawings consist of the following Contract Drawings for the following Project:

**University of Louisiana at Lafayette**
**Agnes Edwards Hall**
**Re-Roof**
**Project Number: 2024-017.00**
**Dated: March, 2025**

B. List of Drawings: Drawings consist of the following Contract Drawings and other drawings of type indicated:

A1.1 – Title Sheet/Project Directory/Site Plan
A3.1 – Roof Plan
A3.2 – Photo Reference Plan
A4.1 - Exterior Elevations
A9.1 – Roof Details
A9.2 – Roof Details

END OF DOCUMENT 000115

# Preface

This introduction shall augment the contract documents for this project. All Contractors shall become familiar with all documents which comprise the Contract Documents, prior to bidding. It is important to read and become thoroughly familiar with all documents and understand their individual and collective importance. It is vital that a Contractor visit the Project site, thoroughly study the existing conditions, compare visual observations with field measurements, reference the Contract Documents, and use all as a basis for bidding.

After the contractor's bid is received neither the Owner nor Architect shall entertain extra compensation to the Contractor for claims of insufficient information in the Contract Documents. It is the sole responsibility of the bidding Contractor to visit the project site, thoroughly review all Contract Documents, including Drawings, Specifications, referenced information and standards, and Addenda prior to bidding. He shall obtain written clarifications and /or additional information needed to completely understand the Project scope prior to bidding. This does not imply that the Contractor or Architect is responsible for unexpected concealed conditions, which can not be verified without excavation or demolition.

The Contractor for this Project shall abide by the requirements of the Contract Documents, including Shop Drawings, Submittals, and other documents which become part of this Contract once submitted to the Architect.

Non-compliance with any of the Contract Documents could cause termination of the Contract by the Owner, in the manner set forth in the General Conditions.

No document in the Contract Documents shall be considered lightly, extraneous, non-applicable, standard, or unimportant. If conflicts occur between different areas in the drawings, different sections in the specifications or between drawings and specifications the most stringent requirements shall supersede all others.

# SECTION 010400 PROJECT COORDINATION

PART 1 - GENERAL

RELATED DOCUMENTS

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

SUMMARY

This Section includes the minimum administrative and supervisory requirements necessary for coordination of work on the project include but are not necessarily limited to the following:

Coordination meeting.
Administrative and supervisory personnel.
Expediting of Project materials.
Surveys and records or reports.
Limitations for use of site.
Special reports.
General installation provisions.
Cleaning and protection.
Coordination of Work of each Sub Contract by General Contractor.

Related Sections: The following Sections contain requirements that relate to this Section.

Division 1 Section "Project Meetings".

Division 1 Section "Submittals".

DESCRIPTION

Coordinate scheduling, submittals, and work of the various sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.

Prepare a written memorandum of required coordination activities. Include such items as required notices, site regulations, permits, approvals, submittals, schedules, reports and attendance at meeting. Distribute this memorandum to each entity performing work at the Project Site. Furnish a copy to the Architect and the Owner for their information. Prepare similar memorandum for separate contractors where interfacing of their work is required.

Coordinate sequence of Work to accommodate Owner occupancy.

ADMINISTRATIVE/SUPERVISORY PERSONNEL:

The Contractor shall furnish a competent and adequate staff as necessary for the proper administration, coordination, supervision and superintendence of the Work; organize the procurement of all materials and equipment so that they will be available at the time they are needed for the Work; and keep an adequate force of skilled workmen on the job to complete the Work in the best and most sound manner in accordance with all requirements of the Contract Documents and in the most expeditious and economical manner consistent with the interests of the Owner.

Contractor shall identify in writing a Project Executive who will have full responsibility for the prosecution of the Work, with full authority to act in all matters as necessary for the proper coordination, direction and technical administration of the Work. In addition, the contractor shall identify in writing its Project management staff, including but not limited to, Project Manager, General Superintendents, Project Engineers, etc. Project Executive and Project management staff

shall be satisfactory to the Owner based upon credentials to be submitted by Contractor. Project Executive and/or the Project management staff shall be changed at the request of the owner for cause and shall not be changed except with the consent of the Owner. All communications to Superintendent(s) shall be as binding as if given to the Contractor. Contractor shall so designate a sufficient number of representatives to ensure representation on the Site at all times when Work is being performed. Contractor shall at all times enforce strict discipline and good order among its employees and shall not employ in the performance of any portion of the work any unfit person or anyone not skilled in the task assigned to said person.

Project Coordinator: In addition to requirements of Section 010400, provide a full-time Project Coordinator experienced in administration and supervision of building construction, including mechanical and electrical work. This Project Coordinator is to be authorized to act as general coordinator of interfaces between units of work. For the purpose of this provision, "interface" is defined to include scheduling and sequencing of work, sharing of access to work spaces, installations, protection of each other's work, cutting and patching, tolerances, cleaning, preparation of coordination drawings, inspection, tests, and temporary facilities and services.

MEETINGS

In addition to progress meetings specified in Section 012000 hold monthly general Project coordination meetings at regularly scheduled times convenient for all parties involved. These meetings are in addition to specific meetings held for other purposes, such as regular project meetings and special pre-installation meetings.

Request representation at each meeting by every party currently involved in coordination or planning for the Work of the entire project. Conduct meetings in a manner which will resolve coordination problems. Record results of the meeting and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

At Contractor's option monthly coordination meetings can be held integrally with progress meetings as specified in Section 012000.

COORDINATION OF SUBMITTALS

Schedule and coordinate submittals specified in Section 013300.

Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

Coordinate requests for substitutions to assure compatibility of space, of operating elements, and affect on work of other sections.

COORDINATION DRAWINGS

Prepare coordination drawings where work by separate entities requires fabrication off-site of products and materials which must accurately interface. Coordination drawings shall indicate how work shown by separate shop drawings will interface, and shall indicate sequence for installation. Comply with all requirements of the "Submittals" section.

Phases and Stages of the Work: Prepare coordination drawings for integration of the work of the various trades.

Mechanical/Electrical/Plumbing/Fire Protection System: Prepare coordination drawings of Mechanical/Electrical/Plumbing and Fire Protection systems with the building structural system in accordance with Section 010400.

COORDINATION OF CONTRACT CLOSEOUT

Coordinate completion and cleanup of work of separate sections in preparation for Substantial Completion.

After Owner occupancy of premises, coordinate access to site by various sections for corrections of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

Assemble and coordinate closeout submittals specified in Section 017700.

MEANS AND METHODS

Neither the Architect nor Owner shall participate in any way in the administration or supervision of the Work. The means, methods, techniques, sequences, procedures and safety measures utilized in the performance of the Work are the sole responsibility of the Contractor. Any means, method, techniques, sequence or procedure set forth in the Contract Documents is solely to specify the desired end product; and if the means, method, technique, sequence or procedure will not result in the desired end product or is unsafe or illegal, it is the Contractor's responsibility to select an appropriate means, method, technique, sequence or procedure. Nothing in the Owner's or Architect's review of the general quality and progress of the Work, including acceptance of submittals and work, shall be construed as the assumption of authority or supervision over the performance of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

RESPONSIBILITIES

General: The following requirements are minimum Contractor's responsibilities, and are not to be construed as setting limits on the Contractor's responsibilities.

Establish lines of authority and communication for the Project. Schedule and conduct meetings among the Owner, Architect, and Contractor for the proper and timely completion of the Work. Meetings are to be held on a scheduled basis.

Coordinate work of all Subcontractors and material suppliers; this includes but is not limited to: shop drawing coordination and timely submittals, expediting of materials, deliveries and hoisting, and coordination of all field work.

Pre-Construction Conference: See Agenda for Pre-Construction Meeting Section 01200.

Construction Schedules: Prepare, monitor and update detailed schedules of the Work for the Project (refer to Section 013300). Monitor schedules as Work progresses, identifying potential variances between scheduled completion dates, make any adjustments in field work plan and schedule necessary to meet required completion dates, provide monthly summary reports of each monitoring and document all changes in schedule. Observe Work to monitor compliance with schedule. Verify that labor and equipment are adequate to meet and maintain the Schedule for the Work. Verify that product deliveries are adequate to meet and maintain the schedule for the Work including but not limited to timely visits to manufacturing and fabrication facilities. Report any noncompliance to Architect with recommendations for remedy. Ensure that adequate services are provided to comply with requirements for Work and climatic conditions. Ensure proper maintenance and operation of temporary facilities.

Changes: Recommend necessary or desirable changes to the Owner and Architect. Assemble and submit the change proposals in a timely fashion to prevent delays in the Work. Analyze Subcontractors' and Suppliers' requests for changes and submit with recommendations. Submit complete back-up information with all Change Proposals including but not limited to quantity and cost of materials to be purchased, labor hours by trade to be expended, subcontractor overhead and profit.

Permits and Fees: Ensure that all the proper permits are obtained and inspections made. Verify that subcontractors have obtained permits for inspections.

Inspections and Testing: Inspect Work to assure that it is performed in accordance with requirements of Contract Documents. Arrange with Architect and Owner for special inspections for testing when required. Correct Work which does not conform to requirements of Contract Documents.

Installer's Inspection of Conditions: Require the installer of each major unit of work to inspect the substrate to receive work and conditions under which the work is to be performed. The Installer shall report all unsatisfactory conditions in writing to the Contractor. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

Manufacturer's Instructions: Where installations include manufactured products, comply with the manufacturer's applicable instructions and recommendations for installation, to the extent that these instructions and recommendations are more explicit or more stringent than requirements indicated in the Contract Documents.

Inspect each item of materials or equipment immediately prior to installation. Reject damaged and defective items.

Provide attachment and connection devices and methods for securing work. Secure work true to line and level, and within recognized industry tolerances. Allow for expansion and building movement. Provide uniform joint width in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable visual effect choices to the Architect for final decision.

Recheck measurements and dimensions of the Work as an integral step of starting each installation.

Install each unit of Work during weather conditions and Project status which will ensure the best possible results in coordination with the entire Work. Isolate each unit of work from incompatible work as necessary to prevent deterioration.

Coordinate enclosure of the Work with required inspections and tests, so as to minimize the necessity of uncovering work for that purpose.

Mounting Heights: Where mounting heights are not indicated, mount individual units of work at heights required in the Americans with Disabilities Act (ADA) otherwise set at industry recognized standard mounting heights for the particular installation indicated. Refer questionable mounting height choices to the Architect for final decision.

Limiting Exposure of Work: To the extent possible through reasonable control and protection methods, supervise performance of the Work in such a manner and by such means which will ensure that none of the Work, whether completed or in progress, will be subjected to harmful, dangerous, damaging or otherwise deleterious exposure during the construction period. Such exposure include, where applicable, but not by way of limitation the following:

Excessive static or dynamic loading
Excessive internal or external pressure
Excessively high or low temperatures
Thermal shock
Excessively high or low humidity
Air contamination or pollution
Water or ice
Solvents
Chemicals

Light
Radiation
Puncture
Abrasion
Heavy traffic
Soiling
Bacteria
Insect infestation
Combustion
Electrical current
High speed operation, improper lubrication, unusual wear or other misuse
Incompatible interface
Destructive testing
Misalignment
Excessive weathering
Unprotected storage
Improper shipping or handling
Theft
Vandalism

Replace and/or repair to like new condition, at no cost to Owner, all materials suffering from deleterious effects of the conditions described above.

Coordinate testing laboratory services for both testing required by the Contract Documents and those ordered additionally by the Architect and Owner. Notify laboratory of test schedules. Verify that required personnel are present, that specified tasks are made as scheduled, and that test results comply with specified criteria. Determine need for testing and submit recommendations to Architect. Administer and cooperate with testing service; assist, as may be required, in the performance of the required testing. Provide casual labor, storage and access (scaffolding, ladders, etc.) to testing laboratory as required. Promptly submit test results to the Architect when received.

Coordinate with Separate Contractors: Separate Contractors shall be afforded access to the entire Site and building for the purpose of installing their Work. Provide general requirements services in accordance with the contract for Construction. Coordinate Contractor's Work with Separate Contractor's Work to ensure best, most economical completion of the total Project. Participate in coordination meetings with Separate Contractors, Owner, Architect, or other design consultants as required.

Interpretations of Contract Documents: Consult with Architect to obtain interpretation or clarification for any portions of Technical Specifications or Drawings which may be unclear or ambiguous. Suggest resolutions if appropriate. Assist in answering of questions which may arise and transmit written interpretation to interested parties.

Coordinate, review, administer, and process shop drawings, product data, and samples between Subcontractors, material suppliers, and Architect. (See Section 013300, "Submittals".)

Owner-Furnished Products for Installation by Contractor: Accept delivery; assume responsibility for handling, storage, protection and security for Owner-furnished products listed in the Contract Documents, if any.

Assume full charge of the entire building premises and site for the storage of materials allotting space between Subcontractors for the various materials in such a manner as will facilitate the Work. Avoid overloading the structure being constructed on the Site, and maintain order as well as good and safe housekeeping within said building and on the Site. Assume responsibility for the proper care and protection against damage and theft of all materials, equipment, and tools delivered, and of materials, equipment, and tools in Contractor's custody whether on or off the Site, and whether or not title was passed to Owner. Schedule and coordinate the

unloading, hoisting and storage of materials and access and hoisting of labor for Separate Contractors.

Maintain Contract Documents at the Site: Maintain for Architect's and Owner's use one copy of all Drawings, Specifications, Addenda, approved shop drawings, Change Orders, and other modifications in good order and marked to record all field changes made during construction. These documents shall be available to the Architect and Owner as required for their use and reference.

Prepare, maintain, and submit daily log of Progress of the Work including description of Work performed, weather conditions, number of workmen by trade, visitors, City/State inspections, and other significant information.

Upon completion of the Work in total, coordinate record documents with the architect to provide a full and comprehensive set of record prints and reproducible tracings indicating all changes for the Owner's use. Refer to Section 017700 for additional requirements.

Maintain Reports and Records at Job Site: Daily log of progress of Work and other pertinent data. Maintain log accessible to Architect. Maintain the following records: Contracts, purchases, materials and equipment records, including record of Owner-furnished products, applicable handbooks, codes and standards, and such additional records as may be properly required. Obtain information from Subcontractors and maintain similar record documents. At Substantial Completion of Project, deliver copies of all records to owner for Owner's records.

Daily Field Reports: Daily reports shall be issued to record a chronological, day-to-day account of the work force, the respective activities performed, the weather conditions, and any specific events that take place on the Project. Daily reports shall not be used as a communication tool. Any situations requiring specific action shall be brought to the attention of the appropriate party by means of written correspondence, memoranda, or meeting minutes. Photographs shall be used with daily reports to clarify or confirm statements and concerns. Provide copies of daily reports to the Architect at progress meetings. Include the following information in daily reports:

Date.
Weather temperature, wind, precipitation.
Number of workers on site by subcontractor and trade.
Material and equipment deliveries.
Construction quantities placed.
General description of the work accomplished.
Specific problems encountered.
Meetings held.
List visitors to site and their companies.
Construction photographs.

Ensure that Project is kept clean during progress of Work and at completion of Contract.

END OF SECTION 010400

# SECTION 012000 - PROJECT MEETINGS

PART 1 - GENERAL

RELATED DOCUMENTS

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

Division 075216 Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing for duplicate copies of meeting forms.

SUMMARY

This Section specifies administrative and procedural requirements for project meetings including but not limited to:

Agenda for Roofing Conferences.
Preliminary Roofing Conferences.
Pre-Application Conference
Final Inspections
Roof Completion Information

Construction schedules are specified in another Division-1 Section.

Construction schedules are specified in another Division-1 Section.

AGENDA FOR ROOFING CONFRENCES

PURPOSE: For Project Coordination.

TIMING: Regularly scheduled meeting should be held as determined during Pre-Application Conference.

ATTENDANCE:

a. Architect
b. Contractor's Project Manager
c. Roofing Job Superintendent or Foreman

AGENDA: The most current AGENDA FOR ROOFING CONRERENCE has been downloaded from FP&C's website to conduct meeting at the at the Project site. See the FP&C's attachment at the end of this specification.

PRELIMINARY ROOFING CONFRENCE

PURPOSE: Establish a direct line of communication, iron out initial questions regarding the project and to review project submittal requirements.

TIMING: The meeting should be held shortly after award of the Contract and at least six weeks prior to the anticipated start of roofing.

ATTENDANCE:

d. Architect
e. Contractor's Project Manager
f. Roofing Job Superintendent or Foreman
g. Manufacturer's Roofing Inspector.

AGENDA: The most current AGENDA FOR PRELIMINARY ROOFING CONFERENCE has been downloaded from FP&C's website to conduct meeting at the at the Project site. See the FP&C's attachment at the end of this specification.

PRE-APPLICATION CONFRENCE

PURPOSE:

1. To verify readiness of the project structure.
2. To review assignments of Preliminary Conference
3. To scan last minute details, changes or corrections
4. To review anticipated schedule of progress

TIMING: Within one week of roofing application

ATTENDANCE:

a. Architect
b. Contractor's Project Manager
c. Roofing Job Superintendent or Foreman
d. Manufacturer's Roofing Inspector.

AGENDA: The most current AGENDA FOR ROOFING PRE- APPLICATION CONFERENCE has been downloaded from FP&C's website to conduct meeting at the at the Project site. See the FP&C's attachment ay the end of this specification.

FINAL INSPECTIONS

ATTENDANCE:

a. Architect
b. Contractor's Project Manager
c. Roofing Job Superintendent or Foreman
d. Manufacturer's Roofing Inspector.

AGENDA: The most current AGENDA FOR ROOFING PRE- APPLICATION CONFERENCE has been downloaded from FP&C's website to conduct meeting at the at the Project site. See the FP&C's attachment ay the end of this specification.

ROOF COMPLETION INFORMATION

The most current Form FOR ROOF COMPLETION INFORMATION has been downloaded from FP&C's website. See the FP&C's attachment ay the end of this specification.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

Facility Planning & Control

## 4. RECOMMENDED AGENDA FOR ROOFING CONFERENCES

Project Name: _____

Project Number & WBS: _____

Conference Location: _____ Date: _____
Type of Conference: _____Preliminary _____Pre-Application ___Final Inspection

Designer: _____

Roofing Contractor: _____

General Contractor: _____

CONFERENCES ATTENDEES:

| NAME | ORGANIZATION | PHONE # | EMAIL ADDRESS |
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## AGENDA FOR PRELIMINARY ROOFING CONFERENCE

PURPOSE: Establish a direct line of communication, iron out initial questions regarding the project and to review project submittal requirements.

TIMING: The meeting should be held shortly after award of the Contract and at least six weeks prior to the anticipated start of roofing. Re-Roofing Projects may combine with Pre-Const. Conf. (ITB § 15).

1. A complete set of Contract Documents (plans and specifications) to be available for review.

2. All meeting minutes to be furnished by the Designer to all parties within 7 days. Establish project record keeping procedures.

3. Review tentative progress schedule for roofing. Set approximate date.

4. Review roofing system and insulation requirements. Size (4'x4' adhered, 4'x8' Mech. Fastened) and Thickness (R-Value), Staggered Joints

5. Weather considerations as they may apply to the project roofing installation.

6. Temporary roofing guidelines for the project. Who and when, will final decision be made, if necessary.

7. Inspection and Testing Requirements:

_____

Name of Inspection Firm:
Name of inspector:
Phone:

_____

a. On-Site Inspection - Discuss project requirements.
b. Laboratory Tests

8. Roof Deck:

Type and Thickness: (if Lt. Wt. Conc. has a Pull Test been done?)

_____

Slope:____Location and Type of Drains:

_____

Tentative Schedule for Installation:

_____

Nailers, curbs, and sheet metal must be completed prior to roofing application. Review CD Details, and discuss if raising Equip. Curbs is required or not.

9. Discuss material storage areas, dumpster location, worker parking, and equipment set-up locations. Review requirements.

10. Specific submittals from the Roofing Contractor:

a. Material approval list
b. Shop drawings (if any)
c. Product material brochures and samples
d. Manufacturer's Guarantee review for compliance with specifications (20-Year State Warranty)
e. Manuf. Assembly Letter (required for Pre-App. Conf. as well as materials on site)

11. Specific project detail discussion. (Include perimeter wall construction and rooftop mechanical equipment details, necessity of disconnecting any Exist. Rooftop Equip.)

12. Other:

_____

13. Review above items briefly and establish date for tentative Pre-Application Conference. (Manuf. Assembly Letter and materials therein required on site prior to scheduling conference). Roof Manuf. Rep. and FP&C Roof Consultant to be scheduled to attend.

## AGENDA FOR ROOFING PRE-APPLICATION CONFERENCE

PURPOSE:

To verify readiness of the project structure
To walk site with Roof Manuf. Assembly Letter in hand, verifying materials on site comply.
To scan last minute details, changes or corrections
To review anticipated schedule of progress

TIMING: Following receipt of Roof Manuf. Assembly Letter, all materials on letter delivered to site, and prior to Roofing Work.

ATTENDANCE: List attendees
(Required attendees: FP&C Project Manager, FP&C Roofing Consultant, Roof Manuf. Rep., User Agency Contact, Designer, Contractor Superintendent.)

1. Copies of approved submittals should be available for review. Are any material changes required due to availability problems or other? Reminder that formal approvals are still required.

2. Review minutes of Preliminary Conference.

3. Discuss revised Roofing Application Schedule.

4. Check equipment set-up and on-site material storage.

5. Deck Readiness:
   a. Any required roof deck certifications must be in order
   b. Rooftop inspection by those in attendance
   c. Drain hookups complete
   d. Curbs, nailers, roof deck penetrations, perimeter edges and mechanical equipment - should all be set and complete. Roof Drain Pipes are verified free of Demo Debris

6. Review roof system, including insulation above deck. Discuss the required application of each to the other components.

   a. (2) Layers Polyiso Insulation (staggered), (1) Layer Cover Board (any special techniques required?)
   b. Mechanical or adhesive attachments (Mech. Fasteners = 4'x8' or Adhesion = 4'x4' board size)
   c. Vapor Retarders
   d. Flashings
   e. Saddles and/or crickets
   f. Venting
   g. Sheet metal

7. Phase Construction Guidelines for project. Factors affecting guidelines include local practices, climate and weather considerations. Tie-offs at days end.

8. Temporary roofing final decisions.

9. Housekeeping, material handling and finished work protection requirements.

10. Inspection and testing requirements - State Roofing Consultant at Final Inspection; Roof Manuf. Inspector as required and at Final Inspection.

11. Project changes in plans, specifications or procedures to be followed - discuss and establish who can approve and how documented.

12. Contractor must provide State 2-Yr Guarantee, and perform 1 & 2 Year Inspections. Roof Manuf. must provide 20-Yr Warranty. Pre-Finished Metal Manuf. must provide 20-Year Finish Warranty.

**NOTES**

**AGENDA FOR ROOFING FINAL INSPECTION**

PURPOSE: To assure 100% completion of contract requirements.

TIMING: Prior to the Roofing Contractor concludes his work at the site.

1. Attendance must include those in attendance at the Pre-Application Conference.

2. Complete rooftop walk over and review:

   a. Perimeter edges
   b. Walls
   c. Curbs and other equipment
   d. Drains
   e. Rooftop penetrations
   f. Site cleanup
   g. Sheet metal
   h. Any special conditions

3. Final Punch List establishment of items to be completed. Copies to all parties. Attached to Meeting Minutes issued by Designer

4. Summary of project records. Organize for final file. Wrap up any loose ends.

5. Stress importance of Bi-Annual (and after storm) Maintenance to User-Agency (keep file for claim)

6. Discuss responsibility for roof system protection until project completed. Responsibility for coordination usually rests with General Contractor. Any damage or additional work to be conducted by original Roofing Contractor in order to keep original guarantee valid.

7. Acceptance by the state will not be issued without submittal and approval of fully executed guarantees for each type of roof installed, which shall include, but not necessarily be limited to the following applicable forms, which can be found on the Instructions to Designers page of the FPC Website:

   a. *Recommendation of Acceptance (ROA)*: (Designer's Responsibility)
   b. *Letter of Concurrence*: Concurring in Designer's ROA (User Agency's Responsibility)
   c. *Roof Completion Information Form*: with a Roof Plan on 8-1/2"x11" of Individual State ID's or different Material Roof (Designer's Responsibility)
   d. *Roof Guarantee/Warranty (2)*: (Contractor's Responsibility)
      i. 20-Year Manuf. Membrane Warranty (State Form in ITD § 28e; 28d for Metal Roof)
      ii. 2-Year Contractor Warranty R-1 (Sub & GC) or R-2 (GC) (State Forms in ITD § 28a, 28b); 28c for Metal Roof)
   e. *Final Cost & Const. Data Report:* Div. 7 Primarily, *attached to "DESIGNER LETTER" E-mail when project began* (Designer's Responsibility)
   f. *As-Builts:* Const. that changed from Contract Docs, Marked-up Job Prints delivered to designer (Contractor's Responsibility)
   g. *Final Documents delivered:* drawings & specs marked *"RECORD DOCUMENTS"* as Hard-copy, as well as PDF & CAAD DWG Files (include Line Weight Files) on Thumb-Drive to FP&C & User Agency (Designer's Responsibility)

**NOTES**

Facility Planning & Control

## 4. RECOMMENDED AGENDA FOR ROOFING CONFERENCES

Project Name: _____

Project Number & WBS: _____

Conference Location: _____ Date: _____
Type of Conference: _____Preliminary _____Pre-Application ___Final Inspection

Designer: _____

Roofing Contractor: _____

General Contractor: _____

CONFERENCES ATTENDEES:

| NAME | ORGANIZATION | PHONE # | EMAIL ADDRESS |
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## AGENDA FOR PRELIMINARY ROOFING CONFERENCE

PURPOSE: Establish a direct line of communication, iron out initial questions regarding the project and to review project submittal requirements.

TIMING: The meeting should be held shortly after award of the Contract and at least six weeks prior to the anticipated start of roofing. Re-Roofing Projects may combine with Pre-Const. Conf. (ITB § 15).

1. A complete set of Contract Documents (plans and specifications) to be available for review.

2. All meeting minutes to be furnished by the Designer to all parties within 7 days. Establish project record keeping procedures.

3. Review tentative progress schedule for roofing. Set approximate date.

4. Review roofing system and insulation requirements. Size (4'x4' adhered, 4'x8' Mech. Fastened) and Thickness (R-Value), Staggered Joints

5. Weather considerations as they may apply to the project roofing installation.

6. Temporary roofing guidelines for the project. Who and when, will final decision be made, if necessary.

7. Inspection and Testing Requirements:

_____

Name of Inspection Firm:
Name of inspector:
Phone:

_____

a. On-Site Inspection - Discuss project requirements.
b. Laboratory Tests

8. Roof Deck:

Type and Thickness: (if Lt. Wt. Conc. has a Pull Test been done?)

_____

Slope:____Location and Type of Drains:

_____

Tentative Schedule for Installation:

_____

Nailers, curbs, and sheet metal must be completed prior to roofing application. Review CD Details, and discuss if raising Equip. Curbs is required or not.

9. Discuss material storage areas, dumpster location, worker parking, and equipment set-up locations. Review requirements.

10. Specific submittals from the Roofing Contractor:

a. Material approval list
b. Shop drawings (if any)
c. Product material brochures and samples
d. Manufacturer's Guarantee review for compliance with specifications (20-Year State Warranty)
e. Manuf. Assembly Letter (required for Pre-App. Conf. as well as materials on site)

11. Specific project detail discussion. (Include perimeter wall construction and rooftop mechanical equipment details, necessity of disconnecting any Exist. Rooftop Equip.)

12. Other:

_____

13. Review above items briefly and establish date for tentative Pre-Application Conference. (Manuf. Assembly Letter and materials therein required on site prior to scheduling conference). Roof Manuf. Rep. and FP&C Roof Consultant to be scheduled to attend.

## AGENDA FOR ROOFING PRE-APPLICATION CONFERENCE

PURPOSE:

To verify readiness of the project structure
To walk site with Roof Manuf. Assembly Letter in hand, verifying materials on site comply.
To scan last minute details, changes or corrections
To review anticipated schedule of progress

TIMING: Following receipt of Roof Manuf. Assembly Letter, all materials on letter delivered to site, and prior to Roofing Work.

ATTENDANCE: List attendees
(Required attendees: FP&C Project Manager, FP&C Roofing Consultant, Roof Manuf. Rep., User Agency Contact, Designer, Contractor Superintendent.)

1. Copies of approved submittals should be available for review. Are any material changes required due to availability problems or other? Reminder that formal approvals are still required.

2. Review minutes of Preliminary Conference.

3. Discuss revised Roofing Application Schedule.

4. Check equipment set-up and on-site material storage.

5. Deck Readiness:
   a. Any required roof deck certifications must be in order
   b. Rooftop inspection by those in attendance
   c. Drain hookups complete
   d. Curbs, nailers, roof deck penetrations, perimeter edges and mechanical equipment - should all be set and complete. Roof Drain Pipes are verified free of Demo Debris

6. Review roof system, including insulation above deck. Discuss the required application of each to the other components.

   a. (2) Layers Polyiso Insulation (staggered), (1) Layer Cover Board (any special techniques required?)
   b. Mechanical or adhesive attachments (Mech. Fasteners = 4'x8' or Adhesion = 4'x4' board size)
   c. Vapor Retarders
   d. Flashings
   e. Saddles and/or crickets
   f. Venting
   g. Sheet metal

7. Phase Construction Guidelines for project. Factors affecting guidelines include local practices, climate and weather considerations. Tie-offs at days end.

8. Temporary roofing final decisions.

9. Housekeeping, material handling and finished work protection requirements.

10. Inspection and testing requirements - State Roofing Consultant at Final Inspection; Roof Manuf. Inspector as required and at Final Inspection.

11. Project changes in plans, specifications or procedures to be followed - discuss and establish who can approve and how documented.

12. Contractor must provide State 2-Yr Guarantee, and perform 1 & 2 Year Inspections. Roof Manuf. must provide 20-Yr Warranty. Pre-Finished Metal Manuf. must provide 20-Year Finish Warranty.

**NOTES**

**AGENDA FOR ROOFING FINAL INSPECTION**

PURPOSE: To assure 100% completion of contract requirements.

TIMING: Prior to the Roofing Contractor concludes his work at the site.

1. Attendance must include those in attendance at the Pre-Application Conference.

2. Complete rooftop walk over and review:

   a. Perimeter edges
   b. Walls
   c. Curbs and other equipment
   d. Drains
   e. Rooftop penetrations
   f. Site cleanup
   g. Sheet metal
   h. Any special conditions

3. Final Punch List establishment of items to be completed. Copies to all parties. Attached to Meeting Minutes issued by Designer

4. Summary of project records. Organize for final file. Wrap up any loose ends.

5. Stress importance of Bi-Annual (and after storm) Maintenance to User-Agency (keep file for claim)

6. Discuss responsibility for roof system protection until project completed. Responsibility for coordination usually rests with General Contractor. Any damage or additional work to be conducted by original Roofing Contractor in order to keep original guarantee valid.

7. Acceptance by the state will not be issued without submittal and approval of fully executed guarantees for each type of roof installed, which shall include, but not necessarily be limited to the following applicable forms, which can be found on the Instructions to Designers page of the FPC Website:

   a. *Recommendation of Acceptance (ROA)*: (Designer's Responsibility)
   b. *Letter of Concurrence*: Concurring in Designer's ROA (User Agency's Responsibility)
   c. *Roof Completion Information Form*: with a Roof Plan on 8-1/2"x11" of Individual State ID's or different Material Roof (Designer's Responsibility)
   d. *Roof Guarantee/Warranty (2)*: (Contractor's Responsibility)
      i. 20-Year Manuf. Membrane Warranty (State Form in ITD § 28e; 28d for Metal Roof)
      ii. 2-Year Contractor Warranty R-1 (Sub & GC) or R-2 (GC) (State Forms in ITD § 28a, 28b); 28c for Metal Roof)
   e. *Final Cost & Const. Data Report:* Div. 7 Primarily, *attached to "DESIGNER LETTER" E-mail when project began* (Designer's Responsibility)
   f. *As-Builts:* Const. that changed from Contract Docs, Marked-up Job Prints delivered to designer (Contractor's Responsibility)
   g. *Final Documents delivered:* drawings & specs marked *"RECORD DOCUMENTS"* as Hard-copy, as well as PDF & CAAD DWG Files (include Line Weight Files) on Thumb-Drive to FP&C & User Agency (Designer's Responsibility)

**NOTES**

**ROOF COMPLETION INFORMATION**

Facility Name: _____ Building Name: _____

Site Code: _____ State I.D: _____ Project No. & WBS: _____

☐New Roof ☐Total Replacement ☐Partial Replacement Roof Section(s): _____

☐ Roof Plan Attached (required)

| **Roof Type:** | **Surfacing Type:** | **Connection Type:** | **Drainage Type:** |
|---|---|---|---|
| 1. SBS Mod. Bit. | 1. Ceramic Granules | 1. Cold Process | 1. Over the Edge |
| 2. PVC | 2. Smooth Uncoated | 2. Hot Asphalt | 2. Roof Drains |
| 3. TPO | 3. Modified Asphalt | 3. Torched Asphalt | 3. Perimeter Gutter |
| 4. Metal | 4. Silicone | 4. Mechanical Fastener | 4. Internal Gutter |
| 5. Tile | 5. Acrylic | 5. _____ | 5. |
| 6. Shingle | 6. Urethane | | |
| 7. Cedar Shake | 7. Aluminum | | **Total Penetrations:** |
| 8. _____ | 8. Pre-Finished Paint | | _____ |
| | 9. _____ | | **No. of Plies:** |

| **Slope:** | **Deck Type:** | **Insulation:** |
|---|---|---|
| 1. 1/4 in./ft. | 1. Structural Concrete | 1. Polisocyanurate |
| 2. 1/8 in./ft. | 2. Gypsum | 2. Cover Board |
| 3. 1/2 in/ft. | 3. Metal | 3. Fiberglass |
| 4. _____ | 4. Lt. Wt. Concrete | 4. Wood Fiber |
| | 5. Cement Fiber | 5. _____ |
| | 6. Wood | |
| | 7. | |

_____ **Insulation Thickness:**

_____ **Roof Area (sq. ft.)**

_____

**Roofing Contractor (2-Year State Guarantee):**

_____ Warranty Beginning Date:

Address: (same as Acceptance Date)

_____ _____

_____ Warranty Ending Date:

_____

Roofing Contractor's Telephone: _____

Roofing Contractor's Email: _____

**Roofing Manufacturer (20-Year State Warranty):**

_____ Roof Warranty Number:

Address: _____

_____ Beginning Date:

_____ (same as Acceptance Date)

Roofing Manufacturer's Telephone: _____ Ending Date:

Roofing Manufacturer's Email: _____ _____

April 2025 25

END OF SECTION 012000

# Section 012300 - Alternates

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 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: Revise 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 revisions 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

Refer to Bid Form for listing of Alternates on Drawings and Specifications.

END OF SECTION 012300

# Section 013300 - Submittals

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

B. Related Requirements:

Division 0 "General Conditions" for requirements for substitutions.

Division 1 "Applications for Payment" for submitting Applications for Payment and the schedule of values.

Division 1 "Project Meetings" for submittal and distribution of meeting and conference minutes.

Division 1" Project Closeout" for requirements for submittal of Project Record Documents and warranties and guarantees at project closeout.

**Division 7 "Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing" for duplicate information of requirement of: Roof Manufacturer's Assembly Letter.**

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

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 are those submittals indicated in individual Specification Sections as "informational submittals."

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 revisions to submittals noted by Architect 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 startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
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 Architect's final release or approval.
    g. Scheduled date of fabrication.
    h. Scheduled dates for purchasing.
    i. Scheduled dates for installation.
    j. Activity or event number.

## 1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.

    a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    b. Digital Drawing Software Program: The Contract Drawings are available in Auto Cad DWG or DXF format.
    c. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement.
    d. The following digital data files will by furnished for each appropriate discipline upon request:

1) Floor plans.
2) Reflected ceiling plans.

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.

a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's 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 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect 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 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.

a. List of Specification Sections requiring sequential review:

1) All items requiring a color selection that has not been specified in the original contract documents.

2) HVAC, Plumbing & Electrical Items

D. Submittals: Place a permanent label or title block on each 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 4” x 5” on the label or beside title block to record Contractor's review and approval markings and action taken.
3. Include the following information for processing and recording action taken:

a. Project name.
b. Date and revision date.
c. Name and address of Architect.
d. Name and address of Contractor.
e. Name and address of subcontractor.

f. Name and of supplier.
g. Name of manufacturer.
h. Submittal number or other unique identifier, including revision identifier.

1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

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.

4. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

5. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return without review submittals received from sources other than Contractor.
a. Transmittal Form for Submittals: Provide locations on form for the following information:

1) Project name.
2) Date.
3) Destination (To:).
4) Source (From:).
5) Name and address of Architect.
6) Name of Contractor.
7) Name of firm or entity that prepared submittal.
8) Names of subcontractor, manufacturer, and supplier.
9) Category and type of submittal.
10) Submittal purpose and description.
11) Specification Section number and title.
12) Specification paragraph number or drawing designation and generic name for each of multiple items.
13) Drawing number and detail references, as appropriate.
14) Indication of full or partial submittal.
15) Transmittal number[, numbered consecutively].
16) Submittal and transmittal distribution record.
17) Remarks.
18) Signature of transmitter.

E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.

a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:

a. Project name.
b. Date.
c. Name and address of Architect.
d. Name of Construction Manager.
e. Name of Contractor.
f. Name of firm or entity that prepared submittal.
g. Names of subcontractor, manufacturer, and supplier.
h. Category and type of submittal.
i. Submittal purpose and description.
j. Specification Section number and title.
k. Specification paragraph number or drawing designation and generic name for each of multiple items.
l. Drawing number and detail references, as appropriate.
m. Location(s) where product is to be installed, as appropriate.
n. Related physical samples submitted directly.
o. Indication of full or partial submittal.
p. Transmittal number, numbered consecutively.
q. Submittal and transmittal distribution record.
r. Other necessary identification.
s. Remarks.

F. Options: Identify options requiring selection by Architect.

G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

H. Substitutions: Substitutions shall be allowed after the bidding process provided products meet or exceed the requirements of the specifications, gives a substantial advantage to the Owner, or conditions have changed since the Project was bid beyond the control of the Architect or Contractor. Architect shall have final control of acceptance or rejection of substitutions.

1. For example: A Warranty cannot be provided because the manufacturer that offered it at the time of bidding no longer does so.

I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.

2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with one of the following notations on the Architect's Shop Drawing Approval Cover Sheet:
   a. Note Markings
   b. Revise and Resubmitt

J. 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.

K. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals with Architect's Shop Drawing Cover Sheet attached.

## 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. Submit electronic submittals via email as PDF electronic files as defined below.

   a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Action Submittals: Submit one PDF file of each submittal unless otherwise indicated. Architect will return annotated electronic file and one paper copy.
3. Informational Submittals: Submit one PDF file of each submittal unless otherwise indicated. Architect will not return copies.
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 digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
   b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

**B. Furnish a Roofing Manuf. Assembly Letter. The Assembly Letter is utilized to insure that the correct materials are ordered and delivered to the site. This letter shall be used to verify that the correct materials are on site prior to work proceeding. This is critical to insure that the Roofing Manuf. will issue a 20-Year**

C. 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.
    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 and of Product Data unless otherwise indicated. Architect will return annotated PDF electronic file.

D. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Use of Architect’s Cad Drawings will be allowed in preparation of Shop Drawings. Submitting Architectural Drawings without alteration to pass as a complete shop drawing submittal shall not be allowed. See 1.5 Submittal Requirements for the acceptable and restricted use of Architect’s Electronic Files in preparation of Shop Drawings.

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, full-size drawings shall be formatted to print 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. PDF electronic file copies of each submittal when it is an Architectural submittal or the Architect's consultant. Architect's Consultant and Architect will retain one PDF copy; and will be return annotated PDF file.

E. 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.
e. Specification paragraph number and generic name of each item.

3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
4. 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.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. 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 full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

F. Coordination Drawing Submittals: Comply with requirements specified in Section 013000 "Project Management and Coordination."

G. Contractor's Construction Schedule: Comply with requirements specified in Section 013000 "Construction Progress Documentation."

H. Application for Payment and Schedule of Values: Comply with requirements specified in Supplemental Conditions

I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."

J. Maintenance Data: Comply with requirements specified in Section 017700"Operation and Maintenance Data."

K. Provide the following if call for in individual specification sections:

1. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
2. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
3. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
5. 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.
6. Product Test Reports: Submit written reports indicating that 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.
7. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.
8. 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.
9. 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.
10. Field Test Reports: Submit written 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.
11. 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. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three 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.

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 Architect.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "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.

SHOP DRAWINGS THAT HAVE NOT BEEN CHECKED BY THE CONTRACTOR WILL BE RETURNED UNCHECKED. CONTRACTOR MUST CHECK FOR COMPLIANCE WITH SPECIFICATIONS, DESIGN DETAILS, ETC. PRIOR TO STAMPING AND SENDING TO ARCHITECT FOR REVIEW.

3.2 ARCHITECT'S ACTION

A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required or list comments on SHOP DRAWING APPROVAL COVER SHEET, and return it. Architect will highlight the appropriate response on the cover sheet to indicate one of the actions as follows:

1. Note Markings
2. Revise and Resubmitt

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may be returned by the Architect without action.

A. The Architect will perform the review of the first resubmittal under the conditions stated herin for the Initial Submittal Procedures.
   1. Should the submittal still not respond to unfulfilled requirements from the previous submittal or still not respond to the specified, indicated, or noted requirements referenced on the previous submittal, the Architect will once again return the submittal to the Contractor for resubmittal.
   2. Should Architect be required to perform additional reviews after the initial resubmittal, due to failure of the submittals to comply with the specified requirements, or the failure to respond to previous comments on either of the previous two submittals, the Owner shall compensated the Architect for such additional services. Owner will deduct the amount of such compensation from the final payment to the Contractor.

END OF SECTION 013000

# SECTION 013220 - PHOTOGRAPHIC DOCUMENTATION

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs to document condition of existing roof arears and cement concrete pavement.

B. Related Sections include the following:

1. Division 1 Section "Submittal Procedures" for submitting construction photographs.

### 1.3 SUBMITTALS

A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

B. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph.

C. Construction Photographs: Submit two prints of each photographic view within seven days of taking photographs.

1. Digital Images: Submit a complete set of digital image electronic files with each submittal of prints s a Project Record Document. Identify electronic media with date photographs were taken. Submit images that have the same aspect ratio as the sensor, uncropped.

### 1.4 QUALITY ASSURANCE

A. Photographer Qualifications: An individual of established reputation who has been regularly engaged as a professional photographer for not less than three years.

1.5 COORDINATION

A. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities including temporary lighting.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in JPEG format, with minimum sensor size of 1.3 megapixels.

PART 3 - EXECUTION

3.1 PHOTOGRAPHS, GENERAL

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

B. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.

C. Field Office Photographs: Retain one set of pictures of progress photographs in the field office at Project site, available at all times for reference. Identify photographs the same as for those submitted to Architect.

3.2 CONSTRUCTION PHOTOGRAPHS

A. Preconstruction Photographs: Before starting construction, take color photographs of Project site and surrounding properties from different vantage points, as required to document the condition of the existing cement concrete pavement.

1. Take photographs to show existing conditions adjacent to the property before starting the Work.

END OF SECTION 013220

# SECTION 015000 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

## PART 1 - GENERAL

### RELATED DOCUMENTS

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

### SUMMARY

This Section includes requirements for construction facilities and temporary controls including temporary utilities, support facilities, and security and protection.

Temporary utilities include, but are not limited to, the following:

- Sanitary facilities, including drinking water.
- Ventilation.
- Telephone service.

Support facilities include, but are not limited to, the following:

- Temporary enclosures.
- Temporary project identification signs and bulletin boards.
- Waste disposal services.
- Rodent and pest control.
- Construction aids and miscellaneous services and facilities.

Security and protection facilities include, but are not limited to, the following:

- Temporary fire protection.
- Barricades, warning signs, and lights.
- Environmental protection.

### QUALITY ASSURANCE

Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:

- Building code requirements.
- Health and safety regulations.
- Utility company regulations.
- Police, fire department, and rescue squad rules.
- Environmental protection regulations.

Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series Standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."

- Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."

Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain

required certifications and permits.

PROJECT CONDITIONS

Utilities: The contractor may use existing utilities including water and electricity.

Conditions of Use: Keep facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

MATERIALS

General: Provide new materials. If acceptable to the Architect, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry."

For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sizes and thicknesses indicated.

Paint: Comply with requirements of Division 9 Section "Painting."

For sign panels and applying graphics, provide exterior-grade alkyd gloss enamel over exterior primer.

EQUIPMENT

General: Provide new equipment. If acceptable to the Architect, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.

Water Hoses: Provide rubber hoses as required, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.

Heating Units: In main Library Building will not be allowed.

Temporary Offices: Provide an air-conditioned temporary office on site with sufficient space to hold monthly meetings. Maintain all record documents in the office including a permanent set of drawings and specifications for marking changes, copies of shop drawings, permits, etc. Provide a fax machine, computer and printer in the office for use between the architect’s office and the job site.

Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Use of toilets in the building is not allowed. NO EXCEPTIONS.

## PART 3 - EXECUTION

### INSTALLATION

Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

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

### TEMPORARY UTILITY INSTALLATION

Water Service: Contractor allowed to use on site water. Owner is responsible for usage charges

Electric Power Service: Contractor allowed to use on site electrical power. Owner is responsible for usage charges

Temporary Lighting:

Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.

Drinking-Water Facilities: Provide containerized, tap-dispenser, bottled-water drinking-water units including paper supply.

### SUPPORT FACILITIES INSTALLATION

Locate storage sheds, and other temporary construction and support facilities for easy access.

Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

Provide incombustible construction for sheds located within the construction area or within 30 feet of building lines. Comply with requirements of NFPA 241.

Storage and Fabrication Sheds: Install storage and fabrication sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on-site.

Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from

exposure, foul weather, other construction operations, and similar activities.

Install tarpaulins securely, with incombustible framing and other materials. Close openings of 25 sq. ft. or less with plywood or similar materials.

Close openings through floor or roof decks and horizontal surfaces with load-bearing construction.

Project Identification and Temporary Signs: Prepare project identification and other signs of size indicated. Install signs where required to inform the public and persons seeking entrance to the Project and to provide directional assistance to persons required to detour around the construction areas. Support on posts or framing of preservative-treated wood or steel. Do not permit installation of any other additional or unauthorized signs.

Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.

Provide directional signage within the interior areas of the building under construction to direct users to emergency exits which may not be readily visible due to the construction operations underway.

Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

Sanitary facilities include temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.

Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.

Provide toilet tissue, paper towels, paper cups and similar disposal materials for each facility. Provide covered waste containers for used materials.

SECURITY AND PROTECTION FACILITIES INSTALLATION

Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."

Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.

Store combustible materials in containers in fire-safe locations.

Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.

Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.

Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting including flashing red or amber lights.
Tree Protection: Prevent any wheeled vehicles or heavy equipment from rolling over roots of trees to remain through the use of 24" stakes with double flagging type set 5'0, or orange construction fencing set outside of the drip line of trees to remain. Do not store materials under drip lines of trees.

Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of other loud noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

OPERATION, TERMINATION, AND REMOVAL

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

Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.

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.

Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, when 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 the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

Where temporary roads and surfacing are removed, add sufficient topsoil to raise the area back to its original grade and for proper drainage.

Materials and facilities that constitute temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.

At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:

Replace air filters and clean inside of ductwork and housings.

Replace significantly worn parts and parts subject to unusual operating conditions.

Replace lamps burned out or noticeably dimmed by hours of use.

END OF SECTION 015000

# SECTION 017700 - PROJECT CLOSEOUT

PART 1 - GENERAL

RELATED DOCUMENTS

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

**Division 7 "Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing" for duplicate copies of Warranty Forms attached at the end of this section.**

SUMMARY

This Section specifies administrative and procedural requirements for project closeout, including but not limited to:

Contractor's certifications relative to claimed status.
Inspection procedures.
Project record document submittal.
Operating and maintenance manual submittal.
Submittal of warranties.
Final cleaning.

Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions-2 through 16.

Pre-Close Out Meeting: When the project reaches 75 to 80% completion the Designer will schedule a meeting with the Contractor, and the User to review the requirements and procedures for the Final Inspection and Acceptance.

SUBSTANTIAL COMPLETION

Refer to Supplementary Conditions

FINAL ACCEPTANCE

Refer to Supplementary Conditions

RECORD DOCUMENT SUBMITTALS

General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.

Interim Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the work varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.

Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.

Note related Change Order numbers where applicable.

Record Product Data: Maintain two copies of each Product Data submittal. Mark these documents to show significant variations in the actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.

Upon completion of mark-up, submit complete set of record Product Data to the Architect for the Owner's records.

Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:

Emergency instructions.
Spare parts list.
Copies of warranties.
Wiring diagrams.
Inspection procedures.
Shop Drawings and Product Data.
Fixture lambing schedule.

**Number of copies of product data and warranty manuals required: Owner –1 Electronic Copy in PDF format.**

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

CLOSEOUT PROCEDURES

Operating and Maintenance Instructions: For equipment items not specified to receive specialized training sessions as enumerated by other Project Manual or Project Specifications sections, arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper start-up, operation, and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's authorized representatives. Include a detailed review of the following items:

Maintenance manuals.
Record documents.
Spare parts and materials.
Tools.
Lubricants.
Fuels.
Identification systems.
Control sequences.
Hazards.
Cleaning.

**Warranties: See FP&C attached warranties at the end of this section. Duplicate form are included in Division 7 "Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing"**

**Project Closeout (Final Inspection): See FP&C attached form at the end of this section. Duplicate copy of form is included in Division 7 "Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing"**

**State Roofing Inspection: Contact Lyle Savant FP&C Roofing at Lyle.Savant@LA.GOV for coordination of State Roofing Inspection.**

Bonds.

Maintenance agreements and similar continuing commitments.

As part of instruction for operating equipment, demonstrate the following procedures:

Start-up.
Shutdown.
Emergency operations.
Noise and vibration adjustments.
Safety procedures.
Economy and efficiency adjustments.
Effective energy utilization.

Parties in Attendance: Operating and maintenance instructional and demonstration meetings shall be scheduled with the Lafayette Public Library maintenance department at a mutually convenient time for all parties. The Lafayette Public Library Personnel shall be responsible for notifying and arranging for applicable personnel to attend.

FINAL CLEANING

General: Execute cleaning, during progress of the Work, and at completion of the Work, as required by Conditions of the Contract. For cleaning of specific products or work, refer to the Specification Section for that Work.

Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

Remove labels that are not permanent labels.

Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

**ROOFING GUARANTEE R-1**

**OWNER:** STATE OF LOUISIANA

ADDRESS: OFFICE OF FACILITY PLANNING AND CONTROL
POST OFFICE BOX 94095 CAPITOL STATION
BATON ROUGE, LOUISIANA 70804-9095

WHEREAS _____

Address _____

Telephone (____)_____ Email _____

herein called the "Roofing Contractor", has performed roofing and flashing in accordance with the Contract Documents for Project / Part No. _____, WBS No._____ (hereinafter called the "Work") under a

Subcontract with _____

General Contractor on the Following Project: _____

Name of Project: _____

User Agency: _____

Location/Address: _____

_____

Name and Type of Building(s): _____

_____ Building I.D. _____

Type(s) of Roof Deck(s): _____

_____

Total Roof Area: _____ SF; Flashing, Edge: _____ LF; Base: _____ LF

Date of Acceptance: _____Guarantee Period: 2 Years

Date of Expiration: _____

AND WHEREAS the Roofing Contractor has contracted (as a Subcontractor) to guarantee said work against water entry from faulty or defective materials and workmanship for the designated Guarantee period;

AND WHEREAS the General Contractor, by its acceptance of the Contract for the above described project, has jointly assumed with the Roofing Contractor the obligations to the Owner of said guarantee against leaks and faulty or defective materials and workmanship;

NOW THEREFORE the Roofing Contractor and the General Contractor jointly and severally guarantee, subject to the terms and conditions herein set forth, that during the Guarantee Period they will at their own cost and expense, make or cause to be made with approved procedures and materials such repairs to or replacements of said work resulting from water entry or faults or defects of said Work as are necessary to correct faulty and defective work and as are necessary to maintain said Work in watertight conditions and further to respond on or within two (2) working days upon written notification of leaks or defects by the Owner/User Agency. Furthermore, they will at their own cost and expense maintain the roof for (2) years after acceptance, in accordance with the current edition of the Roof Maintenance Manual published by the Roofing Industry Educational Institute. The roof shall be inspected a minimum of twice each year, and a report prepared documenting the conditions observed at each inspection. These inspections shall be made once during the months of April or May and once during the months of September and October. Two copies of each report shall be forwarded to the Owner and User Agency.

This Guarantee is made subject to the following terms and conditions:

1. Specifically excluded from this guarantee are damages to the Work, other parts of the building and building contents caused by: A) lightning, and storm (includes hurricanes and tornadoes), hailstorm, earthquakes and other unusual phenomena of the elements; B) fire; and C) structural failures causing excessive roof deck, edgings and related roof components movement. When the Work has been damaged by any of the foregoing causes, the Guarantee will be null and void until such damage has been repaired by the Roofing Contractor, and until the cost and expense thereof has been paid by the Owner or another responsible party so designated.

2. During the Guarantee Period, if the Owner/User Agency allows alteration of the Work by anyone other than a Contractor approved in writing by the Roofing Subcontractor, General Contractor, and Roofing Material Manufacturer prior to the work being performed, including cutting, patching and maintenance in connection with penetrations, attachment of other work, and positioning of anything on the roof, this Guarantee shall become null and void upon the date of said alterations. If the Owner/User Agency engages the Roofing Contractor to perform said alterations, the Guarantee shall not become null and void, unless the Roofing Contractor, prior to proceeding with said work, shall have notified the Owner/User Agency in writing, showing reasonable cause for claim that said alterations would likely damage or deteriorate the Work, thereby reasonably justifying a termination of this Guarantee.

3. During the Guarantee Period, if the original use of the roof is changed and it becomes used for, but for which it was not originally designed or specified, as a promenade, work deck, spray-cooled surface, flooded basin, or other use of service more severe than originally specified, this Guarantee shall become null and void upon the date of said change.

4. During the Guarantee Period, if any building or area of a building is changed to uses creating extremes of interior temperature and/or humidity, but for which it was not originally designed and specified, without provisions and alterations made to the building which effectively contain or control these conditions, this guarantee shall become null and void upon the date of said change.

5. The Owner/User Agency shall promptly notify the Roofing Contractor in writing of observed, known or suspected leaks, defects or deterioration, and shall afford reasonable opportunity for the Roofing Contractor to inspect the Work, and to examine the evidence of such leaks, defects or deterioration.

6. This Guarantee is recognized to be the only guarantee of the General and Roofing Contractor on said work, and shall not operate to restrict or cut off the Owner from other remedies and recourses lawfully available to him in case of roofing failure. Specifically, this Guarantee shall not operate to relieve the Roofing Contractor of his responsibility for performance of the original work, regardless of whether the Contract was a Contract directly with the Owner or a Subcontract with the Owner's General Contractor.

IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, 20____.

Roofing Contractor's Signature: _____

Typed Name: _____

Representing: _____

Telephone (____)_____, Email _____

Witness:_____

Witness:_____

And has been countersigned by the General Contractor issuing the Roofing Contractor's Subcontract for said work:

Name of General Contractor: _____

Date: _____ Authorized Signature: _____

Representing: _____

Typed Name: _____

Telephone (____)_____, Email _____

Witness:_____

Witness:_____

FPC MWMRS Document

# MANUFACTURER'S NDL WATERTIGHTNESS MEMBRANE ROOFING SYSTEM WARRANTY

ISSUE TO:

STATE OF LOUISIANA- DOA- FACILITY PLANNING AND CONTROL

MFGR WARRANTY NUMBER:_____

_____, hereinafter referred to as "mfgr" hereby warrants to the owner, known as the State of Louisiana, hereinafter referred to as the "State" that the referenced membrane roofing assembly will remain in a watertight condition for a period of ____ years. For the purpose of this warranty "watertight" or "watertightness means that the roofing system does not allow water to leak through a breach in the roofing system. Mfgr further warrants the performance of the products listed below and warrants that the material and installation of the roofing assembly is free of material and known installation defects at the time of application and that the materials listed below conform to mfgr specifications.

All products used in the roofing assembly from the deck (structural concrete, metal, LWIC, wood, etc.), up are included in this warranty regardless of whether mfgr furnished or branded the products with the exception of shop fabricated metals not furnished by mfgr. These products are to include, but not be limited to: base sheets, fasteners and plates, insulation board, cover board, asphalt, adhesives (insulation and membrane), mastics, field plies, membrane flashing plies and liquid flashing products. The roofing products are specifically listed as follows:

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

In the event that the new membrane roofing assembly is installed in a recover fashion over an existing roofing assembly, the performance of the existing roofing products that remain in-place beneath the new roofing assembly are excluded from this warranty.

In the event that covered leaks occur in the roofing system that are attributable to the workmanship of the installing contractor or a defect in or failure of any of the mfgr products listed above, mfgr will make repairs required to return the roof to a watertight condition, regardless of the scope and cost of the required repairs. The State will notify mfgr within 30 days of the discovery of the leak. Should the State not make this notification within the prescribed 30 day time period, then further damage to the roofing assembly caused by the delay in notification will not be construed as a warranty repair item. Mfgr will respond to the leak notification within 10 days and once it is confirmed that the leak(s) is within the scope of mfgrs responsibilities under this warranty, mfgr will execute repairs promptly thereafter. Mfgr's failure to respond timely and make proper repairs shall enable the State to engage service of "others" to address the problem(s) at mfgr's expense assuming the cost of the repair is reasonable and the scope of the repair is limited to the remedy of the leak without jeopardizing State's protection under terms of this warranty. The State may make reasonable and customary emergency temporary repairs at its discretion and at mfgrs expense without jeopardizing the State's protection under the terms of this warranty.

The manufacturers of SBS products that are approved by the State and included in the State's list of acceptable products have agreed to a dimensional stability of the cap sheet and interply sheet of 0.2% per ASTM D 5147, section 10. 0.2% of a 33 foot roll is approximately equal to ¾". For the term of this warranty, SBS cap sheet shrinkage in excess of ¾" will be repaired by the mfgr by cutting out the interply void in the "T" lap, cleaning and drying, and repair with an acceptable cap sheet product.

**The following items are excluded from this warranty:**

1. Damage to the roof caused by wind exceeding 72 mph, lightning, hail, fire or physical damage from falling or wind-blown objects
2. Deficient design by other than mfgr
3. Intentional or accidental damages to the roof, or misuse, abuse, vandalism or the likes
4. Leaks caused by deterioration or failure of items not included in the warranty
5. Modifications or alterations to the roofing assembly after completion unless done in a manner approved by mfgr
6. Damage to the roofing assembly after issuance of this warranty caused by excessive foot traffic or its use as a work platform or storage area
7. Damage to the roofing assembly caused by ponding water, which is defined as water on the surface of the roof that does not dissipate within 72 hours of average drying conditions
8. Consequential and incidental damages, including damage to the building or its contents
9. Damage to the roofing assembly caused by failure by the State to exercise reasonable care and maintenance

10. Damage to the roofing assembly caused by structural defects or failure or excessive movement of building components
11. Damage to the roofing assembly due to exposure to chemical attack, including deposits of animal fats, grease and oil
12. The State shall be responsible for the costs associated with the removal and replacement of any overburden, superstrata or overlays, either permanent or temporary, which include but are not limited to: structures or assemblies added after installation, fixtures or utilities on or through the roofing assembly, support platforms or bases for solar panels, garden roofs, decks, patios or any other obstacles that impede access, clear observation, investigation or repairs to the roofing system, excluding ballast or pavers or any other overburden specifically accepted by mfgr to be included within warranty coverage.

For wind related events, this warranty excludes damage to the roofing assembly where the cause includes any of the following:

A. Failure or excessive movement of primary or secondary structural elements or roof deck, wood nailers or blocking and edge system components not furnished by mfgr
B. Failure of walls, doors, windows, openings or other building envelope components
C. Rooftop structures and equipment

Mfgr may have access to the roof for inspection purposes for the term of the warranty by scheduling through the appropriate State Agency.

This warranty is tendered for the benefit of the State and is not transferable or assignable without the written consent of Mfgr.

The Nineteenth Judicial District Court in and for the Parish of East Baton Rouge, State of Louisiana shall have sole jurisdiction in any action brought as a result of this warranty by any party hereto. This warranty shall be governed by and construed in accordance with the laws of the State of Louisiana.

This warranty instrument supersedes and is in lieu of any and all other expressed or implied warranties that are or may be in conflict with terms and conditions stated herein.

This warranty requires the signature of an authorized officer of Mfgr. Three fully executed copies are to be provided to the State as a prerequisite for project acceptance. The State's signature shall not be a requirement for implementation of, or cause to validate this warranty.

A separate and independent warranty shall be issued for each building or independent roof system in the case of multiple buildings or mixed roof types.

Abbreviations:

LWIC—Lightweight Insulating Concrete

ASTM—American Society for Testing and Materials

**PROJECT DATA / SIGNATURE**

Owner: State of Louisiana- DOA- Facility Planning and Control
Building/Project Name:_____
Roof Type:_____
No. of Squares:_____
Location:_____
La. State Building I.D.:_____
Site Code:_____
LA State Project Number:_____
Date of Project Acceptance and Commencement of Warranty:_____

_____
Warranty End Date:_____

**Manufacturer Name Address and Phone Number:**

_____
_____
_____
_____

Authorized Manufacturer Signature: _____

_____ ____/____/____
Printed name Date

_____
Title

Direct to:
**STATE of LOUISIANA (Owner)**
**DIVISION OF ADMINISTRATION**
**Facility Planning and Control**
PO Box 94095
Baton Rouge, Louisiana 70804-9095

//////////////// END NDL WATERTIGHTNESS WARRANTY \\\\\\\\\\\\\\\\

**AGENDA FOR ROOFING FINAL INSPECTION**

PURPOSE: To assure 100% completion of contract requirements.

TIMING: Prior to the Roofing Contractor concludes his work at the site.

1. Attendance must include those in attendance at the Pre-Application Conference.

2. Complete rooftop walk over and review:

   a. Perimeter edges
   b. Walls
   c. Curbs and other equipment
   d. Drains
   e. Rooftop penetrations
   f. Site cleanup
   g. Sheet metal
   h. Any special conditions

3. Final Punch List establishment of items to be completed. Copies to all parties. Attached to Meeting Minutes issued by Designer

4. Summary of project records. Organize for final file. Wrap up any loose ends.

5. Stress importance of Bi-Annual (and after storm) Maintenance to User-Agency (keep file for claim)

6. Discuss responsibility for roof system protection until project completed. Responsibility for coordination usually rests with General Contractor. Any damage or additional work to be conducted by original Roofing Contractor in order to keep original guarantee valid.

7. Acceptance by the state will not be issued without submittal and approval of fully executed guarantees for each type of roof installed, which shall include, but not necessarily be limited to the following applicable forms, which can be found on the Instructions to Designers page of the FPC Website:

   a. *Recommendation of Acceptance (ROA)*: (Designer's Responsibility)
   b. *Letter of Concurrence*: Concurring in Designer's ROA (User Agency's Responsibility)
   c. *Roof Completion Information Form*: with a Roof Plan on 8-1/2"x11" of Individual State ID's or different Material Roof (Designer's Responsibility)
   d. *Roof Guarantee/Warranty (2)*: (Contractor's Responsibility)
      i. 20-Year Manuf. Membrane Warranty (State Form in ITD § 28e; 28d for Metal Roof)
      ii. 2-Year Contractor Warranty R-1 (Sub & GC) or R-2 (GC) (State Forms in ITD § 28a, 28b); 28c for Metal Roof)
   e. *Final Cost & Const. Data Report:* Div. 7 Primarily, *attached to "DESIGNER LETTER" E-mail when project began* (Designer's Responsibility)
   f. *As-Builts:* Const. that changed from Contract Docs, Marked-up Job Prints delivered to designer (Contractor's Responsibility)
   g. *Final Documents delivered:* drawings & specs marked *"RECORD DOCUMENTS"* as Hard-copy, as well as PDF & CAAD DWG Files (include Line Weight Files) on Thumb-Drive to FP&C & User Agency (Designer's Responsibility)

**NOTES**

**ROOF COMPLETION INFORMATION**

Facility Name: _____ Building Name: _____

Site Code: _____ State I.D: _____ Project No. & WBS: _____

☐New Roof ☐Total Replacement ☐Partial Replacement Roof Section(s): _____

☐ Roof Plan Attached (required)

| **Roof Type:** | **Surfacing Type:** | **Connection Type:** | **Drainage Type:** |
|---|---|---|---|
| 1. SBS Mod. Bit. | 1. Ceramic Granules | 1. Cold Process | 1. Over the Edge |
| 2. PVC | 2. Smooth Uncoated | 2. Hot Asphalt | 2. Roof Drains |
| 3. TPO | 3. Modified Asphalt | 3. Torched Asphalt | 3. Perimeter Gutter |
| 4. Metal | 4. Silicone | 4. Mechanical Fastener | 4. Internal Gutter |
| 5. Tile | 5. Acrylic | 5. _____ | 5. |
| 6. Shingle | 6. Urethane | | |
| 7. Cedar Shake | 7. Aluminum | | **Total Penetrations:** |
| 8. _____ | 8. Pre-Finished Paint | | _____ |
| | 9. _____ | | **No. of Plies:** |

| **Slope:** | **Deck Type:** | **Insulation:** |
|---|---|---|
| 1. 1/4 in./ft. | 1. Structural Concrete | 1. Polisocyanurate |
| 2. 1/8 in./ft. | 2. Gypsum | 2. Cover Board |
| 3. 1/2 in/ft. | 3. Metal | 3. Fiberglass |
| 4. _____ | 4. Lt. Wt. Concrete | 4. Wood Fiber |
| | 5. Cement Fiber | 5. _____ |
| | 6. Wood | |
| | 7. | |

_____ **Insulation Thickness:**

_____ **Roof Area (sq. ft.)**

_____

**Roofing Contractor (2-Year State Guarantee):**

_____ Warranty Beginning Date:

Address: (same as Acceptance Date)

_____ _____

_____ Warranty Ending Date:

_____

Roofing Contractor's Telephone: _____

Roofing Contractor's Email: _____

**Roofing Manufacturer (20-Year State Warranty):**

_____ Roof Warranty Number:

Address: _____

_____ Beginning Date:

_____ (same as Acceptance Date)

Roofing Manufacturer's Telephone: _____ Ending Date:

Roofing Manufacturer's Email: _____ _____

April 2025 25

END OF SECTION 017000

RITTER
CONSULTING ENGINEERS

2014 W. Pinhook Rd. Suite 200
Lafayette, LA 70508
Phone: 337.984.8498
Fax: 337.984.8576

Andrea B. Manceaux, P.E.*
Lee Ritter, C.I.E., WRT, FSRT, ASD

**VIA: MAIL & EMAIL**

June 9, 2025

Allen Bonnet
University of Louisiana at Lafayette
Facility Planning & Construction
310 E. Lewis Street
Lafayette, LA 70503

RE: **University of Louisiana at Lafayette – Agnes Edwards Roof Asbestos Inspection**
RCE Project No.: 254007

Dear Mr. Bonnet:

On May 13, 2025, we had suspect material samples analyzed from **University of Louisiana at Lafayette – Agnes Edwards Hall Roof** located at 110 Rex Street, Lafayette, LA 70506, with Eurofins Built Environmental Testing Central in Houston, Tx. The results of the **four (4)** samples of asphalt roofing and flashing taken from the site are **negative** for asbestos. All construction work in this area can continue as scheduled. Please see attached sample log, lab results, and inspector certifications.

If you have any questions or concerns, please do not hesitate to call.

Sincerely,

Melody DiMaggio, Asbestos Inspector

MD

encl(s): Sample Log, Lab Results, & Inspector Certifications

*Licensed in Connecticut, Florida, Louisiana, Mississippi, North Carolina, Texas, and Wisconsin

# Asbestos Inspection Sample Log & Chain of Custody

RITTER CONSULTING ENGINEERS
2014 West Pinhook Suite 200
Lafayette, LA 70508
Office: 337-984-8498
Fax: 337-984-8576

Project Name: UL - Agnes Edwards Roof Asbestos Inspection
Project No.: 254007
Date: 5/13/2025
Client Name: University of Louisiana at Lafayette
Facility Address: 110 Rex St, Lafayette, LA 70506
RCE Contact Email: labs@ritterconsultingengineers.com

Send Reports to: Lee Ritter & Dustin Viviano
Tracking No.: 4070733

Asbestos: PLM, TEM, IAQ
Analysis: AHERA, Point Count, Air Cassettes
TA Time: (Hour) 2, 4, 8, 16, 24

Total # Samples Submitted 4 Total # Samples to be Analyzed 4 Material Matrix: Air / Bulk Bulk

| HA No. | Sample No. | Sample Description | Friable (Y/N) | Sample Location |
|---|---|---|---|---|
| 1 | 254007-001 | Asphalt Roofing | N | Exterior Roof |
| 1 | 254007-002 | Asphalt Roof Flashing | N | Exterior Roof |
| 1 | 254007-003 | Asphalt Roofing | N | Exterior Roof |
| 1 | 254007-004 | Asphalt Roofing | N | Exterior Roof |
| | | | | |
| | | | | |
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| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Comments:

Samples Relinquished: _____ Samples Received: _____

Signature / Date / Time Signature / Date / Time

eurofins | Built Environment Testing

RITTER CONSULTING ENGINEERS ASBESTOS • LEAD • MOLD

Report for:

**Mr. Lee Ritter**
**Ritter Consulting Engineers, Ltd.**
2014 West Pinhook Road
Suite 200
Lafayette, LA 70508

---

Regarding: Eurofins Built Environment Testing Central, LLC
Project: 254007; UL - Agnes Edwards Roof Asb Inspection
EML ID: 4070733

Approved by:

Business Unit Manager
Scott Ward

Dates of Analysis:
Asbestos PLM (Layer %): 05-15-2025

Service SOPs: Asbestos PLM (Layer %) (EPA 40CFR App E to Sub E of Part 763 & EPA METHOD 600/R-93-116, SOP EB-AS-S-1267)
NVLAP Lab Code 600120-0

---

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. The results relate only to the samples as received and tested. The results include an inherent uncertainty of measurement associated with estimating percentages by polarized light microscopy. Measurement uncertainty data for sample results with >1% asbestos concentration can be provided when requested.

**Eurofins Built Environment Testing Central, LLC**
5200 Mitchelldale St., Ste. E15, Houston, TX 77092
713-290-0221 www.eurofinsus.com/Built

Client: Ritter Consulting Engineers, Ltd.
C/O: Mr. Lee Ritter
Re: 254007; UL - Agnes Edwards Roof Asb Inspection

Date of Sampling: 05-13-2025
Date of Receipt: 05-14-2025
Date of Report: 05-15-2025

## Bulk Asbestos Fiber Analysis by Polarized Light Microscopy (PLM)
## Appx E Sub E 40 CFR 763 / EPA 600/R-93/116

| Sample ID # Lab-ID version | Sample Description | Asbestos Constituents | Non-Asbestos Constituents | Comment |
|---|---|---|---|---|
| 254007-001. Asphalt Roofing 20292843-1 | Layer 1 Black Roofing Material Homogeneity:Good | Not Detected | 95% Non-Fibrous Material 5% Glass Fibers | A |
| 254007-002. Asphalt Roof Flashing 20292844-1 | Layer 1 Black Roofing Material Homogeneity:Good | Not Detected | 95% Non-Fibrous Material 5% Glass Fibers | A |
| 254007-003. Asphalt Roofing 20292845-1 | Layer 1 Black Roofing Material Homogeneity:Good | Not Detected | 95% Non-Fibrous Material 5% Glass Fibers | A |
| 254007-004. Asphalt Roofing 20292846-1 | Layer 1 Black Roofing Material Homogeneity:Good | Not Detected | 95% Non-Fibrous Material 5% Glass Fibers | A |

**Comments:** A)Analysis of replicate sample is delayed.

**Analyst(s):** Anthony Mallory

The total percentage of sample components shown may be greater than 100% when some components are detected at <1%.

 Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers of that type were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.

‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

**Eurofins Built Environment Testing Central, LLC**
5200 Mitchelldale St., Ste. E15, Houston, TX 77092
713-290-0221 www.eurofinsus.com/Built

Client: Ritter Consulting Engineers, Ltd.
C/O: Mr. Lee Ritter
Re: 254007; UL - Agnes Edwards Roof Asb Inspection

Date of Sampling: 05-13-2025
Date of Receipt: 05-14-2025
Date of Report: 05-15-2025

**Bulk Asbestos Fiber Analysis by Polarized Light Microscopy (PLM)**
**Appx E Sub E 40 CFR 763 / EPA 600/R-93/116**

## PROJECT ANALYST AND SIGNATORY REPORT

**Project Analyst**

**Analyst:** Anthony Mallory



‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

# STATE OF LOUISIANA
## DEPARTMENT OF ENVIRONMENTAL QUALITY

**Is hereby granting a Louisiana Environmental Laboratory Accreditation to**

## Eurofins J3 Resources Inc
## 6110 W 34th St
## Houston, Texas 77092

**Agency Interest No. 139374**
**Activity No. ACC20230002**

According to the Louisiana Administrative Code, Title 33, Part I, Subpart 3, LABORATORY ACCREDITATION, the State of Louisiana formally recognizes that this laboratory is technically competent to perform the environmental analyses listed on the scope of accreditation detailed in the attachment.

The laboratory agrees to perform all analyses listed on this scope of accreditation according to the Part I, Subpart 3 requirements and acknowledges that continued accreditation is dependent on successful ongoing compliance with the applicable requirements of Part I. Please contact the Department of Environmental Quality, Louisiana Environmental Laboratory Accreditation Program (LELAP) to verify the laboratory's scope of accreditation and accreditation status.

Accreditation by the State of Louisiana is not an endorsement or a guarantee of validity of the data generated by the laboratory. Accreditation of the environmental laboratory does not imply that a product, process, system, or person is approved by LELAP. To be accredited initially and maintain accreditation, the laboratory agrees to participate in two single-blind, single-concentration PT studies, where available, per year for each field of testing for which it seeks accreditation or maintains accreditation as required in LAC 33:I.4711.

Tonya Landry
Administrator
Public Participation and Permit Support Division

**Issued Date:** 6/18/2024

**Effective Date:** July 1, 2024
**Expiration Date:** June 30, 2025
**Certificate Number: 04143**

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Effective Date: July 1, 2024

Eurofins J3 Resources Inc
AI Number: 139374
Activity No. ACC20230002
Expiration Date: June 30, 2025

6110 W 34th St, Houston, Texas 77092

**Certificate Number: 04143**

## Air Emissions

| Analyte | Method Name | Method Code | Type | AB |
|---|---|---|---|---|
| 1520 - Asbestos | NIOSH 7400 (A Rules) | 899 | AIHA Policy Module | AIHA |
| 100206 - Asbestos and Other Fibers | NIOSH 7400 (A Rules) | 899 | AIHA Policy Module | AIHA |
| 100173 - Asbestos by Phase Contrast Microscopy | NIOSH 7400 (A Rules) | 899 | AIHA Policy Module | AIHA |
| 100131 - Airborne Asbestos | 40 CFR Part 763, Subpart E, Appendix A (Mandatory TEM) | 2062 | ISO 17025 | NVLAP |
| 1520 - Asbestos | 40 CFR Part 763, Subpart E, Appendix A (Mandatory TEM) | 2062 | ISO 17025 | NVLAP |
| 100251 - Fungal Direct Exam | J3-SOP-7-03-1 | 2417 | AIHA Policy Module | AIHA |
| 100251 - Fungal Direct Exam | J3-SOP-7-03-2 | 2418 | AIHA Policy Module | AIHA |
| 1520 - Asbestos | NIOSH 7400, Rev.3 | 90018001 | AIHA Policy Module | AIHA |
| 100206 - Asbestos and Other Fibers | NIOSH 7400, Rev.3 | 90018001 | AIHA Policy Module | AIHA |
| 100173 - Asbestos by Phase Contrast Microscopy | NIOSH 7400, Rev.3 | 90018001 | AIHA Policy Module | AIHA |

## Non Potable Water

| Analyte | Method Name | Method Code | Type | AB |
|---|---|---|---|---|
| NONE | NONE | NONE | NONE | NONE |

## Solid Chemical Materials

| Analyte | Method Name | Method Code | Type | AB |
|---|---|---|---|---|
| 1520 - Asbestos | EPA 600/M4-82-020 (PLM) | 1488 | AIHA Policy Module | AIHA |
| 100095 - Asbestos in Bulk Insulation | EPA 600/M4-82-020 (PLM) | 1488 | AIHA Policy Module | AIHA |
| 100030 - Asbestos in Friable Material | EPA 600/M4-82-020 (PLM) | 1488 | AIHA Policy | AIHA |

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Effective Date: July 1, 2024

Eurofins J3 Resources Inc
AI Number: 139374
Activity No. ACC20230002
Expiration Date: June 30, 2025

6110 W 34th St, Houston, Texas 77092

**Certificate Number: 04143**

## Solid Chemical Materials

| Analyte | Method Name | Method Code | Type | AB |
|---|---|---|---|---|
| 100243 - Asbestos in Non-Friable Material | EPA 600/M4-82-020 (PLM) | 1488 | Module AIHA Policy Module | AIHA |
| 100095 - Asbestos in Bulk Insulation | 40 CFR 763, Subpart E, Appendix E (Section 1.PLM) | 2004 | ISO 17025 | NVLAP |
| 100030 - Asbestos in Friable Material | 40 CFR 763, Subpart E, Appendix E (Section 1.PLM) | 2004 | ISO 17025 | NVLAP |
| 100243 - Asbestos in Non-Friable Material | 40 CFR 763, Subpart E, Appendix E (Section 1.PLM) | 2004 | ISO 17025 | NVLAP |
| 100095 - Asbestos in Bulk Insulation | 40 CFR Part 763, Subpart E, Appendix A (Mandatory TEM) | 2062 | ISO 17025 | NVLAP |
| 100030 - Asbestos in Friable Material | EPA 600/M4-82-020 (item 198.1) | 2814 | AIHA Policy Module | AIHA |
| 100131- Airborne Asbestos | EPA 600/R-93/116 | 10294583 | AIHA Policy Module | AIHA |
| 1520 - Asbestos | EPA 600/R-93/116 | 10294583 | AIHA Policy Module | AIHA |
| 100206 - Asbestos and Other Fibers | EPA 600/R-93/116 | 10294583 | AIHA Policy Module | AIHA |
| 100173 - Asbestos by Phase Contrast Microscopy | EPA 600/R-93/116 | 10294583 | AIHA Policy Module | AIHA |
| 100172 - Asbestos by Polarized Light Microscopy | EPA 600/R-93/116 | 10294583 | AIHA Policy Module | AIHA |
| 100171 - Asbestos by Transmission Electron Microscopy | EPA 600/R-93/116 | 10294583 | AIHA Policy Module | AIHA |
| 100791 - Asbestos in Bulk Building Materials | EPA 600/R-93/116 | 10294583 | AIHA Policy Module | AIHA |
| 100095 - Asbestos in Bulk Insulation | EPA 600/R-93/116 | 10294583 | AIHA Policy Module | AIHA |
| 100243 - Asbestos in Non-Friable Material | EPA 600/R-93/116 | 10294583 | AIHA Policy Module | AIHA |
| 1520 - Asbestos | NIOSH 7400 | 90018001 | AIHA Policy Module | AIHA |

## Biological Tissue

| Analyte | Method Name | Method Code | Type | AB |
|---|---|---|---|---|

Clients and Customers are urged to verify the laboratory's current certification status with the Louisiana Environmental Laboratory Accreditation Program.

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Effective Date: July 1, 2024

Eurofins J3 Resources Inc
AI Number: 139374
Activity No. ACC20230002
Expiration Date: June 30, 2025

6110 W 34th St, Houston, Texas 77092

**Certificate Number: 04143**

## Biological Tissue

| Analyte | Method Name | Method Code | Type | AB |
|---|---|---|---|---|
| NONE | NONE | NONE | NONE | NONE |

**United States Department of Commerce**
**National Institute of Standards and Technology**

# Certificate of Accreditation to ISO/IEC 17025:2017

**NVLAP LAB CODE: 600120-0**

## Eurofins Built Environment Testing Central- Houston, TX

Houston, TX

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:*

## Asbestos Fiber Analysis

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique on ISO/IEC 17025).*

2024-04-01 through 2025-03-31

*Effective Dates*

*For the National Voluntary Laboratory Accreditation Program*

# National Voluntary Laboratory Accreditation Program

## SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

**Eurofins Built Environment Testing Central- Houston, TX**
5200 Mitchelldale
Suite E15
Houston, TX 77092
Christine Ricard
Phone: 346-689-4035
Email: christine.ricard@et.eurofinsus.com
https://www.eurofinsus.com/Built

**ASBESTOS FIBER ANALYSIS** **NVLAP LAB CODE 600120-0**

### Bulk Asbestos Analysis

| ***Code*** | ***Description*** |
|---|---|
| 18/A01 | EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples |
| 18/A03 | EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials |

*For the National Voluntary Laboratory Accreditation Program*

# STATE OF LOUISIANA

# DEPARTMENT OF ENVIRONMENTAL QUALITY

**certifies that**

## *Melody DiMaggio*

**Has complied with all requirements of the Louisiana Department of Environmental Quality and is authorized to perform the duties of**

**Asbestos Inspector**

**Accreditation No.** OI236494

**AI No.** 236494

**Date of Issuance** October 14, 2024

**Expiration** October 13, 2025

**Failure to comply with all applicable provisions of La. R.S. 2025.E. (1)(a) and La. R.S. 2025.F. (2)(a) may result in civil and/or criminal enforcement actions by the State.**

Charles Finley

**Permit Support Services Division**
**Office of Environmental Services**

# Section 040110 - Masonry Cleaning

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 cleaning the following:

1. Masonry surfaces.

1.3 DEFINITIONS

A. Very Low-Pressure Spray: Under 100 psi (690 kPa).

B. Low-Pressure Spray: 100 to 400 psi (690 to 2750 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).

C. Medium-Pressure Spray: 400 to 800 psi (2750 to 5510 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).

D. High-Pressure Spray: 800 to 1200 psi (5510 to 8250 kPa); 4 to 6 gpm (0.25 to 0.4 L/s**)**.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to cleaning masonry including, but not limited to, the following:

a. Verify masonry-cleaning equipment and facilities needed to make progress and avoid delays.
b. Materials, material application, and sequencing.
c. Cleaning program.
d. Coordination with building occupants.

1.5 SEQUENCING AND SCHEDULING

A. Work Sequence: Perform masonry-cleaning work in the following sequence:

1. Remove plant growth.

2. Inspect for open mortar joints. Where repairs are required, delay further cleaning work until after repairs are completed, cured, and dried to prevent the intrusion of water and other cleaning materials into the wall.
3. Remove paint.
4. Clean masonry surfaces.
5. Where water repellents are to be used on or near masonry, delay application of these chemicals until after cleaning.

B. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in masonry units according to masonry repair Sections. Patch holes in mortar joints according to masonry repointing Sections.

## 1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include material descriptions and application instructions.
2. Include test data substantiating that products comply with requirements.

## 1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For paint-remover manufacturer and chemical-cleaner manufacturer.

B. Preconstruction Test Reports: For cleaning materials and methods.

C. Cleaning program.

## 1.8 QUALITY ASSURANCE

A. Waterproofing Contractor Qualifications or Commercial Painting Contractor: A firm regularly engaged and whose main business is cleaning and waterproofing masonry or commercial painting contractor refer to Section 099113 that has been using similar applications with successful results, and with factory-authorized service representatives who are available for consultation and Project-site inspection**, preconstruction product testing,** and on-site assistance.

B. Chemical-Cleaner Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, and with factory-authorized service representatives who are available for consultation and Project-site inspection**, preconstruction product testing,** and on-site assistance.

C. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used; protection of surrounding materials; and control of runoff during operations. Include provisions for supervising worker performance and preventing damage.

1. If materials and methods other than those indicated are proposed for any phase of cleaning work, add a written description of such materials and methods, including

evidence of successful use on comparable projects and demonstrations to show their effectiveness for this Project.

D. Mockups: Prepare mockups of cleaning on existing surfaces to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Cleaning: Clean an area **approximately 25 sq. ft. (2.3 sq. m)** for each type of masonry and surface condition.

a. Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not test cleaners and methods known to have deleterious effect.
b. Allow a waiting period of not less than seven days after completion of sample cleaning to permit a study of sample panels for negative reactions.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

## 1.9 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage one or more chemical-cleaner and paint-remover manufacturers to perform preconstruction testing on masonry surfaces.

1. Use test areas as indicated and representative of proposed materials and existing construction.
2. Propose changes to materials and methods to suit Project.

## 1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry-cleaning work to be performed according to product manufacturers' written instructions and specified requirements.

B. Clean masonry surfaces only when air temperature is 40 deg F (4 deg C) and above and is predicted to remain so for at least seven days after completion of cleaning.

# PART 2 - PRODUCTS

## 2.1 CLEANING MATERIALS

A. Water: Potable.

B. Hot Water: Water heated to a temperature of 140 to 160 deg F (60 to 71 deg C).

C. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium pyrophosphate (TSPP), 1/2 cup (125 mL) of laundry detergent, and 20 quarts (20 L) of hot water for every 5 gal. (20 L) of solution required.

D. Mold, Mildew, and Algae Remover, Job Mixed: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium pyrophosphate (TSPP), 5 quarts (5 L) of 5 percent sodium hypochlorite (bleach), and 15 quarts (15 L) of hot water for every 5 gal. (20 L) of solution required.

E. Nonacidic Gel Cleaner: Manufacturer's standard gel formulation, with pH between 6 and 9, that contains detergents with chelating agents and is specifically formulated for cleaning masonry surfaces.

1. Dumond Chemicals, Inc.
2. PROSCO, Inc.

F. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.

1. American Building Restoration Products Inc.
2. Diedrich Technologies Inc.
3. PROSCO, Inc.

G. Mild-Acid Cleaner: Manufacturer's standard mild-acid cleaner containing no muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.

1. American Building Restoration Products Inc.
2. Diedrich Technologies Inc.
3. PROSCO, Inc.

H. Acidic Cleaner: Manufacturer's standard acidic masonry cleaner composed of hydrofluoric acid or ammonium bifluoride blended with other acids, detergents, wetting agents, and inhibitors.

1. American Building Restoration Products Inc.
2. Diedrich Technologies Inc.
3. PROSCO, Inc.

I. One-Part Limestone Acidic Cleaner: Manufacturer's standard one-part acidic formulation for cleaning limestone.

1. American Building Restoration Products Inc.
2. Hydroclean; Hydrochemical Tecniques, Inc.
3. PROSCO, Inc.

J. Two-Part Chemical Cleaner: Manufacturer's standard system consisting of potassium- or sodium-hydroxide-based, alkaline prewash cleaner and acidic afterwash cleaner that does not contain hydrofluoric acid.

1. Diedrich Technologies Inc.
2. Hydroclean; Hydrochemical Tecniques, Inc.
3. PROSCO, Inc.

## 2.2 ACCESSORY MATERIALS

A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, glazed masonry, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.

1. American Building Restoration Products Inc.
2. Price Research, Ltd.
3. PROSCO, Inc.

## 2.3 CHEMICAL CLEANING SOLUTIONS

A. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended in writing by chemical-cleaner manufacturer.

B. Acidic Cleaner Solution for Non-glazed Masonry: Dilute acidic cleaner with water to produce hydrofluoric acid content of 3 percent or less, but not greater than that recommended in writing by chemical-cleaner manufacturer.

1. Stones: Use only on unpolished granite, unpolished dolomite marble, and siliceous sandstone.

# PART 3 - EXECUTION

## 3.1 PROTECTION

A. Comply with each manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent paint removers and chemical cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

1. Cover adjacent surfaces with materials that are proven to resist paint removers and chemical cleaners used unless products being used will not damage adjacent surfaces. Use protective materials that are waterproof and UV resistant. Apply masking agents according to manufacturer's written instructions. Do not apply liquid strippable masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
2. Do not apply chemical solutions during winds of enough force to spread them to unprotected surfaces.
3. Neutralize alkaline and acid wastes before disposal.
4. Dispose of runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

B. Remove gutters and downspouts and associated hardware adjacent to immediate work area and store during masonry cleaning. Reinstall when masonry cleaning is complete.

1. Provide temporary rain drainage during work to direct water away from building.

## 3.2 CLEANING MASONRY, GENERAL

A. Cleaning Appearance Standard: Cleaned surfaces are to have a uniform appearance as viewed from **20 feet (6 m)** away by Architect.

B. Proceed with cleaning in an orderly manner; work from top to bottom of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water do not wash over dry, cleaned surfaces.

C. Use only those cleaning methods indicated for each masonry material and location.

1. Brushes: Do not use wire brushes or brushes that are not resistant to chemical cleaner being used.
2. Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that cleaning methods do not damage surfaces, including joints.

a. Equip units with pressure gages.
b. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with nozzle having a cone-shaped spray.
c. For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.
d. For high-pressure water-spray application, use fan-shaped spray that disperses water at an angle of at least 40 degrees.
e. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F (60 and 71 deg C) at flow rates indicated.
f. For steam application, use steam generator capable of delivering live steam at nozzle.

D. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces. Keep wall wet below area being cleaned to prevent streaking from runoff.

E. Perform additional general cleaning, paint and stain removal, and spot cleaning of small areas that are noticeably different when viewed according to the "Cleaning Appearance Standard" Paragraph, so that cleaned surfaces blend smoothly into surrounding areas.

F. Water Application Methods:

1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.
2. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches (150 mm) from masonry surface and apply water in horizontal back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.

G. Steam Cleaning: Apply steam to masonry surfaces at the very low pressures indicated for each type of masonry. Hold nozzle at least 6 inches (150 mm) from masonry surface and apply steam in horizontal back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.

H. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces according to chemical-cleaner manufacturer's written instructions; use brush **or spray**

application. **Do not spray apply at pressures exceeding 50 psi (345 kPa).** Do not allow chemicals to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.

I. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.

1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.

J. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

## 3.3 PRELIMINARY CLEANING

A. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing remaining growth to dry as long as possible before removal. Remove loose soil and plant debris from open joints to whatever depth they occur.

B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to planned cleaning methods. Extraneous substances include paint, calking, asphalt, and tar.

1. Carefully remove heavy accumulations of rigid materials from masonry surface with sharp chisel. Do not scratch or chip masonry surface.
2. Remove paint and calking with **alkaline paint remover**.

    a. Comply with requirements in "Paint Removal" Article.
    b. Repeat application up to two times if needed.

3. Remove asphalt and tar with **solvent-type paste paint remover**.

    a. Comply with requirements in "Paint Removal" Article.
    b. Apply paint remover only to asphalt and tar by brush without prewetting.
    c. Allow paint remover to remain on surface for 10 to 30 minutes.
    d. Repeat application if needed.

## 3.4 CLEANING MASONRY

A. Cold-Water Soak:

1. Apply cold water by intermittent spraying to keep surface moist.
2. Use perforated hoses or other means that apply a fine water mist to entire surface being cleaned.
3. Apply water in cycles of **five minutes** on and **20 minutes** off.
4. Continue spraying **until surface encrustation has softened enough to permit its removal by water wash or as indicated by cleaning tests**.

5. Remove soil and softened surface encrustation from surface with cold water applied by low-pressure spray.

B. Cold-Water Wash: Use cold water applied by pressure spray.

C. Hot-Water Wash: Use hot water applied by pressure spray.

D. Steam Cleaning: Apply steam at very low pressures not exceeding **30 psi (207 kPa)**. Remove dirt softened by steam with wood scrapers, stiff-nylon or -fiber brushes, or cold-water wash, as indicated by cleaning tests.

E. Detergent Cleaning:

1. Wet surface with water applied by low-pressure spray.
2. Scrub surface with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.
3. Rinse with water applied by pressure spray to remove detergent solution and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

F. Mold, Mildew, and Algae Removal:

1. Wet surface with water applied by low-pressure spray.
2. Apply mold, mildew, and algae remover by brush **or low-pressure spray**.
3. Scrub surface with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that surface remains wet.
4. Rinse with water applied by pressure spray to remove mold, mildew, and algae remover and soil.
5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

G. Nonacidic Gel Chemical Cleaning:

1. Wet surface with water applied by low-pressure spray.
2. Apply gel cleaner in 1/8-inch (3-mm) thickness by brush, working into joints and crevices. Apply quickly and do not brush out excessively, so area is uniformly covered with fresh cleaner and dwell time is uniform throughout area being cleaned.
3. Let cleaner remain on surface for period **established by mockup**.
4. Remove bulk of gel cleaner.
5. Rinse with water applied by pressure spray to remove chemicals and soil.
6. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

H. Nonacidic Liquid Chemical Cleaning:

1. Wet surface with water applied by low-pressure spray.

2. Apply cleaner to surface **in two applications** by brush **or low-pressure spray**.
3. Let cleaner remain on surface for period **recommended in writing by chemical-cleaner manufacturer or established by mockup**.
4. Rinse with water applied by pressure spray to remove chemicals and soil.
5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

I. Mild-Acid Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface **in two applications** by brush **or low-pressure spray**.
3. Let cleaner remain on surface for period **recommended in writing by chemical-cleaner manufacturer or established by mockup**.
4. Rinse with cold water applied by pressure spray to remove chemicals and soil.
5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

J. Acidic Chemical Cleaning:

1. Wet surface with cold water applied by low-pressure spray.
2. Apply cleaner to surface **in two applications** by brush **or low-pressure spray**.
3. Let cleaner remain on surface for period **recommended in writing by chemical-cleaner manufacturer or established by mockup**.
4. Rinse with cold water applied by pressure spray to remove chemicals and soil. Rinse until all foaming, if any, stops and suds disappear.
5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

K. One-Part Limestone Chemical Cleaning:

1. Wet surface with water applied by low-pressure spray.
2. Apply cleaner to surface by brush **or low-pressure spray**.
3. Let cleaner remain on surface for period **recommended in writing by chemical-cleaner manufacturer** or **established by mockup**.
4. Immediately repeat application of one-part limestone cleaner as indicated above over the same area.
5. Rinse with water applied by medium-pressure spray to remove chemicals and soil.

L. Two-Part Chemical Cleaning:

1. Wet surface with water applied by low-pressure spray.
2. Apply alkaline prewash cleaner to surface by brush or roller.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer unless otherwise indicated.
4. Rinse with water applied by medium-pressure spray to remove chemicals and soil.
5. Apply acidic afterwash cleaner to surface **in two applications**, while surface is still wet, using **low-pressure spray equipment,** deep-nap roller or soft-fiber brush. Let neutralizer

remain on surface for period recommended in writing by manufacturer unless otherwise indicated.

6. Rinse with cold water applied by medium-pressure spray to remove chemicals and soil. **Rinse until surface reaction value is between pH 5 and pH 9 according to pH-measuring paper, pen, or indicator solution.**
7. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once.

## 3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage **paint-remover manufacturer's and** chemical-cleaner manufacturer's factory-authorized service representatives for consultation and Project-site inspection**, to perform preconstruction product testing,** and provide on-site assistance when requested by Architect. Have **paint-remover manufacturer's and** chemical-cleaner manufacturer's factory-authorized service representatives visit Project site not less than **twice** to observing progress and quality of the work.

## 3.6 FINAL CLEANING

A. Clean adjacent nonmasonry surfaces of spillage and debris. Use detergent and soft brushes or cloths.

B. Remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.

C. Remove masking materials, leaving no residues that could trap dirt.

END OF SECTION 040110

# Section 040120.63 - Brick Masonry Repair

## 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. Repairing brick masonry, including replacing units.
2. Injection for brick masonry repair

### 1.3 DEFINITIONS

A. Low-Pressure Spray: **100 to 400 psi (690 to 2750 kPa); 4 to 6 gpm (0.25 to 0.4 L/s)**.

B. Rebuilding (Setting) Mortar: Mortar used to set and anchor masonry in a structure, distinct from pointing mortar installed after masonry is set in place.

C. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of masonry units to freezing and thawing.

### 1.4 PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1. Review methods and procedures related to brick masonry repair including, but not limited to, the following:

a. Verify brick masonry repair specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
b. Materials, material application, sequencing, tolerances, and required clearances.
c. Quality-control program.
d. Coordination with building occupants.

### 1.5 SEQUENCING AND SCHEDULING

A. Order sand and gray portland cement for colored mortar immediately after approval of mockups. Take delivery of and store at Project site enough quantity to complete Project.

B. Work Sequence: Perform brick masonry repair work in the following sequence, which includes work specified in this and other Sections:

1. Remove plant growth.
2. Inspect masonry for open mortar joints and point them before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
3. Remove paint.
4. Clean masonry.
5. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.
6. Repair masonry, including replacing existing masonry with new masonry materials.
7. Rake out mortar from joints to be repointed.
8. Point mortar and sealant joints.
9. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.
10. Where water repellents are to be used on or near masonry work, delay application of these chemicals until after pointing and cleaning.

C. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in masonry units according to "Masonry Unit Patching" Article. Patch holes in mortar joints according to Section 040120.64 "Brick Masonry Repointing."

## 1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include recommendations for product application and use. Include test data substantiating that products comply with requirements.

B. Shop Drawings:

1. Include plans, elevations, sections, and locations of replacement masonry units on the structure, showing relation of existing and new or relocated units.
2. Show provisions for expansion joints or other sealant joints.

C. Samples for Initial Selection: For the following:

1. Colored Mortar: Submit sets of mortar that will be left exposed in the form of sample mortar strips, 6 inches (150 mm) long by **1/2 inch (13 mm)** wide, set in aluminum or plastic channels.

   a. Have each set contain a close color range of at least **four** Samples of different mixes of colored sands and cements that produce a mortar matching existing, cleaned mortar when cured and dry.
   b. Submit with precise measurements on ingredients, proportions, gradations, and source of colored sands from which each Sample was made.

2. Patching Compound: Submit sets of patching compound Samples in the form of plugs (patches in drilled holes) in sample units of masonry representative of the range of masonry colors on the building.

    a. Have each set contain a close color range of at least **four** Samples of different mixes of patching compound that matches the variations in existing masonry when cured and dry.

3. Include similar Samples of accessories involving color selection.

D. Samples for Verification: For the following:

1. Each type of brick unit to be used for replacing existing units. Include sets of Samples to show the full range of shape, color, and texture to be expected. For each brick type, provide straps or panels containing at least four bricks. Include multiple straps for brick with a wide range.
2. Each type of patching compound in the form of briquettes, at least 3 inches (75 mm) long by 1-1/2 inches (38 mm) wide. Document each Sample with manufacturer and stock number or other information necessary to order additional material.
3. Accessories: Each type of accessory and miscellaneous support.

## 1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For **brick masonry repair specialist**.

B. Preconstruction Test Reports: For **existing masonry units and mortar and replacement masonry units**.

C. Quality-control program.

## 1.8 QUALITY ASSURANCE

A. Brick Masonry Repair Specialist Qualifications: Engage an experienced brick masonry repair firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing masonry is insufficient experience for masonry repair work.

1. Field Supervision: Brick masonry repair specialist firm shall maintain experienced full-time supervisors on Project site during times that brick masonry repair work is in progress.
2. Brick Masonry Repair Worker Qualifications: When masonry units are being patched, assign at least one worker per crew who is trained and approved by manufacturer of patching compound to apply its products.

B. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage.

C. Mockups: Prepare mockups of brick masonry repair to demonstrate aesthetic effects and to set quality standards for materials and execution and for fabrication and installation.

1. Masonry Repair: Prepare sample areas for each type of masonry repair work performed. If not otherwise indicated, size each mockup not smaller than two adjacent whole units or approximately 48 inches (1200 mm) in least dimension. Construct sample areas in locations in existing walls where directed by Architect unless otherwise indicated. Demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:

   a. Replacement: Four brick units replaced.
   b. Patching: Three small holes at least 1 inch (25 mm) in diameter for each type of brick indicated to be patched.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

## 1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry units to Project site strapped together in suitable packs or pallets or in heavy-duty cartons and protected against impact and chipping.

B. Deliver packaged materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

D. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.

E. Store sand where grading and other required characteristics can be maintained and contamination avoided.

F. Handle masonry units to prevent overstressing, chipping, defacement, and other damage.

## 1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit brick masonry repair work to be performed according to product manufacturers' written instructions and specified requirements.

B. Temperature Limits, General: Repair masonry units only when air temperature is between 40 and 90 deg F (4 and 32 deg C) and is predicted to remain so for at least seven days after completion of the Work unless otherwise indicated.

C. Cold-Weather Requirements: Comply with the following procedures for masonry repair unless otherwise indicated:

1. When air temperature is below 40 deg F (4 deg C), heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F (4 and 49 deg C).
2. When mean daily air temperature is below 40 deg F (4 deg C), provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for seven days after repair.

D. Hot-Weather Requirements: Protect masonry repairs when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks, and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F (32 deg C) and above unless otherwise indicated.

E. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.

## PART 2 - PRODUCTS

### 2.1 MATERIALS, GENERAL

A. Source Limitations: Obtain each type of material for repairing brick masonry (brick, cement, sand, etc.) from single source with resources to provide materials of consistent quality in appearance and physical properties.

### 2.2 MASONRY MATERIALS

A. Face Brick: As required to complete brick masonry repair work.

1. Brick Matching Existing: Units with colors, color variation within units, surface texture, size, and shape that match existing brickwork and with physical properties.

a. For existing brickwork that exhibits a range of colors or color variation within units, provide brick that proportionally matches that range and variation rather than brick that matches an individual color within that range.

### 2.3 MORTAR MATERIALS

A. Portland Cement: ASTM C 150/C 150M, Type I or Type II, except Type III may be used for cold-weather construction; white **or gray, or both** where required for color matching of mortar.

1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.

B. Hydrated Lime: ASTM C 207, Type M.

C. Masonry Cement: ASTM C 91/C 91M.

1. Holcim (US) Inc
2. Lafarge North American Inc.

D. Mortar Cement: ASTM C 1329/C 1329M.

E. Mortar Sand: ASTM C 144.

1. Exposed Mortar: Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
2. Colored Mortar: Natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.

F. Mortar Pigments: ASTM C 979/C 979M, compounded for use in mortar mixes, and having a record of satisfactory performance in masonry mortars.

1. Davis Colors
2. Lanxess Corporation
3. Solomon Colors,Inc.

G. Water: Potable.

## 2.4 MANUFACTURED REPAIR MATERIALS

A. Brick Patching Compound: Factory-mixed cementitious product that is custom manufactured for patching brick masonry.

1. Quest - Cannon Tone Stain
2. Catherdral Stone Products
3. Coproco Corporation

4. Use formulation that is vapor and water permeable (equal to or more than the masonry unit), exhibits low shrinkage, has lower modulus of elasticity than masonry units being repaired, and develops high bond strength to all types of masonry.
5. Use formulation having working qualities and retardation control to permit forming and sculpturing where necessary.
6. Formulate patching compound in colors and textures to match each masonry unit being patched. Provide sufficient number of colors to enable matching of the color, texture, and variation of each unit.

## 2.5 ACCESSORY MATERIALS

A. Setting Buttons and Shims: Resilient plastic, nonstaining to masonry, sized to suit joint thicknesses and bed depths of masonry units, less the required depth of pointing materials unless removed before pointing.

B. Masking Tape: Nonstaining, nonabsorbent material; compatible with mortar, joint primers, sealants, and surfaces adjacent to joints; and that easily comes off entirely, including adhesive.

C. Antirust Coating: Fast-curing, lead- and chromate-free, self-curing, universal modified-alkyd primer according to **surface-tolerant, anticorrosive metal primer, SSPC-Paint 20 or SSPC-Paint 29 zinc-rich coating**.

1. Surface Preparation: Use coating requiring no better than **SSPC-SP 2, "Hand Tool Cleaning" or SSPC-SP 3, "Power Tool Cleaning"** surface preparation according to manufacturer's literature or certified statement.
2. VOC Limit: Use coating with a VOC content of **400 g/L (3.3 lb/gal.)** or less.

D. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:

1. Previous effectiveness in performing the work involved.
2. Minimal possibility of damaging exposed surfaces.
3. Consistency of each application.
4. Uniformity of the resulting overall appearance.
5. Do not use products or tools that could leave residue on surfaces.

## 2.6 INJECTION FOR BRICK MASONRY REPAIR

A. Use non-shrink, thixotropic, cementitious grout: for an injection process that will bond brick masonry to existing reinforced concrete column to stabilize and add structural strength to the brick /column assembly. Products recommended from the following manufacturers may be acceptable provided they meet the requirements of these specifications:

1. Helifix HeliBond Grout (Basis of Design)

## 2.7 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.

1. Mortar Pigments: Where mortar pigments are indicated, do not add pigment exceeding 10 percent by weight of the cementitious or binder materials, except for carbon black which is limited to 2 percent, unless otherwise demonstrated by a satisfactory history of performance.

C. Do not use admixtures in mortar unless otherwise indicated.

D. Mixes: Mix mortar materials in the following proportions:
1. Rebuilding (Setting) Mortar by Property: ASTM C 270, Property Specification, **Type N** unless otherwise indicated; with cementitious material limited to **portland cement and lime or mortar cement**.
2. Pigmented, Colored Mortar: Add mortar pigments to produce exposed, setting (rebuilding) mortar of colors required.

PART 3 - EXECUTION

3.1 PROTECTION

A. Prevent mortar from staining face of surrounding masonry and other surfaces.

1. Cover sills, ledges, and other projecting items to protect them from mortar droppings.
2. Keep wall area wet below rebuilding and repair work to discourage mortar from adhering.
3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.

B. Remove **gutters and** downspouts and associated hardware adjacent to masonry and store during masonry repair. Reinstall when repairs are complete.

1. Provide temporary rain drainage during work to direct water away from building.

3.2 MASONRY REPAIR, GENERAL

A. Appearance Standard: Repaired surfaces are to have a uniform appearance as viewed from **50 feet (15 m)** away by Architect.

3.3 ABANDONED ANCHOR REMOVAL

A. Remove the damaged portion of rusted masonry reinforcement down to solid metal.

1. Remove carefully to avoid spalling or cracking masonry.
2. Notify Architect before proceeding if an item cannot be removed without damaging surrounding masonry. Do the following where directed:

a. Cut or grind off item below surface of existing mortar prior to repointing.
b. Immediately paint exposed end of item with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended dry film thickness per coat. Keep paint off sides of recess.

3. Patch hole where each item was removed unless directed to remove and replace masonry unit.

3.4 BRICK REMOVAL AND REPLACEMENT

A. At locations indicated, remove bricks that are damaged, spalled, or deteriorated. Carefully remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.

1. When removing single bricks, remove material from center of brick and work toward outside edges.

B. Support and protect remaining masonry that surrounds removal area.

C. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition. **Coordinate with new reinforcement.**

D. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.

E. Remove in an undamaged condition as many whole bricks as possible.

1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.

F. Clean masonry surrounding removal areas by removing mortar, dust, and loose particles in preparation for brick replacement.

G. Replace removed damaged brick with other removed brick in good condition, where possible, **or with new brick** matching existing brick. Do not use broken units unless they can be cut to usable size.

H. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.

1. Maintain joint width for replacement units to match existing joints.
2. Use setting buttons or shims to set units accurately spaced with uniform joints.

I. Lay replacement brick with rebuilding (setting) mortar and with completely filled bed, head, and collar joints. Butter ends with enough mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C 67 initial rates of absorption (suction) of more than 30 g/30 sq. in. per min. (30 g/194 sq. cm per min.) Use wetting methods that ensure that units are nearly saturated but surface is dry when laid.

1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.
2. Rake out mortar used for laying brick before mortar sets according to Section 040120.64 "Brick Masonry Repointing." Point at same time as repointing of surrounding area.
3. When mortar is hard enough to support units, remove shims and other devices interfering with pointing of joints.

J. Curing: Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.

1. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

## 3.5 PAINTING STEEL UNCOVERED DURING THE WORK

A. Notify Architect if steel is exposed during masonry removal. Where Architect determines that steel is structural, or for other reasons cannot be totally removed, prepare and paint it as follows:

1. Surface Preparation: Remove paint, rust, and other contaminants according to **SSPC-SP 2, "Hand Tool Cleaning"** or **SSPC-SP 3, "Power Tool Cleaning"**, as applicable to comply with paint manufacturer's recommended preparation.
2. Antirust Coating: Immediately paint exposed steel with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended rate of application (dry film thickness per coat).

B. If on inspection and rust removal, the thickness of a steel member is found to be reduced from rust by more than **1/16 inch (1.6 mm)**, notify Architect before proceeding.
1. Dry mechanical pinning of existing brick masonry

## 3.6 MASONRY UNIT PATCHING

A. Patch the following masonry units unless another type of repair or replacement is indicated:

1. Units indicated to be patched.
2. Units with holes.
3. Units with chipped edges or corners. **Patch chipped edges or corners measuring more than 3/4 inch (19 mm) in least dimension.**
4. Units with small areas of deep deterioration. **Patch deep deteriorations measuring more than 3/4 inch (19 mm) in least dimension and more than 1/4 inch (6 mm) deep.**

B. Remove and replace existing patches **unless otherwise indicated or approved by Architect**.

C. Patching Bricks:

1. Remove loose material from masonry surface. Carefully remove additional material so patch does not have feathered edges but has square or slightly undercut edges on area to be patched and is at least **1/4 inch (6 mm)** thick, but not less than recommended in writing by patching compound manufacturer.
2. Mask adjacent mortar joint or rake out for repointing if patch extends to edge of masonry unit.
3. Mix patching compound in individual batches to match each unit being patched. Combine one or more colors of patching compound, as needed, to produce exact match.
4. Rinse surface to be patched and leave damp, but without standing water.
5. Brush-coat surfaces with slurry coat of patching compound according to manufacturer's written instructions.
6. Place patching compound in layers as recommended in writing by patching compound manufacturer, but not less than 1/4 inch (6 mm) or more than 2 inches (50 mm) thick. Roughen surface of each layer to provide a key for next layer.
7. Trowel, scrape, or carve surface of patch to match texture and surrounding surface plane or contour of masonry unit. Shape and finish surface before or after curing, as determined by testing, to best match existing masonry unit.
8. Keep each layer damp for 72 hours or until patching compound has set.
9. Remove and replace patches with hairline cracks or that show separation from brick at edges, and those that do not match adjoining brick in color or texture.

## 3.7 PRESSURE INJECTION FOR BRICK MASONRY REPAIR

A. Use manufacturers injection kit, tools, products and accessories as required to meet requirements specified.

B. Follow manufacturer’s recommend cleaning, and installation procedures.

## 3.8 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water applied by low-pressure spray.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

B. Clean adjacent non-masonry surfaces. Use detergent and soft brushes or cloths.

C. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.

D. Remove masking materials, leaving no residues that could trap dirt.

## 3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.

B. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.

C. Notify **inspectors and Architect's Project representatives** in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until **inspectors and Architect's Project representatives** have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

## 3.10 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property.

B. Masonry Waste: Remove masonry waste and legally dispose of off Owner's property.

END OF SECTION 040120.63

# Section 040120.64 - Brick Masonry Repointing

## 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. Repointing joints with mortar.
2. Repointing joints with sealant.

### 1.3 DEFINITIONS

A. Low-Pressure Spray: 100 to 400 psi (690 to 2750 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).

### 1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to repointing brick masonry including, but not limited to, the following:

a. Verify brick masonry repointing specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
b. Materials, material application, sequencing, tolerances, and required clearances.
c. Quality-control program.
d. Coordination with building occupants.

### 1.5 SEQUENCING AND SCHEDULING

A. Order sand and gray portland cement for pointing mortar immediately after approval of mockups. Take delivery of and store at Project site enough quantity to complete Project.

B. Work Sequence: Perform brick masonry repointing work in the following sequence, which includes work specified in this and other Sections:

1. Remove plant growth.
2. Inspect masonry for open mortar joints and permanently or temporarily point them before cleaning to prevent the intrusion of water and other cleaning materials into the wall.

3. Clean masonry.
4. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.
5. Repair masonry, including replacing existing masonry with new masonry materials.
6. Rake out mortar from joints to be repointed.
7. Point mortar and sealant joints.
8. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.

C. As scaffolding is removed, patch anchor holes used to attach scaffolding.

## 1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include recommendations for product application and use. Include test data substantiating that products comply with requirements.

B. Shop Drawings:

1. Include plans, elevations, sections, and locations of repointing work on the structure.
2. Show provisions for expansion joints or other sealant joints.
3. Show locations of scaffolding and points of scaffolding in contact with masonry. Include details of each point of contact or anchorage.

## 1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For brick masonry repointing specialist including field supervisors and workers.

B. Preconstruction Test Reports: For existing masonry units and mortar.

C. Quality-control program.

## 1.8 QUALITY ASSURANCE

A. Brick Masonry Repointing Specialist Qualifications: Engage an experienced brick masonry repointing firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing masonry is insufficient experience for masonry repointing work.

1. Field Supervision: Brick masonry repointing specialist firms shall maintain experienced full-time supervisors on Project site during times that brick masonry repointing work is in progress.

B. Mockups: Prepare mockups of brick masonry repointing to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Repointing: Rake out joints in two separate areas for each type of repointing required, and repoint one of the areas.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

## 1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver packaged materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.

D. Store sand where grading and other required characteristics can be maintained and contamination avoided.

## 1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit repointing work to be performed according to product manufacturers' written instructions and specified requirements.

B. Temperature Limits, General: Repoint mortar joints only when air temperature is between 40 and 90 deg F (4 and 32 deg C) and is predicted to remain so for at least seven days after completion of the Work unless otherwise indicated.

C. Cold-Weather Requirements: Comply with the following procedures for mortar-joint pointing unless otherwise indicated:

1. When air temperature is below 40 deg F (4 deg C), heat mortar ingredients and existing masonry walls to produce temperatures between 40 and 120 deg F (4 and 49 deg C).
2. When mean daily air temperature is below 40 deg F (4 deg C), provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for seven days after pointing.

D. Hot-Weather Requirements: Protect mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar materials. Provide artificial shade and wind breaks, and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F (32 deg C) and above unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Source Limitations: Obtain each type of material for repointing brick masonry (cement, sand, etc.) from single source with resources to provide materials of consistent quality in appearance and physical properties.

2.2 MORTAR MATERIALS

A. Portland Cement: ASTM C 150/C 150M, Type I or Type II, except Type III may be used for cold-weather construction..

1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.

B. Hydrated Lime: ASTM C 207, Type N.

C. Masonry Cement: ASTM C 91/C 91M.

1. Hanson Brick and Tile
2. Holcim (US) Inc
3. Lafarge North America Inc.

D. Mortar Sand: ASTM C 144.

1. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.

E. Water: Potable.

2.3 ACCESSORY MATERIALS

A. Sealant Materials:

1. Sealant manufacturer's standard elastomeric sealant(s) of base polymer and characteristics indicated below and according to applicable requirements in Section 079200 "Joint Sealants."

a. Type: Single-component, nonsag urethane sealant.

2. Colors: Provide colors of exposed sealants to match colors of mortar adjoining installed sealant unless otherwise indicated.
3. Ground-Mortar Aggregate: Custom crushed and ground pointing mortar sand or existing mortar retrieved from joints. Grind to a particle size that matches the adjacent mortar aggregate and color. Remove all fines passing the No. 100 sieve.

B. Joint-Sealant Backing:

1. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
2. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended in writing by sealant manufacturer for preventing sealant from adhering to rigid, inflexible, joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

C. Masking Tape: Nonstaining, nonabsorbent material; compatible with mortar, joint primers, sealants, and surfaces adjacent to joints; and that easily comes off entirely, including adhesive.

D. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:

1. Previous effectiveness in performing the work involved.
2. Minimal possibility of damaging exposed surfaces.
3. Consistency of each application.
4. Uniformity of the resulting overall appearance.
5. Do not use products or tools that could leave residue on surfaces.

## 2.4 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again, adding only enough water to produce a damp, unworkable mix that retains its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.

B. Do not use admixtures in mortar unless otherwise indicated.

C. Mixes: Mix mortar materials in the following proportions:

1. Pointing Mortar by Type: ASTM C 270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to portland cement and lime,masonry cement or mortar cement.

# PART 3 - EXECUTION

## 3.1 PROTECTION

A. Prevent mortar from staining face of surrounding masonry and other surfaces.

1. Cover sills, ledges, and other projecting items to protect them from mortar droppings.
2. Keep wall area wet below pointing work to discourage mortar from adhering.

3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.

B. Remove **gutters and** downspouts and associated hardware adjacent to masonry and store during masonry repointing. Reinstall when repointing is complete.

1. Provide temporary rain drainage during work to direct water away from building.

## 3.2 MASONRY REPOINTING, GENERAL

A. Appearance Standard: Repointed surfaces are to have a uniform appearance as viewed from **20 feet (6 m)** away by Architect.

## 3.3 REPOINTING MASONRY

A. Rake out and repoint joints to the following extent:

1. Joints at locations of the following defects:

a. Holes and missing mortar.
b. Cracks that can be penetrated 1/4 inch (6 mm) or more by a knife blade 0.027 inch (0.7 mm) thick.
c. Cracks **1/8 inch (3 mm)** or more in width and of any depth.
d. Hollow-sounding joints when tapped by metal object.
e. Eroded surfaces 1/4 inch (6 mm) or more deep.
f. Deterioration to point that mortar can be easily removed by hand, without tools.
g. Joints filled with substances other than mortar.

B. Do not rake out and repoint joints where not required.

C. Rake out joints as follows, according to procedures demonstrated in approved mockup:

1. Remove mortar from joints to depth of 2 times joint width, but not less than 1/2 inch (13 mm) or not less than that required to expose sound, unweathered mortar. Do not remove unsound mortar more than 2 inches (50 mm) deep; consult Architect for direction.
2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Architect.

D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

E. Pointing with Mortar:

1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than **3/8 inch (9 mm)** until a uniform

depth is formed. Fully compact each layer, and allow it to become thumbprint hard before applying next layer.

3. After deep areas have been filled to same depth as remaining joints, point joints by placing mortar in layers not greater than **3/8 inch (9 mm)**. Fully ompact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.
6. Hairline cracking within mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

F. Pointing with Sealant: Comply with Section 079200 "Joint Sealants." and as follows:

1. After raking out, keep joints dry and free of mortar and debris.
2. Clean and prepare joint surfaces. Prime joint surfaces unless sealant manufacturer recommends against priming. Do not allow primer to spill or migrate onto adjoining surfaces.
3. Fill sealant joints with specified joint sealant.

    a. Install cylindrical sealant backing beneath the sealant. Where space is insufficient for cylindrical sealant backing, install bond-breaker tape.
    b. Install sealant using only proven installation techniques that ensure that sealant is deposited in a uniform, continuous ribbon, without gaps or air pockets, and with complete wetting of the joint bond surfaces equally on both sides. Fill joint flush with surrounding masonry and matching the contour of adjoining mortar joints.
    c. Install sealant as recommended in writing by sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead:

        1) Fill joints to a depth equal to joint width, but not more than 1/2 inch (13 mm) deep or less than 1/4 inch (6 mm) deep.

    d. Tool sealant to form smooth, uniform beads, slightly concave. Remove excess sealant from surfaces adjacent to joint.
    e. Sanded Joints: Immediately after first tooling, apply ground-mortar aggregate to sealant, gently pushing aggregate into the surface of sealant. Lightly retool sealant to form smooth, uniform beads, slightly concave. Remove excess sealant and aggregate from surfaces adjacent to joint.
    f. Do not allow sealant to overflow or spill onto adjoining surfaces, or to migrate into the voids of adjoining surfaces, particularly rough textures. Remove excess and spillage of sealant promptly as the work progresses. Clean adjoining surfaces by the means necessary to eliminate evidence of spillage, without damage to adjoining surfaces or finishes, as demonstrated in an approved mockup.

G. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

## 3.4 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water applied by low-pressure spray.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

B. Clean adjacent nonmasonry surfaces. Use detergent and soft brushes or cloths.

C. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.

D. Remove masking materials, leaving no residues that could trap dirt.

## 3.5 FIELD QUALITY CONTROL

A. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.

B. Notify Architect's Project representatives in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Architect's Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

END OF SECTION 040120.64

# SECTION 055000 – MISCELLANEOUS METAL FABRICATIONS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. Section Includes:

1. Metal Ladders

### 1.3 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F material surfaces.

### 1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Metal Ladders.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.

1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

### 1.5 INFORMATIONAL SUBMITTALS

### 1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

### 1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

1.8 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages and steel weld plates and angles. 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.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel Tubing: ASTM A 500, cold-formed steel tubing.

C. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40) unless otherwise indicated.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563 and, where indicated, flat washers.

C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F 593; with hex nuts, ASTM F 594; and, where indicated, flat washers; Alloy Group 1].

D. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

E. Eyebolts: ASTM A 489.

F. Machine Screws: ASME B18.6.3.

G. Lag Screws: ASME B18.2.1.

H. Plain Washers: Round, ASME B18.22.1.

I. Lock Washers: Helical, spring type, ASME B18.21.1.

J. Post-Installed Anchors: Torque-controlled expansion anchors.

## 2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Shop Primers: Provide primers that comply with Division 9 painting Sections.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

## 2.5 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches , with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

## 2.6 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

C. Galvanize miscellaneous framing and supports where indicated.

D. Prime miscellaneous framing and supports with primer specified in Division 9 Section "Painting where indicated.

## 2.7 METAL LADDERS

A. General:

1. Comply with ANSI A14.3.

B. STEEL LADDERS:

1. Basis of Design:

2. **Cotterman Fixed Steel Ladder type M**: Modular ladder with walk-thru handrails and safety cage

**a. Model: M16WC, M17WC or M18WC (Contractor to field measure distance from lower roof to higher roof to determine exact model to math exact length required to meet standards below.)**

b. Meet the following Standards:
   1) ANSI A14.3 and ASME A17.1/CSA B44.
   2) OSHA 1910.27 and 1926, 1053 standards.

c. Side rails: Continuous, 1/4-by-2-inch by 2” steel angles.

d. Rungs: 3/4-inch- (19-mm-) round, steel bars on 12” centers.
   1) Provide nonslip surfaces on top of each rung.

e. Stand-off mounting brackets: 7”

f. Walk thru handrails : 42” above landing surface

g. Safety Cage:
   1) Meet OSH standards with flared bottom opening.
   2) Cage shall begin 7’-0” from bottom of ladder.

h. Support ladder at top and bottom, and not more than 60 inches (1500 mm) o.c. apart with welded or bolted steel brackets. (See Drawings for interior painted steel mounting plate with stainless steel bolts.)

i. Finish: Galvanized ladder, including brackets.

j. Source Limitations: Provide all components from single source from single manufacturer.

k. Note: Approximate distance from lower roof to higher roof is ± 18’ verify in field.

3. Products from other Manufacturers are acceptable provided they have the same salient properties.

2.8 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

2.9 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for operable partitions securely to and rigidly brace from building structure.

3.3 ADJUSTING AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 055000

# Section 061053 - Miscellaneous Rough Carpentry

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes the following:

1. Fire-retardant wood blocking**,** and nailers.

B. Related Sections include the following:

1. Division 7 Section "Modified Bituminous Membrane Roofing" for nailers, blocking and associated with roofing work.

2. Division 7 Section “Sheet Metal Flashing and Trim” for associated wood blocking details associated with roofing work.

### 1.3 DEFINITIONS

A. Rough Carpentry: Carpentry work not specified in other Sections and not exposed, unless otherwise indicated.

B. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NELMA - Northeastern Lumber Manufacturers Association.
2. NLGA - National Lumber Grades Authority.
3. SPIB - Southern Pine Inspection Bureau.
4. WCLIB - West Coast Lumber Inspection Bureau.
5. WWPA - Western Wood Products Association.

### 1.4 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment

manufacturer's written instructions for handling, storing, installing, and finishing treated material.

2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials, both before and after exposure to elevated temperatures when tested according to ASTM D 5516 and ASTM D 5664.
3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
4. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

## 1.5 QUALITY ASSURANCE

A. Source Limitations for Fire-Retardant-Treated Wood: Obtain each type of fire-retardant-treated wood product through one source from a single producer.

## 1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

# PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

## 2.2 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
3. Provide dressed lumber, S4S, unless otherwise indicated.
4. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38-mm actual) thickness or less, unless otherwise indicated.
5. **All concealed blocking and nailers shall be fire-retardant treated wood.**

B. Wood Structural Panels:

1. Plywood: Either DOC PS 1 or DOC PS 2, unless otherwise indicated.
2. Thickness: As needed to comply with requirements specified but not less than thickness indicated.

3. Comply with "Code Plus" provisions in APA Form No. E30K, "APA Design/Construction Guide: Residential & Commercial."
4. Factory mark panels according to indicated standard.
5. **All concealed wood structural panels shall be fire-retardant treated wood.**

## 2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, provide materials that comply with performance requirements in AWPA C20 (lumber) and AWPA C27 (plywood). Identify fire-retardant-treated wood with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Use treatment for which chemical manufacturer publishes physical properties of treated wood after exposure to elevated temperatures, when tested by a qualified independent testing agency according to ASTM D 5664, for lumber and ASTM D 5516, for plywood.
2. Use treatment that does not promote corrosion of metal fasteners.
3. Use Exterior type for exterior locations and where indicated.

## 2.4 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.

B. For items of dimension lumber size, provide Construction, Stud, or No. 2 grade lumber with 19 percent maximum moisture content and any of the following species:

1. Mixed southern pine; SPIB.
2. Spruce-pine-fir (south) or Spruce-pine-fir; NELMA, NLGA, WCLIB, or WWPA.

C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine, No. 2 grade; SPIB.
2. Spruce-pine-fir (south) or Spruce-pine-fir, Construction or 2 Common grade; NELMA, NLGA, WCLIB, or WWPA.

## 2.5 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where rough carpentry has been pressure preservative treated or is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M of Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: CABO NER-272.

D. Wood Screws: ASME B18.6.1.

E. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

F. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M).

G. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).

## 2.6 MISCELLANEOUS MATERIALS

A. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

# PART 3 - EXECUTION

## 3.1 INSTALLATION, GENERAL

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

B. Do not use materials with defects that impair quality of rough carpentry or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

C. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.

D. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. CABO NER-272 for power-driven fasteners.
2. Table 2305.2, "Fastening Schedule," in the BOCA National Building Code.
3. Table 2306.1, "Fastening Schedule," in the Standard Building Code.

E. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.

## 3.2 WOOD SLEEPER**,** BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated. Build anchor bolts into masonry during installation of masonry work. Where possible, secure anchor bolts to formwork before concrete placement.

END OF SECTION 061053

# SECTION 071416 - COLD FLUID-APPLIED WATERPROOFING

## 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. Fluid applied waterproofing and water barrier membrane.
2. Adhesive and detailing compound.
3. Joint & Seam Filler

### 1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review waterproofing requirements including, but not limited to, the following:

a. Surface preparation specified in other Sections.
b. Minimum curing period.
c. Forecasted weather conditions.
d. Special details and sheet flashings.
e. Repairs.

### 1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, and tested physical and performance properties of waterproofing.
2. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.
3. Product Data.

### 1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended in writing by waterproofing manufacturer.

B. Maintain adequate ventilation during application and curing of waterproofing materials.

1.7 WARRANTY

A. Provide a 10-Year Waterproofing Guarantee from the date of acceptance of the project material and labor guarantee/warranty, furnished by the manufacturer of the materials. The contractor shall be a certified contractor approved by the waterproofing material manufacturer, to conduct necessary testing and inspections as required by the waterproofing material manufacturer to obtain said guarantee. The guarantee shall not require the Owner's signature to be effective, shall not be DL/prorated, nor state the manufacturer will not honor the warranty until the waterproofing contractor, the supplier, and/or the manufacturer have been paid in full. The sample form of the guarantee shall be delivered to the Owner, and said guarantee shall be approved by the Owner prior to any ordering of materials. The manufacturer's labor and material guarantee shall guarantee, at the manufacturer's own cost and expense, to make or cause to be made such re-applications of, and to correct any and all faulty installations/applications.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis of Design:

1. PROSOCO R-Guard Cat 5

B. Approved Manufacturer's; Provided product meets salient characteristics of product and accessories specified:

1. Henry Air Bloc LF Liquid-Applied flashing

C. Source Limitations: Obtain components including waterproofing, primer, joint treatment, flashing around doors and windows from same waterproofing manufacturer or approved by waterproofing manufacturer.

2.2 AUXILIARY MATERIALS

A. General: Provide auxiliary materials recommended in writing by waterproofing manufacturer for intended use and compatible with one another and with waterproofing.

B. Primer: Manufacturer's standard primer, sealer, or surface conditioner; factory-formulated acrylic latex, polyurethane, or epoxy.

C. Joint Treatment. : Basis of Design:

1. PROSOCO R-Guard Joint & Seam Filler

D. Head, Jamb and Sill Flashing around Doors, Windows, Curtainwall and Storefront Systems, Basis of Design:

1. PROSOCO r-Guard FastFlash

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
1. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

C. PREPARATION AT TERMINATIONS, PENETRATIONS, AND CORNERS

1. Prepare surfaces at terminations and penetrations through waterproofing and at expansion joints, drains, sleeves, and corners according to waterproofing manufacturer's written instructions.
2. Apply waterproofing in applications as recommended by waterproofing manufacturer.

D. JOINT AND CRACK TREATMENT

1. Prepare, treat, rout, and fill joints and cracks in substrate according to waterproofing manufacturer's written instructions.
2. Install flashing and bond to wall substrates where required according to waterproofing manufacturer's written instructions.

### 3.3 WATERPROOFING APPLICATION

A. Inspect membrane before covering to ensure a void- and pinhole-free surface. Repair any deep gouges, punctures, or damaged areas with additional.

B. Apply Fluid applied waterproofing and water barrier membrane according to manufacturer's written.

C. Roller apply Fluid applied waterproofing and water barrier membrane to exterior wall assembly using vertical strokes with a slight diagonal slant ensuring coverage that is free of pinholes, voids and gaps.

D. Seal masonry ties and other penetrations as work progresses.

E. Coverage

1. Coverage rates vary depending on surface porosity, moisture uptake and other factors.
2. Exterior Gypsum Board, OSB and Plywood: 50 to 100 square feet per gallon
3. CMU: 50 to 80 square feet per gallon

F. Overlap repairs, penetration treatments, transitions, rigid flashing and other air barrier components to ensure positive drainage and continuity of the air and water-resistive barrier.

G. Cure Fluid applied waterproofing and water barrier membrane, taking care to prevent contamination and damage during application and curing.

## 3.4 PROTECTION

A. Protect waterproofing from damage and wear during remainder of construction period.

B. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

END OF SECTION 071416

# Section 074213.13 - Formed Metal Wall Panels

## 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. Exposed-fastener, lap-seam metal wall panels.

### 1.3 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 1-1/2 inches per 12 inches (1:10).

C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied finishes.

1. Include Samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish, prepared on Samples of size indicated below:

1. Metal Panels: 12 inches (305 mm) long by actual panel width. Include fasteners, closures, and other metal panel accessories.

### 1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranties: For special warranties.

## 1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

## 1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockup of typical metal panel assembly, including **corner, punched window opening,** supports, attachments, and accessories.
2. Water-Spray Test: Conduct water-spray test of metal panel assembly mockup, testing for water penetration according to AAMA 501.2.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

## 1.7 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, warping, 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 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 during installation.

## 1.8 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 manufacturers' written instructions and warranty requirements.

## 1.9 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leak-proof, secure, and noncorrosive installation.

1.10 WARRANTY

A. Special 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, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.
c. Leaks due to product failure or improper installation

2. Warranty Period: **Two** years 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, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: **20** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. 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 283 at the following test-pressure difference:

1. Test-Pressure Difference: **1.57 lbf/sq. ft. (75 Pa)**.

B. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 331 at the following test-pressure difference:

1. Test-Pressure Difference: **2.86 lbf/sq. ft. (137 Pa)**.

C. 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.

1. Temperature Change (Range): **120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces**.

D. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

## 2.2 EXPOSED-FASTENER, LAP-SEAM METAL WALL PANELS

A. General: Provide factory-formed metal panels designed to be field assembled by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps. Include accessories required for weathertight installation.

B. Approved Manufactures or Comparable Products 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:

1. Berridge Manf. Co.
2. MBCI
3. McElroy Metal Inc.

C. Tapered-Rib-Profile, Exposed-Fastener Metal Wall Panels: Formed with raised, trapezoidal major ribs and **intermediate stiffening ribs symmetrically spaced** between major ribs.

1. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation, or 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: **0.028 inch (0.71 mm)**.
b. Exterior Finish: **Siliconized polyester**.
c. Color: A**s selected by Architect from manufacturer's full range**.

2. Major-Rib Spacing: **12 inches (305 mm)** o.c.
3. Panel Coverage: **36 inches (914 mm)**.
4. Panel Height: **1.25 inches (32 mm)**.

## 2.3 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C 645, cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A 792/A 792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy 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 a 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 rakes, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

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, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
2. Joint Sealant: ASTM C 920; elastomeric polyurethane or 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.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

## 2.4 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by 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 panels may be fabricated on-site using UL-certified, 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. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

E. 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 to 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 as 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 wall panel manufacturer for application but not less than thickness of metal being secured.

## 2.5 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 not acceptable. 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. Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.2 mil (0.005 mm) for primer and 0.8 mil (0.02 mm) for topcoat.
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 0.5 mil (0.013 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 existing masonry wall verify that installation is within flatness tolerances required by metal wall 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 subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 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 securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. 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. Blind Fasteners: High-strength stainless-steel rivets. **Aluminum rivets not allowed.**

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.

1. Lap ribbed or fluted sheets one full rib. Apply panels and associated items true to line for neat and weathertight enclosure.
2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.

3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
5. Flash and seal panels with weather closures at perimeter of all openings.

E. Watertight Installation:

1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels; and elsewhere as needed to make panels watertight.
2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
3. At panel splices, nest panels with minimum 6-inch (152-mm) end lap, sealed with sealant and fastened together by interlocking clamping plates.

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, closure strips, and similar items. Provide types indicated by metal wall panel manufacturer; or, if not indicated, provide types recommended by metal 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 are permanently watertight.

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 performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

## 3.4 FIELD QUALITY CONTROL

A. Water-Spray Test: After installation, test area of assembly **as directed by Architect** for water penetration according to AAMA 501.2.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal wall panel installation, including accessories.

C. Remove and replace metal wall panels where tests and inspections indicate that they do not comply with specified requirements.

D. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

E. 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 in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074213.13

# Section 075216 - Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane 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. Roof Plies.
2. Tapered Insulation board
3. Cover Board
4. Application methods.

B. Related Requirements:

1. Section 061053 “ Miscellaneous Carpentry " for wood nailers, curbs, and blocking.
2. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counter flashings.
3. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

### 1.3 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

### 1.4 PRELIMINARY ROOFING CONFRENCE

A. PURPOSE: Establish a direct line of communication, iron out initial questions regarding the project and to review project submittal requirements.

B. TIMING: The meeting should be held shortly after award of the Contract and at least six weeks prior to the anticipated start of roofing.

C. ATTENDANCE:

a. Architect
b. Contractor’s Project Manager
c. Roofing Job Superintendent or Foreman
d. Manufacturer’s Roofing Inspector.

D. AGENDA: The most current AGENDA FOR PRELIMINARY ROOFING CONFERENCE has been downloaded from FP&C's website to conduct meeting at the at the Project site. See the FP&C's attachment at the end of this specification.

1.5 PRE-APPLICATION CONFRENCE

A. PURPOSE:

1. To verify readiness of the project structure.
2. To review assignments of Preliminary Conference
3. To scan last minute details, changes or corrections
4. To review anticipated schedule of progress

B. TIMING: Within one week of roofing application

C. ATTENDANCE:

a. Architect
b. Contractor's Project Manager
c. Roofing Job Superintendent or Foreman
d. Manufacturer's Roofing Inspector.

D. AGENDA: The most current AGENDA FOR ROOFING PRE- APPLICATION CONFERENCE has been downloaded from FP&C's website to conduct meeting at the at the Project site. See the FP&C's attachment ay the end of this specification.

1.6 FINAL INSPECTION AND WRAP-UP MEETING

A. PURPOSE: To assure 100% completion of project requirements.

B. TIMING: Just before the Roofing Contractor concludes his work at the site.

C. ATTENDANCE:

a. Architect
b. Contractor's Project Manager
c. Roofing job Superintendent or Foreman
d. Manufacturer's Roofing Inspector.

D. AGENDA: The most current AGENDA FOR ROOFING FINAL INSPECTION has been downloaded from FP&C's website to conduct meeting at the at the Project site. See the FP&C's attachment ay the end of this specification.

E. ROOF COMPLETION FORM: Fill out form downloaded from FP&C's website and submit to FP&C for approval. See the FP&C's attachment at the end of this specification. The Designer should contact. Architect will contact Lyle Savant FP&C Roofing at Lyle.Savant@LA.GOV for coordination of State Roofing Inspection.

A. 11) **Division 06 § 061053 - Misc. Rough Carpentry (Treated Lumber):** NRCA expresses

1.7 SUBSTITUTION SUBMITTALS

A. FP&C has developed a process by which SBS roofing manufacturers can gain approval of their system(s) that meet the State's requirements through a submittal process. When this process has been successfully completed by a Roofing Manufacturer, their approved products are then placed in the list contained herein. Once a manufacturer's products gain State approval, the State will not entertain requests from the manufacturer to change these approved products. The procedure for a roofing manufacturer to be removed from this list and re-application process is described in the State's Criteria for selection of roofing materials for the 20 year list. See the FP&C's list at the end of this specification.

1.8 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work, including:

1. Base flashings and membrane terminations.
2. Cants, tapered edge strips, including slopes.
3. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
4. Tapered insolation layout

1.9 INFORMATIONAL SUBMITTALS

A. Coordinate "Qualification Data" Paragraph below with qualification requirements in Section 014000 "Quality Requirements" and as may be supplemented in "Quality Assurance" Article.

B. Qualification Data: For Installer and manufacturer.

C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

D. Submit evidence of complying with performance requirements.

E. Product Test Reports: For components of membrane roofing system, for tests performed by manufacturer and witnessed by a qualified testing agency.

F. Research/Evaluation Reports: For components of membrane roofing system, from ICC-ES.

G. Field quality-control reports.

H. Sample Warranties: For manufacturer's special warranties.

I. The roofing system product supplier shall furnish the Roofing Contractor with Material Safety Data Sheet/Sheets (MSDS), incorporating OHSA approved form, current edition." State that "Said sheets shall be available at the site at all times until project completion." A copy shall be filed in the project file with FP&C.

J. Furnish a **Roofing Manuf. Assembly Letter**. The Assembly Letter is utilized to insure that the correct materials are ordered and delivered to the site. This letter shall be used to verify that the correct materials are on site prior to work proceeding. This is critical to insure that the Roofing Manuf. will issue a 20-Year

1.10 COSEOUT SUBMITTALS

A. The Roofing Contractor shall submit to the Designer, in 3-ring binders and in digital format, three (3) copies each of all roofing data, including manufacturer's catalogs/manuals of materials and accessories used in the Project, including manufacturer's guarantee and maintenance recommendations, for distribution to the User, Umbrella Agencies and Designer.

B. As-builts: As-built documents shall be furnished by the Architect and shall include plans with details, specifications, all change orders and shop drawings all of which shall be furnished before Final Acceptance to the User in either in a 3-ring binder or in digital format upon agreement of delivery method by the Owner.

1.11 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is **UL listed** for membrane roofing system identical to that used for this Project.

B. An approved manufacturer shall have been in business manufacturing in the United States a minimum of (5) five years and the roofing system specified has been applied for (5) five years in the same type climatic zone as the geographic location of subject project.

1. If requested Manufacturer shall provide a list of qualifying applications that can be documented as having been applied and performing well. If requested Manufacturer shall provide performance records of at least 3 roofs with addresses, locations and telephone numbers of contact persons.

**C.** Installer Qualifications: **The Roofing Contractor shall provide a current letter of Certificate of Certification issued by the Roof System Manufacturer that indicates he has attained the highest level of certification as an installer of the roof system specified that is issued by the manufacturer. This letter or certificate shall be presented to the owner within 48 hours after the time of the bid.**

1.12 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect cant strip materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

E. Rolls are to be stored on pallets, and on their ends.

## 1.13 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

## 1.14 WARRANTY

A. Special Warranty: Submit Manufacturer’s warranty on warranty form at the end of this section, signed by Manufacturer where they agree to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.

1. Special warranty includes membrane roofing, base flashings, **fasteners, roofing accessories,** and other components of roofing system.
2. Warranty Period: **20** years from date of Substantial Completion.
3. Type: **NDL** (no dollar limit)

B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as membrane roofing, base flashing, roof insulation, fasteners, and walkway products, for the following warranty period:

1. Warranty Period: **Two** years from date of Substantial Completion.

# PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

A. Basis of Design: Soprema.

B. Acceptable Manufactured (provided manufacturer can provide an equal system that also meets approval from FM Global): Johns Manville International, Inc.

C. Source Limitations: Obtain components including **fasteners** for roofing system from **same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer**.

2.2 PERFORMANCE REQUIREMENTS

A. Roofing System Design: modified bitumen roofing system mechanically fastened to an existing wood deck. Provide a roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE 7-16. Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight. Design a roofing system to resist the uplift pressures produced to meet the requirements per the International Building Code 2021:

B. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.

1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

C. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

D. Materials: Class A fire rating.

E. Factory Mutual System (FM): meet FM "Approval Standard, Class I Roof Covers Class Number 4470", current edition with current supplements and "Approval Standard, Class 1 Insulated Steel Deck Roofs. Class Number 4450" current edition with current Supplements.

F. Roofing System Design: Tested by a qualified testing agency to resist the following uplift pressures:

**1. Roof Area One (West Pit):**

a. Wind Speed Resistance: Provide the corner, perimeter, and field-of roof uplift pressure resistance calculated specifically for this building using:
b. **130** mph wind-speed.
c. Building Configuration: **Enclosed**
d. Exposure: **B**
e. Risk Catagory: **II**
f. **Not in Wind-Borne Debris Region.**
g. Height: **A=15'**
h. Roof Deck Type (Existing Roof): Structural Concrete Deck
i. Roof Covering Type: Modified Bitumen
j. Minimum Recommended Design Wind Resistance Loads as calculated by inputting above information into the NRCA Report of Roof System Design Wind - Load Analysis ASCE 7-16 Roofing System Design to resist the uplift pressures to meet the requirements per the International Building Code 2021. Roofing system shall be tested by a qualified testing agency to resist the following uplift pressures:
   1) Zone 1' (roof area field): 33.4 pounds per square foot
      a) Fasten using specified adhesive in parallel ribbons @ 12" o.c.

2) Zone 1 (roof area field): 58.1 pounds per square foot
   a) Fasten using specified adhesive in parallel ribbons @ 12" o.c.
3) Zone 2 (roof area perimeter): 76.7 pounds per square foot
   a) Fasten using specified adhesive in parallel ribbons @ 6" o.c.
4) Zone 3 (roof area corners): 104.5 pounds per square foot
   a) Fasten using specified adhesive in parallel ribbons @ 4" o.c.

**2. Roof Area "Two" (East Pit):**

a. Wind Speed Resistance: Provide the corner, perimeter, and field-of roof uplift pressure resistance calculated specifically for this building using:
b. **130** mph wind-speed.
c. Building Configuration: **Enclosed**
d. Exposure: **B**
e. Risk Catagory: **II**
f. **Not in Wind-Borne Debris Region.**
g. Height: **15'**
h. Roof Deck Type (Existing Roof): Structural Concrete Deck
i. Minimum Recommended Design Wind Resistance Loads as calculated by inputting above information into the NRCA Report of Roof System Design Wind - Load Analysis ASCE 7-16 Roofing System Design to resist the uplift pressures to meet the requirements per the International Building Code 2021. Roofing system shall be tested by a qualified testing agency to resist the following uplift pressures:
   1) Zone 1' (roof area field): 33.4 pounds per square foot
      a) Fasten using specified adhesive in parallel ribbons @ 12" o.c.
   2) Zone 1 (roof area field): 58.1 pounds per square foot
      a) Fasten using specified adhesive in parallel ribbons @ 12" o.c.
   3) Zone 2 (roof area perimeter): 76.7 pounds per square foot
      a) Fasten using specified adhesive in parallel ribbons @ 6" o.c.
   4) Zone 3 (roof area corners): 104.5 pounds per square foot
      a) Fasten using specified adhesive in parallel ribbons @ 4" o.c.

3. **Roof Area "Three" (Main Roof):**

a. Wind Speed Resistance: Provide the corner, perimeter, and field-of roof uplift pressure resistance calculated specifically for this building using:
b. **130** mph wind-speed.
c. Building Configuration: **Enclosed**
d. Exposure: **C**
e. Risk Catagory: **II**
f. **Not in Wind-Borne Debris Region.**
g. Height: **56'**
h. Roof Deck Type (Existing): Lightweight Concrete over Metal Deck
i. Roof Covering Type: Modified Bitumen
j. Minimum Recommended Design Wind Resistance Loads as calculated by inputting above information into the NRCA Report of Roof System Design Wind - Load Analysis ASCE 7-16 Roofing System Design to resist the uplift pressures to meet the requirements per the International Building Code 2021. Roofing system shall be tested by a qualified testing agency to resist the following uplift pressures:
   1) Zone 1' (roof area field): 53.0 pounds per square foot
      a) 10 fasteners per 4' x 4' board
   2) Zone 1 (roof area field): 92.3 pounds per square foot

a) 10 fasteners per 4’ x 4’ board
3) Zone 2 (roof area perimeter): 121.9 pounds per square foot
a) 15 fasteners per 4’ x 4’ board
4) Zone 3 (roof area corners): 166.2 pounds per square foot
a) 16 fasteners per 4’ x 4’ board

4. **Roof Area “Four” (Penthouse):**

a. Wind Speed Resistance: Provide the corner, perimeter, and field-of roof uplift pressure resistance calculated specifically for this building using:
b. **130** mph wind-speed.
c. Building Configuration: **Enclosed**
d. Exposure: **C**
e. Risk Catagory: **II**
f. **Not in Wind-Borne Debris Region.**
g. Height: **70’**
h. Roof Deck Type (Existing): Lightweight Concrete over Metal Deck
i. Roof Covering Type: Modified Bitumen
j. Minimum Recommended Design Wind Resistance Loads as calculated by inputting above information into the NRCA Report of Roof System Design Wind - Load Analysis ASCE 7-16 Roofing System Design to resist the uplift pressures to meet the requirements per the International Building Code 2021. Roofing system shall be tested by a qualified testing agency to resist the following uplift pressures:

1) Zone 1’ (roof area field): 54.0 pounds per square foot
a) 10 fasteners per 4’ x 4’ board
2) Zone 1 (roof area field): 94.1 pounds per square foot
a) 10 fasteners per 4’ x 4’ board
3) Zone 2 (roof area perimeter): 124.2 pounds per square foot
a) 15 fasteners per 4’ x 4’ board
4) Zone 3 (roof area corners): 169.3 pounds per square foot
a) 16 fasteners per 4’ x 4’ board

**G. Project Site is not in a wind-borne debris region**

H. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, **Class A**; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

I. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

## 2.3 SBS-MODIFIED ASPHALT-SHEET MATERIALS

A. ROOFING MEMBRANE VENTED BASE SHEET (Loose laid) ASTM D 4897, random glass fiber mat-reinforced SBS-modified asphalt sheet; top side surfaced with fine mineral aggregate (sanded), underside surfaced with mineral granules to facilitate venting characteristics as follows:

1. Basis of Design:
**a. Soprema, Inc.: Sopra 4897**

2. Products from the following Manufactures are acceptable provided they have the same salient properties:

   a. Johns Manville

B. ROOFING MEMBRANE VAPOR BARRIER (Cold Applied in ribbon pattern) ASTM D 6164, Grade S, Type I, non-woven polyester mat-reinforced SBS-modified asphalt sheet; smooth surfaced; suitable for application method specified, and as follows:

1. Basis of Design:
   **a. Soprema, Inc.: Sopralene 180 PS 3.0**
2. Products from the following Manufactures are acceptable provided they have the same salient properties:

   a. Johns Manville

C. ROOFING MEMBRANE **INTERPLY SHEET** (**Cold Applied**) ASTM D 6164, non-woven polyester mat-reinforced SBS-modified asphalt sheet; smooth surfaced; suitable for application method specified, and as follows:

1. Basis of Design:
   **a. Soprema, Inc.: Sopralene 180 Sanded 2.2**
2. Products from the following Manufactures are acceptable provided they have the same salient properties:

   a. Johns Manville

D. ROOFING MEMBRANE **INTERPLY SHEET** (**Heat Welded**)

1. Basis of Design:
   a. **Soprema, Inc.: Sopralene Flam 180**
2. Products from the following Manufactures are acceptable provided they have the same salient properties:

   a. Johns Manville

E. ROOFING MEMBRANE **CAP SHEET** (**Cold Applied**): ASTM D 6164, Grade G, Type I, non-woven polyester-reinforced mat, SBS-modified asphalt sheet; gray granular surfaced; suitable for application method specified, and as follows:

1. Basis of Design:
   **a. Soprema, Inc.: Sopralene 180 FR GR**
2. Products from the following Manufactures are acceptable provided they have the same salient properties:

   a. Johns Manville
3. Granule Color: Gray.

F. ROOFING MEMBRANE **CAP SHEET** (**Heat Welded**): ASTM D 6164, Grade G, Type I, non-woven polyester-reinforced mat, SBS-modified asphalt sheet; gray granular surfaced; suitable for application method specified, and as follows:

1. Basis of Design:
   **a. Soprema, Inc.: Sopralene Flam180 FR GR**

2. Products from the following Manufactures are acceptable provided they have the same salient properties:

   a. Johns Manville

3. Granule Color: Gray.

## 2.4 BASE FLASHING MATERIALS

A. **BACKER SHEET** (**Heat Welded**) ASTM D 5147, Grade S, Type I, glass-fiber-reinforced SBS-modified asphalt sheet; smooth surfaced; suitable for application method specified.

1. Basis of Design:
   a. **Soprema, Inc.: Sopralene Flam 180**
2. Products from the following Manufactures are acceptable provided they have the same salient properties:

   a. Johns Manville

B. **FLASHING SHEET** (**Heat Welded**) ASTM D 5147, Grade G, Type I, glass-fiber-reinforced granular surfaced; suitable for application method specified.

1. Basis of Design:
   **a. Soprema, Inc.: Sopraline Flam180 FR GR**
2. Products from the following Manufactures are acceptable provided they have the same salient properties:

   a. Johns Manville

3. Granule Color: Gray.

## 2.5 LIQUID APPLIED WATERPROOF FLASHING SYSTEM

A. PMMA (polymethyl methacrylate) technology, liquid applied waterproofing system with layers of non-woven, polyester fabric reinforcement.

1. Basis of Design
   **a. Soprema, Inc.: Alsan RS with primer & Poly Fleece**

2. Other Acceptable Products:
   a. Johns Manville: PermaFlash Bitminous Flashing System with Primer, Scrim and BUR Cement

## 2.6 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing components.

B. **Cold-Applied Adhesive (Type I)**: Roofing system manufacturer's standard single-component polymeric polymer modified adhesive for use with SBS-modified bitumen membrane systems.

1. Basis of Design:
   **a. Soprema, Inc.: Colply EF Adhesive**

C. **Low Rise Adhesive**: Low pressure, two-component spray polyurethane foam adhesive, applied in ribbons for adhering coverboards and rigid insulation.

1. Basis of Design:
   **a. Soprema, Inc.: Duotack SPF Adhesive**

2. Products from the following Manufactures are acceptable provided they have the same salient properties:

   a. Johns Manville

D. **Cold-Applied Adhesive (Type II)**: Roofing system manufacturer's standard asphalt-based, one- or two-part, asbestos-free, cold-applied adhesive specially formulated for compatibility and use with flashing membranes Basis of Design:

1. Basis of Design:
   **a. Soprema: Colply Adhesive**

**2.** Other Acceptable Products **:**
   a. Johns Manville: MBR Cold Application Adhesive

E. Asphalt Primer: ASTM D 41/D 41M.

F. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required by roofing system manufacturer for application.

G. Mastic Sealant: Polyisobutylene, plain or modified bitumen; nonhardening, nonmigrating, nonskinning, and nondrying.

H. Fasteners: Factory-coated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Global 4470 **(Plastic Fastener plates not Allowed)**, designed for fastening roofing components to substrate; tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.

I. Roofing Granules: Ceramic-coated roofing granules, No. 11 screen size with 100 percent passing No. 8 (2.36-mm) sieve and 98 percent of mass retained on No. 40 (0.425-mm) sieve, color to match roofing.

## 2.7 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Approvals-approved roof insulation.

B. Polyisocyanurate Board Insulation: felt or glass-fiber mat facer on both major surfaces.

1. Soprema: Sopra-Iso
   a. Tapered
      1) 1/16 inches per foot (Roof Systems A & B)
      2) 1/8 inches per foot (Roof Systems C & D) see plan for location

2. Products from the following Manufactures are acceptable provided they have the same salient properties:

   a. Johns Manville

2.8 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.

A. **Cant Strips**: Triangular shaped, modified bitumen cant strips.
   1. Basis of Design: **Soprema Soprarock Cant Strips**
   2. Products from the following Manufactures are acceptable provided they have the same salient properties:
   3. Johns Manville

2.9 COVER BOARD

A. Cover Board: Mineral fortified asphaltic core formed between two fiberglass reinforcing plies. Thickness 1/ 4".

   1. Basis of Design:
      **a. Soprema Inc.: Sopraboard**

   2. Other Acceptable Products:
      a. W.R. Meadows, Sturdy-Dek
      b. Blue Ridge Sturdy-Dek

B. Wood Nailer Strips: Comply with requirements in **Section 061053 "Miscellaneous Rough Carpentry."**

2.10 ROOFING ACCESSORIES

A. Pipe Supports: Reuse existing

2.11 WALKWAYS

A. Walkway Cap-Sheet Strips: ASTM D5147, Type I or II, Grade G, SBS-modified asphalt sheet reinforced with a non-woven polyester fabric; granule surfaced; suitable for application method specified, and as follows:

   1. Basis of Design: Soprema Soprawalk;
      a. Size: Manufacturer's standard.
      b. Granule Color: **Gray**.
   2. Products from the following Manufactures are acceptable provided they have the same salient properties:
      a. Johns Manville

2.12 PIPE SUPPORTS:

A. Adjustable pipe supports designed to support roof-mounted gas pipes, electrical conduit and other mechanical piping. Design to absorb thermal expansion and contraction of pipes thus preventing damage to the roof membrane. Use one of the following depending on application or approved equal:

1. Basis of Design: Miro;
   a. Miro 3-RAH-7 (adjustable height from 3-1/2” to 7”)
   b. Miro 2.5-CS-12 (adjustable height from 4-1/4” to 12”)
   c. Spacing 10’ max
   d. Base Material: Polycarbonate
   e. Metal parts: Stainless Steel
2. Other Acceptable Products:
   a. MIFAB; C-port Rubber Support Series.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:

1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that deck is securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16 inch (1.6 mm) out of plane relative to adjoining deck.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 INSTALLATION, GENERAL

A. Comply with roofing system manufacturer's written instructions.

B. Substrate-Joint Penetrations: Prevent roofing asphalt and adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

## 3.4 CANT & TAPERED INSULATION INSTALLATION

A. Cant Strips: Install and secure preformed 45-degree insulation cant strips at junctures of roofing system with vertical surfaces or angle changes greater than 45 degrees.

B. Install tapered insulation under area of roofing to conform to slopes indicated adhere to substrate as follows:

1. Cold Application Adhesive, Urethane Insulation Adhesive, or Mechanically Fasten to comply with description in (3.11 Summary) or to meet FM Assembly #’s called for in (1.6 Informational Submittals).

C. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.

D. Adhered cant & tapered edge strips Insulation: Install to substrate with cold application adhesive.

## 3.5 ROOFING INSTALLATION, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions and applicable recommendations in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing."

1. Install roofing system, according to roof assembly identification matrix and roof assembly layout illustrations in NRCA's "The NRCA Roofing and Waterproofing Manual" and to Section requirements.

B. Install roofing system according to roofing system manufacturer's written instructions and applicable recommendations in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing"

C. Start installation of roofing in presence of manufacturer's technical personnel.

D. Coordinate installation of roofing system and other components of the roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

1. Provide tie-offs at end of each day's work to cover exposed roofing sheets and insulation with a course of coated felt set in roofing cement or hot roofing asphalt, with joints and edges sealed.
2. Complete terminations and base flashings, and provide temporary seals to prevent water from entering completed sections of roofing system.
3. Remove and discard temporary seals before beginning work on adjoining roofing.

## 3.6 BASE-PLY SHEET INSTALLATION

A. Install base-ply sheets according to roofing system manufacturer's written instructions starting at low point of roofing system. Align glass-fiber base-ply sheets without stretching. Extend sheets over and terminate beyond cants.

1. Shingle side laps of base-ply sheets uniformly to ensure that required number of base-ply sheets covers substrate at any point. Shingle in direction to shed water.

2. Embed each base-ply sheet in a continuous void-free installation of cold application adhesive per manufacturer's instructions.

## 3.7 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

A. Install modified bituminous roofing **sheet and** cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:

1. Adhere to substrate in cold application adhesive per manufacturer's instructions.
2. Unroll roofing sheets and allow them to relax for minimum time period required by manufacturer.

B. Laps: Accurately align roofing sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids.

1. Repair tears and voids in laps and lapped seams not completely sealed.
2. Apply roofing granules at laps.

C. Install roofing sheets so side and end laps shed water.

## 3.8 FLASHING AND STRIPPING INSTALLATION

A. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions and as follows:

1. Prime substrates with asphalt primer if required by roofing system manufacturer.
2. Backer-Sheet Application: Mechanically fasten backer sheet to walls or parapets. **Torch-apply backer sheet over roofing membrane at cants.**
1. Flashing-Sheet Application: **Torch-apply base flashing sheet to substrate**.

B. Extend base flashing up walls or parapets a minimum of 8 inches (200 mm) above roofing membrane and 4 inches (100 mm) onto field of roofing membrane.

C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.

1. Seal top termination of base flashing **with a strip of glass-fiber fabric set in asphalt roofing cement**.

D. Install roofing cap-sheet stripping where metal flanges and edgings are set on roofing according to roofing system manufacturer's written instructions.

E. Roof Drains: Set **30-by-30-inch- (760-by-760-mm-)** metal flashing in bed of asphaltic adhesive on completed roofing membrane. Cover metal flashing with roofing cap-sheet stripping, and extend a minimum of **6 inches (150 mm)** beyond edge of metal flashing onto field of roofing membrane. Clamp roofing membrane, metal flashing, and stripping into roof-drain clamping ring.

1. Install stripping according to roofing system manufacturer's written instructions.

3.9 FIELD QUALITY CONTROL

A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

1. Notify Architect and Owner 48 hours in advance of date and time of inspection.

B. Roofing system will be considered defective if it does not pass inspections.

1. Additional inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.10 INSPECTIONS:

B. FP&C may, at their option, select and employ at FP&C'S expense:

1. A roofing systems Consultant to review the Construction Documents and/or perform surveillance during any installation of substrate, roofing, flashing and any other part of the total roofing system.

2. An independent roofing inspection service specializing in performing Non-Destructive Evaluation (NDE), for moisture detection purposes, before the final acceptance of the roofing or before the end of the roofing Guarantee Period.

3. Have a full time representative on site during the roofing installation. Additionally, FP&C may conduct a moisture survey using FP&C's Roofing Section personnel and equipment prior to the Department's approval and acceptance of the roofing contract. Discuss this with Facility Planning and Control before completing Construction Documents.

4. The representatives of the Designer, FP&C, User Agency, the General Contractor, the Roofing Contractor and Roofing Manufacturer's technical representative shall make inspections of the roofing system toward the end of the one (1) year warranty period and toward the end of the Roofing Contractor's two (2) year guarantee period. Further, the Roofing System Manufacturer's authorized technical representative shall inspect the roofing system near the close of the Manufacturer's Guarantee. A written report shall be submitted to FP&C, with a copy to the User, by the Roof System Manufacturer's representative within seven days of each site visit.

3.11 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.12 SUMMARY OF WORK:

A. Project Description: THE PROJECT INCLUDES:

**B. Roofing Systems "A" ±33' Above Finished Floor (West Pit):**

1. Flat System over Structural Concrete

a. **Existing Roof Components:** from top to bottom: from Core Report prepared by Mid South Specialty Products LLC August 16, 2024: (One roof system in place)

1) Modified Bitumen Granular Cap Sheet
2) Modified Bitumen interplay sheet
3) Tapered perlite
4) Structural Concrete

**b. Demolition of Existing Roofing System:**

1) Remove: entire roof system down to Structural Concrete
2) Dry out existing concrete prior to installation of new roof components

**c. New Roof Systems Components:** from bottom to top**:**

1) Dry out existing concrete deck with all means necessary
2) Install Vapor Barrier base sheet in cold applied adhesive Type I in ribbon pattern.
3) Install 1 /16" per foot tapered Polyisocyanurate rigid insulation board in low rise adhesive.
4) Install 1/ 4" thick semi rigid, asphaltic cover board in cold applied adhesive Type II
5) Torch apply INTERPLY layer of SBS modified bitumen.
6) Torch apply Granulated SBS modified bitumen CAP SHEET.
7) Ponding Water: Once Cap Sheet has been installed flood roof with water and mark areas that are still holding water. Mark low areas with spray can paint and fill low areas with cementitious sloping material. Water shall not be allowed to pond in any area of the roof for more than 24 hours.

**C. Roofing Systems "B" ±33' AFF (East Pit):**

1. 2 Flat Systems over Structural Concrete

a. **Existing Roof Components:** from top to bottom: from Core Report prepared by Mid South Specialty Products LLC August 16, 2024: (Two roof systems in place)

1) Modified Bitumen Granular Cap Sheet
2) Modified Bitumen interplay sheet
3) Tapered perlite 2nd roof system over
4) Existing built up roof
5) Structural Concrete

**b. Demolition of Existing Roofing System:**

1) Remove: entire roof system down to Structural Concrete
2) Dry out existing concrete prior to installation of new roof components

**c. New Roof Systems Components:** from bottom to top**:**

1) Dry out existing concrete deck with all means necessary
2) Install Vapor Barrier base sheet in cold applied adhesive Type I in ribbon pattern.
3) Install 1 /8" per foot tapered Polyisocyanurate rigid insulation board in low rise adhesive.
4) Install 1/ 4" thick semi rigid, asphaltic cover board in cold applied adhesive Type II
5) Torch apply INTERPLY layer of SBS modified bitumen.
6) Torch apply Granulated SBS modified bitumen CAP SHEET.
7) Ponding Water: Once Cap Sheet has been installed flood roof with water and mark areas that are still holding water. Mark low areas with spray can paint and fill low areas with cementitious sloping material. Water shall not be allowed to pond in any area of the roof for more than 24 hours.

D. **Roof System "C" Flat System over Zonolite over Metal Deck ±56'AFF (High Main Roof Section)**

a. **Existing Roof Components:** from top to bottom from: Core Report prepared by Mid South Specialty Products LLC August 16, 2024:

1) Cold Apply Modified Bitumen Granular Cap Sheet
2) Cold Apply Modified Bitumen interplay sheet
3) Perlite insulation
4) Mechanically attached loose laid base sheet
5) Sloped Zonolite
6) Metal Deck

**b. Demolition of Existing Roofing System:**

1) Remove: entire roof system down to Zonolite
2) Dry out existing deck prior to installation of new roof components

**c. New Roof Systems Components: from bottom to top:**

1) Dry out existing Zonolite deck with all means necessary
2) Install VENTED BASE SHEET (Lose Laid)
3) Install 1 /8" per foot tapered Polyisocyanurate rigid insulation board with 3- 1/ 2" metal plates and #15 metal fasteners through Zonolite into metal deck.
4) Install 1/ 4" thick semi rigid, asphaltic cover board in cold applied adhesive Type II.
5) Install INTERPLY SHEET in cold applied adhesive Type II.
6) Install Granulated SBS modified bitumen CAP SHEET in cold applied adhesive Type II.
7) Ponding Water: Once Cap Sheet has been installed flood roof with water and mark areas that are still holding water. Mark low areas with spray can paint and fill low areas with cementitious sloping material. Water shall not be allowed to pond in any area of the roof for more than 24 hours.

**E. Roofing Systems "D" ±70' Above Finished Floor (Penthouse Roof):**

a. **Existing Roof Components:** from top to bottom from: Core Report prepared by Mid South Specialty Products LLC August 16, 2024:

1) Cold apply Modified Bitumen Granular Cap Sheet
2) Cold apply Modified Bitumen interplay sheet
3) Mechanically attached loose laid base sheet
4) Sloped Zonolite
5) Metal Deck

**b. Demolition of Existing Roofing System:**

1) Remove: entire roof system down to Zonolite
2) Dry out existing deck prior to installation of new roof components

**c. New Roof Systems Components: from bottom to top:**

1) Dry out existing Zonolite deck with all means necessary
2) Install VENTED BASE SHEET (Lose Laid)
3) Install 1 /8" per foot tapered Polyisocyanurate rigid insulation board with 3- 1/ 2" metal plates and #15 metal fasteners through Zonolite into metal deck.
4) Install 1/ 4" thick semi rigid, asphaltic cover board in cold applied adhesive Type II.
5) Install INTERPLY SHEET in cold applied adhesive Type II.
6) Install Granulated SBS modified bitumen CAP SHEET in cold applied adhesive Type II.
7) Ponding Water: Once Cap Sheet has been installed flood roof with water and mark areas that are still holding water. Mark low areas with spray can paint and fill low areas with cementitious sloping material. Water shall not be allowed to pond in any area of the roof for more than 24 hours.

3.13 ROOFING INSTALLER'S WARRANTY:

1. The Roofing Contractor or Roofing Systems Manufacturer, as applicable, shall make approved repairs and/or replacements covered by the Guarantee.

2. The project will not be accepted until the Roofing Contractor's Guarantee and the Roofing Manufacturer's Guarantee are both executed in strict accordance with the Contract Documents and data from "Attached FPC_R2" below in these Instructions and have been submitted to and accepted by the Owner.

**ROOFING GUARANTEE R-1**

**OWNER:** STATE OF LOUISIANA

ADDRESS: OFFICE OF FACILITY PLANNING AND CONTROL
POST OFFICE BOX 94095 CAPITOL STATION
BATON ROUGE, LOUISIANA 70804-9095

WHEREAS _____

Address _____

Telephone (____)_____ Email _____

herein called the "Roofing Contractor", has performed roofing and flashing in accordance with the Contract Documents for Project / Part No. _____, WBS No._____ (hereinafter called the "Work") under a

Subcontract with _____

General Contractor on the Following Project: _____

Name of Project: _____

User Agency: _____

Location/Address: _____

_____

Name and Type of Building(s): _____

_____ Building I.D. _____

Type(s) of Roof Deck(s): _____

_____

Total Roof Area: _____ SF; Flashing, Edge: _____ LF; Base: _____ LF

Date of Acceptance: _____Guarantee Period: 2 Years

Date of Expiration: _____

AND WHEREAS the Roofing Contractor has contracted (as a Subcontractor) to guarantee said work against water entry from faulty or defective materials and workmanship for the designated Guarantee period;

AND WHEREAS the General Contractor, by its acceptance of the Contract for the above described project, has jointly assumed with the Roofing Contractor the obligations to the Owner of said guarantee against leaks and faulty or defective materials and workmanship;

NOW THEREFORE the Roofing Contractor and the General Contractor jointly and severally guarantee, subject to the terms and conditions herein set forth, that during the Guarantee Period they will at their own cost and expense, make or cause to be made with approved procedures and materials such repairs to or replacements of said work resulting from water entry or faults or defects of said Work as are necessary to correct faulty and defective work and as are necessary to maintain said Work in watertight conditions and further to respond on or within two (2) working days upon written notification of leaks or defects by the Owner/User Agency. Furthermore, they will at their own cost and expense maintain the roof for (2) years after acceptance, in accordance with the current edition of the Roof Maintenance Manual published by the Roofing Industry Educational Institute. The roof shall be inspected a minimum of twice each year, and a report prepared documenting the conditions observed at each inspection. These inspections shall be made once during the months of April or May and once during the months of September and October. Two copies of each report shall be forwarded to the Owner and User Agency.

This Guarantee is made subject to the following terms and conditions:

1. Specifically excluded from this guarantee are damages to the Work, other parts of the building and building contents caused by: A) lightning, and storm (includes hurricanes and tornadoes), hailstorm, earthquakes and other unusual phenomena of the elements; B) fire; and C) structural failures causing excessive roof deck, edgings and related roof components movement. When the Work has been damaged by any of the foregoing causes, the Guarantee will be null and void until such damage has been repaired by the Roofing Contractor, and until the cost and expense thereof has been paid by the Owner or another responsible party so designated.

2. During the Guarantee Period, if the Owner/User Agency allows alteration of the Work by anyone other than a Contractor approved in writing by the Roofing Subcontractor, General Contractor, and Roofing Material Manufacturer prior to the work being performed, including cutting, patching and maintenance in connection with penetrations, attachment of other work, and positioning of anything on the roof, this Guarantee shall become null and void upon the date of said alterations. If the Owner/User Agency engages the Roofing Contractor to perform said alterations, the Guarantee shall not become null and void, unless the Roofing Contractor, prior to proceeding with said work, shall have notified the Owner/User Agency in writing, showing reasonable cause for claim that said alterations would likely damage or deteriorate the Work, thereby reasonably justifying a termination of this Guarantee.

3. During the Guarantee Period, if the original use of the roof is changed and it becomes used for, but for which it was not originally designed or specified, as a promenade, work deck, spray-cooled surface, flooded basin, or other use of service more severe than originally specified, this Guarantee shall become null and void upon the date of said change.

4. During the Guarantee Period, if any building or area of a building is changed to uses creating extremes of interior temperature and/or humidity, but for which it was not originally designed and specified, without provisions and alterations made to the building which effectively contain or control these conditions, this guarantee shall become null and void upon the date of said change.

5. The Owner/User Agency shall promptly notify the Roofing Contractor in writing of observed, known or suspected leaks, defects or deterioration, and shall afford reasonable opportunity for the Roofing Contractor to inspect the Work, and to examine the evidence of such leaks, defects or deterioration.

6. This Guarantee is recognized to be the only guarantee of the General and Roofing Contractor on said work, and shall not operate to restrict or cut off the Owner from other remedies and recourses lawfully available to him in case of roofing failure. Specifically, this Guarantee shall not operate to relieve the Roofing Contractor of his responsibility for performance of the original work, regardless of whether the Contract was a Contract directly with the Owner or a Subcontract with the Owner's General Contractor.

IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, 20____.

Roofing Contractor's Signature: _____

Typed Name: _____

Representing: _____

Telephone (____)_____, Email _____

Witness:_____

Witness:_____

And has been countersigned by the General Contractor issuing the Roofing Contractor's Subcontract for said work:

Name of General Contractor: _____

Date: _____ Authorized Signature: _____

Representing: _____

Typed Name: _____

Telephone (____)_____, Email _____

Witness:_____

Witness:_____

FPC MWMRS Document

# MANUFACTURER'S NDL WATERTIGHTNESS MEMBRANE ROOFING SYSTEM WARRANTY

ISSUE TO:

STATE OF LOUISIANA- DOA- FACILITY PLANNING AND CONTROL

MFGR WARRANTY NUMBER:_____

_____, hereinafter referred to as "mfgr" hereby warrants to the owner, known as the State of Louisiana, hereinafter referred to as the "State" that the referenced membrane roofing assembly will remain in a watertight condition for a period of ____ years. For the purpose of this warranty "watertight" or "watertightness means that the roofing system does not allow water to leak through a breach in the roofing system. Mfgr further warrants the performance of the products listed below and warrants that the material and installation of the roofing assembly is free of material and known installation defects at the time of application and that the materials listed below conform to mfgr specifications.

All products used in the roofing assembly from the deck (structural concrete, metal, LWIC, wood, etc.), up are included in this warranty regardless of whether mfgr furnished or branded the products with the exception of shop fabricated metals not furnished by mfgr. These products are to include, but not be limited to: base sheets, fasteners and plates, insulation board, cover board, asphalt, adhesives (insulation and membrane), mastics, field plies, membrane flashing plies and liquid flashing products. The roofing products are specifically listed as follows:

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

In the event that the new membrane roofing assembly is installed in a recover fashion over an existing roofing assembly, the performance of the existing roofing products that remain in-place beneath the new roofing assembly are excluded from this warranty.

In the event that covered leaks occur in the roofing system that are attributable to the workmanship of the installing contractor or a defect in or failure of any of the mfgr products listed above, mfgr will make repairs required to return the roof to a watertight condition, regardless of the scope and cost of the required repairs. The State will notify mfgr within 30 days of the discovery of the leak. Should the State not make this notification within the prescribed 30 day time period, then further damage to the roofing assembly caused by the delay in notification will not be construed as a warranty repair item. Mfgr will respond to the leak notification within 10 days and once it is confirmed that the leak(s) is within the scope of mfgrs responsibilities under this warranty, mfgr will execute repairs promptly thereafter. Mfgr's failure to respond timely and make proper repairs shall enable the State to engage service of "others" to address the problem(s) at mfgr's expense assuming the cost of the repair is reasonable and the scope of the repair is limited to the remedy of the leak without jeopardizing State's protection under terms of this warranty. The State may make reasonable and customary emergency temporary repairs at its discretion and at mfgrs expense without jeopardizing the State's protection under the terms of this warranty.

The manufacturers of SBS products that are approved by the State and included in the State's list of acceptable products have agreed to a dimensional stability of the cap sheet and interply sheet of 0.2% per ASTM D 5147, section 10. 0.2% of a 33 foot roll is approximately equal to ¾". For the term of this warranty, SBS cap sheet shrinkage in excess of ¾" will be repaired by the mfgr by cutting out the interply void in the "T" lap, cleaning and drying, and repair with an acceptable cap sheet product.

**The following items are excluded from this warranty:**

1. Damage to the roof caused by wind exceeding 72 mph, lightning, hail, fire or physical damage from falling or wind-blown objects
2. Deficient design by other than mfgr
3. Intentional or accidental damages to the roof, or misuse, abuse, vandalism or the likes
4. Leaks caused by deterioration or failure of items not included in the warranty
5. Modifications or alterations to the roofing assembly after completion unless done in a manner approved by mfgr
6. Damage to the roofing assembly after issuance of this warranty caused by excessive foot traffic or its use as a work platform or storage area
7. Damage to the roofing assembly caused by ponding water, which is defined as water on the surface of the roof that does not dissipate within 72 hours of average drying conditions
8. Consequential and incidental damages, including damage to the building or its contents
9. Damage to the roofing assembly caused by failure by the State to exercise reasonable care and maintenance

10. Damage to the roofing assembly caused by structural defects or failure or excessive movement of building components
11. Damage to the roofing assembly due to exposure to chemical attack, including deposits of animal fats, grease and oil
12. The State shall be responsible for the costs associated with the removal and replacement of any overburden, superstrata or overlays, either permanent or temporary, which include but are not limited to: structures or assemblies added after installation, fixtures or utilities on or through the roofing assembly, support platforms or bases for solar panels, garden roofs, decks, patios or any other obstacles that impede access, clear observation, investigation or repairs to the roofing system, excluding ballast or pavers or any other overburden specifically accepted by mfgr to be included within warranty coverage.

For wind related events, this warranty excludes damage to the roofing assembly where the cause includes any of the following:

A. Failure or excessive movement of primary or secondary structural elements or roof deck, wood nailers or blocking and edge system components not furnished by mfgr
B. Failure of walls, doors, windows, openings or other building envelope components
C. Rooftop structures and equipment

Mfgr may have access to the roof for inspection purposes for the term of the warranty by scheduling through the appropriate State Agency.

This warranty is tendered for the benefit of the State and is not transferable or assignable without the written consent of Mfgr.

The Nineteenth Judicial District Court in and for the Parish of East Baton Rouge, State of Louisiana shall have sole jurisdiction in any action brought as a result of this warranty by any party hereto. This warranty shall be governed by and construed in accordance with the laws of the State of Louisiana.

This warranty instrument supersedes and is in lieu of any and all other expressed or implied warranties that are or may be in conflict with terms and conditions stated herein.

This warranty requires the signature of an authorized officer of Mfgr. Three fully executed copies are to be provided to the State as a prerequisite for project acceptance. The State's signature shall not be a requirement for implementation of, or cause to validate this warranty.

A separate and independent warranty shall be issued for each building or independent roof system in the case of multiple buildings or mixed roof types.

Abbreviations:

LWIC—Lightweight Insulating Concrete

ASTM—American Society for Testing and Materials

**PROJECT DATA / SIGNATURE**

Owner: State of Louisiana- DOA- Facility Planning and Control

Building/Project Name:_____

Roof Type:_____

No. of Squares:_____

Location:_____

La. State Building I.D.:_____

Site Code:_____

LA State Project Number:_____

Date of Project Acceptance and Commencement of Warranty:_____

_____

Warranty End Date:_____

**Manufacturer Name Address and Phone Number:**

_____

_____

_____

_____

Authorized Manufacturer Signature: _____

_____ ____/____/____

Printed name Date

_____

Title

Direct to:

**STATE of LOUISIANA (Owner)**

**DIVISION OF ADMINISTRATION**

**Facility Planning and Control**

PO Box 94095

Baton Rouge, Louisiana 70804-9095

//////////////// END NDL WATERTIGHTNESS WARRANTY \\\\\\\\\\\\\\\\

# State of Louisiana / DOA / Facility Planning and Control (FP&C)

## 20-Year Warranty SBS Manuf. / Products Acceptable on State Projects

**GENERAL: A Two-Ply *Cold-Applied* SBS Modified Bitumen Roofing Assembly (with Heat Welded Laps) is the State of Louisiana's selected membrane roof type.** Variations to this system are considered by Facility Planning and Control (FP&C), when a compelling reason to do so is presented in writing by the Roofing Designer. Variations may include Hot-Applied Asphalt SBS Systems, or possibly different types of roofing membrane assemblies when warranted.

FP&C has developed a process by which SBS roofing manufacturers can gain approval of their system(s) that meet the State's requirements through a submittal process. When this process has been successfully completed by a Roofing Manufacturer, their approved products are then placed in the list contained herein. Once a manufacturer's products gain State approval, the State will not entertain requests from the manufacturer to change these approved products. The procedure for a roofing manufacturer to be removed from this list and re-application process is described in the State's *Criteria for selection of roofing materials for the 20 year list*.

**GENERAL NOTES:**

- All flashing systems are to be 2-Ply Systems.
- Designers should specify granular surfaced flashing materials unless there is a specific need for the Metal Clad Flashing.
- Basic Roof Assembly: (2) Layers off Polyiso. Insulation (stagger joints), thickness specified by Designer to meet required R-Value / (1) Cover Board, thickness specified by Designer (typ. ½" to be confirmed by Roof Manuf. in Assembly Letter), Inter-Ply, Granulated Cap Sheet
- Foot Traffic must be minimized after installing plies with Cold-Applied per Manuf. Specs.

**WARRANTY:** Upon successful completion of the project, and after all post installation procedures have been completed, the Contractor shall furnish the State with a twenty (20) year NDL labor and materials watertightness warranty on the State of Louisiana Manufacturer's NDL Watertightness Membrane Roofing System Warranty Format.

**********

**MATERIALS:** The following Cold Applied Materials (or hot mopped by specific allowance) and heat fused flashings, shall be acceptable:

**1. Certainteed Commercial Roofing:**

**Field Plies:**
**Cap Sheet:** Flintlastic FR-P Cap Sheet (168 mils; weight 100 lbs. per one square roll; with a polyester mat)
**Interply:** Flintlastic Ultra Poly SMS Base Sheet (148 mils; weight 89 lbs. per one square roll; with a polyester mat)

**Granular Flashing Plies:**
**Cap Ply:** Flintlastic FR-P Cap Sheet (168 mils; weight 100 lbs. per one square roll; with a polyester mat)
**Stripping Ply:** Flintlastic Ultra Poly SMS Base Sheet (148 mils; weight 89 lbs. per one square roll; with a polyester mat)

**Heat Fused Granular Flashing Plies:**
**Cap Ply:** Flintlastic GTS-FR (160 mils; weight 103 lbs. per one square roll; with a polyester mat)
**Stripping Ply:** Flintlastic Ultra Poly SMS Base Sheet (148 mils; weight 89 lbs. per one square roll; with a polyester mat)

**Heat Fused Aluminum Clad flashing Plies: N/A**

**Cold Adhesive:** Flintbond SBS Modified Bitumen Adhesive, Brush Grade

**2. <u>Johns Manville Corporation</u>:**

**Field Plies:**
**Cap Sheet:** DynaGlas FR (3.8 mm thick, weight 95 lbs per square; with Fiberglass Mat).
**Interply:** DynaLastic 180 S (3.0 mm thick; weight 90 lbs per square; with Polyester reinforcement).

**Granular Flashing Plies:**
**Cap Ply:** DynaGlas FR (3.8 mm thick, weight 95 lbs. per square; with Fiberglass Mat).
**Stripping Ply:** DynaLastic 180 S (3.0 mm thick; weight 90 lbs. per square; with Polyester reinforcement).

**Heat Fused Granular Flashing Plies:**
**Cap Ply:** Dynaweld Cap FR (165 mils/4.2 mm thick; weight 106 lbs. per one square roll; with fiberglass reinforcement mat).
**Stripping Ply:** Dynaweld 180S (118 mils/3.0 mm thick; weight 86 lbs. per one square roll; with polyester mat with bidirectional glass-scrim reinforcement)

**Heat Fused Aluminum Clad Flashing Plies:**
**Cap Ply:** DynaClad (158 mils/4.0 mm thick; weight 101 lbs per square, with fiberglass Mat)
**Stripping Ply:** DynaLastic 180 S (3.0 mm thick; weight 90 lbs. per square; with Polyester reinforcement) hot mopped.

**Cold adhesive:** MBR

**3. <u>Polyglass U.S.A. Inc.</u>:**

**Field Plies:**
**Cap Sheet:** Elastoflex S6G FR (157 mils/4.0 mm thick; weight 102 lbs. per roll; with reinforced polyester reinforcement).
**Interply:** Elastoflex V (120 mils/3.0 mm thick; weight 84 lbs. per roll; with glass fiber reinforcement).

**Granular Flashing Plies:**
**Cap Ply:** Elastoflex S6G FR (157 mils/4.0 mm thick; weight 102 lbs. per roll, with reinforced polyester reinforcement).
**Stripping Ply:** Elastoflex V (120 mils/3.0 mm thick; weight 84 lbs. per roll; with glass fiber reinforcement).

**Heat Fused Granular Flashing Plies:**
**Cap Ply:** Elastoflex S6 FR (157 mils/4.0 mm thick; weight 102 lbs. per roll; with a reinforced polyester reinforcement).
**Stripping Ply (Non-combustible substrates):** Elastoflex V (120 mils/3.0 mm; weight 84 lbs. per roll; with glass fiber reinforcement).
**Stripping Ply (Combustible substrates):** Elastoflex SA V (80 mils/2.0mm; weight 95 lbs. per roll; with a glass fiber reinforcement).

**Cold adhesive:** PG 350 or PolyPlus 35 Modified Bitumen Adhesive

**4. Siplast Inc.:**

**Field Plies:**
**Cap Sheet:** Paradiene 30 FR (98 mils/2.5mm thick; weight 90 lbs. per square; with fiberglass mat).
**Interply:** Paradiene 20 EG (3.0 mm thick; weight 84 lbs. per square; with fiberglass scrim/fiberglass mat).

**Granular Flashing Plies:**
**Cap Ply:** Parafor 50LT (157 mils/ 4.0 mm thick; weight 129 lbs per square, with polyester/fiberglass mat reinforcement).
**Stripping Ply:** Paradiene 20 EG (3.0 mm thick; weight 84 lbs. per square; with fiberglass scrim/fiberglass mat).

**Heat Fused Granular Flashing Plies:**
**Cap Ply:** Parafor 30 TG (161 mils/ 4.1 mm thick; weight 114 lbs. per square; with a fiberglass scrim/polyester mat composite).
**Stripping Ply (Non-combustible substrates):** Paradiene 20 TG (114 mils/2.9mm; weight 76 lbs. per square; with fiberglass mat).
**Stripping Ply (Combustible substrates):** Paradiene 20 SA (102 mils/2.6mm; weight 72 lbs. per square; with a fiberglass mat).

**Heat Fused Aluminum Clad Flashing Plies:**
**Cap Ply:** Veral Aluminum (138 mils/3.8 mm thick; weight 82 lbs. per square; with fiberglass scrim)
**Stripping Ply:** Irex 40 (110 mils/2.8mm; weight 85 lbs. per square; with lightweight random fiberglass mat)

**Cold adhesive:** PA-311

**5. SOPREMA, Inc.:**

**Field Plies:**
**Cap Sheet:** Sopralene 180 Granules FR; (160 mils/4.0 mm thick, weight 108 lbs per square; polyester reinforced).
**Interply:** Sopralene 180 sanded 2.2, polyester reinforced (90 mils/2.2 mm thick, 58 lbs. per square).

**Granular Flashing Plies:**
**Cap Ply:** Sopralene 180 Granules FR; (160 mils/4.0 mm thick, weight 108 lbs. per square; polyester reinforced).
**Stripping Ply:** Sopralene 180 sanded 2.2, polyester reinforced (90 mils/2.2 mm thick, 58 lbs. per square).

**Heat Fused Granular Flashing Plies:**
**Cap Ply:** Sopralene Flam 180 FR GR; (157 mils/4.0mm thick, weight 118 lbs. per one square roll; with a non-woven polyester mat)
**Stripping Ply:** Sopralene Flam 180; (118 mils/3.0mm thick, weight 81 lbs. per one square roll; with a non-woven polyester mat)

**Heat Fused Aluminum Clad Flashing Plies:**
**Cap Ply:** Sopralast TV Aluminum, fiberglass reinforced (162 mils/4.2 mm thick, 97 lbs per square), torch applied.
**Stripping Ply:** Sopralene Flam 180

**Cold Adhesive:** Colply

**6. U. S. Ply, Inc.:**

**Field Plies:**
**Cap Sheet:** Duraflex 190FR SBS (170 mils/4.3 mm thick; weight 105 lbs per square; with a non-woven polyester mat).
**Interply:** Duraflex 190S SBS (120 mils/3.0 mm thick; weight 88 lbs per square; with a non-woven polyester mat).

**Granular Flashing Plies:**
**Cap Ply:** Duraflex 190FR SBS (170 mils/4.3 mm thick; weight 105 lbs. per square; with a non-woven polyester mat).
**Stripping Ply:** Duraflex 190S SBS (120 mils/3.0 mm thick; weight 88 lbs. per square; with a non-woven polyester mat).

**Heat Fused Granular Flashing Plies: TBD**

**Heat Fused Aluminum Clad Flashing Plies:**
**Cap Ply:** Duraflex Aluminum SBS (140 mils/3.5 mm thick; weight 103 lbs per square; with a fiberglass mat).
**Stripping Ply:** Duraflex 190S SBS (120 mils/3.0 mm thick; weight 88 lbs. per square; with a non-woven polyester mat) hot mopped.

**Cold Adhesive:** 901 Premium Modified Adhesive

End

Facility Planning & Control

## 4. RECOMMENDED AGENDA FOR ROOFING CONFERENCES

Project Name: _____

Project Number & WBS: _____

Conference Location: _____ Date: _____
Type of Conference: _____Preliminary _____Pre-Application ___Final Inspection

Designer: _____

Roofing Contractor: _____

General Contractor: _____

CONFERENCES ATTENDEES:

| NAME | ORGANIZATION | PHONE # | EMAIL ADDRESS |
|---|---|---|---|
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**AGENDA FOR PRELIMINARY ROOFING CONFERENCE**

PURPOSE: Establish a direct line of communication, iron out initial questions regarding the project and to review project submittal requirements.

TIMING: The meeting should be held shortly after award of the Contract and at least six weeks prior to the anticipated start of roofing. Re-Roofing Projects may combine with Pre-Const. Conf. (ITB § 15).

1. A complete set of Contract Documents (plans and specifications) to be available for review.

2. All meeting minutes to be furnished by the Designer to all parties within 7 days. Establish project record keeping procedures.

3. Review tentative progress schedule for roofing. Set approximate date.

4. Review roofing system and insulation requirements. Size (4'x4' adhered, 4'x8' Mech. Fastened) and Thickness (R-Value), Staggered Joints

5. Weather considerations as they may apply to the project roofing installation.

6. Temporary roofing guidelines for the project. Who and when, will final decision be made, if necessary.

7. Inspection and Testing Requirements:

   _____
   Name of Inspection Firm:
   Name of inspector:
   Phone:

   _____
   a. On-Site Inspection - Discuss project requirements.
   b. Laboratory Tests

8. Roof Deck:

Type and Thickness: (if Lt. Wt. Conc. has a Pull Test been done?)

_____

Slope:____Location and Type of Drains:

_____

Tentative Schedule for Installation:

_____

Nailers, curbs, and sheet metal must be completed prior to roofing application. Review CD Details, and discuss if raising Equip. Curbs is required or not.

9. Discuss material storage areas, dumpster location, worker parking, and equipment set-up locations. Review requirements.

10. Specific submittals from the Roofing Contractor:

   a. Material approval list
   b. Shop drawings (if any)
   c. Product material brochures and samples
   d. Manufacturer's Guarantee review for compliance with specifications (20-Year State Warranty)
   e. Manuf. Assembly Letter (required for Pre-App. Conf. as well as materials on site)

11. Specific project detail discussion. (Include perimeter wall construction and rooftop mechanical equipment details, necessity of disconnecting any Exist. Rooftop Equip.)

12. Other:

_____

13. Review above items briefly and establish date for tentative Pre-Application Conference. (Manuf. Assembly Letter and materials therein required on site prior to scheduling conference). Roof Manuf. Rep. and FP&C Roof Consultant to be scheduled to attend.

**AGENDA FOR ROOFING PRE-APPLICATION CONFERENCE**

PURPOSE:

To verify readiness of the project structure
To walk site with Roof Manuf. Assembly Letter in hand, verifying materials on site comply.
To scan last minute details, changes or corrections
To review anticipated schedule of progress

TIMING: Following receipt of Roof Manuf. Assembly Letter, all materials on letter delivered to site, and prior to Roofing Work.

ATTENDANCE: List attendees
(Required attendees: FP&C Project Manager, FP&C Roofing Consultant, Roof Manuf. Rep., User Agency Contact, Designer, Contractor Superintendent.)

1. Copies of approved submittals should be available for review. Are any material changes required due to availability problems or other? Reminder that formal approvals are still required.

2. Review minutes of Preliminary Conference.

3. Discuss revised Roofing Application Schedule.

4. Check equipment set-up and on-site material storage.

5. Deck Readiness:
   a. Any required roof deck certifications must be in order
   b. Rooftop inspection by those in attendance
   c. Drain hookups complete
   d. Curbs, nailers, roof deck penetrations, perimeter edges and mechanical equipment - should all be set and complete. Roof Drain Pipes are verified free of Demo Debris

6. Review roof system, including insulation above deck. Discuss the required application of each to the other components.

   a. (2) Layers Polyiso Insulation (staggered), (1) Layer Cover Board (any special techniques required?)
   b. Mechanical or adhesive attachments (Mech. Fasteners = 4'x8' or Adhesion = 4'x4' board size)
   c. Vapor Retarders
   d. Flashings
   e. Saddles and/or crickets
   f. Venting
   g. Sheet metal

7. Phase Construction Guidelines for project. Factors affecting guidelines include local practices, climate and weather considerations. Tie-offs at days end.

8. Temporary roofing final decisions.

9. Housekeeping, material handling and finished work protection requirements.

10. Inspection and testing requirements - State Roofing Consultant at Final Inspection; Roof Manuf. Inspector as required and at Final Inspection.

11. Project changes in plans, specifications or procedures to be followed - discuss and establish who can approve and how documented.

12. Contractor must provide State 2-Yr Guarantee, and perform 1 & 2 Year Inspections. Roof Manuf. must provide 20-Yr Warranty. Pre-Finished Metal Manuf. must provide 20-Year Finish Warranty.

**NOTES**

**AGENDA FOR ROOFING FINAL INSPECTION**

PURPOSE: To assure 100% completion of contract requirements.

TIMING: Prior to the Roofing Contractor concludes his work at the site.

1. Attendance must include those in attendance at the Pre-Application Conference.

2. Complete rooftop walk over and review:

   a. Perimeter edges
   b. Walls
   c. Curbs and other equipment
   d. Drains
   e. Rooftop penetrations
   f. Site cleanup
   g. Sheet metal
   h. Any special conditions

3. Final Punch List establishment of items to be completed. Copies to all parties. Attached to Meeting Minutes issued by Designer

4. Summary of project records. Organize for final file. Wrap up any loose ends.

5. Stress importance of Bi-Annual (and after storm) Maintenance to User-Agency (keep file for claim)

6. Discuss responsibility for roof system protection until project completed. Responsibility for coordination usually rests with General Contractor. Any damage or additional work to be conducted by original Roofing Contractor in order to keep original guarantee valid.

7. Acceptance by the state will not be issued without submittal and approval of fully executed guarantees for each type of roof installed, which shall include, but not necessarily be limited to the following applicable forms, which can be found on the Instructions to Designers page of the FPC Website:

   a. *Recommendation of Acceptance (ROA)*: (Designer's Responsibility)
   b. *Letter of Concurrence*: Concurring in Designer's ROA (User Agency's Responsibility)
   c. *Roof Completion Information Form*: with a Roof Plan on 8-1/2"x11" of Individual State ID's or different Material Roof (Designer's Responsibility)
   d. *Roof Guarantee/Warranty (2)*: (Contractor's Responsibility)
      i. 20-Year Manuf. Membrane Warranty (State Form in ITD § 28e; 28d for Metal Roof)
      ii. 2-Year Contractor Warranty R-1 (Sub & GC) or R-2 (GC) (State Forms in ITD § 28a, 28b); 28c for Metal Roof)
   e. *Final Cost & Const. Data Report:* Div. 7 Primarily, *attached to "DESIGNER LETTER" E-mail when project began* (Designer's Responsibility)
   f. *As-Builts:* Const. that changed from Contract Docs, Marked-up Job Prints delivered to designer (Contractor's Responsibility)
   g. *Final Documents delivered:* drawings & specs marked "*RECORD DOCUMENTS*" as Hard-copy, as well as PDF & CAAD DWG Files (include Line Weight Files) on Thumb-Drive to FP&C & User Agency (Designer's Responsibility)

**NOTES**

**ROOF COMPLETION INFORMATION**

Facility Name: _____ Building Name: _____

Site Code: _____ State I.D: _____ Project No. & WBS: _____

☐New Roof ☐Total Replacement ☐Partial Replacement Roof Section(s): _____

☐ Roof Plan Attached (required)

| **Roof Type:** | **Surfacing Type:** | **Connection Type:** | **Drainage Type:** |
|---|---|---|---|
| 1. SBS Mod. Bit. | 1. Ceramic Granules | 1. Cold Process | 1. Over the Edge |
| 2. PVC | 2. Smooth Uncoated | 2. Hot Asphalt | 2. Roof Drains |
| 3. TPO | 3. Modified Asphalt | 3. Torched Asphalt | 3. Perimeter Gutter |
| 4. Metal | 4. Silicone | 4. Mechanical Fastener | 4. Internal Gutter |
| 5. Tile | 5. Acrylic | 5. _____ | 5. |
| 6. Shingle | 6. Urethane | | |
| 7. Cedar Shake | 7. Aluminum | | **Total Penetrations:** |
| 8. _____ | 8. Pre-Finished Paint | | _____ |
| | 9. _____ | | **No. of Plies:** |

| **Slope:** | **Deck Type:** | **Insulation:** |
|---|---|---|
| 1. 1/4 in./ft. | 1. Structural Concrete | 1. Polisocyanurate |
| 2. 1/8 in./ft. | 2. Gypsum | 2. Cover Board |
| 3. 1/2 in/ft. | 3. Metal | 3. Fiberglass |
| 4. _____ | 4. Lt. Wt. Concrete | 4. Wood Fiber |
| | 5. Cement Fiber | 5. _____ |
| | 6. Wood | |
| | 7. | |

_____ **Insulation Thickness:**

_____ **Roof Area (sq. ft.)**

_____

**Roofing Contractor (2-Year State Guarantee):**

_____ Warranty Beginning Date:

Address: (same as Acceptance Date)

_____ _____

_____ Warranty Ending Date:

_____

Roofing Contractor's Telephone: _____

Roofing Contractor's Email: _____

**Roofing Manufacturer (20-Year State Warranty):**

_____ Roof Warranty Number:

Address: _____

_____ Beginning Date:

_____ (same as Acceptance Date)

Roofing Manufacturer's Telephone: _____ Ending Date:

Roofing Manufacturer's Email: _____ _____

April 2025 25

END OF SECTION 075216

# Section 076200 - Sheet Metal Flashing and Trim

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes the following sheet metal flashing and trim:

1. Formed low-slope roof flashing and trim.
2. Formed equipment support flashing.

B. Related Sections include the following:

1. Division 6 Section "Rough Carpentry" for wood nailers, curbs, and blocking.
2. Division 7 Section "Silicone - Polyurethane Insulation Roof System" for installing sheet metal flashing and trim integral with roofing membrane.
3. Division 7 Section "Joint Sealants" for field-applied sheet metal flashing and trim sealants.

C. QUALITY ASSURANCE

D. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1. For copings and roof edge flashings that are **SPRI ES-1 tested**, shop shall be listed as able to fabricate required details as tested and approved.

### 1.3 PERFORMANCE REQUIREMENTS

A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

1. SPRI Wind Design Standard: Manufacture and install **roof edge flashings** tested according to design pressure as determined by formulas in IBC 2021 that account for basic wind speed, exposure factor, building height, building importance factor, and pressure coefficient that combines a gust factor **SPRI ES-1** and capable of resisting the following design pressure:

a. Meet NRCA Report of Roof System Design Wind - Load Analysis ASCE 7-10 Roofing System Design.

**b. (Main Roof )Design Pressure (horizontal load direction):**

1) Zone 4 (wall edge perimeter): 63.0 pounds per square foot.
2) Zone 5 (wall edge corners): 77.7 pounds per square foot

**c. (Penthouse Roof )Design Pressure (horizontal load direction):**

1) Zone 4 (wall edge perimeter): 64.2.6 pounds per square foot.
2) Zone 5 (wall edge corners): 79.1 pounds per square foot

2. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

B. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

## 1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Show layouts of sheet metal flashing and trim, including plans and elevations. Distinguish between shop- and field-assembled work. Include the following:

1. Identify material, thickness, weight, and finish for each item and location in Project.
2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
3. Details for fastening, joining, supporting, and anchoring sheet metal flashing and trim, including fasteners, clips, cleats, and attachments to adjoining work.
4. Details of expansion-joint covers, including showing direction of expansion and contraction.

C. Samples for Initial Selection: For each type of sheet metal flashing and trim indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

## 1.5 QUALITY ASSURANCE

A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

## 1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

## 1.7 COORDINATION

A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

## 1.8 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows 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 Delta E units when tested in accordance with ASTM D2244.
   b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
   c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: **20** years from date of Substantial Completion.

# PART 2 - PRODUCTS

## 2.1 SHEET METALS

A. Prepainted, Metallic-Coated Steel Sheet: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

1. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40; structural quality.
2. Exposed Finishes (Not exposed to view from ground level): Apply the following coil coating:

   a. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

      1) Fluoropolymer 2-Coat System: Manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent

polyvinylidene fluoride resin by weight; complying with physical properties and coating performance requirements of AAMA 2604, except as modified below:

a) Humidity Resistance: 1000 hours.

2) Color: To be selected from Manufacturer's full range of color selections to match existing roofing metal.

3. Non-exposed Finishes (not exposed to view from ground level):

a. Aluminum-Zinc Alloy-Coated Steel Sheet with no coating

## 2.2 UNDERLAYMENT MATERIALS

A. Felts: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

## 2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.

1. Exposed Fasteners: Heads matching color of sheet metal by means of plastic caps or factory-applied coating.
2. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed, with hex washer head.
3. Blind Fasteners: High-strength stainless-steel rivets. **Aluminum rivets not allowed.**

C. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.

D. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

## 2.4 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated. Shop fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.

B. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.

C. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.

1. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.

D. Sealed Joints: Form non-expansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.

E. Expansion Provisions: Where lapped or bayonet-type expansion provisions in the Work cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with elastomeric sealant concealed within joints.

F. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

G. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

1. Thickness: As recommended by SMACNA's "Architectural Sheet Metal Manual" and FMG Loss Prevention Data Sheet 1-49 for application but not less than thickness of metal being secured.

## 2.5 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing (Gravel Stop) and Fascia Caps: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 10-foot- (3-m-) long, sections from Prepainted, Metallic-Coated Steel Sheet . Furnish with 6-inch- (150-mm-) wide joint cover plates fabricated from:

1. Prefinished Aluminum-Zinc Alloy-Coated Steel: 0.0276 inch (0.7 mm) thick (24 gage).
2. Cleats:
   a. Prefinished Aluminum-Zinc Alloy-Coated Steel: 0.034 inch (0.86 mm) thick. (22gage)
3. Joint Style: Butt, with 6-inch- (150-mm-) wide exposed cover plates.

B. Counterflashing: Fabricate from the following material:

1. Prepainted, Metallic-Coated Steel Sheet.

C. Hanging Gutters: Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-inch- (2400-mm-) long sections. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard but with thickness not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, gutter bead reinforcing bars, and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.

1. Gutter Profile: Style A according to cited sheet metal standard.

2. Expansion Joints: Built in.
3. Gutters with Girth up to 15 Inches (380 mm): Fabricate from the following materials:
    1) Prefinished Aluminum-Zinc Alloy-Coated Steel: **0.034** inch (0.86 mm) thick. **(22gage)**

D. Downspouts: Fabricate rectangular downspouts to dimensions indicated, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows**.**

1. Hanger Style: Per Drawings.
2. Fabricate from the following materials:
    1) Prefinished Aluminum-Zinc Alloy-Coated Steel: **0.034** inch (0.86 mm) thick. **(22gage)**

## 2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Splash Pans: Fabricate to dimensions and shape required and from the following materials:

1. Aluminum-Zinc Alloy-Coated Steel: **0.034** inch (0.86 mm) thick. **(22gage)**

B. Roof-to-Wall Transition: Fabricate from the following materials: **Shop fabricate interior and exterior corners.**

1. Aluminum-Zinc Alloy-Coated Steel: **0.034** inch (0.86 mm) thick. **(22gage)**

C. Counterflashing: **Shop fabricate interior and exterior corners.** Fabricate from the following materials:

1. Aluminum-Zinc Alloy-Coated Steel: **0.0276 inch (0.7 mm)** thick **(24 gage).**

D. Flashing Receivers: Fabricate from the following materials:

1. Aluminum-Zinc Alloy-Coated Steel: **0.0276 inch (0.7 mm)** thick **(24 gage).**

## 2.7 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following material:

1. Aluminum-Zinc Alloy-Coated Steel: **0.0276 inch (0.7 mm)** thick **(24 gage).**

## 2.8 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. 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 the same piece are not acceptable. 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.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.

1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Torch cutting of sheet metal flashing and trim is not permitted.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.

1. Coat side of stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene underlayment.
3. Bed flanges in thick coat of asphalt roofing cement where required for waterproof performance.

C. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.

D. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and elastomeric sealant.

E. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

1. Space cleats not more than 12 inches (300 mm) apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.

F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with elastomeric sealant concealed within joints.

G. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.

1. Galvanized or Prepainted, Metallic-Coated Steel: Use stainless-steel fasteners.

H. Seal joints with elastomeric sealant as required for watertight construction.

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

## 3.3 ROOF FLASHING INSTALLATION

A. General: Install sheet metal roof flashing and trim to comply with performance requirements and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight.

B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.

1. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch (75-mm) centers.

C. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending a minimum of 4 inches (100 mm) over base flashing. Install stainless-steel draw band and tighten.

D. Counter flashing: Coordinate installation of counter flashing with installation of base flashing. Insert counter flashing in reglets or receivers and fit tightly to base flashing. Extend counter flashing 4 inches (100 mm) over base flashing. Lap counter flashing joints a minimum of 4 inches (100 mm) and bed with elastomeric sealant.

1. Secure in a waterproof manner by means of interlocking folded seam anchor and washer at 36-inch (900-mm) centers.

E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install flashing as follows:

1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.
2. Seal with elastomeric sealant and clamp flashing to pipes penetrating roof except for lead flashing on vent piping.

## 3.4 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

## 3.5 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

## 3.6 CLEANING AND PROTECTION

A. Clean and neutralize flux materials. Clean off excess solder and sealants.

B. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

C. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 076200

# Section 079200 - Joint Sealants

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes joint sealants for the following applications, including those specified by reference to this Section:

1. Exterior joints in the following vertical surfaces and horizontal non-traffic surfaces:

a. Joints between roofing metals
b. Joints between roofing metals and roof systems

### 1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

### 1.4 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Warranties: Special warranties specified in this Section.

### 1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Use ASTM C 1087 manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
3. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
4. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

## 1.6 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

## 1.7 WARRANTY

A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: The sealant guarantee shall be a 10-Year from the date of acceptance of the project material and labor guarantee/warranty, furnished by the manufacturer of the materials. The contractor shall be a certified contractor approved by the waterproofing material manufacturer, to conduct necessary testing and inspections as required by the waterproofing material manufacturer to obtain said guarantee. The guarantee shall not require the Owner’s signature to be effective, shall not be DL/pro-rated, nor state the manufacturer will not honor the warranty until the waterproofing contractor, the supplier, and/or the manufacturer have been paid in full. The sample form of the guarantee shall be delivered to the Owner, and said guarantee shall be approved by the Owner prior to any ordering of materials. The manufacturer’s labor and material guarantee shall guarantee, at the manufacturer’s own cost and expense, to make or cause such re-applications of, and to correct all faulty installations/applications.

# PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

## 2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

## 2.3 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

B. Single-Component Nonsag Urethane Sealant ES-3:

1. Available Products:

    a. Sika Corporation, Inc.; Sikaflex - 1a.
    b. Sonneborn, Division of ChemRex Inc.; NP 1.

2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Uses Related to Exposure: T (traffic) and NT (nontraffic).
5. Uses Related to Joint Substrates: M, G**,** A, and, as applicable to joint substrates indicated, O.

    a. Use O Joint Substrates: Color anodic aluminum, aluminum coated with a high-performance coating galvanized steel and wood.

## 2.4 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F (minus 32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

## 2.5 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.
    c. Unglazed surfaces of ceramic tile.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Glass.

c. Porcelain enamel.

B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on pre-construction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

## 3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
4. Provide flush joint configuration where indicated per Figure 5B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 5C in ASTM C 1193.

a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

## 3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

## 3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 07920

# Section 084113 – Aluminum Storefronts

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. Storefront framing for punched openings.

1.3 DEFINITIONS

A. ADA/ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disability Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities."

1.4 PERFORMANCE REQUIREMENTS

A. General Performance: Aluminum-framed systems shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:

1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
2. Dimensional tolerances of building frame and other adjacent construction.
3. Failure includes the following:

a. Deflection exceeding specified limits.
b. Thermal stresses transferring to building structure.
c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
d. Glazing-to-glazing contact.
e. Noise or vibration created by wind and by thermal and structural movements.
f. Loosening or weakening of fasteners, attachments, and other components.
g. Sealant failure.
h. Failure of operating units.

B. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design glazed aluminum storefront.

C. Structural Performance: Provide glazed aluminum curtain walls capable of withstanding design loads within limits and under conditions indicated.

D. Structural Loads:

1. Basic Wind Speed and Pressures: per requirements per the International Building Code 2021

2. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7-10, based on heights above grade indicated on Drawings.
   a. **130** mph wind-speed.
   b. Building Configuration: **Enclosed**
   c. Exposure: **B**
   d. Risk Catagory: **II**

3. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch (25 mm), whichever is less.
4. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.

E. Condensation Resistance: Provide aluminum-framed systems with fixed glazing and framing areas having condensation-resistance factor (CRF) of not less than 45 when tested according to AAMA 1503.

F. Thermal Conductance: Provide aluminum-framed systems with fixed glazing and framing areas having an average U-factor of not more than 0.57 Btu/sq. ft. x h x deg F (3.23 W/sq. m x K) when tested according to AAMA 1503.

## 1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum-framed systems.

B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.

1. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.
2. For entrance doors, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.

## 1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems, indicating compliance with performance requirements.

B. Source quality-control reports.

C. Warranties: Sample of special warranties.

## 1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.

## 1.8 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated.

C. Accessible Entrances: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines.

D. Source Limitations for Aluminum-Framed Systems: Obtain from single source from single manufacturer.

E. Preinstallation Conference: Conduct conference at Project site.

## 1.9 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.

## 1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Structural failures including, but not limited to, excessive deflection.
   b. Noise or vibration caused by thermal movements.
   c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   d. Adhesive or cohesive sealant failures.
   e. Water leakage through fixed glazing and framing areas.
   f. Failure of operating components.

2. Warranty Period: Five years from date of Substantial Completion.

1.11 MANUFACTURERS

A. Basis of Design:
   1. Kawneer North America; an Alcoa company.
      a. Trifab® VG 451 Storefront System - 2" x 4-1/2" flush glazed system for 1” insulated glass ; Thermal; Front Glazed; Shear Block Fabrication.

B. Approved Manufacturer’s; Provided equal product meets salient characteristics of products specified:
   1. Oldcastle
   2. Vistawall

C. Source Limitations: Obtain components including Aluminum Framed and Storefronts, fasteners, from same manufacturer.

1.12 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

   1. Sheet and Plate: ASTM B 209 (ASTM B 209M).
   2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
   3. Extruded Structural Pipe and Tubes: ASTM B 429.
   4. Structural Profiles: ASTM B 308/B 308M.
   5. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.

B. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer, complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.

   1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
   2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
   3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

1.13 FRAMING SYSTEMS

A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

   1. Construction: Non-Thermally broken.
   2. Glazing System: Retained mechanically with gaskets on four sides.
   3. Glazing Plane: Center.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, fabricated from stainless steel.

D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts, complying with ASTM A 123/A 123M or ASTM A 153/A 153M.

E. Framing System Gaskets and Sealants: Manufacturer's standard, recommended by manufacturer for joint type.
1. Sealants used inside the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

## 1.14 GLAZING SYSTEMS

A. Glazing: As specified in Section 088000 "Glazing."

B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, molded or extruded, of profile and hardness required to maintain watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

## 1.15 ACCESSORY MATERIALS

A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Section 079200 "Joint Sealants."

## 1.16 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.

4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

## 1.17 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

# PART 2 - EXECUTION

## 2.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

## 2.2 INSTALLATION

A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
6. Seal joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or applying sealant or tape, or by installing nonconductive spacers as recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Set continuous sill members and flashing in full sealant bed as specified in Section 079200 "Joint Sealants" to produce weathertight installation.

E. Install components plumb and true in alignment with established lines and grades, and without warp or rack.

F. Install glazing as specified in Section 088000 "Glazing."

G. Install perimeter joint sealants as specified in Section 079200 "Joint Sealants" to produce weathertight installation.

2.3 ERECTION TOLERANCES

A. Install aluminum-framed systems to comply with the following maximum erection tolerances:

1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet (3 mm in 3.7 m); 1/4 inch (6 mm) over total length.
2. Alignment:

a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch (1.5 mm).
b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch (0.8 mm).

B. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch (3 mm).

END OF SECTION 084113

# Section 088000 – Glazing

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:

1. Glazing for Exterior Storefront System Windows.

B. Related Sections:

1. Section 084113 "Aluminum Storefronts."

### 1.3 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

C. Interspace: Space between lites of an insulating-glass unit.

### 1.4 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Delegated Design: Design glass, including comprehensive engineering analysis according to ICC's 2021 International Building Code by a qualified professional engineer, using the following design criteria:

1. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7-16, based on heights above grade indicated on Drawings.

    a. Wind Design Data: 2021 International Building Code
    b. ASCE 7-16
    c. Risk Category II
    d. Wind Speed is 130mph
    e. The Courthouse is 45 miles from the coast of the Gulf of Mexico so we don't need impact resistant glass

2. Vertical Glazing: For glass surfaces sloped 15 degrees or less from vertical, design glass to resist design wind pressure based on glass type factors for short-duration load.

3. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.

4. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

D. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:

1. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
2. Center-of-Glass Values: Based on using LBL-44789 WINDOW 5.0 computer program for the following methodologies:

    a. U-Factors: NFRC 100 expressed as Btu/ sq. ft. x h x deg F.
    b. Solar Heat Gain Coefficient: NFRC 200.
    c. Solar Optical Properties: NFRC 300.

## 1.5 ACTION SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches square.

1. Insulating glass.
2. Glazing Accessory Samples: For gaskets and sealants, in 12-inch lengths. Install sealant Samples between two strips of material representative in color of the adjoining framing system.

C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

## 1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For installers and manufacturers of insulating-glass units with sputter-coated, low-e coatings.

B. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.

C. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.

1. For solar-control low-e-coated glass, provide documentation demonstrating that manufacturer of coated glass is certified by coating manufacturer.

D. Warranties: Sample of special warranties.

## 1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.

B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

C. Source Limitations for Glass: Obtain clear float glass, tinted float glass, coated float glass, laminated glass, and insulating glass from single source from single manufacturer for each glass type.

D. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

E. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. GANA Publications: GANA's "Laminated Glazing Reference Manual" and GANA's "Glazing Manual."
2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

F. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

G. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

H. Pre-installation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review temporary protection requirements for glazing during and after installation.

I. Quality Assurance (Insulated Metal Glazing Panel)

1. Manufacturer shall have a minimum of 15 years experience in the manufacturing of this type of panel.
2. Field Provide all architectural panels from a single source.
3. Field measurements shall be taken prior to the manufacturing and or cutting

J. Pre-Bid Qualifications for Insulated Metal Panels

1. All products other than those referenced herein, must be pre-qualified (by manufacturer and/or contractor) at least ten (10) business days prior to the bid date for consideration. A contractor entertaining submission of a bid proposal must furnish a sample panel, complete with manufacturers literature describing all materials and manufacturing processes, and additional information as shown below:
2. Sample must be same type in which bid will be based upon.
3. Provide documentation showing manufacturer has been in business producing similar type products for at least ten (15) years.
4. Provide evidence that the installer has been in business installing similar type products for a minimum of five (5) years.

## 1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with insulating-glass manufacturer's written recommendations for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

## 1.9 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or below 40 deg F.

1.10 WARRANTY

A. Provide a written 10-year warranty from date of manufacture for sputter coated glass. Warranty covers deterioration due to normal conditions of use and not to handling, installing, and cleaning practices contrary to the glass manufacturer's published instructions.

B. Provide a written 10-year warranty from date of manufacture for insulating glass. Warranty covers deterioration due to normal conditions of use and not to handling, installing, protecting and maintaining practices contrary to the glass manufacturer's published instructions.

C. Provide a written 12-year warranty from date of manufacture for insulating glass with a Thermal Spacer. Warranty shall cover deterioration due to normal conditions of use and not to handling, installing, protecting and maintaining practices contrary to the glass manufacturer's published instructions

D. Provide a written 10-year warranty from date of manufacture for ceramic frit including digitally printed ceramic ink. Warranty shall cover deterioration due to normal conditions of use and not to handling, installing, and cleaning practices contrary to the glass manufacturer's published instructions.

C. Insulated Metal Panel manufacturer shall warrant that the painted finish will not chalk, crack or peel for a period of twenty (20) years from substantial completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS GLAZING

A. Basis of Design:
1. Vitro Architectural Glass;

B. Approved Manufacturer's; Provided equal product meets salient characteristics of products specified:
1. Guardian
2. Viracon

C. Source Limitations: Obtain components including glazing gaskets, setting blocks, coatings, for glazing panels from the same manufacturer or approved by membrane glazing manufacturer.

2.2 GLASS PRODUCTS, GENERAL

A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.

1. Minimum Glass Thickness for Exterior Lites: Not less than 6.0 mm.

B. Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened glass is indicated, provide Kind HS heat-

treated float glass or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article.

C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6.0 mm thick.
2. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
3. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
4. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
5. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

## 2.3 GLASS PRODUCTS

A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.

B. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
2. For uncoated glass, comply with requirements for Condition A.
3. For coated vision glass, comply with requirements for Condition C (other coated glass).

C. Sputter-Coated Float Glass: ASTM C 1376, float glass with metallic-oxide or nitride coating deposited by vacuum deposition process after manufacture and heat treatment, and complying with other requirements specified.

D. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190, and complying with other requirements specified.

1. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in Part 1 "Performance Requirements" Article.
2. Provide Kind FT (fully tempered) glass lites where safety glass is indicated or required by Code
3. Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated for insulating-glass units are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites at unit's edge.
4. Sealing System: Dual seal, with manufacturer's standard primary and secondary.
5. Spacer: Manufacturer's standard spacer material and construction.
6. Desiccant: Molecular sieve or silica gel, or blend of both.
7. Corner Construction: Manufacturer’s standard corner construction.

8. Glass: Comply with applicable requirements in "Glass Products" Article as indicated by designations in "Insulating-Glass Types" Article.

## 2.4 GLAZING GASKETS

A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:

1. Neoprene complying with ASTM C 864.
2. EPDM complying with ASTM C 864.
3. Silicone complying with ASTM C 1115.
4. Thermoplastic polyolefin rubber complying with ASTM C 1115.

B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned neoprene gaskets complying with ASTM C 509, Type II, black; of profile and hardness required to maintain watertight seal.

1. Application: Use where soft compression gaskets will be compressed by inserting dense compression gaskets on opposite side of glazing or pressure applied by means of pressure-glazing stops on opposite side of glazing.

## 2.5 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

G. Subsills: Fabricated aluminum subsills in configurations indicated on Drawings

## 2.6 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.

C. Grind smooth and polish exposed glass edges and corners.

## 2.7 INSULATING-GLASS UNITS(S)

A. **Passive Solar Low-E Insulating-Glass Units (Clear) :**

1. Available Products: Basis of Design

    a. Vitro Architectural Glass;Double Glazed Solar Control Insulating Glass Unit Solarban 70 (2) on Clear 6mm | Air 1/2" (12.7mm) | Clear 6mm

2. Conformance: ASTM E 2190
3. Overall Unit Thickness: 1 inch.
4. Outdoor Lite: Tinted Float Glass
    a. Conformance: ASTM C 1036, Type 1, Class 2, Quality q3.
    b. Glass Thickness: 6mm (1/4")
    c. Magnetic Sputter Vacuum Deposition Coating (MSVD): ASTM C 1376.
    d. Coating: Solarban 70 on Surface # 2
    e. Heat-Treatment: **Heat-Strengthened Float Glass**: ASTM C 1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) as indicated, Quality-Q3. **In all locations where safety glazing is not required by code.**
    f. Heat-Treatment: **Tempered**; ASTM C 1048, Kind FT; Safety Glazing meets ANSI Z97.1 and CPSC 16CFR-1201 **In all locations where safety glazing is required by code.**
5. Interspace Content: Air 1/2" (12.7mm)
6. Indoor Lite: Clear float glass
    a. Conformance: ASTM C 1036, Type 1, Class 1, Quality q3.
    b. Heat-Treatment: **Heat-Strengthened Float Glass**: ASTM C 1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear), Quality-Q3. **In all locations where safety glazing is not required by code.**
    c. Heat-Treatment: **Tempered**; ASTM C 1048, Kind FT; Safety Glazing meets ANSI Z97.1 and CPSC 16CFR-1201 **In all locations where safety glazing is required by code.**

## 2.8 MONOLITHIC FLOAT-GLASS UNITS

A. Flat Glass:

1. Shall comply with ASTM C1036 Standard Specification for Flat Glass, Type 1, Class 1 (clear) or Class 2 (tinted, heat-absorbing and light reducing) and Quality q3

2. ASTM C 1048 Heat Treated Flat Glass, Kind HS or FT (remove ASTM Standard C 1048 if annealed glass), Condition A (uncoated), B (spandrel glass, one surface coated), or C (other coated glass)
    a. Heat Treated Flat Glass to be by horizontal (roller hearth) process with inherent rollerwave distortion parallel to the bottom edge of the glass as installed.
    b. Maximum peak to valley rollerwave 0.003" (0.08mm) in the central area and 0.008" (0.20mm) within 10.5" (267mm) of the leading and trailing edge
    c. For clear or low-iron glass 1/4" to 3/8" thick without ceramic frit or ink, maximum + or – 100 mD (millidiopter) over 95% of the glass surface.
    d. Maximum bow and warp 1/32" per lineal foot (0.79mm).

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that will leave visible marks in the completed work.

### 3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches.

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

J. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

K. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

L. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

## 3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

## 3.5 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

## 3.6 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 088000

# Section 099113 - Exterior Painting

## 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 surface preparation and the application of paint systems on the following exterior substrates:
   1. Steel.
   2. Brick Masonry

### 1.3 DEFINITIONS

A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

C. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

D. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

E. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

F. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

### 1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

B. Samples for Initial Selection: For each type of topcoat product.

C. Product List: For each product indicated, include the following:

   1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.

D. Manufacturers' in-field inspection, pre-construction testing, and recommendation report for: Smooth Silicone Elastomeric System coatings.

## 1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

## 1.6 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

## 1.7 PRE-CONSTRUCTION TESTING

A. Manufacturer's Field Service: Engage a factory-authorized service representative for in-field inspection of substrate prior to application of brick masonry, concrete, and plaster **Smooth Silicone Elastomeric System** coatings as well as adherence testing for primer, intermediate, and top coatings.

B. Manufacturer's authorized service representative shall instruct authorized service representative for any adjustments to application process to comply with warranty requirements in the form of a submitted report. Provide a manufacturer's in-field inspection, pre-construction testing, and recommendation report as part of the submittal process.

## 1.8 POST-CONSTRUCTION TESTING

A. Manufacturer's Field Service: Engage a factory-authorized service representative for in-field inspection of the dry millage on brick masonry, concrete, and plaster provided with a **Smooth Silicone Elastomeric System** coating. Provide a manufacturer's in-field inspection, post-construction testing report as part of the close out procedure. Provide a pass/fail report with suggested corrective measures if required. Provide as many inspections as needed to gain a pass recommendation.

## 1.9 WARRANTY

A. Provide a 10-Year Waterproofing Guarantee from the date of acceptance of the project material and labor guarantee/warranty, furnished by the manufacturer of the materials. The contractor shall be a certified contractor approved by the waterproofing material manufacturer, to conduct

necessary testing and inspections as required by the waterproofing material manufacturer to obtain said guarantee. The guarantee shall not require the Owner's signature to be effective, shall not be DL/prorated, nor state the manufacturer will not honor the warranty until the waterproofing contractor, the supplier, and/or the manufacturer have been paid in full. The sample form of the guarantee shall be delivered to the Owner, and said guarantee shall be approved by the Owner prior to any ordering of materials. The manufacturer's labor and material guarantee shall guarantee, at the manufacturer's own cost and expense, to make or cause to be made such re-applications of, and to correct any and all faulty installations/applications.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. ICI Paints (Canada); PPG Industries.
2. Sherwin Williams
3. Dow Corning

### 2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. Colors: As selected by Architect from manufacturer's full range

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

C. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

B. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulates.

1. Remove incompatible primers and re-prime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

C. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer. but not less than the following:

1. SSPC-SP 2, "Hand Tool Cleaning."
2. SSPC-SP 3, "Power Tool Cleaning."
3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
4. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."

D. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

F. Wood Substrates:

1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual." **Apply coatings with brush or roller on all surfaces; Spray applications will not be permitted.**

1. Use applicators and techniques suited for paint and substrate indicated.

2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

## 3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

## 3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. Steel & Galvanized Steel Substrates:

1. Latex System:

a. Prime Coat: Primer, galvanized, water based. (DevFlex DTM Primer 4020)
b. Intermediate Coat: Latex, exterior gloss (Gloss Level 6). (DevFlex DTM Semi-Gloss 4216)
c. Topcoat: Latex, exterior gloss (Gloss Level 6). (DevFlex DTM Semi-Gloss 4216)

B. Brick Masonry – unpainted

1. Smooth Silicone Elastomeric System:

a. Prime Coat: (DOW AllGuard Primer)
b. Intermediate Coat: (gloss Level 2) (DOW AllGuard)
c. Topcoat: (gloss Level 2) (DOW AllGuard)
d. Millage:
1) Intermediate & Topcoat: 10 mills wet; 5 mills dry
2) Minimum total dry millage: 10 mills

END OF SECTION 099113