

University of California Hastings College of Law

Façade Access Upgrade Project

200 McAllister Street,
San Francisco, CA 94102

Project Number 12042.04
ITB #56-0160 (Revised)

August 20, 2015

PROJECT MANUAL

University of California Hastings College of Law

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200 McAllister Street
San Francisco, CA 94102

MCA Project Number 12042.04
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Owner:

University of California
Hastings College of Law
200 McAllister Street
San Francisco, CA 94102

Project Manual Prepared by Architect:

McGinnis Chen Associates, Inc.
1019 Mission Street
San Francisco, CA 94103
(415) 986-3873

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II. BIDDING REQUIREMENTS

1.01 McGINNIS CHEN's PROJECT NUMBER: 12042.04

1.02 PROJECT NAME AND LOCATION

University of California
Hastings College of Law
Façade Access Upgrade Project
200 McAllister Street
San Francisco, CA 94102

1.03 OWNER

University of California
Hastings College of Law
Facilities Manager
200 McAllister Street
San Francisco, CA 94102

1.04 ARCHITECT

McGinnis Chen Associates, Inc.
1019 Mission Street
San Francisco, CA 94103
(415) 986-3873

1.05 BID SUBMISSION: Architect's address.

END OF SECTION 001000

1.01 SCHEDULE SUBMISSION WITH BID

- A. Submit a construction schedule for the Project using Microsoft Project.
- B. Schedule Format: Indicate each significant construction activity separately. Indicate the estimated time duration for each activity, sequence requirements, sequence of elevations or locations, and relationship of each activity in relation to other activities using the Critical Path Method (CPM) schedule.
- C. Process data to produce output data or a computer-drawn, time-scaled network. Produce the Critical Patch Method (CPM) schedule within the limitations of the Contract Time.

1.02 BID QUALIFICATIONS SUBMISSION WITH BID

- A. Submit three (3) project examples completed within the last five (5) years with similar scope of work.
- B. Sample Format: Indicate scope of work, project team, project timeline, and total construction cost. Provide references for each project sample submitted.
- C. Bids without sample projects and references **will not be accepted**.

1.03 DEPARTMENT OF INDUSTRIAL RELATIONS (DIR) CERTIFIED

- A. Contractor must be DIR Certified in order for their bid to be accepted.
- B. Contractor to submit DIR certification number with bid.

1.04 PROGRESS SCHEDULE

- A. Project Progress Schedule: During construction, submit updated CPM schedule during each progress meeting with the Owner, Owner's Representative, and Architect.
- B. The Undersigned hereby agrees to provide the Owner, Owner's Representative, and Architect the construction schedule showing the proposed schedule of Work items and their anticipated completion times.

1.05 CONTRACTOR'S GENERAL CONDITIONS

- A. The Undersigned hereby agrees that the General Conditions for the Project includes, but is not limited to, the Terms and Conditions stated in General Conditions provided by the Owner.
- B. Contractor shall comply with the provisions of applicable California law, including but not limited to, Sections 1770, et seq, of the Labor Code of the State of California
- C. All contractors should be aware that the Project is fully occupied during construction. This condition will require the Work area(s) to be continuously cleaned for the safety of both the tenants and contractors. Should the Work areas not be kept clean in a satisfactory manner, the Owner reserves the right to stop all Work. The Undersigned hereby agrees that the General Conditions for the Project includes, but is not limited to, the following:
 - 1. Coordination for obtaining permits, except plan check fees and building permit cost.
 - 2. Telephone.

3. Toilets (use of building toilets is forbidden).
4. Temporary power.
5. Water (Drinking).
6. Gasoline.
7. Travel.
8. Safety/Equipment.
9. Fines & penalties.
10. Warranty.
11. Punch list items.
12. Glass breakage.
13. Debris Boxes/Containers.
14. Trucking.
15. CPM Schedules and Three-Week Look-ahead Activities-Locations Schedule.
16. Computers and equipment rental.
17. Postage/Delivery.
18. Plans/Printing.
19. Field office supplies.
20. Field office equipment.
21. Miscellaneous materials.
22. Construction Aids/Small tools.
23. Project sign.
24. Forklift rental.
25. Truck rental.
26. Trailer /storage rental.
27. Miscellaneous equipment rental/Repair.
28. Temporary fence.
29. Temporary lighting.
30. Temporary heating.
31. Temporary security to prevent building intrusions through construction staging.
32. Temporary pedestrian protection canopy and temporary stairs.
33. Egress for occupants: Emergency exit paths.
34. Motorized lifts, scaffolding, or other access system to building exterior for Work.
35. Occupant assistance for relocate furniture, removal and re-hang window coverings, and the like.
36. Hoisting other than forklift and scaffold.
37. Testing supports as specified in the technical sections.
38. Daily Progressive Cleanup.
39. Clean Up Final (both exterior and Interiors of building as necessary).
40. Project Closeout.

C. Contractor's Supervision

1. Include cost of Project Supervision in the cost of General Conditions.
2. The Project should be properly staffed and that there is sufficient field staff in which to administer the Project and to properly coordinate the Work with the Owner. Although the Project does not require interior access, the contractors are hereby advised that they will be required to coordinate with the Owner for all notices to building tenants and make all arrangements for entry to tenant space. The Undersigned hereby agrees that the supervision provided for this Project includes one (1) part-time Project Manager and one (1) full-time on-site Project Superintendent.

3. Changes in Project Manager and Project Superintendent are not allowed without a written approval from the Owner.
 4. The Project Manager and Project Superintendent should attend weekly progress meetings with the Owner, Owner's Representative, and Architect for construction updates and coordination. Provide update CPM Schedules for the Owner and Architect at the meetings.
 5. The Contractor shall provide full access for and accompany the Architect to conduct initial identification of the necessary repairs at each locations of Work. The Project Manager or Project Superintendent shall accompany the Architect for the repair work identification visit.
 6. The Contractor shall record and maintain records of actual repairs performed under allowance quantities. The record of actual repairs will be verified jointly by the Architect and the Contractor during the punchlist visit before means of access (eg. ladder, etc.) will be removed. The Project Manager or Project Superintendent shall accompany the Architect for the repair work verification/punchlist visit. Provide a minimum of seven (7) days advance notice to the Architect prior to the punchlist.
- D. The fees for the following items will be provided by the Owner. Contractor shall provide coordination and facilitation:
1. Building permit cost.
 2. Plan check fees.

2.01 GENERAL BID AGREEMENTS (See Bid Pricing)

END OF BID FORM

SECTION 005000 - STANDARD FORM OF AGREEMENT

1.01 Not used (Reference Introductory Pages).

END OF SECTION 005000

SECTION 006000 - BONDS AND CERTIFICATES

1.01 Not used (Reference Introductory Pages).

END OF SECTION 006000

SECTION 006110 - CONSENT OF SURETY

1.01 Not used (Reference Introductory Pages).

END OF SECTION 006110

SECTION 006250 - CERTIFICATE OF SUBSTANTIAL COMPLETION

1.01 AIA Document G704-2000, Certificate of Substantial Completion shall be issued by the Architect at a time determined by the Architect. A copy of the document is bound with this Project Manual.

END OF SECTION 006250

SECTION 007000 – GENERAL CONDITIONS

1.01 Not used (Reference Introductory Pages).

END OF SECTION 007000

SECTION 008000 – SUPPLEMENTARY CONDITIONS

1.01 Not used (Reference Introductory Pages).

END OF SECTION 008000

SECTION 009000 - ADDENDA AND MODIFICATIONS

1.01 Not used (Reference Introductory Pages).

END OF SECTION 009000

PART 1 GENERAL

1.01 APPLICABLE CODES AND STANDARDS

- A. All Work shall meet or exceed the requirements of the current California Building Code as amended by the local jurisdiction. References to code all pertain to the most current version at the time of the dating of the Drawings or the signing of the Agreement. Nothing in the Drawings or Specifications is to be interpreted as requiring or permitting Work that is contrary to these rules, regulations, and codes. Where the Drawings or Specifications exceed the standard set by the regulatory agencies the provisions of the Drawings and Specifications shall take precedence over said laws, codes, rules, and regulations.
- B. All applicable Federal, State, and local laws, and the rules and regulations of governing utility districts and the various other authorities having jurisdiction over the construction and completion of the Project including the latest rules and regulations of the State Fire Marshall, Cal-OSHA and the State Safety Orders, and the California Labor Code shall apply to the Contract throughout, and they shall be deemed to be included in the Contract the same as though printed in these Specifications.
- C. It is Contractor's responsibility to conform to all applicable Federal, State and local laws, and as well as rules and regulations regarding hazardous materials in the performance of the Façade Access Upgrade Project.
- D. This Section is provided as information only. Architect is not responsible to check and ensure that the Contractor perform Work in compliance with all Federal, State, local laws, rules, and regulations.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 010600

PART 1 GENERAL

1.01 PROJECT IDENTIFICATION

- A. Project Name: University of California, Hastings College of Law
Façade Access Upgrade Project,
- B. Project Location: 200 McAllister Street, San Francisco, CA 94102.
- C. McGinnis Chen Project Number: 12042.04
- D. ITB 56-0160 (Revised)
- E. Owner: University of California, Hastings College of Law, 200 McAllister Street, San Francisco, CA 94102.
- E. Architect: McGinnis Chen Associates, Inc., 1019 Mission Street, San Francisco, CA 94103.

1.02 SCOPE OF WORK

- A. The Work required to be performed by the Contractor consists of constructing and completing the "Project", as defined and specified in the General Conditions, in accordance with the Specifications and all applicable provisions of the Contract Documents.
- B. The Work includes furnishing all labor, tools, equipment, appliances, materials, transportation, and services and in performing all operations necessary for and properly incidental to the construction and completion of the Project.
- C. Work under this Contract includes:
 - 1. Thoroughly examine Specifications, site of Work and conditions under which all Work will be performed before submitting a proposal. Area cannot be worked, waterproofed, repaired, or installed with products as specified shall be brought to the Owner's and Architect's attention immediately in writing. No changes to this Specification will be accepted.
 - a. Starting of Work without notification of unacceptable conditions will be considered acceptance of such conditions by Contractor.
 - b. The Contractor shall replace unsatisfactory Work caused by improper installation of Work including its preparation procedure and other related procedures, or defective Work materials, as directed by the Architect at no additional cost.
 - 2. Pre-document the (E) conditions of the Work areas, including the (E) cement plaster wall, windows, louvers, mechanical units, utility pipes, conduits, and affected interior unit/space prior to the Façade Access Anchor replacement work.
 - 3. Carefully cut and dispose of the (E) Façade Access Anchors above the roofing or provide suggested alternative design to render (E) Façade Access Anchors unusable.
 - 4. Carefully remove and dispose of the (E) cement plaster finish and associated accessories (metal lath, J-mold, corner-aid, wire-ties, weep screed, etc.) around the proposed Façade Access Anchors penetrations through the penthouse walls. Peel back (E) weather resistive barrier (WRB/Building Paper) for the tie-on with (N) self adhered membrane (SAM) with primer as required by the manufacturer. Include a layer of sacrificial building paper between SAM and cement plaster finish.

5. Install (N) Façade Access Anchors per Structural and Façade Access Drawings on to structural deck and structural walls of penthouse.
6. Detail around (N) Façade Access Anchors per Architectural Drawings on the roofing and cement plaster finish. Seal around each window washer anchorage penetration through the penthouse with backer rod and sealant. Patch roofing and cement plaster as needed (See Allowances).
7. Provide (N) elastomeric coating on wall panels of (E) penthouse where cement plaster was patched from cement plaster control joint to control joint to match (E).

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 011000

PART 1 GENERAL

1.01 ACCESS TO SITE AND USE OF PREMISES

- A. The Contractor shall confine his operations at the site to only those indicated areas necessary to perform the Work. Work zone limits may be established by the Owner.
- B. All access to building interiors must be arranged through the Owner or Owner's Representative. Cooperate with Owner to minimize conflicts and facilitate Owner usage. Keep driveways and entrances serving premises clear and available to Owner and Owner's Representative.

1.02 PROTECTION

- A. Maintain existing building in a weather tight condition throughout construction period.
- B. Protect building and its occupants during construction period. Utmost consideration must be given to Owner.

1.03 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
- B. Hours of Work shall be limited to 7:00 AM to 5:00 PM, Monday to Friday only.
- C. Noise caused by Work cannot occur prior to 8:00 AM, unless otherwise permitted by the Owner. The Use of personal stereos is prohibited anywhere in or around buildings.
- D. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor air intakes.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 011400

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to the Contractor. Materials and equipment specified in the Contract Documents by allowances include installation. If necessary, additional requirements will be issued by Change Order.
 - 2. Types of allowances include the following:
 - a. Lump-sum allowances.
 - b. Unit-cost allowances.
 - c. Quantity allowances.
 - d. Contingency allowances.
 - e. Testing and inspecting allowances.

1.02 SELECTION AND PURCHASE: At earliest date after Contract award, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

1.03 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- C. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- D. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.04 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.05 UNUSED MATERIALS: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted. If requested by Architect, prepare and deliver unused material to Owner's storage space when it is not economically practical to return the material for credit. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

- 3.01 EXAMINATION: Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to Manufacturer for replacement.
- 3.02 PREPARATION: Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related Work.
- 3.03 SCHEDULE OF ALLOWANCES: Allowance quantities are as specified in the Bid Form, hereby incorporated as part of this Specification.

END OF SECTION 012100

PART 1 GENERAL

- 1.01 DEFINITIONS: Alternates are amount stated on the Bid Form for certain defined Work 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.
- A. 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.
- 1.02 PROCEDURES: Modify or adjust affected adjacent Work as necessary to completely integrate Work of the alternate into Project. Include as part of each alternates, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate. Execute accepted alternates under the same conditions as other Work of the Contract.
- 1.03 SUBMISSION REQUIREMENTS: Submit alternatives identifying the effect on adjacent or related components. Alternatives quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted alternatives will be identified in the Owner-Contractor Agreement.
- 1.04 SCHEDULE OF ALTERNATES: Alternates are as specified in the Bid Form hereby incorporated as part of this Specification.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 012300

PART 1 GENERAL

1.01 MINOR CHANGES IN THE WORK: Architect will issue supplemental instructions authorizing Minor Changes in the Work on AIA Document G710.

1.02 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work.
- B. Contractor-Initiated Proposals: Contractor may propose changes by submitting a request for a change to Architect. Include a statement outlining reasons for the change.
- C. Submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change. Include quantities of products and unit costs, labor, total amount of purchases and credits to be made, overhead, profit, taxes, insurance and bonds, delivery charges, equipment, trade discounts, updated Contractor's Construction Schedule. Use available total float before requesting an extension of the Contract Time. Comply with requirements in Section 016000 - "Product Requirements" and Section 013200 "Construction Progress Documentation".
- D. Proposal Request Form: Use AIA Document G709 for Proposal Requests. Use AIA Document G701 for Change Order proposals. Sample copy is included in Section 009000 - "Addenda and Modifications".

1.03 ALLOWANCES

- A. Allowance Adjustment: Base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. Include installation costs in purchase amount only. Submit substantiation of a change in Scope of Work related to unit-cost allowances. Owner reserves the right to establish the quantity of Work-In-Place.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents. Submit claims within twenty-one (21) days of receipt of the Change Order or Construction Change Directive authorizing Work to proceed. Owner will reject claims submitted later than allowable days. Do not include indirect expense in the Change Order cost amount unless the nature or extent of Work has changed from what could have been foreseen from the Contract Documents. No change to Contractor's indirect expense is permitted within the same scope and nature as originally indicated.

1.04 CHANGE ORDER PROCEDURES

- A. Owner-Initiated Proposal Requests: Upon received a Proposal Request issued by the Architect, Contractor will prepare and submit an estimate for such Work within five (5) working days.
- B. Stipulated Sum/Price Change Order: Based on Proposal Request or Notice of Change and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Architect.
- C. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Contract Conditions. Architect will determine the change allowable in Contract Sum/Price and Contract Time.

- D. Maintain detailed records of Work done on percentage of completion basis, documented on the Drawings and with appropriate backup material. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.
 - E. AIA Document G701 Change Order: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- 1.05 CONSTRUCTION CHANGE DIRECTIVE: Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714, which instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Maintain detailed records on a time and material basis of Work. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
- 1.06 DOCUMENTATION OF CHANGE IN CONTRACT SUM/PRICE AND CONTRACT TIME:
Maintain detailed records of Work done on a time and material and unit cost basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation. Include date of claim, dates and times Work was performed, wage rates paid, receipts for products, equipment.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 012500

PART 1 GENERAL

1.01 DEFINITIONS: Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.02 PROCEDURES

- A. Include all necessary material, plus cost for delivery, preparation, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: Refer to individual Specification Sections for Work that requires establishment of unit prices.
- C. Owner reserves the right to reject Contractor's measurement of Work-In-Place that involves use of established unit prices and to have this Work measured by independent survey.
- D. List of Unit Prices: Refer to Bid Form, hereby incorporated as part of this Specification.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 012700

PART 1 GENERAL

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

1.02 SCHEDULE OF VALUES:

- A. Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including Application for Payment forms with Continuation Sheets.
 - 1. Submit the Schedule of Values to the Architect no later than seven (7) days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items. Include Project identification: Name, address, Project number, submittal date, Contractor's name and address.
 - 1. Schedule of Values shall indicate Specification Section and Change Orders (numbers), and dollar value (Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total one hundred percent (100%)).
 - 2. Provide a breakdown of the Contract Sum to facilitate continued evaluation of Applications for Payment and progress reports. Round amounts to nearest whole dollar, total shall equal the Contract Sum.
 - 3. Provide a separate line item for: (1) Each part of the Work where materials purchased or fabricated and stored. Include evidence of insurance or bonded warehousing for storage if required; (2) Initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work; (3) Each allowance; and (4) Total cost and proportionate share of general overhead and profit for each item.
 - 4. Update and resubmit the Schedule of Values before the next Applications for Payment to reflect any changes.

1.03 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous certified and paid applications and payments. The date for each progress payment and the period of Work covered by each payment are indicated in the Agreement between Owner and Contractor.
- B. Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.
- C. Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
- D. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

- E. Submit three (3) signed and notarized original copies of each Application for Payment to the Architect. One (1) copy shall include lien releases and waivers and similar attachments, as required by Contract Documents.
- F. Submit each Application for Payment with waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment. Submit partial waivers on each item for amount requested, before deduction for retainage, on each item. When an application shows completion of an item, submit final or full waivers. Owner reserves the right to designate which entities involved in the Work must submit waivers. Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- G. Administrative actions and submittals that must precede with submittal of first Application for Payment include: (1) List of subcontractors; (2) Schedule of Values; (3) Contractor's Construction Schedule; (4) Products list; (5) Schedule of unit prices; (6) List of Contractor's principal consultants; (7) Copies of building permits; (8) Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work; (9) Certificates of insurance and insurance policies; (10) Performance and payment bonds; and (11) Data needed to acquire Owner's insurance.
- H. After issuing the Certificate of Substantial Completion, submit an Application for Payment showing one hundred percent (100%) completion for portion of the Work claimed as substantially complete. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
- I. Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following: (1) Evidence of completion of Project closeout requirements; (2) Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid; (3) Updated final statement, accounting for final changes to the Contract Sum; (4) AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims"; (5) AIA Document G706A, "Contractor's Affidavit of Release of Liens"; (6) AIA Document G707, "Consent of Surety to Final Payment"; (7) Evidence that claims have been settled; (8) Final, liquidated damages settlement statement.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 012900

PART 1 GENERAL

1.01 COORDINATION

- A. Coordinate construction operations included in various Sections of the Specifications to ensure efficient, maximum accessibility, and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, which depend on each other for proper installation, connection, and operation. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination.
- B. Coordinate scheduling and timing of required administrative procedures to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include: (1) Preparation of Contractor's Construction Schedule; (2) Preparation of the Schedule of Values; (3) Installation and removal of temporary facilities and controls; (4) Delivery and processing of submittals; (5) Progress meetings; (6) Pre-Installation conferences; (7) Project closeout activities.
- C. Coordinate with the Building Engineer and the Owner to ensure that proper utilities are in place for the operation of equipment used in the Work. Contractor shall be responsible for design, construction and operation of modifications to the building utilities as required for a successful installation.
- D. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion; and access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.02 SUBMITTALS: Submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities and telephone numbers

1.03 PROJECT MEETING: Schedule and conduct meetings and conferences.

- A. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
- B. Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned within three (3) days of the meeting.
- C. Architect will schedule a pre-construction conference before starting construction. Agenda for pre-construction conference includes:
 - (1) Designation of responsible personnel;
 - (2) Execution of Owner-Contractor Agreement;
 - (3) Submission of executed bonds and insurance certificates;
 - (4) Distribution of Contract Documents;
 - (5) Preparation of Record Documents;
 - (6) Construction schedule;
 - (7) Phasing;
 - (8) Critical Work sequencing;
 - (9) Procedures for processing field decisions and Change Orders;
 - (10) Procedures for processing Applications for Payment;
 - (11) Submittal procedures;
 - (12) Use of the premises;
 - (13) Owner's requirements and continuing occupancy during construction;
 - (14) Responsibility for temporary facilities and controls;

- (15) Parking availability;
 - (16) Office, Work, and storage areas;
 - (17) Equipment deliveries and priorities;
 - (18) First aid;
 - (19) Security;
 - (20) Progress cleaning;
 - (21) Working hours; and
 - (22) Closeout procedures.
- D. Conduct a Pre-Installation Conference at Project site before each construction activity and each mock-up activity that requires coordination with other construction. Do not proceed with installation if the conference cannot be successfully concluded. Agenda for Pre-Installation Conference includes:
- (1) Related Change Orders;
 - (2) Deliveries;
 - (3) Submittals;
 - (4) Review of mock-ups;
 - (5) Possible conflicts;
 - (6) Compatibility problems;
 - (7) Time schedules;
 - (8) Weather limitations;
 - (9) Manufacturer's written recommendations;
 - (10) Warranty requirements;
 - (11) Acceptability of substrates;
 - (12) Temporary facilities and controls;
 - (13) Space and access limitations;
 - (14) Regulations of authorities having jurisdiction;
 - (15) Testing and inspecting requirements;
 - (16) Required performance results; and
 - (17) Protection of construction and personnel.
- E. Conduct progress meetings at regular intervals. Agenda for progress meeting includes:
- (1) Review minutes of previous meetings;
 - (2) Review of Work progress;
 - (3) Field observations, problems, and decisions;
 - (4) Identification of problems that impede planned progress;
 - (5) Review of submittals schedule and status of submittals;
 - (6) Maintenance of Contractor's Construction Schedule;
 - (7) Corrective measures to regain projected schedules;
 - (8) Maintenance of quality, Work standards, and progress cleaning;
 - (9) Effect of any proposed changes on schedule and coordination;
 - (10) Deliveries, access, and site utilization;
 - (11) Temporary facilities and controls;
 - (12) Work hours; and
 - (13) Hazards and risks.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 013100

PART 1 GENERAL

1.01 SUBMITTALS

- A. Preliminary Construction Schedule: Submit two (2) printed copies within seven (7) days of date established for commencement of the Work.
- B. Contractor's Construction Schedule: Submit two (2) printed copies of schedule to show entire schedule for entire construction period. Submit within thirty (30) days of date established for the Notice to Proceed.
- C. Field Condition Reports: Submit two (2) copies at time of discovery of differing conditions.
- D. Special Reports: Submit two (2) copies at time of unusual event.
- E. Distribute copies of approved schedule to Architect, Owner, and related parties.

1.02 COORDINATION: Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, payment requests, and other required schedules and reports. Secure time commitments for performing the Work from parties involved. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 PRODUCTS

2.01 CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
- B. Treat each separate area or each installation/application Work as a separate numbered activity for each principal element of the Work. Include procurement process activities for long lead items as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
- C. Include review times indicated in Section 013300 "Submittal Procedures" in schedule.
- D. Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
- E. Include constraints as follows in schedule, and show how the sequence of the Work is affected: (1) Work by Owner; (2) Products ordered in advance; (3) Owner-Furnished Products; (4) Work Restrictions; and (5) Work Stages, that include subcontract awards, submittals, purchases, mock-ups, sample testing, deliveries, and installation.
- F. Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- G. For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis to demonstrate the effect of the proposed change on the overall Project schedule.

2.02 PRELIMINARY CONSTRUCTION SCHEDULE: Submit preliminary horizontal bar-chart-type construction schedule. Indicate each significant construction activity separately.

2.03 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a Gantt-chart-type, Contractor's Construction Schedule. Indicate each significant construction activity separately. Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities.
- B. Submit updated schedule with each Application for Payment to reflect actual construction progress and activities. Update and resubmit schedule for every Change Order and Construction Change Directive.

2.04 FIELD CONDITION REPORTS: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a Request For Information (RFI). Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.05 SPECIAL REPORTS: Submit special reports directly to Owner within one (1) day of an occurrence. Distribute copies of report to parties affected by the occurrence. When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 EXECUTION

Not Used

END OF SECTION 013200

PART 1 GENERAL

1.01 SUMMARY: This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous Submittals.

1.02 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's responsive action.
- B. Informational Submittals: Written information that does not require Architect's approval. Submittals may be rejected for not complying with requirements.

1.03 SUBMITTAL PROCEDURES

- A. Transmit each Submittal with cover sheet. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, and coordination of information are in accordance with the requirements of Contract Documents.
- B. Allow enough time for Submittal review and re-Submittals. Time for review shall commence on Architect's receipt of Submittal. Architect reserves the right to withhold action on a Submittal requiring coordination with other Submittals until related Submittals are received.
 - 1. Allow fifteen (15) days for initial review of each Submittal. Allow additional time if processing must be delayed to permit coordination with subsequent Submittals. Architect will advise Contractor when a Submittal being processed must be delayed for coordination.
 - 2. Allow twenty-one (21) days for initial review of each item that requires concurrent review by Architect's consultants, Owner, or other parties.
- C. Place title block on each Submittal for identification. Indicate name of firm prepared each Submittal on title block. Include Project name, date, name and address of Contractor, subcontractor, supplier, Manufacturer, Number and title of appropriate Specification Section, and each product name and title, including model number and other identifications.
- D. Provide a minimum 4-inches by 5-inches space beside title block to record Contractor's review and approval markings and action taken by Architect. Use only final Submittals with mark indicating action taken by Architect in connection with construction.
- E. Transmit each Submittal using a separate sheet transmittal form. Architect will return Submittals, without review from sources other than Contractor.

PART 2 PRODUCTS

2.01 ACTION SUBMITTALS

- A. Submit four (4) copies of each Submittal. Architect will return two (2) copies to the Contractor and one (1) copy to the Owner. Retain one (1) returned copy as a Project Record Document.

- B. Product Data: Collect information into a single Submittal for each element of construction and type of product. If information must be specially prepared for Submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
1. Include: (1) Manufacturer's written recommendations; (2) Manufacturer's product specifications; (3) Manufacturer's installation instructions; (4) Standard color charts; (5) Manufacturer's catalog cuts; (6) Standard product operating and maintenance manuals; (7) Compliance with recognized trade association standards and testing agency standards; and (8) Notation of coordination requirements.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. Submit three (3) black-line prints of each submittal. Submit four (4) prints where prints are required for operation and maintenance manuals. Architect will return three (3) copies. Mark up and retain one (1) returned print as a Project Record Drawing.
1. Include: (1) Dimensions; (2) Identification of products; (3) Fabrication and installation drawings; (4) Roughing-in and setting diagrams; (5) Shop-work manufacturing instructions; (6) Schedules; (7) Design calculations; (8) Compliance with specified standards; and (9) Notation of coordination requirements and dimensions established by field measurement.
- D. Comply with requirements in Section 013100 "Project Management and Coordination".
- E. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work. Submit for review of kind, color, pattern, and texture.
1. Comply with requirements in Division 1 Section 014000 "Quality Requirements" for mock-ups.
 2. Attach label on unexposed side that includes the following: (1) Generic description of Sample; (2) Product name or name of manufacturer; (3) Sample source.
 3. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
 4. Submit three (3) separate sets of Samples of each item or the number of Samples specified in individual Specification Sections. Architect will return two (2) copies. Mark up and retain one (1) returned Sample set as a Project Record Sample. Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 5. Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity.
 6. Mock-ups or 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.
- F. Comply with requirements in: (1) Section 013200 "Construction Progress Documentation" for Contractor's Construction Schedule; and (2) Section 012900 "Payment Procedures" for Application for Payment and Schedule of Values.

- G. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design.

2.02 INFORMATIONAL SUBMITTALS

- A. Submit two (2) copies of each submittal. Provide a notarized statement that includes signature of entity responsible for preparing written statement, reports, and certification.
- B. Comply with requirements in: (1) Section 014000 "Quality Requirements." for Test and Inspection Reports; and (2) Section 013200 "Construction Progress Documentation." for Contractor's Construction Schedule.
- C. Qualification Data: Demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of Architects and Owners, and other information specified.
- D. Certificates, on Manufacturer's letterhead: (1) Product and Material Certificates certifying that product complies with requirements; (2) Installer Certificates certifying that Installer complies with requirements and, where required, is authorized for this specific Project; (3) Manufacturer Certificates certifying that Manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- E. Welding Certificates: Certifying that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- F. Reports by a qualified testing agency or Manufacturer, indicating and interpreting test results of material for compliance with requirements: (1) Material Test Reports; (2) Preconstruction Test Reports for tests performed before installation of product; (3) Compatibility Test Reports for compatibility tests performed before installation of product, include recommendations for primers and substrate preparation needed for adhesion; (4) Field Test Reports for tests performed either during installation of product or after product is installed in its final location; and (5) Product Test Reports for tests performed by Manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- G. Maintenance Data: written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 1 Section 01770 "Closeout Procedures".
- H. Design Data: 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.
- I. Manufacturer's Instructions: Written or published information that documents Manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include preparation of substrates, required substrate tolerances, sequence of installation or erection, required installation tolerances, required adjustments, and recommendations for cleaning and protection.
- J. Insurance Certificates and Bonds: Written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

K. Material Safety Data Sheets.

PART 3 EXECUTION

3.01 CONTRACTOR'S REVIEW: Review each Submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect. Stamp each Submittal with a uniform, approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that Submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.02 ARCHITECT'S ACTION

- A. Architect will not review Submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each Submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each Submittal with an action stamp and will mark stamp appropriately to indicate action taken.
- C. Informational Submittals: Architect will review each Submittal and will not return it, or will reject and return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 013300

PART 1 GENERAL

1.01 SUMMARY: This Section includes administrative and procedural requirements for quality assurance and quality control. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1.02 DEFINITIONS

- A. Quality-Assurance Services: Services performed before and during Work execution to guard against defects and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Services performed during and after Work execution to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mock-ups: Full-size, physical example assemblies to illustrate finishes and materials; to verify selections made under Sample submittals; to review construction, coordination or testing; and to establish the standard by which the Work will be judged. They are not Samples.
- D. Testing Agency: An entity engaged to perform specific tests, inspections, or both.

1.03 SUBMITTALS

- A. Qualification Data for testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications by a recognized authority.
- B. Submit certified written reports that include: (1) Date of issue; (2) Project title and number; (3) Name, address, and telephone number of testing agency; (4) Dates and locations of tests or inspections; (5) Environmental conditions during test; (6) Description of the test and inspection method; (7) Identification of product and Specification Section; (8) Test and inspection results and state whether the Work complies with Contract Documents; (9) Name and signature of laboratory inspector.
- C. Submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.04 QUALITY ASSURANCE

- A. Fabricator: A firm experienced in producing products and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- B. Manufacturer's Representative: An authorized representative of Manufacturer who is trained and approved by Manufacturer to inspect installation of Manufacturer's products.
- C. Installer: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- D. Manufacturer: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.

- E. Professional Engineer: A professional Engineer who is legally qualified to practice in jurisdiction at Project's location and who is experienced in providing engineering services of the kind indicated.
- F. Testing Agency: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.
- G. Preconstruction Testing: Performed by testing agency, compliance with specified requirements for performance and test methods. Testing agency submit a certified written report of each test to Architect with copy to Contractor. Contractor responsibilities include:
 - 1. Provide test specimens representative of proposed construction. Provide sizes and configurations of assemblies to adequately demonstrate capability of product.
 - 2. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - 3. Fabricate and install test assemblies using installers perform the same tasks for Project.
 - 4. When testing is completed, remove assemblies; do not reuse materials on Project.
- H. Mock-ups: Install mock-ups at the site as required by individual Specifications Sections. Before installing portions of the Work requiring mock-ups, build mock-ups and comply with the following requirements:
 - 1. Build mock-ups in location and of size indicated or as directed by Architect.
 - 2. Notify Architect seven (7) days in advance of date when mock-ups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain Architect's approval of mock-ups before starting Work, fabrication, or construction.
 - 5. Remove and reapply / reinstall mock-ups until they are approved by Architect.
 - 6. Maintain mock-ups undisturbed as a standard for judging the completed Work.
 - 7. Approved mock-up may become part of the completed Work if undisturbed at time of Substantial Completion.
 - 8. Demolish and remove mock-ups when directed, unless otherwise indicated.
 - 9. Coordinate with other related Work.

1.05 QUALITY CONTROL

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions and workmanship, to produce Work of specified quality. Comply fully with Manufacturer's instructions, including handling, storage, application, and other steps in sequence. Should Manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- B. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship. Comply with current local, State, and Federal regulations and requirements. Perform Work with Lead Safe Practices.

- C. Perform Work by persons qualified to produce workmanship of specified quality and to assure finished Work of first class quality and durability. All materials shall be applied evenly with proper film thickness and free of runs, rags, skips and other defects. All Work shall be done under favorable weather conditions and suitably protected from the weather recommended by the Manufacturer.
 - D. Contractor Responsibilities: Provide quality-control services specified and required by authorities having jurisdiction.
 - 1. If indicated as Contractor's responsibility, engage a qualified testing agency to perform services. Contractor shall not employ the same entity engaged by Owner.
 - 2. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 3. Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.
 - 4. Provide retesting and re-inspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.
 - 5. Notify Owner, Architect, testing agencies, and each involved party where and when the tests and inspections will be performed.
 - E. Owner may engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.
- 1.06 REFERENCES: Conform to reference standard by date of issue current on date of Construction Documents, unless specified otherwise in relevant Specification Section.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

- 3.01 REPAIR AND PROTECTION: On completion of testing and inspecting, repair damaged construction and restore substrates and finishes. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services. Comply with the Contract Document requirements for Section 017310 "Cutting and Patching".

END OF SECTION 014000

PART 1 GENERAL

1.01 DEFINITIONS: Basic Contract definitions are included in the Conditions of the Contract

- A. "Approved": Architect's action on Contractor's submittals, applications, and requests, It is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- B. "Directed": A command by Architect. "Requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."
- C. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. "Shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- D. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- E. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- F. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, installing, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- G. "Provide": Furnish and install, complete and ready for the intended use.
- H. "Installer": Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations. "Carpentry" does not imply that activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter"; and does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.
- I. "Experienced": "Experienced" means having successfully completed a minimum of five (5) previous projects similar in size and scope to this Project; and having complied with requirements of authorities having jurisdiction.
- J. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.02 SCHEDULE OF REFERENCES

ACI	American Concrete Institute
AGC	Associated General Contractors of America
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
CRSI	Concrete Reinforcing Steel Institute
FM	Factory Mutual System
FS	Federal Specification
ICBO	International Conference of Building Officials

NAAMM	National Association of Architectural Metal Manufacturers
NCMA	National Concrete Masonry Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SSPC	Steel Structures Painting Council
UL	Underwriters' Laboratories, Inc.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 014200

PART 1 GENERAL

1.01 USE CHARGES

- A. Cost or use charges for temporary facilities are not chargeable to Owner or Architect and shall be included in the Contract Sum.
- B. Water Service and Electric Power Service: Use water from Owner's existing water system and electric power without metering and without payment of use charges.

1.02 QUALITY ASSURANCE: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," NFPA 241, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

PART 2 PRODUCTS

2.01 MATERIALS: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Architect. Provide materials suitable for use intended. Provide chain-link fencing and potable water.

2.02 EQUIPMENT: Provide mobile unit field offices, potable UL rated fire extinguishers that comply with NFPA 10 and NFPA 241, and self-contained toilet units.

PART 3 EXECUTION

3.01 INSTALLATION: Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Maintain and modify as required. Do not remove until facilities are no longer needed.

3.02 TEMPORARY UTILITY INSTALLATION

- A. Water Service: Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use. Where outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
- B. Sanitary Facilities: Provide temporary self-contained toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
- C. Wash Facilities: Install wash facilities supplied with potable water for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.
- D. Drinking-Water Facilities: Provide bottled-water, drinking-water units.
- E. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner. Provide receptacle outlets, waterproof connectors, power cords adequate for connection of power tools and equipment. Provide warning signs at power outlets other than 110 to 120 V.

- F. Lighting: Provide temporary lighting that provides adequate illumination for traffic conditions and for safety and security purposes.
- G. Telephone Service: Provide temporary telephone service throughout construction period for common-use facilities used by all personnel engaged in construction activities. Provide a telephone and answering machine for superintendent's use in making and receiving telephone calls when away from field office.

3.03 SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.
- B. Install signs where indicated to inform public and persons seeking entrance to Project.
- C. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Provide information on destination of each type of waste material and means to be used to dispose of all waste materials. Comply with Section 017000 "Execution Requirements" for progress cleaning requirements.
- D. Storage and Fabrication Sheds: Approval of on site storage shall be obtained from the Owner. All protection and security shall be the Contractor's responsibility. The Owner cannot guaranty that the requested area will be provided and will not be responsible any related cost impact.
- E. Lifts and Hoists: Provide facilities for hoisting materials and personnel.
- F. Existing Elevator and Stair Usage: Use of Owner's existing elevators will be permitted, as long as stairs and elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use.
- G. Parking: Utilize street parking at Contractor's expense. Obtain city permits for exclusive on-street parking if required. Do not allow vehicle parking in existing fire lanes, loading dock, or on landscaped areas and sidewalk.
- H. Scaffolding: Ensure proper permission, certification, and safety standards. Provide all scaffolding equipment, set-up, operation, maintenance, and removal. All building exits and sidewalk around the buildings must remain accessible and clear at all times. Comply with OSHA regulations.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise.
- B. Before construction operations begin, install portable chain-link enclosure fence with lockable entrance gates. Prevent public, dogs, and other animals from easily entering construction areas. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
- C. Comply with standards and code requirements for erecting structurally adequate barricades. Where appropriate and needed, provide lighting, including flashing red or amber lights.

- D. Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
 - E. Provide fire extinguishers. Comply with NFPA 241. Class A stored-pressure water-type extinguishers. 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 firefighting. Prohibit smoking in hazardous fire-exposure areas. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
 - F. Provide all protection necessary to protect the tenants of the building, the public, and the property, including adjacent properties, from damage as a result of the Work in this Section. Provide continuous protection of all public and private property including automobiles from damage during the Work.
- 3.05 OPERATION, TERMINATION, AND REMOVAL: To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses. Maintain facilities in good operating condition until removal. Remove each temporary facility when need for its service has ended. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Section 017700 "Closeout Procedures".

END OF SECTION 015000

PART 1 GENERAL

1.01 DEFINITIONS

- A. Products: New material, machinery, components, equipment, fixtures, and systems forming the Work. Items purchased for incorporating into the Work and for Project. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
 - 1. Named Products: Identified by Manufacturer's product name, including model number listed in manufacturer's literature, which is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into Project. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, 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.
 - 4. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by Manufacturer to Owner.
- D. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by Manufacturer's warranty or to provide more rights for Owner.

1.02 SUBMITTALS

- A. Product List: Within thirty (30) days after date of commencement of the Work, submit two (2) copies of completed product list. Include Manufacturer's name, product names, and Specification Section number and title. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule. Submit Include a written explanation for omissions of data and for variations from Contract requirements.
- B. Substitution Requests: Submit two (2) copies of each request for consideration. Include Specification Section number and title and Drawing numbers and titles. Use CSI Form 13.1A or Contractor's form similar to CSI Form. Obtain CSI Form from the Architect.
 - 1. Include:
 - a. Show compliance with requirements for substitutions. Detailed comparison of significant qualities of proposed substitution with those of the Work specified.
 - b. Indicating why specified material or product cannot be provided.
 - c. Samples, Product Data, including drawings and descriptions of products and fabrication and installation procedures.

- d. Material test reports and Research/evaluation reports evidencing compliance with requirements, regulations, and codes.
 - e. Effects on Contract Time and Contract Sum. Unit cost data of the proposed substitution.
 - f. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
2. Architect's Action: Architect may request additional information. Architect will notify Contractor of acceptance or rejection of proposed substitution within fifteen (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later.
- a. Form of Acceptance: Change Order.
 - b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.
- 1.03 QUALITY ASSURANCE: If a dispute arises between contractors over concurrently selectable, but incompatible products, Architect will determine which products shall be used.
- 1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING
- A. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - B. Transport and handle products in accordance with Manufacturer's instructions. Deliver products to Project site in Manufacturer's original sealed container with labels, stock number, date of manufacturer, application instructions, and instructions for handling, storing, unpacking, protecting, and installing.
 - C. Store products under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation. Coordinate location with Owner. Comply with product manufacturer's written instructions for storage.
- 1.05 PRODUCT WARRANTIES
- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.
 - C. Comply with requirements in Section 017700 "Closeout Procedures".

PART 2 PRODUCTS

2.01 PRODUCT OPTIONS

- A. Provide products that comply with the Contract Documents, which are new and undamaged at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation.
 - 2. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 - 3. If products accompanied by the term "as selected," Architect will make selection. If products are accompanied by the term "match sample," Sample is Architect's.
 - 4. If products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one (1) of the products listed that complies with requirements.
 - 1. Visual Matching Specification: Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches satisfactorily.
 - 2. Visual Selection Specification: Where Specifications include the phrase "as selected from Manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements. Architect will select color, pattern, or texture from Manufacturer's product line
 - 3. Refer to individual Specification Sections and "Allowance" provisions in Division 1 for allowances that control product selection and for procedures required for processing such selections.

2.02 PRODUCT SUBSTITUTIONS

- A. Architect will consider requests for substitution if received within sixty (60) days after the Notice to Proceed. Requests received after that time may be considered or rejected.
- B. If the following conditions are not satisfied, Architect will return requests without action:
 - 1. When a specified product becomes unavailable through no fault of the Contractor.
 - 2. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional Owner's responsibilities of compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.

3. Requested substitution: (1) Does not require extensive revisions to the Contract Documents; (2) Is consistent with the Contract Documents and will produce indicated results; (3) Will not adversely affect Contractor's Construction Schedule; (4) Has received necessary approvals of authorities having jurisdiction; (5) Has been coordinated with other portions of the Work; and (6) Provides specified warranty.
 4. Substitution request is fully documented and properly submitted.
- C. A request for substitution constitutes a representation that the Contractor: (1) Has determined that it meets or exceeds the quality level of the specified product; (2) Will provide the same warranty for the Substitution as for the specified product; (3) Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner; and (4) Waives claims for additional costs or time extension, which may subsequently become apparent.
 - D. Substitutions will not be considered when the proposed substitution does not serve the best interest of the Owner in the opinion of the Architect.
- 2.03 COMPARABLE PRODUCTS: Submit with the following, in addition to other required submittals:
- A. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 - B. Detailed comparison of significant qualities of proposed product with those named in the Specifications.
 - C. Evidence that proposed product provides specified warranty.
 - D. Samples, if requested.

PART 3 EXECUTION

Not Used

END OF SECTION 016000

PART 1 GENERAL

- 1.01 SUBMITTALS: For professional engineer, submit Qualification Data to demonstrate their capabilities and experience.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 EXAMINATION

- A. The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning Work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
- B. Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.02 PREPARATION

- A. Do not interrupt utilities serving facilities occupied by Owner or occupants unless approved by the Owner with written permission. Notify Owner not less than two (2) days in advance of proposed utility interruptions.
- B. Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication.
- C. Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.03 INSTALLATION

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated. Make vertical Work plumb and make horizontal Work level. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
- B. Comply with Manufacturer's written instructions and recommendations for installing products in applications indicated. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- C. Do not use tools or equipment that produce harmful noise levels. Do not use products, cleaners, and installation materials that are considered hazardous.

- D. Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work. Allow for building movement, including thermal expansion and contraction. Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

3.04 PROGRESS CLEANING

- A. Clean Project site and Work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
- B. Do not hold materials more than seven (7) days during normal weather or three (3) days if the temperature is expected to rise above 80 deg F.
- C. Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work. Remove liquid spills promptly. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
- D. Keep installed Work clean. Clean installed and exposed surfaces according to written instructions of Manufacturer or Fabricator of product installed, using recommended cleaning materials that are not hazardous to health or property. Remove debris from concealed spaces before enclosing the space.
- E. Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- F. During handling and installation, clean and protect construction in progress and adjoining materials already in place or completed construction. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

3.05 PROTECTION OF INSTALLED CONSTRUCTION: Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion. Comply with Manufacturer's written instructions for temperature and relative humidity.

3.06 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Comply with requirements in Section 017310 "Cutting and Patching".
- B. Restore permanent facilities used during construction to their specified condition. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017000

PART 1 GENERAL

1.01 DEFINITIONS

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair Work required to restore surfaces to original conditions after installation of other Work.

1.02 SUBMITTALS: Coordinate procedures at least ten (10) days before the time cutting and patching will be performed, requesting approval to proceed.

- A. Include in Cutting and Patching Proposal: (1) Describe area or locations scheduled for Work; (2) Describe anticipated Changes, if any; (3) Indicate when cutting and patching will be performed; (4) List utilities that cutting and patching procedures will disturb or affect; (5) Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure. Coordinate Work with Architect; (6) List products to be used and firms or entities that will perform the Work.
- B. Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory Work.

1.03 QUALITY ASSURANCE

- A. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio. Do not cut and patch the operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. The elements include:
 - 1. Water, moisture, or vapor barriers.
 - 2. Membranes and flashings.
 - 3. Exterior curtain-wall construction.
 - 4. Equipment supports.
 - 5. Piping, ductwork, vessels, and equipment.
 - 6. Noise- and vibration-control elements and systems.
- B. Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

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

PART 2 PRODUCTS

- 2.01 MATERIALS: Comply with requirements specified in other Sections of these Specifications. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

PART 3 EXECUTION

- 3.01 EXAMINATION: Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed. Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.
- 3.02 PREPARATION: Provide temporary support of Work to be cut. Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for exposed portions during cutting and patching operations. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- 3.03 PERFORMANCE
- A. Employ skilled workers to perform cutting and patching. Cut existing construction for installation of other components or performance of other construction, and subsequently patch to restore surfaces to their original condition.
 - B. Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.
 - 1. Use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Proceed with patching after construction operations requiring cutting are complete.
 - C. Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
 - 1. Test and inspect patched areas after completion to demonstrate integrity of installation.
 - 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 4. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 5. Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 6. Patch components in a manner that restores enclosure to a weathertight condition.
- D. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 017310

PART 1 GENERAL

1.01 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and re-installed.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and re-install them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and re-installed.

1.02 MATERIALS OWNERSHIP: Except for items or materials indicated to be reused, salvaged, re-installed, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.03 SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience.
- B. Submit statement that indicates the measures proposed for dust-control and noise-control. After selective demolition is complete, submit a list of items that have been removed and salvaged. Schedule of Selective Demolition Activities, indicate:
 - 1. Detailed sequence of selective demolition and removal Work, with starting and ending dates for each activity.
 - 2. Interruption of utility services.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Locations of temporary partitions and means of egress, including for other tenants affected by selective demolition operations.
 - 6. Coordination of Owner's continuing occupancy of portions of existing building.

1.04 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction. Comply with ANSI A10.6 and NFPA 241.

- C. Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination". Review methods and procedures related to selective demolition, Include: (1) Inspect and discuss condition of construction to be selectively demolished; (2) Review structural load limitations of existing structure; (3) Review and finalize selective demolition schedule; and (4) Review requirements of Work performed by other trades that rely on substrates exposed by selective demolition operations.
- 1.05 PROJECT CONDITIONS: Conduct selective demolition so Owner's operations will not be disrupted. Provide not less than seventy-two (72) hours' notice to Owner of activities that will affect Owner's operations. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct without written permission from the Owner. Owner assumes no responsibility for condition of areas to be selectively demolished. Storage or sale of removed items or materials on-site will not be permitted.
- A. Hazardous materials are present in building to be selectively demolished. Examine report on the presence of hazardous materials and to become aware of locations where hazardous materials are present. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
- 1.06 WARRANTY: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. If possible, retain original Installer or fabricator to patch the exposed Work that is damaged during selective demolition.

PART 2 PRODUCTS

- 2.01 REPAIR MATERIALS: Use repair materials identical to existing materials. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible. Use materials whose installed performance equals or surpasses that of existing materials. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Survey existing conditions, utilities to be disconnected and capped, and conditions correlate with requirements indicated to determine extent of selective demolition required. Inventory and record the condition of items to be removed and re-installed, and removed and salvaged.
- B. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the extent of conflict. Promptly submit a written report to Architect. Engage a Professional Engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of structure or adjacent structures. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.02 UTILITY SERVICES: Do not interrupt services indicated to remain and protect them against damage during selective demolition operations unless authorized in writing by Owner and authorities having jurisdiction. Provide at least seventy-two (72) hours' notice to Owner if shutdown is required. Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished. Arrange to shut off indicated utilities with utility companies.

3.03 PREPARATION

- A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and legally dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Protect existing site improvements, appurtenances, and landscaping to remain.
- C. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain. Provide temporary weather protection to prevent water leakage and damage to structure and interior areas. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
- D. Provide and maintain shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.04 POLLUTION CONTROLS

- A. Comply with governing environmental-protection regulations for dust-control. Do not use water when it may damage existing construction. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas. Use chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.05 SELECTIVE DEMOLITION

- A. Demolish and remove existing construction only within the indicated extent. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations of each floor before disturbing the next lower level.
- B. Neatly cut openings and holes plumb, square, and true to dimensions required. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces. Temporarily cover openings to remain.

- C. Do not use cutting torches until Work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations. Maintain adequate ventilation when using cutting torches.
- D. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
- E. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- F. Comply with Building Manager's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.
- G. Removed and Salvaged Items: Comply with the following: (1) Clean salvaged items; (2) Pack or crate items after cleaning. Identify contents of containers; (3) Store items in a secure area until delivery to Owner; (4) Transport items to Owner's storage area designated by Owner; and (5) Protect items from damage during transport and storage.
- H. Removed and Re-installed Items: Comply with the following: (1) Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment; (2) Pack or crate items after cleaning and repairing. Identify contents of containers; (3) Protect items from damage during transport and storage; and (4) Re-install items in locations indicated. Comply with installation requirements for new materials and equipment.
- I. Existing Items to Remain: Protect construction indicated to remain, clean items, and reinstalled in their original locations after selective demolition operations are complete. Comply with installation requirements for existing items.
- J. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.
- K. Roofing: Remove no more existing roofing than can be covered in one (1) day by new roofing. Refer to applicable Division 7 Section for new roofing requirements.

3.06 PATCHING AND REPAIRS

- A. Comply with Section 017310 "Cutting and Patching." Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- B. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to Manufacturer's written recommendations. Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.
- C. Where walls that are demolished extend one (1) finished area into another, patch and repair surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials. Comply with installation requirements specified in other Specifications Sections.

- D. Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
 - E. Test and inspect patched areas after completion to demonstrate integrity of installation.
- 3.07 DISPOSAL OF DEMOLISHED MATERIALS: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site. Do not burn demolished materials without permission from the Owner. If burning is allowed, provide full-time monitoring for burning materials until fires are extinguished. Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 017320

PART 1 GENERAL

- 1.01 FORM OF SUBMITTALS: Bind in 8-1/2 x 11 inch D-side 3-ring binders with durable plastic covers. Identify each binder with typed or printed title WARRANTIES with title of Project; name, address and telephone number of Contractor; and name of responsible company principal. Separate each warranty with index tab sheets. Provide full information, using separate typed sheets as necessary. List Subcontractor, Supplier, and Manufacturer, with name, address, and telephone number of responsible principal.
- 1.02 PREPARATION OF SUBMITTALS: Obtain warranties executed in duplicate by responsible Subcontractors, suppliers, and manufacturers. Warranties should be obtained within ten (10) days of the completion of a task, but they should not be dated until the Date of Substantial completion is determined. Verify that documents are in proper form, contain full information, and are notarized. Co-execute submittals when required. Retain warranties until time specified for submittal.
- 1.03 TIME OF SUBMITTALS: Make other Submittals within ten (10) days after Date of Substantial Completion, prior to final Application for Payment. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten (10) days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 017400

PART 1 GENERAL

1.01 SUBSTANTIAL COMPLETION

- A. Before requesting inspection for determining date of Substantial Completion, complete the following.
 - 1. Prepare a list of items to be completed and corrected (punch list).
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Prepare and submit Project Record Documents, operation and maintenance manuals.
 - 5. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with Manufacturer's name and model number where applicable.
 - 6. Complete final cleaning requirements, including paint touchup, repair, and restore marred exposed finishes to eliminate visual defects.
- B. Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1.02 FINAL COMPLETION

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect review. Before requesting final inspection for determining date of Final Completion, complete the following:
 - 1. Submit a final Application for Payment according to Section 012900 "Payment Procedures" and for identifying total adjusted Contract Sum, previous payments, and sum remaining due.
 - 2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect.
 - 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 4. Instruct Owner's personnel in operation, adjustment, and maintenance of products.
 - 5. Provide submittals to Architect that are required by governing or other authorities or this Specification.
- B. Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1.03 LIST OF INCOMPLETE ITEMS (PUNCH LIST): Architect will prepare punch lists for the Project. Contractor shall schedule with the Architect for each punch listing. Contractor shall notify the Architect at least fourteen (14) days in advance of the date for conducting each punch list.

- A. Scaffolding, rigs (swing stages), or devices necessary for Architect to conduct punch list shall remain in use until the completion of punch listing, completion of correction for the punched items, completion of re-checking for punched items by the Architect, and as well as final punch listing.

1.04 PROJECT RECORD DOCUMENTS

- A. Comply with requirements stated in Section 017810 Project Record Documents. Maintain on site, one (1) set of all the record documents; record actual revisions to the Work.
- B. Record Specifications: Submit one (1) copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
- C. Record Drawings: Maintain and submit one (1) set of Contract Drawings and Shop Drawings. Mark Record Prints to show the actual installation where installation varies from that shown originally.
- D. Record Product Data: Submit one (1) copy of each Product Data submittal. Mark one (1) set to indicate the actual product installation where installation varies substantially from that indicated in Product Data.
- E. Miscellaneous Record Submittals: Records required by other Specification Sections and submittal in connection with actual performance of the Work.

1.05 OPERATION AND MAINTENANCE MANUALS: Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

- A. Include (1) Manufacturer's information, including list of spare parts; (2) Name, address, and telephone number of Installer or supplier; (3) Maintenance procedures; (4) Maintenance and service schedules; (5) Maintenance record forms; (6) Copies of maintenance service agreements; (7) Copies of warranties and bonds; and (8) Identify each binder with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

1.06 WARRANTIES: Comply with requirements stated in Section 017400 "Warranty Submittals." Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 PRODUCTS

2.01 MATERIALS: For progress and final cleaning, use cleaning materials and agents recommended by Manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

- 3.01 DEMONSTRATION AND TRAINING: Instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system. Schedule training with Owner, through Architect, with at least seven (7) days' advance notice.
- 3.02 FINAL CLEANING: Provide final cleaning prior to final inspection. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations. Employ experienced workers or professional cleaners for final cleaning. Comply with Manufacturer's written instructions.
- A. Complete the following cleaning operations, whichever is applicable, before requesting inspection for certification of Substantial Completion:
1. Clean Project site, yard, and grounds, in areas disturbed by construction activities.
 2. Clean exterior surfaces exposed to view; remove temporary tapes, stains and foreign substances affected by the Work.
 3. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 4. Remove tools, construction equipment, machinery, and surplus material from Project site.
 5. Clean exposed hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 6. Remove debris and surface dust from limited access spaces.
 7. Sweep concrete floors broom clean in unoccupied spaces.
 8. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 9. Clean transparent materials, including mirrors and glass in doors and windows. Replace chipped or broken glass and other damaged transparent materials.
 10. Remove labels that are not permanent.
 11. Touch-up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 12. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
- B. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 017700

PART 1 GENERAL

- 1.01 SUBMITTALS: Contractor to submit three (3) copies of: (1) Record Drawings sets of marked-up Record Prints. Contractor will initial and date each print and mark whether general scope of changes, additional information recorded; (2) Record Specifications of Project's Specifications, including addenda and contract modifications; and (3) Record Product Data of each Product Data submittal.

PART 2 PRODUCTS

2.01 RECORD DRAWINGS

- A. Record Prints: Maintain the Contract Drawings and Shop Drawings. Mark Record Prints to show the actual installation where installation varies from that shown originally. Use other colors to distinguish between changes for different categories of the Work at the same location. If Shop Drawings are marked, show cross-reference on the Contract Drawings. Accurately record information in an understandable drawing technique.
- B. Include: (1) Dimensional changes to Drawings; (2) Revisions to details shown on Drawings; (3) Changes made by Change Order or Construction Change Directive; (4) Changes made following Architect's written orders; (5) Details not on the original Contract Drawings; (6) Field records for variable and concealed conditions; and (7) Record information on the Work that is shown only schematically.
- C. Prepare new Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation. Integrate newly prepared Record Drawings into Record Drawing sets.
- D. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

- 2.02 RECORD SPECIFICATIONS: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications. Record the name and model number of products, including substitutions and product options selected, name of Manufacturer, Supplier, Installer, and other information necessary to provide a record of selections made. Note related Change Orders, Record Drawings, and Product Data where applicable.

- 2.03 RECORD PRODUCT DATA: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal. Include significant changes in the product delivered to Project site and changes in Manufacturer's written instructions for installation. Note related Change Orders, Record Drawings, and Product Data where applicable.

- 2.04 MISCELLANEOUS RECORD SUBMITTALS: Records required by other Specification Sections and submittal in connection with actual performance of the Work.

PART 3 EXECUTION

- 3.01 RECORDING AND MAINTENANCE: Post modifications to Project Record Documents as they occur. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order, clean, and legible condition. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 017810

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies cast-in-place concrete at the following locations:
 - 1. Patching at new window washing anchors.
- B. Section Includes:
 - 1. Concrete reinforcement.
 - 2. Concrete curing.
- C. Provide all labor, materials, tools, equipment, transportation, and services necessary for, or incidental to the execution of the concrete work and related items as shown on the Drawings, specified herein, and as identified by the Architect/Engineer in the field.

1.03 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute International; 2010.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
- C. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete; American Concrete Institute International; 1998 (Reapproved 2004).
- D. ACI 301 - Specifications for Structural Concrete; American Concrete Institute International; 2010.
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.
- F. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001 (Reapproved 2008).
- G. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2011.
- H. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute International; 2004.
- I. ASTM A185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.
- J. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Billet-Steel Bars for Concrete Reinforcement; 2012.
- K. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2013.

- L. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2012a.
- M. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2013.
- N. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2012.
- O. ASTM C150/C150M - Standard Specification for Portland Cement; 2012.
- P. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2012.
- Q. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
- R. ASTM C330 - Standard Specification for Lightweight Aggregates for Structural Concrete; 2009.
- S. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2013.
- T. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2012.
- U. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2011.
- V. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2013.
- W. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2012.

1.04 SUBMITTALS

- A. General: Prepare and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections.
- B. Product Data: Include material descriptions, chemical composition, physical properties, test data, and mixing and application instructions. Include Manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties.
 - 1. Material List: An inclusive list of required materials. Indicate each material and cross-reference the specific material, finish system, and application. Identify each material by Manufacturer's catalog number and general classification.
 - 2. Manufacturer's Information: Technical information including label analysis and instructions for handling, storing, and applying each material.
 - 3. Include Material Safety Data Sheets, if applicable.
- C. Mix Design: Submit proposed concrete mix design.

- D. Material Test Reports: From a qualified testing agency indicating and interpreting test results of the following for compliance with requirements indicated:
 - 1. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
 - a. Concrete materials.
 - b. Reinforcing materials.
 - c. Admixtures.
- E. Submit Qualification Data of firms and persons specified in the "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.
- F. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.
- G. Warranty: Submit manufacturer warranty and ensure forms have been completed in UC Hastings' name and registered with Manufacturer.

1.05 QUALITY ASSURANCE

- A. Perform Work of this Section in accordance with ACI 301 and ACI 318.
- B. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- C. Maintain one (1) copy of each document on site.
- D. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
 - 1. Company specializing in performing the Work of this Section with minimum five (5) years of experience.
 - 2. Workers: Thoroughly skilled and specially trained in the techniques applying specified products and materials. Applicators shall be able to demonstrate acceptable level of skill for review and acceptance by the Architect.
- E. Use adequate numbers of skilled workmen thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and methods needed for proper performance of the Work of this Section.
- F. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
- G. Source Limitations: Obtain each type of cement of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- H. All Work shall be subject to acceptance by the Owner and Architect. All Work that does not comply with the intent of the Specifications shall be corrected by the Contractor.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in Manufacturer's original and unopened containers, labeled with type and name of products and manufacturers, and bearing labels include the following information:
 - 1. Manufacturer's brand name and stock number.
 - 2. Product name or title of material.
 - 3. Directions for storage and handling instructions and precautions.
 - 4. Date of manufacture and shelf life.
 - 5. Mixing and application instructions.
 - 6. VOC content.
- B. Comply with Manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.
- C. Store materials in a clean, dry location protected from exposure to direct sunlight. In storage areas, maintain environmental conditions within range recommended in writing by Manufacturer.
- D. Store cementitious materials off the ground, under cover, and in a dry location.
- E. Store aggregates, covered and in a dry location, where grading and other required characteristics can be maintained and contamination avoided.
- F. Environmental requirements: Proceed with Work of this Section only when existing and forecasted weather conditions will permit the application to be performed in accordance with the Manufacturer's recommendations.
- G. Safety: Refer to all applicable data, including, but not limited to MSDS sheets, PDS sheets, Product labels, specific instructions for specific personal protection requirements.
- H. Remove all materials, including cloths, tarps, and empty containers from the area of Work at the close of each day.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable Federal, State, and local regulatory requirements including flame and smoke rating requirements for finishes.
- B. Flammable Liquids serve all current regulation regarding flammable liquids such as posting "No Smoking" signs. Allow no open flames, welding, or other ignition sources in the Work.
- C. Conform to all applicable laws, codes, and regulations for disposal of all materials, debris, and containers.

1.08 COORDINATION

- A. Coordinate the Work of this Section with interfacing and adjoining Work for proper sequencing of each installation.
- B. Cease operations immediately if Work area appears to be in danger and notify the Architect/Engineer. Do not resume operations until conditions have been corrected.

- C. It is the Contractor's responsibility to protect building interiors and assemblies from damage throughout the Work.
- D. Protect existing utility lines and services, whether indicated or not.
- E. Exercise care to protect all existing Work, which is to remain. Any such Work that is damaged shall be repaired to the satisfaction of the Architect/Engineer at no additional charge to the Owner.
- F. Wear suitable protective eyewear, headgear, ear and hand protection when handling equipment, debris, and during off-loading.
- G. Provide barriers against unauthorized foot traffic into the work area.
- H. Provide warning signs indicating construction areas.

1.09 WARRANTY

- A. See Section 017800 "Closeout Submittals", for additional warranty requirements.
- B. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace concrete that does not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two (2) years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M Grade 60 (420).
 - 1. Type: Deformed billet-steel bars.
- B. Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain type.
- C. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage (1.5 mm).
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.02 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I - Normal Portland type.
- B. Fine and Coarse Aggregates: ASTM C 33.
- C. Lightweight Aggregate: ASTM C 330.
- D. Fly Ash: ASTM C618, Class C or F.
- E. Silica Fume: ASTM C1240, proportioned in accordance with ACI 211.1.
- F. Water: Clean and not detrimental to concrete.

G. Fiber Reinforcement: Alkali-resistant polypropylene complying with ASTM C1116/C1116M.

1. Fiber Length: 0.25 inch (6 mm), nominal.

2.03 ADMIXTURES

- A. General: Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Chemical Admixtures: Provide admixtures certified by Manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
- C. Air Entrainment Admixture: ASTM C260.
- D. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
- E. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
- F. Retarding Admixture: ASTM C494/C494M Type B.
- G. Water Reducing Admixture: ASTM C494/C494M Type A.

2.04 ACCESSORY MATERIALS

- A. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 1. ASTM C1107/C1107M; Grade A, B, or C.

2.05 BONDING AND JOINTING PRODUCTS

- A. Slab Isolation Joint Filler: 1/2 inch (13 mm) thick, height equal to slab thickness, with removable top section that will form 1/2 inch (13 mm) deep sealant pocket after removal.
 1. Material: Closed-cell, non-absorbent, compressible polyethylene or polymer foam in sheet form.
- B. Slab Contraction Joint Device: Preformed linear strip intended for pressing into wet concrete to provide straight route for shrinkage cracking.

2.06 CURING MATERIALS

- A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
- B. Moisture-Retaining Sheet: ASTM C171.
 1. Polyethylene film, clear, minimum nominal thickness of 0.0040 in. (0.10 mm).
 2. White-burlap-polyethylene sheet, weighing not less than 10 oz/per linear yd, 40 inches wide (305 grams per sq. meter).
- C. Water: Potable, not detrimental to concrete.

2.07 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Proportioning Structural Lightweight Concrete: Comply with ACI 211.2 recommendations.
- C. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 - 1. For trial mixtures method, employ independent testing agency acceptable to McGinnis Chen Associates, Inc. for preparing and reporting proposed mix designs.
- D. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by Manufacturer.
- E. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard (0.89 kg per cubic meter), or as recommended by Manufacturer for specific project conditions.
- F. Normal Weight Concrete:
 - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at twenty-eight (28) days: 3,000 pounds per square inch (20.7 MPa).
 - 2. Total Air Content: Four percent (4%), determined in accordance with ASTM C173/C173M.
 - 3. Maximum Slump: 4 inches (100 mm).
- G. Structural Lightweight Concrete:
 - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at twenty-eight (28) days: 3,000 pounds per square inch (20.7 MPa).
 - 2. Total Air Content: Three percent (3%), determined in accordance with ASTM C173/C173M.
 - 3. Maximum Slump: 3 inches (75 mm).

2.08 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
 - 1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 - 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
 - 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.
 - 4. Fiber Reinforcement: Batch and mix as recommended by Manufacturer for specific project conditions.
- B. Transit Mixers: Comply with ASTM C94/C94M.
 - 1. When air temperature is above 90 deg F, reduce mixing and delivery time to sixty (60) minutes.

2.09 CONCRETE FINISH

- A. Cast new concrete to match color and texture of adjacent concrete.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with Work of this Section.

3.02 PREPARATION

- A. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with Manufacturer's instructions.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.04 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- C. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

3.05 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 - 1. Normal concrete: Not less than seven (7) days.

3.06 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article. Perform tests according to ACI 301.
- B. The Contractor for Work under this Section shall maintain a Quality Control program specifically to verify compliance with this Specification.

- C. Provide free access to concrete operations at Project site and cooperate with appointed firm.
- D. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during operations:
 - 1. Owner may engage a qualified independent testing agency to sample material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency shall perform tests for characteristics specified, using applicable referenced testing procedures or, if not referenced, using tests cited in Manufacturer's product data.
 - 3. Owner may direct Contractor to stop application if test results show materials being used do not comply with requirements. Contractor shall remove non-complying materials from Project site, pay for testing, and reapply surfaces with rejected materials. If necessary, Contractor may be required to remove rejected materials from previously applied surfaces.
- E. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- F. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three (3) concrete test cylinders. Obtain test samples for every 100 cu yd (76 cu m) or less of each class of concrete placed.
- G. Perform one (1) slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional Work with specified requirements.

3.07 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the McGinnis Chen Associates, Inc. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of McGinnis Chen Associates, Inc. for each individual area.

3.08 CLEANING

- A. Cleanup: At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. Collect waste material that may constitute a fire hazard, place in closed metal containers and remove daily from site.
- C. Remove spills from adjacent surfaces. Restore to original condition or replace with new materials to the satisfaction of the Architect.
- D. Contractor shall replace all materials in kind that are damaged during Work of this Section.
- E. Provide continuous dust control to protect all areas of the Work.
- F. Legally dispose of debris in accordance with local, State, and Federal regulations.

- G. Upon completion of Work, remove all debris and surplus items from the site, and leave all areas and building components in an acceptable condition for the remaining Work.
- H. Clean off excess products as the Work progresses. Do not scratch or damage adjacent finished surfaces.

3.09 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.
- B. Protect Work of other trades from damage. Correct damage by cleaning, repairing, replacing, and recoating as approved by Architect. Leave in an undamaged condition.

END OF SECTION 033000

1.00 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes the following applications:

- 1. Patch existing Built-Up Roofing at removed and new Façade Access Anchors.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the Work with other Sections referencing this Section.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by the built-up roofing manufacturer to install Manufacturer's product and that is eligible to receive Manufacturer's special warranty.

1.05 WARRANTY

- A. Roofing Applicator Warranty: Two (2) years from date of Substantial Completion.
- B. Roofing Manufacturer's Warranty: Ten (10) years from date of Substantial Completion.

2.00 PRODUCTS

2.01 BUILT-UP ROOFING MANUFACTURERS (FOR REPAIR)

- A. Subject to compliance with requirements.
- B. Built-Up Roofing System: Asphalt cold-applied roofing system. Provide roofing repair products by Johns Manville – 4GLC.

3.00 EXECUTION

3.01 EXAMINATION

- A. Inspect surfaces that will receive the new roofing system to make sure they are clean, smooth, sound, properly prepared, and free of moisture, dirt, debris, or other contamination.
- B. Verify that existing built-up roofing is properly fastened to substrate, or if needed, properly repair per NRCA's Repair Manual for Low-Slope Membrane Roof Systems.
- C. Verify that all roof penetrations, mechanical equipment, cants, edge metal, and other on-roof items are in place and secure.
- D. Verify slope to drain.
- E. Verify that all critical areas around the immediate vicinity of the spray area are suitably protected.

- F. Verify all roof drains are clean and in working order.
- G. Verify that all air conditioning and air intake vents are suitably protected or closed.
- H. Proceed with installation only after unsatisfactory conditions have been corrected. See requirements specified in "Project Conditions" article.

3.02 PREPARATION

- A. The surface must be clean, sound, dry and free of any materials that would inhibit proper adhesion of the sealant. Achievement of this condition may require the use of industrial cleaner, scraping, power brooming, vacuuming or other means, and shall always be performed observing responsible trade practices. In any case, any existence of talc or other separator agents on the built-up or bitumen roofing is not acceptable.
- B. All blisters shall be cut, dried out, re-adhered and sealed with roofing adhesive/mastic as described in Section 3.03.C.
- C. All loose seams and wall termination of existing roof system shall be fastened down and sealed with roofing adhesive/mastic. Sealant must seal fasteners as well.
- D. After the existing built-up roofing substrate is properly repaired and cleaned, perform adhesion tests per the procedures as required by the sealant manufacturer.

3.03 BUILT-UP ROOFING INSTALLATION, PATCHING

- A. Perform built-up roofing membrane repair according to roofing manufacturer's written instructions and applicable recommendations of NRCA's "the NRCA Repair Manual for Low-Slope Membrane Roof System of Built-up Roofing."
 - 1. Install roofing system BU-4-LC, according to roof assembly identification matrix and roof assembly layout illustrations in NRCA's "The NRCA Repair Manual for Low-Slope Membrane Roof System of Built-up Roofing" and requirements in this Section.
- B. Install roofing membrane according to roofing manufacturer's written instructions and applicable recommendations of NRCA's "Quality Control Guidelines for the Application of Built-up Roofing" and as follows:
 - 1. Deck Type: L (Light Weight Concrete).
 - 2. Base Sheet: 1
 - 3. Number of Ply Sheets: 2.
 - 4. Surfacing Type: M (mineral-granule-surfaced cap sheet).
 - 5. Mineral-granule-surfaced cap sheet is in addition to number of ply sheets specified.
- C. For patching, perform the following repair procedure:
 - 1. Remove debris, contaminants, aggregate or loose surfacing from the surface of the membrane or flashing to be repaired. The area to be prepared should extend a minimum of 18 inches beyond the perimeter of the defect to provide an ample clean work area on which to install the patch and tie it into the existing roof membrane.
 - 2. If the membrane surface has been flood coated and aggregate embedded, carefully spud the aggregate free from the surface and sweep clean.

3. If water infiltration is suspected, inspect the insulation and deck for damage. Remove wet or damaged insulation and repair or replace as required. Properly attach or adhere new, dry insulation consistent with thickness of the existing insulation and compatible with the other roof system components.
4. Prime the surface of the membrane with asphalt primer and allow to dry.
5. Install the same numbers of plies as were removed (a minimum of 2 plies) in cold-applied adhesive. Extend the bottom ply at least 6 inches beyond the area to be repaired and each succeeding plies at least 3 inches beyond the previous ply.
6. As an alternative, 2 plies of modified bitumen sheet may be installed by suitable cold adhesive.
7. Install liquid-applied flashing on new penetrations through BUR roofing.

3.06 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Inspection by the coating manufacturer's representative shall be made to verify the proper installation of the system. Any areas that do not meet the minimum standards for application as specified herein shall be corrected at the Contractor's expense. Manufacturer's inspection or verification shall not constitute acceptance of responsibility for any improper application of material.

3.07 PROTECTING AND CLEANING

- A. Correct deficiencies in or remove built-up roofing that does not comply with requirements, repair substrates, and repair or reinstall roofing to a condition free of damage and deterioration prior to acrylic roof coating installation.
- B. Provide all protection necessary to protect the tenants of the building, the public, and the property, including adjacent properties, from damage as a result of the Work in this Section.
- C. Provide continuous protection of all public and private property including automobiles from damage during the Work.
- D. Protect Work of other trades from damage. Correct damage by cleaning, repairing, replacing, and recoating as approved by Architect. Leave in an undamaged condition.

END OF SECTION 075000

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings, counter-flashings, and coping.
- B. Reglets and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 075000 – Built-Up Roofing Repair.
- B. Section 079200 - Joint Sealants.

1.03 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.
- B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.
- C. ASTM B32 - Standard Specification for Solder Metal; 2008.
- D. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012)e1.
- E. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2009.
- F. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2012.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Pre-installation Meeting: Convene one (1) week before starting Work of this Section.

1.05 SUBMITTALS

- A. See Section 013000 "Administrative Requirements", for submittal procedures.
- B. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 1. Material List: An inclusive list of required materials. Indicate each material and cross-reference the specific system and application. Identify each material by Manufacturer's catalog number and general classification.
 - 2. Manufacturer's Information: Technical information including label analysis and instructions for handling, storing, and installing material.
 - 3. Include Material Safety Data Sheets, if applicable.
- C. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details. 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, and attachments to adjoining Work.
 4. Do not submit Architectural Drawings. Submit Fabricator's shop drawings to confirm the actual profiles, shapes, seams, and dimensions of the sheet metal flashing and trim to be installed for the Project.
- D. Submit Manufacturer's instructions for correct application of the materials, including special surface preparation procedures and substrate conditions requiring special attention.
 - E. Samples: Submit one (1) Sample, 12-inches (304.8 mm) in size, illustrating material and fabrication details of typical flashing with cleats and coping.
 - F. Submit Qualification Data of firms and persons specified in the "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.
 - G. Maintenance Data: To include in maintenance manuals. Identify substrates and types of materials installed. Include recommendations for periodic inspections, cleaning, care, maintenance, and repair.
 - H. Warranty: Sample of special warranty.
 - I. Maintain one (1) copy of each document on site.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise indicated.
- B. Maintain one (1) copy of each document on site.
- C. Fabricator and Installer Qualifications: Company specializing in sheet metal work with three (3) years of documented experience.
- D. Use adequate numbers of skilled workmen thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and methods needed for proper performance of the Work of this Section.
- E. Manufacturer: Company specializing in manufacturing the Products specified in this Section with minimum ten (10) years of experience.
- F. Pre-Installation Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination".
- G. All Work shall be subject to acceptance by the Owner and Architect. All Work that does not comply with the intent of the Specifications shall be corrected by the Contractor.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Slope metal sheets to ensure drainage.
- B. Do not store sheet metal materials in contact with other materials that might cause staining, discoloration, denting, or other surface damage.

- C. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.
- D. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.
- E. Environmental requirements: Proceed with Work of this Section only when existing and forecasted weather conditions will permit the application to be performed in accordance with the Manufacturer's recommendations.
- F. Take precautionary measures and store in UL listed storage locker to protect from fire hazards and spontaneous combustion.
- G. Remove all materials, including cloths, tarps, and empty containers from the area of Work at the close of each day.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

- A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 0.028 inch (0.71 mm) thick base metal.

2.02 UNDERLAYMENT

- A. Felt Underlayment: ASTM D226, asphalt saturated organic roofing felt, Type II ("No. 30"), nonperforated.
- B. Slip Sheet: Rosin sized building paper, 3lb/100 sq. ft.
- C. Self-Adhering, High-Temperature Sheet: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.
 - 1. Products:
 - a. Refer to Section 076500 "Flexible Flashing and Weather Resistive Barriers".

2.03 ACCESSORIES

- A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.

- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
 - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed neoprene sealing washers under heads of exposed fasteners bearing on weather side of metal. Neoprene isolator at washer if stainless steel bolts contact with galvanized steel.
 - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
 - 3. Fasteners for zinc-coated (galvanized) Steel Sheet: Series 300 stainless steel.
- C. Elastomeric Sealant: ASTM C 920, elastomeric polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight. Refer to Section 079200 "Joint Sealants".
- D. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- E. Plastic Cement: ASTM D4586, Type I.
- F. Solder:
 - 1. For Zinc-Coated (Galvanized) Steel: ASTM B32; Grade Sn50 (50/50) type.

2.04 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. General: Custom fabricate sheet metal flashing to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Shop-fabricate items where practicable.
 - 1. 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.
 - 2. Obtain field measurements for accurate fit before shop fabrication.
 - 3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 - 4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- C. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- D. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4-inch in 20-feet (6mm in 6m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

- 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 deep, filled with elastomeric sealant concealed within joints.
 - 1. Provide loose locking slip joint of maximum 8-feet from external and internal corners, maximum 24-feet length of straight runs, unless Manufacturer recommends more frequent interval, and one (1) at center of runs less than 20-feet, but more than 8-feet, unless specified otherwise following herein.
 - 2. Size and locate joints, fastenings, reinforcements and supports as required to preclude distortion or displacement due to thermal expansion and contraction. Conceal fastenings wherever possible.
- F. Sealed Joints: Form non-expansion, but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations. Refer to Section 079200 "Joint Sealants".
- G. Form pieces in longest possible lengths.
- H. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- I. Fabricate cleats and attachment devices of sizes as recommended by SMACNA's "Architectural Sheet Metal Manual" and by FMG Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.
- J. Hem exposed edges on underside 1/2-inch (13 mm); miter and seam corners. Raw edges will not be permitted.
- K. Seams: Form non-moving seams with flat lock seams, except where otherwise indicated. Form seams and seal with elastomeric sealant, unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.
- L. Fabricate corners from one (1) piece with minimum 18-inch (450 mm) long legs; seam for rigidity, seal with sealant.
- M. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessories as required for installation of Work, matching or compatible with material installed, non-corrosive, size and gauge as required for performance.
- N. Do not use graphite pencils to mark metal surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
 - 1. Verify compliance with requirements for installation tolerances of substrates.
 - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
 - 3. Verify that water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
 - 4. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
 - 5. Verify roofing termination and base flashings are in place, sealed, and secure.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 UNDERLAYMENT INSTALLATION

- A. General: Install underlayment as indicated on Drawings.
- B. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches (50 mm).
- C. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle-free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps and edges with roller. Cover underlayment within fourteen (14) days.

3.03 INSTALLATION

- A. Comply with standards of SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
- B. General: Anchor sheet metal coping 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. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
 - 2. 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.

3. Space cleats not more than 12-inches (300mm) apart. Attach each cleat with at least two (2) fasteners. Bend tabs over fasteners.
 4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
 5. Torch cutting of sheet metal flashing and trim is not permitted.
 6. Do not use graphite pencils to mark metal surfaces.
- C. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
1. Coat concealed side of stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
 2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet or install a course of polyethylene underlayment.
- D. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10-feet with no joints within 24-inches (600 mm) of corner or intersection.
1. Form expansion joints of intermeshing hooked flanges, not less than 1-inch (25 mm) deep, filled with sealant concealed within joints.
 2. Use lapped expansion joints only where indicated on Drawings.
- E. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4 inches for nails and 3/4-inch for wood screws 1-1/4 inches for nails.
- F. Conceal fasteners and expansion provisions where possible in exposed Work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation. Use exposed fasteners only where permitted.
- G. Apply plastic cement compound between metal flashings and felt flashings.
- H. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- I. Seal joints as required for watertight construction.
1. Use sealant-filled joints unless otherwise indicated. 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 between 40 and 70 deg F (4 and 21 deg C), set joint members for fifty percent (50%) movement each 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 Section 079200 "Joint Sealants".
- J. Soldered Joints:
1. Clean surfaces to be soldered, removing oils and foreign matter.

2. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches, except reduce pre-tinning where pre-tinned surface would show in completed Work.
3. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

3.04 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, 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-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install flashing per roofing manufacturer's recommendations.

3.05 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 Façade Access Anchors.
- B. Openings Flashing in Frame Construction: Install continuous head, sill, penetration and similar flashings to extend 4-inches beyond wall openings.

3.06 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4-inch in 20-feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3mm) offset of adjoining faces and of alignment of matching profiles

3.07 FIELD QUALITY CONTROL

- A. See Section 014000 "Quality Requirements", for field inspection requirements.
- B. Inspection will involve surveillance of Work during installation to ascertain compliance with specified requirements.

3.08 CLEANING AND PROTECTION

- A. Cleanup: At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. Collect waste material that may constitute a fire hazard, place in closed metal containers and remove daily from site.
- C. Contractor shall replace all materials in kind that are damaged during Work of this Section.
- D. Provide continuous dust control to protect all areas of the Work.
- E. Legally dispose of debris in accordance with local, State, and Federal regulations.
- F. Upon completion of the Work, remove all debris and surplus items from the site.
- G. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

- H. Clean and neutralize flux materials. Clean off excess solder.
- I. Clean off excess sealants.
- J. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in Manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.
- K. 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.
- L. Protect Work of other trades from damage whether being coated or not. Correct damage by cleaning, repairing, replacing, and recoating as approved by Architect. Leave in an undamaged condition.

END OF SECTION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes self-adhered membrane (SAM) at the following locations:
 - 1. Around window washing anchor penetrations on cement plaster wall.
- B. Provide all labor, materials, tools, equipment, transportation, and services necessary for, or incidental to the execution of the wood installation work and related items as shown on the Drawings, specified herein, and as identified by the Architect/Engineer in the field.

1.03 RELATED SECTIONS

- A. SECTION 017320 SELECTIVE DEMOLITION
- B. SECTION 076200 SHEET METAL FLASHING AND TRIM
- C. SECTION 079200 JOINT SEALANTS

1.04 REFERENCES

- A. ASTM E 96: Standard Test Methods for Water Vapor Transmission of Materials; 1995.

1.05 SUBMITTALS

- A. Submit under provision of Section 013300 "Submittal Procedures."
- B. Product Data: For each type of process and factory-fabricated product, and indicate component materials and dimensions and include construction and application details. Include identification of materials; construction and application details; installation instructions; and available profiles and textures.
 - 1. Material List: An inclusive list of required materials. Indicate each material and cross-reference the products, and installation. Identify each material by Manufacturer's catalog number and general classification.
 - 2. Manufacturer's Information: Technical information including label analysis and instructions for handling, storing, and installing each material.
- C. Submit Manufacturer's instructions for correct installation of the materials, including special surface preparation procedures and substrate conditions requiring special attention.

D. Samples for Verification:

1. For each of the following:

a. Sample of self-adhered membrane (SAM).

2. Provide a list of materials and installations for each Sample. Label each Sample for location and application.

E. Submit Qualification Data of firms and persons specified in the "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.

F. Warranties: Sample of warranties.

G. Maintain one (1) copy of each document on site.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual experienced in flexible flashing and weather resistive barrier in material, design, and extent to that indicated for Project whose work has resulted in installations with a record of successful in-service performance.

1. Company specializing in performing the Work of this Section with minimum five (5) years of experience. Such company has completed flexible flashing and weather resistive barrier installations similar in material and extent to that indicated for this Project with a record of successful in-service performance.

2. Workers: Thoroughly skilled and specially trained in the techniques installing flexible flashing and weather resistive barrier product. Installers shall be able to demonstrate acceptable level of skill for review and acceptance by the Architect.

B. Use adequate numbers of skilled workmen thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and methods needed for proper performance of the Work of this Section.

C. Manufacturer: Company specializing in manufacturing the Products specified in this Section with minimum ten (10) years of experience.

D. Source Limitations: Obtain each type of flexible flashing and weather resistive barrier product through one (1) source from a single manufacturer.

E. Mock-up: Construct sample wall installation to verify selections made under sample submittals and to evaluate extent of water damage and qualities of materials and construction sequencing. Build mock-up to verify selections made under sample submittals and to demonstrate aesthetic effects.

1. Build mock-up under provisions of Section 01400 "Quality Requirements".

F. Perform Work in accordance with ASTM requirements for preparation and material installation and in accordance with Manufacturer's requirements for preparation and product installation instructions.

G. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

- H. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section 013100 "Project Management and Coordination".
- I. All Work shall be subject to acceptance by the Owner and Architect. All Work that does not comply with the intent of the Specifications shall be corrected by the Contractor.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle products in compliance with Manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.
- B. Deliver other materials to Project site in Manufacturer's unopened packages or bundles with labels intact bearing Manufacturer's name and label, and the following information:
 - 1. Manufacturer's brand name and stock number.
 - 2. Product name or title of material.
 - 3. Directions for storage and handling instructions and precautions.
- C. Environmental requirements: Proceed with Work of this Section only when existing and forecasted weather conditions will permit the application to be performed in accordance with the Manufacturer's recommendations.
- D. Safety: Refer to all applicable data, including, but not limited to MSDS sheets, PDS sheets, Product labels, specific instructions for specific personal protection requirements.
- E. Take precautionary measures and store in UL listed storage locker to protect from fire hazards and spontaneous combustion.
- F. Remove all materials, including cloths, tarps, and empty containers from the area of Work at the close of each day.

1.08 PROJECT CONDITIONS

- A. Environmental Limitations: Do not proceed with installation of wood products under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by Producer.
 - 2. When substrates are wet.
 - 3. Adverse weather conditions.

1.09 REGULATORY REQUIREMENTS

- A. Conform to applicable Federal, State, and local regulatory requirements including flame and smoke rating requirements for finishes.
- B. Flammable Liquids serve all current regulation regarding flammable liquids such as posting "No Smoking" signs. Allow no open flames, welding, or other ignition sources in the Work.
- C. Conform to all applicable laws, codes, and regulations for disposal of all materials, debris, and containers.
- D. All Materials shall be VOC Compliant.

1.10 COORDINATION

- A. Coordinate the Work of this Section with interfacing and adjoining Work for proper sequencing of each installation in accordance to Section 013100 "Project Management and Coordination".

1.11 WARRANTY

- A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Installer's Warranty: Installer's standard form in which Installer agrees to covering materials and workmanship, and to repair or replace self-adhered membrane (SAM), weather-resistive barrier (WRB), and other specified flexible flashing and weather resistive barrier materials that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: One (1) years from date of Substantial Completion.
- C. Warranty: Written warranty, signed by Manufacturer agreeing to repair or replace wood products, self-adhered membrane, weather-resistive barrier, and other specified flexible flashing and weather resistive barrier materials that do not comply with requirements or that deteriorate during the specified warranty period.
 - 1. Warranty Period: Five (5) years from date of Substantial Completion.
- D. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 PRODUCTS

2.01 PRODUCTS AND MANUFACTURERS

- A. Manufacturers: Company specializing in manufacturing the Products specified in this Section with minimum ten (10) years documented experience. Subject to compliance with requirements, provide products by one (1) of the following:
- B. Self-Adhered Membrane (SAM): Pressure-sensitive plastic tape for sealing joints and penetrations in sheathing. Self-adhesive membrane for sealing vertical wall surfaces, such as sills, pans, and through-wall penetrations and gaps:
 - 1. Polyken Shadowlastic 627-35 Premium Flashing Tape by Berry Plastics Corporation.
 - 2. Vycor Plus by W.R. Grace. Provide primer at surfaces recommended by W.R. Grace.

PART 3 EXECUTION

3.01 EXAMINATION

- A. The Installer shall examine the substrate and the conditions which flashing is to be performed and notify the Contractor of unsatisfactory conditions. Do not proceed with the Work until satisfactory conditions do exist.

- B. Verify that all surfaces to receive self-adhered flexible flashing are dry and free of dust, dirt, and other foreign matter.

3.02 WALL FLASHING INSTALLATION

- A. General: Install flexible flashing as indicated in Manufacturer's installation instruction and the Architectural Drawings.
- B. Verify that the existing condition of the substrates complies with the recommended condition prior to the installation of flexible flashing.
- C. Install flexible flashing in the recommended order/sequence as indicated in the Manufacturer's installation instruction and the Architectural Drawings.
- D. Coordinate with other related Work.
- E. Ensure that the flashing is fully adhered to the substrate with rollers. Apply firm pressure along the entire adhesive strip to ensure a continuous seal.

3.03 FIELD QUALITY CONTROL

- A. The Contractor for Work under this Section shall maintain a Quality Control program specifically to verify compliance with this Specification.
- B. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during operations:
 - 1. Owner may engage a qualified independent testing agency to sample material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency shall perform tests for characteristics specified, using applicable referenced testing procedures or, if not referenced, using tests cited in Manufacturer's product data.
 - 3. Owner may direct Contractor to stop application if test results show materials being used do not comply with requirements. Contractor shall remove non-complying materials from Project site, pay for testing, and reapply surfaces with rejected materials. If necessary, Contractor may be required to remove rejected materials from previously applied surfaces.
 - 4. Provide water testing at five percent (5%) of installed windows and doors.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional Work with specified requirements.

3.04 CLEANING

- A. Clean Work and disposal under provisions of Section 017700 "Closeout Procedures".
- B. Cleanup: At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- C. Collect waste material that may constitute a fire hazard, place in closed metal containers and remove daily from site.
- D. Clean off excess products as the Work progresses. Do not scratch or damage adjacent finished surfaces. Restore to original condition or replace with new materials to the satisfaction of the Architect.

- E. Contractor shall replace all materials in kind that are damaged during Work of this Section.
- F. Provide continuous dust control to protect all areas of the Work.
- G. Legally dispose of debris in accordance with local, State, and Federal regulations.
- H. Upon completion of Work, remove all debris and surplus items from the site, and leave all areas and building components in an acceptable condition for the remaining Work.

3.05 PROTECTION

- A. Protect Work of other trades from damage. Correct damage by cleaning, repairing, replacing, and recoating as approved by Architect. Leave in an undamaged condition.

END OF SECTION 076500

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

- A. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- B. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.
- C. ASTM D1056 - Standard Specification for Flexible Cellular Materials--Sponge or Expanded Rubber; 2007.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the Work with other Sections referencing this Section.

1.04 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.05 SUBMITTALS

- A. See Section 013000 "Administrative Requirements", for submittal procedures.
- B. Product Data: For each joint-sealant product specified, include primers, solvents, cleaning compounds, sealants, and other products not specified in this Section but that will be used during the course of this Work: Include Manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties.
 - 1. Material List: An inclusive list of required sealant products. Indicate each material and cross-reference specific sealant and installation. Identify each material by Manufacturer's catalog number and general classification.
 - 2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and installing sealant.
 - 3. Include Material Safety Data Sheets.
 - 4. Provide four (4) sets of Product Data Submittals.
- C. Submit Manufacturer's instructions for correct installation of the materials, including special surface preparation procedures and substrate conditions requiring special attention.
- D. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

- E. Samples for Verification: For each type and color of joint sealant required, provide Samples of joint sealants.
 - 1. Provide 1/2-inch-wide sealant joints formed between two (2) 3-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
 - 2. Provide a list of materials and installations for each sealant.
 - 3. Submit four (4) Samples for Architect's review.
- F. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.
- G. Submit Qualification Data of firms and persons specified in the "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.
- H. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer of joint sealants certifying that products furnished comply with requirements and are suitable for the use indicated.
- I. Maintenance Data: To include in maintenance manuals. Identify substrates and types of sealant applied. Include recommendations for periodic inspections, cleaning, care, maintenance, and repair of sealant.
- J. Submit Manufacturer's certification that products supplied comply with local regulations controlling use of volatile organic compounds (VOC's).
- K. SWRI Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.
- L. Compatibility and Adhesion Test Reports: From Sealant Manufacturer indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- M. Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on preconstruction testing specified in "Quality Assurance" Article.
- N. Warranties: Sample of warranties specified in this Section.
- O. Maintain one (1) copy of each document on site.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with SWRI and ASTM requirements for preparation of surface and material installation and in accordance with Sealant Manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Installer Qualifications: A firm or individual experienced in applying sealants, silicone tapes, and pre-formed silicone extrusions, similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance and who is certified by Manufacturer.
 - 1. Company specializing in performing the Work of this Section with minimum five (5) years of experience.
 - 2. Workers: Thoroughly skilled and specially trained in the techniques applying sealants. Installers shall be able to demonstrate acceptable level of skill for review and acceptance by the Architect.
- C. Use adequate numbers of skilled workmen thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and methods needed for proper performance of the Work of this Section.
- D. Manufacturer: Company specializing in manufacturing the Products specified in this Section with minimum ten (10) years of experience. Manufacturer shall have factory-trained representatives who are available for consultation and Project site inspection at no additional cost.
- E. Sealants shall be applied in accordance with Manufacturer's directions and printed specifications. Sealants applied shall be free of defects.
- F. Source Limitations: Obtain each type of joint sealant through one (1) source from a single manufacturer, unless otherwise specified.
- G. 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 Manufacturer's standard test methods to determine whether priming and other specific joint preparation techniques are required to obtain optimum adhesion of joint sealants to joint substrates.
 - 2. 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.
- H. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to joint substrates as follows:
 - 1. Locate test joints where indicated on the Drawings or, if not indicated, as directed by Architect.
 - a. Conduct field-adhesion tests for each type of sealant and joint substrate indicated.
 - 2. Notify Architect seven (7) days in advance of dates and times when test joints will be erected.

3. Arrange for tests to take place with Joint Sealant Manufacturer's Technical Representative present.
 - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193.
 - b. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
4. Report whether sealant in joint connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
5. Evaluation of Pre-construction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.
- I. Mock-ups: After the completion of Preconstruction Field-Adhesion Testing and Evaluation and before installation, install mock-ups for each joint sealant to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution. Install mock-ups to comply with the following requirements, using materials indicated for the completed Work and to demonstrate performance and constructability and set quality standards for materials and execution:
 1. Joints in mock-ups of assemblies specified in other Sections that are indicated to receive joint sealants, which are specified by reference to this Section.
 2. Install mock-ups in the location and of the size indicated or, if not indicated, as directed by Architect.
 3. Build mock-up under provisions of Section 014000 "Quality Requirements".
 4. Mock-up may be tested for adhesion.
- J. Pre-installation Conference:
 1. Review requirements for sealant installation including substrate condition, special details, installation procedures, protection, and repairs.
- K. All Work shall be subject to acceptance by the Owner and Architect. All Work that does not comply with the intent of the Specifications shall be corrected by the Contractor.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles bearing Manufacturer's name and label and the following information:
 1. Manufacturer's brand name and stock number.
 2. Product name or title of material.
 3. Color name and number.

4. Directions for storage and handling instructions and precautions.
 5. Mixing instructions for multi-component materials.
 6. Date of manufacture, shelf life, and expiration date.
 7. Contents by volume, for pigment and vehicle constituents.
 8. Curing time.
 9. VOC content.
- B. Store and handle materials in compliance with Manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.
- C. Safety: Refer to all applicable data, including, but not limited to MSDS sheets, PDS sheets, Product labels, specific instructions for specific personal protection requirements.
- D. Environmental requirements: Proceed with Work of this Section only when existing and forecasted weather conditions will permit the application to be performed in accordance with the Manufacturer's recommendations.
- E. Take precautionary measures and store in UL listed storage locker to protect from fire hazards and spontaneous combustion.
- F. Remove all materials, including cloths, tarps, and empty containers from the area of Work at the close of each day.
- G. Ventilation: General ventilation is recommended; zero VOC materials do not generate harmful or flammable vapors. Secondary materials may present hazards to be addressed.

1.08 REGULATORY REQUIREMENTS

- A. Conform to applicable Federal, State, and local regulatory requirements including flame and smoke rating requirements for finishes.
- B. Flammable Liquids serve all current regulation regarding flammable liquids such as posting "No Smoking" signs. Allow no open flames, welding, or other ignition sources in the Work.
- C. Conform to all applicable laws, codes, and regulations for disposal of all materials, debris, and containers.
- D. Sealants shall be VOC Compliant.
- E. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):
1. Architectural Sealants: 250 g/L.
 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 3. Sealant Primers for Porous Substrates: 775 g/L.

1.09 PROJECT CONDITIONS

- A. Environmental Limitations: 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° F.
 - 2. Adverse weather conditions.
 - 3. When joint substrates are wet.
 - 4. Where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
 - 5. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.
- B. Joint-Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer or Contract Documents for applications indicated.
- C. Joint-Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.10 WARRANTY

- A. General: Warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Installer's Warranty: Written and signed Installer's warranty form in which the Installer agrees provide materials and workmanship, and to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Three (3) years from date of Substantial Completion.
- C. Manufacturer's Warranty: Written and signed Manufacturer's warranty form in which the Manufacturer agrees to repair or replace joint sealants that do not comply with the performance and other requirements specified in this Section during the specified warranty period.
 - 1. Warranty Period for Polyurethane Sealant: Five (5) years from date of Substantial Completion.
 - 2. Warranty Period for Silicone Sealant: Twenty (20) years from date of Substantial Completion.
- D. Warranties may exclude deterioration or failure of joint sealants from the following:
 - 1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 - 2. Disintegration of joint substrates from natural causes exceeding design specifications.

3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

1.11 EXTRA MATERIALS

- A. Furnish extra materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
 1. Sealant: Furnish Owner not less than two (2) unopened cartridges of sealant of each type applied.
 2. Label each sealed container with color, type, texture, locations, and the Manufacturer's label.

PART 2 PRODUCTS

2.01 GENERAL

- 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. 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.
- C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

2.02 JOINT SEALANTS

- A. Single-Component Nonsag Neutral-Curing Silicone Sealant:
 1. Exposed sealant joints: Provide silicone sealants, ASTM C920, Type S, Grade NS, Class 50, Use NT, G, A, and O, and non-staining. Prime all metal surfaces that are to accept sealant.
 2. Application for:
 - a. Joints in cement plaster.
 3. Products:
 - a. Dow Corning 790 Silicone Weather Barrier Sealant by Dow Corning Corporation.
 - b. Silpruf LM SCS2700 by General Electric (G.E.) Silicones Company.
 - c. Spectrem 1 by Tremco.
 - d. Or approved equivalent.

B. Color:

1. Match the existing adjacent wall color or existing sealant or submit for approval.

2.03 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. Cylindrical Sealant Backings: ASTM C 1330, Close cell or any of the preceding types, as approved in writing by joint sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

2.04 ACCESSORIES

- 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: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.
- D. Color: Provide color samples or mock-ups on the existing substrate for review by the Owner and Architect.

PART 3 - EXECUTION

3.01 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. Verify that joints are clean, dry, sound, smooth, straight and parallel, and otherwise ready to receive joint seals.
- C. Verify that joints are of sufficient depth.
- D. Verify compatibility with and suitability of substrates.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.
- F. Verify that all other Work involved with this area, done under other sections, has been completed and accepted by the Architect and General Contractor prior to starting the application.
- G. Start of sealant application will be construed as Applicator's acceptance of surface conditions.

- H. Test primer for compatibility with substrate materials.

3.02 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, 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. Exposed Aggregate Pre-Cast Concrete Panels.
 - b. Concrete.
 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. As previously noted in "Miscellaneous Materials" Article, purpose of primers is to improve adhesion of sealant to substrate.
- C. Joint Priming: Prime joint substrates, where recommended in writing by joint sealant manufacturer, based on pre-construction 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.
- D. 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.

3.03 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 bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 1. Place sealants so that they are directly in contact and fully wet seal the substrate joints.
 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.
 4. Sealant is free of air pockets, foreign embedded matter, ridges and sags.
 5. Do not use scrap material.
- F. Tooling of Nonsag 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.

3.04 FIELD QUALITY CONTROL

- A. The Contractor for Work under this Section shall maintain a Quality Control program specifically to verify compliance with this Specification.
- B. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during the period when sealant is being applied:
 1. Owner may engage a qualified independent testing agency to sample sealant being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in the presence of Contractor.
 2. Testing agency shall perform tests for characteristics specified, using applicable referenced testing procedures or, if not referenced, using tests cited in Manufacturer's product data.

3. Owner may direct Contractor to stop sealant application if test results show material being used does not comply with specified requirements. Contractor shall remove non-complying sealant from Project site, pay for testing, and reapply the specified sealants.
- C. If test results show sealants do not comply with requirements, remove non-complying materials, prepare surfaces, and reapply sealants.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional Work with specified requirements.
- E. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
 1. Extent of Testing: Test completed elastomeric sealant joints as follows:
 - a. Subparagraphs below are examples only. Revise to suit Project.
 - b. Perform tests for the first 20 feet of joint length for each type of sealant and joint substrate.
 2. Method A below is the first of four (4) test methods recommended in Appendix X1.1 in ASTM C 1193. Retain one (1) or more of the other three (3) test methods if more appropriate for Project joint conditions, and include optional text ", as appropriate for type of joint sealant application indicated."
 3. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab in Appendix X1 in ASTM C 1193 as appropriate for type of joint sealant application indicated.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; do this by extending cut along one (1) side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 4. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field-adhesion-test log.
 5. Inspect tested joints and report on the following:
 - a. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
 - b. Whether sealants filled joint cavities and are free of voids.
 - c. Whether sealant dimensions and configurations comply with specified requirements.
 6. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
 7. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

- F. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.05 CLEANING

- A. Cleanup: At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
 - 1. After completing sealants work, clean glass and spattered surfaces. Remove spattered sealant without scratch or damage adjacent finished surfaces.
- B. 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.
- C. Remove spills from adjacent surfaces. Restore to original condition or replace with new materials to the satisfaction of the Architect.
- D. Contractor shall replace all materials in kind that are damaged during Work of this Section.
- E. Collect waste material that may constitute a fire hazard, place in closed metal containers and remove daily from site.
- F. Provide continuous dust control to protect all areas of the Work.
- G. Legally dispose of debris in accordance with local, State, and Federal regulations.
- H. Upon completion of the Work, remove all debris and surplus items from the site.

3.06 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.
- B. Provide all protection necessary to protect the tenants of the building, the public, and the property, including adjacent properties, from damage as a result of the Work in this Section.
- C. Provide continuous protection of all public and private property including automobiles from damage during the Work.
- D. Protect Work of other trades from damage. Correct damage by cleaning, repairing, replacing, and recoating as approved by Architect. Leave in an undamaged condition.

END OF SECTION 079200

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes surface preparation and application of elastomeric coatings to the following surfaces:
 - 1. Cement Plaster Repair.
- B. Related Sections include the following:
 - 1. Section 079200 - Joint Sealants

1.02 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference: Conduct a Pre-Installation Conference at the Project site meeting at least one (1) week prior to the start of the Work of this Section; require attendance by all affected installers.
 - 1. Before installing coatings, meet with representatives of Manufacturer's Technical Representative, Architect, and other concerned entities. Review requirements for coatings. Notify participants at least seven (7) days before conference.
- B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.04 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric coating systems with the following properties as determined by test methods indicated:
 - 1. Performance requirements described in subparagraphs below are listed in MPI 113. Revise to suit Project or to establish other criteria.
 - 2. Revise first subparagraph below, if necessary, to reference test method ASTM D 412 instead of ASTM D 2370 to establish percent of elongation at break. Many manufacturers use ASTM D 412 to establish percent of elongation at break. See Evaluations for discussion of performance standards.
 - 3. Elongation: Not less than one hundred percent (100%) with a tensile strength of 200 psi and not less than eighty-eight percent (88%) recovery after 1 hour and ninety percent (90%) recovery after 24 hours when tested according to ASTM D 2370 using parameters established by MPI 113.
 - 4. Accelerated Weathering: No cracking, peeling, blistering, chalking, or visual deterioration after 1000 hours when tested according to procedures in ASTM G 155.
 - 5. Low-Temperature Flexibility: No crack formation when tested according to ASTM D 1737.
 - 6. Moisture-Vapor Transmission: Not less than 2.0 perms according to ASTM D 1653.
 - 7. Wind-Driven Rain Resistance: No water penetration according to procedures in FS TT-C-555.

8. Minimum Solids Content by Volume: Not less than forty-five percent (45%).

1.05 SUBMITTALS

- A. General: Prepare and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections.
- B. Product Data: For each elastomeric coating system specified, include crack fillers, block fillers, and primers: Include Manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties.
 - 1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference the specific coating, finish system, and application. Identify each material by Manufacturer's catalog number and general classification.
 - 2. Manufacturer's Information: Technical information including label analysis and instructions for handling, storing, and applying each coating material.
 - 3. Include Material Safety Data Sheets, if applicable.
- C. Samples for Verification: For each color and material to be applied, with texture to simulate actual conditions, on representative Samples of actual substrate.
 - 1. Provide a list of materials and applications for each coat of each Sample. Label each Sample for location and application.
 - 2. Submit four (4) Samples on the following substrates for Architect's review of color, texture, and sheen only:
 - a. Provide 6-inch square Samples of each color, texture, and sheen.
- D. Product Certificate: For each elastomeric coating material, signed by manufacturers, certifying that the products of this Section meet or exceed specified requirements, based on comprehensive testing of current product formulations within the last three (3) years.
- E. Submit Qualification Data of firms and persons specified in the "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.
 - 1. For products required to be installed by workers approved by product manufacturers, include letters of acceptance by product manufacturers certifying that installers are approved to apply their products.
- F. Manufacturer's Instructions: Submit Manufacturer's instructions for correct application of the materials, including special surface preparation procedures and substrate conditions requiring special attention.
- G. Maintenance Data: To include in maintenance manuals. Identify substrates and types of elastomeric coatings applied. Include recommendations for periodic inspections, cleaning, care, maintenance, and repair of coatings.
- H. Submit Manufacturer's certification that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
- I. Warranty: Submit Manufacturer warranty and ensure that forms have been completed in Owner's name and registered with Manufacturer.

- J. Maintenance Materials: Furnish the following for Owner's use in maintenance of Project.
1. Furnish extra elastomeric coating materials from same production run as materials applied and in quantities described below. Package materials in unopened, factory-sealed containers for storage and identify with labels describing contents. Deliver extra materials to Owner.
 - a. Quantity: Furnish Owner with five (5) one-gallon containers of each color and finish of elastomeric coating materials applied. Quantity to be verified by the Owner.
 - b. Label each sealed container with color, type, texture, locations, and the Manufacturer's label.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section, with not less than documented experience. Manufacturer shall have factory-trained representatives who are available for consultation and Project site inspection at no additional cost.
- B. Applicator Qualifications: A firm or individual experienced in applying elastomeric coating systems similar in material and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance and who is certified by Manufacturer.
1. Company specializing in performing the Work of this Section with minimum five (5) years of experience.
 2. Workers: Thoroughly skilled and specially trained in the techniques applying coatings. Applicators shall be able to demonstrate acceptable level of skill for review and acceptance by the Architect.
- C. Use adequate numbers of skilled workmen thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and methods needed for proper performance of the Work of this Section.
- D. Coating materials shall be evenly coated in accordance with Manufacturer's directions and printed specifications. Finish surfaces shall be free of runs, sags, skips, and other defects.
- E. The specification of the number of coats is a minimum requirement. If full coverage is not provided with the specified number of coats, additional coats shall be applied to achieve the required finish.
- F. Source Limitations: Obtain crack fillers, block fillers, primers, and other undercoat materials from same manufacturer as finish coats.
- G. Fire-Test-Response Characteristics:
1. Fire-response testing was performed by UL, ITS, or another independent testing and inspecting agency that is acceptable to authorities having jurisdiction and that performs testing and follow-up services.
- H. Copies of Documents at Project Site: Maintain at the Project site a copy of each referenced document that prescribes execution requirements.

- I. All Work shall be subject to acceptance by the Owner and Architect. All Work that does not comply with the intent of the Specifications shall be corrected by the Contractor.

1.07 MOCK-UP

- A. Wall Surfaces: Prepare Samples on at least 10 sq. ft. of cement plaster wall surface.
- B. Locate where directed.
- C. Apply mock-up according to requirements for the completed Work. Provide required sheen, color, and texture on each surface.
- D. Mock-up shall be tested for adhesion per the Manufacturer's requirements.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in Manufacturer's original, unopened packages and containers bearing Manufacturer's name and label, and the following information:
 - 1. Manufacturer's brand name and stock number.
 - 2. Product name or title of material.
 - 3. Directions for storage and handling instructions and precautions.
 - 4. Date of manufacture and shelf life.
 - 5. Mixing and application instructions.
 - 6. Contents by volume, for pigment and vehicle constituents.
 - 7. Thinning instructions (if permitted).
 - 8. Color name and number.
 - 9. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue. Maintain environmental conditions within range recommended in writing by Manufacturer.
 - 1. Protect elastomeric coating materials from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.
- C. Safety: Refer to all applicable data, including, but not limited to MSDS sheets, PDS sheets, Product labels, specific instructions for specific personal protection requirements.
- D. Ventilation: General ventilation is recommended; zero (0) VOC materials do not generate harmful or flammable vapors. Secondary materials may present hazards to be addressed.
- E. Environmental requirements: Proceed with Work of this Section only when existing and forecasted weather conditions will permit the application to be performed in accordance with the Manufacturer's recommendations.

- F. Take precautionary measures and store in UL listed storage locker to protect from fire hazards and spontaneous combustion.
- G. Remove all materials, including cloths, tarps, and empty containers from the area of Work at the close of each day.

1.09 REGULATORY REQUIREMENTS

- A. Conform to applicable Federal, State, and local regulatory requirements including flame and smoke rating requirements for finishes.
- B. Flammable Liquids serve all current regulation regarding flammable liquids such as posting "No Smoking" signs. Allow no open flames, welding, or other ignition sources in the Work.
- C. Conform to all applicable laws, codes, and regulations for disposal of all materials, debris, and containers.
- D. Exterior coating materials shall be VOC Compliant.

1.10 FIELD CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 90 deg F, unless otherwise permitted by Manufacturer's written instructions.
- B. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds eighty-five percent (85%); or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
 - 1. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before starting or continuing coating operation.

1.11 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. General: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- C. Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric coating that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period for Elastomeric Coatings: Correct defective Work within a three (3) year period after Date of Substantial Completion.
- D. Elastomeric Coating Warranty: Manufacturer's standard form in which Manufacturer agrees to repair or replace elastomeric coatings that do not comply with requirements or that deteriorate during the specified warranty period.
 - 1. Warranty Period for Elastomeric Coatings: Provide ten (10) year Manufacturer warranty from date of substantial completion.

2. Deterioration of elastomeric coatings includes, but is not limited to, the following:
 - a. Adhesive or cohesive failures.
 - b. Abrasion or tearing failures.
 - c. Surface crazing or spalling.
 - d. Blistering, running, peeling, scaling, streaks, fading, or stains.
 - e. Intrusion of water, oils, gasoline, grease, salt, deicer chemicals, or acids into substrate.

PART 2 PRODUCTS

2.01 GENERAL

- A. Products: Subject to compliance with requirements.
- B. Material Compatibility: Provide crack fillers, block fillers, primers, elastomeric finish-coat materials, and related materials 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.
- C. Material Quality: Provide Manufacturer's best-quality elastomeric coating materials that are factory formulated, and are recommended by Manufacturer for the application indicated. Material containers not displaying Manufacturer's product identification are not acceptable.
 1. Proprietary Names: Use of Manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other Manufacturers. Furnish Manufacturer's material data and certificates of performance of proposed substitutions.
- D. Block Fillers: Apply block fillers as recommended by the Manufacturer to concrete or cementitious surfaces at a rate to ensure complete coverage with pores filled.
- E. Color: Match existing color. To be selected and approved in writing by the Owner.

2.02 ELASTOMERIC COATING

- A. High solids silicone elastomeric coating.
 1. GE; SEC2400 SilShield: Minimum two (2) coats. Finish dry film thickness of 10 mils.
 2. Or approved equivalent.
- B. Color: To be chosen from Manufacturer's selection by Architect and Owner.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, with Manufacturer representative and Applicator present, for compliance with requirements for coating application. Comply with procedures specified in PDCA P4.
 - 1. For the record, prepare written report, endorsed by Applicator, listing conditions detrimental to performance.
 - 2. Verify compatibility with and suitability of substrates.
 - 3. Proceed with coating application only after unsatisfactory conditions have been corrected and surfaces are thoroughly dry.
 - 4. Verify that substrates are visibly dry and free of moisture. Test for moisture by method recommended in writing by Manufacturer.
 - 5. Verify that all other Work involved with this area, done under other Sections, has been completed and accepted by the Architect and General Contractor prior to starting the waterproofing application.
 - 6. Start of coating application will be construed as Applicator's acceptance of surface conditions
- B. Verify that sealant work is in place and cured.
- C. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 - 1. Notify Architect about anticipated problems when using coatings specified over substrates primed by others.

3.02 PREPARATION

- A. Power wash surfaces that will be coated in order to remove existing loose coating, dirt, and foreign impurities prior to the application of the coating. Clean and prepare surfaces to be painted according to Manufacturer's written instructions for each particular substrate condition and as specified.
- B. Remove hardware and hardware accessories, plates, machined surfaces, light fixtures, and similar items already installed that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating. General:
 - 1. After completing coating operations, re-install items removed, using workers skilled in trades involved.

- C. Cleaning: Before applying coatings or other surface treatments, clean substrates according to Manufacturer's written recommendations to produce clean, dust-free, dry substrate. Clean substances that could impair bond of coating systems. Remove oil and grease before cleaning.
 - 1. Schedule cleaning and coating application so dust and other contaminants from cleaning process will not fall on wet, newly coated surfaces.
 - 2. Remove oil and grease before cleaning.
 - 3. Clean all surfaces to remove dirt, oil, grease, oxidation, rust, loose and scaling paint, mildew, or any other contaminated surface as follows: hand or mechanical wire brush, scrape and spot sand where required to remove all loose materials.
 - 4. Remove all existing coatings that are loose, blistered, flaking, peeling or otherwise in unacceptable condition to receive paint to a sound, firm, well adhered surface suitable for re-coating.
 - 5. Repair and fill minor defects such as protruding nails, nail holes, cracks, gaps, and blemishes.
- D. Surface Preparation: Clean and prepare surfaces to be painted according to Manufacturer's written instructions for each particular substrate condition and as specified.
- E. Mask off adjoining surfaces not receiving coatings and substrate penetrations to prevent spillage, leaking, and migration of coatings.
- F. Material Preparation: Mix and prepare materials according to coating manufacturer's written instructions.
 - 1. Maintain containers used in mixing and applying elastomeric coatings in a clean condition, free of foreign materials and residue.
 - 2. Stir materials before application to produce a mixture of uniform density. Stir as required during application. If surface film forms, do not stir film into material. If necessary, remove film and strain coating material before using.
 - 3. If Manufacturer permits thinning, use only thinners recommended by Manufacturer, and only within recommended limits.
- G. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match color of finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.03 APPLICATION

- A. General: Apply elastomeric coatings after the substrate is cleaned, free of existing loose coating, dust and foreign impurities, and fully dried. Apply elastomeric coatings according to Manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
 - 1. Colors, surface treatments, and finishes are indicated in coating schedule.
 - 2. Do not paint over conditions detrimental to formation of a durable coating film, such as dirt, rust, scale, grease, moisture, and scuffed surfaces.
 - 3. Provide finish coats compatible with primers used.

- B. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- C. Scheduling Coating: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
 - 1. Number of coats and film thickness required are same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by Manufacturer.
 - 2. If undercoats or other conditions show through final coat, apply additional coats until coating film is of uniform finish, color, and appearance. Ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.
 - 3. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until coating has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat does not cause undercoat to lift or lose adhesion.
- D. Application Procedures: Apply elastomeric coatings by brush, roller, or spray according to Manufacturer's written instructions.
 - 1. Brushes: Use brushes best suited for material being applied.
 - 2. Rollers: Use professional-quality quick-release rollers of carpet, velvet back, or high-pile sheep's wool covers with a 1- to 1-1/4-inch nap as recommended by Manufacturer for material and texture required.
 - 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by Manufacturer for material and texture required.
- E. Minimum Coating Thickness: Apply each material no thinner than Manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness as recommended by Manufacturer.
 - 1. Wherever spray application is used, apply each coat to provide equivalent hiding of brush-applied coats. Do not double back with spray equipment, building up film thickness of two (2) coats in one (1) pass.
- F. Block Fillers: Apply block fillers to concrete or cementitious surface at a rate to ensure complete coverage with pores filled.
- G. Prime Coats: If recommended by Manufacturer, apply a primer to material being coated before applying finish coats.
- H. Brush Application: Brush-out and work brush coats into surfaces in an even film. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Neatly draw glass lines and color breaks.
- I. Roller Application: Keep cover wet at all times; do not dry roll. Work in sections. Lay on required amount of material, working material into grooves and rough areas; then level material, working it into surface.

- J. Spray Application: Use spray equipment for application only when permitted by Manufacturer's written instructions and authorities having jurisdiction.
- K. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or recoat work not complying with specified requirements.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. The contractor for Work under this Section shall maintain a Quality Control program specifically to verify compliance with this Specification.
- C. Inspections: A minimum of three (3) (Substrate, Application and Final) inspections, by an approved Manufacturer's representative, will be required on all Work requiring a warranty.
- D. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during coating operations:
 - 1. Owner may engage a qualified independent testing agency to sample coating material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency shall perform tests for characteristics specified, using applicable referenced testing procedures or, if not referenced, using tests cited in Manufacturer's product data.
 - 3. Testing agency shall verify thickness of coatings during coating application.
 - 4. Testing agency will perform appropriate tests for the following characteristics as required by Owner:
 - a. Elongation.
 - 1) Accelerated weathering.
 - 2) Low-temperature flexibility.
 - 3) Moisture-vapor transmission.
 - 4) Wind-driven rain resistance.
 - 5) Minimum solids content by volume.
 - 6) Adhesion strength to the existing coating.
 - b. Owner may direct Contractor to stop coating application if test results show materials being used do not comply with requirements. Contractor shall remove non-complying materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. If necessary, Contractor may be required to remove rejected materials from previously coated surfaces if, on recoating with specified materials, the two (2) coatings are not compatible.
- E. If test results show coating materials do not comply with requirements, remove non-complying materials, prepare surfaces, and reapply coatings.
- F. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional Work with specified requirements.

- G. Contractor to provide maintenance guidelines to Owner for elastomeric coatings as part of close-out procedures.

3.05 CLEANING

- A. Clean off adjacent surfaces including doorframes, louvers, sheet metal flashing, etc.
 - 1. After completing coating work, clean glass and spattered surfaces. Remove spattered coatings by washing, scraping, or other methods, being careful not to scratch or damage adjacent finished surfaces.
- B. Collect waste material that may constitute a fire hazard, place in closed metal containers and remove daily from site.
- C. Clean off excess coatings smears adjacent surfaces as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of coatings.
- D. Remove spills from adjacent surfaces. Restore to original condition or replace with new materials to the satisfaction of the Architect.
- E. Contractor shall replace all materials in kind that are damaged during Work of this Section.
- F. Provide continuous dust control to protect all areas of the Work.
- G. Legally dispose of debris in accordance with local, State, and Federal regulations.
- H. Upon completion of the Work, remove all debris and surplus items from the site.

3.06 PROTECTION

- A. Protect Work of other trades from damage whether being coated or not. Correct damage by cleaning, repairing, replacing, and recoating as approved by Architect. Leave in an undamaged condition.
- B. Provide "Wet Paint" signs to protect newly coated finishes. Remove temporary protective wrappings provided by others to protect their Work after completing coating operations.
 - 1. After construction activities of other trades are complete, touch-up and restore damaged or defaced coated surfaces. Comply with procedures specified in PDCA P1.

END OF SECTION