PROJECT MANUAL

FOR

PROMENADE EAST
EXTERIOR MASONRY REPAIRS
AND WINDOW REPLACEMENT

Prepared for:

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LIST OF CONSULTANTS:

The consultants involved in the preparation of the documents herein and their areas of discipline are listed below. All inquiries relative to interpretation of documents prepared by such consultants shall be made solely to the Architect. Responses to direct inquiries of consultants shall not be considered as binding.

(List disciplines, names and addresses of consultants)

None other than Wiss, Janney, Elstner Associates, Inc. (WJE)

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SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. This work covers exterior masonry repairs, window and door replacement, and new interior wall construction including new metal studs, insulation and sheathing for Eastern Promenade Condominiums.

1.02 LOCATION

1. The building is located at 340 Eastern Promenade, Portland, Maine.

1.03 DESCRIPTION OF STRUCTURE

The building consists of two 14-story towers in an L-shaped configuration. Each tower consists of approximately 40 residential condominium units. The condominium units have a townhouse configuration of upper and lower floors and there are 5 floors with corridor access to the multistory units. The buildings exterior walls are clad with a combination of prefabricated brick panels, built in place brick veneer and exterior insulation finish system (EIFS). Past repairs of cracked brick and EIFS include routing and sealing. Building fenestration is typically provided by a combination of fixed and sliding aluminum framed windows in punched window openings. Slider doors are present at units with exterior balconies. Doors at main entrances are hinged. Vertical access includes 2 passenger elevators and two stair towers. There is no freight elevator present.

1.04 SCOPE OF WORK

A. The Contractor shall provide the labor, materials, equipment and supervision with incidental services necessary to perform the work indicated on the Drawings and specified herein, including but not limited to the following:

1. General: Provide all general requirements of the project, including but not limited to:
   a. Install protective canopies, fences, and barriers as required to protect people, property, and building components.
   b. Install other protection and control devices or constructions as required to limit dust, noise, etc.

2. Selective Demolition: as required for work outlined below.

3. Structural Repair of Prefabricated Brick Panels
   a. Install new steel shelf angle at each floor slab elevation.
   b. Install new 4” metal studs fastened to interior face of prefabricate panels.

4. Brick Masonry
    a. Install steel lintels above windows at select locations.
    b. Removal and replacement of selected areas of exterior brick masonry.
    c. Repair of cracked and spalling brick masonry.
    d. Repointing of selected areas of brick masonry.

5. Masonry Coatings
    a. Install new breathable elastomeric coating. Actual product to be installed is dependent upon mock-ups and testing to be conducted. For bidding purposes, provide allowance pricing for installation of Dow AllGuard.

6. Exterior Insulation Finish System (EIFS)
    a. Install new metal stud framing, sheathing and EIFS at all stair tower soffits.
    b. Repair of damaged EIFS at star towers.
    c. Clean and recoat EIFS at stairtowers and balconies.

7. Doors, Windows and Louvers
    a. Install new exterior sliding doors and windows at units, as indicated on the Drawings.
    b. Install new exterior louvers, as indicated on the Drawings.

8. Interior Wall Framing
    a. Install new metal studs, insulation, vapor barrier and sheathing at exterior brick walls.

9. Sheet Metal
    a. Installation of new flashing for doors and windows, as indicated on Drawings.

10. Sealants
    a. Removal and replacement of sealant at all window and door perimeters.
    b. Removal and replacement of sealant at all exterior masonry panel joints.

11. Miscellaneous Items: Remove and store, or temporarily support and protect, all existing fixtures and attachments to the exterior walls except cell phone cable raceways which shall be protected and will remain in service for the duration of the project. Restore all fixtures to their original positions and working order at the completion of the work. Temporarily disconnect electrical, mechanical, and plumbing items to facilitate work, and reconnect all items upon completion of the work. Protect all affected service connections or fixtures left in place during the work.

1.05 ACCESS AND SUPPORT FOR INSPECTIONS AND TESTING

A. Contractor shall provide access and support for Architect/Engineer to conduct inspections of existing conditions and work in progress during the work. Contractor support shall include exterior access to selected areas of the building via suspended scaffolding or personnel lift (as deemed appropriate by the Architect/Engineer).

B. Contractor shall allow Architect/Engineer access to all work areas at Architect/Engineer's discretion at all time during the work. If suspended scaffolding is to be used, Contractor shall provide equipment and labor to allow Architect/Engineer to observe area on a minimum of two occasions during work at each scaffolding drop.

1.06 WORK SEQUENCE AND PHASING

The Promenade East Condominiums will be occupied during the work.

Contractor shall provide a schedule and plan to describe sequence and phasing for the entire project at least fourteen days prior to beginning the Work.

The Contractor's plan shall include a detailed work description, schedule, and sufficient Drawings to adequately describe his approach to sequencing of the work and time restrictions required.

The schedule of work shall be in sufficient detail to provide an accurate time estimate for the completion of the work on each building as well as the total work.

The schedule will reflect completion of work by the date established by the Owner.

The Contractor shall notify the Owner’s Representative and Architect/Engineer seven days in advance of the time when selective demolition will begin on each owner’s unit.

The Contractor shall also notify the Owner's Representative and Architect/Engineer 48 hours in advance of any changes to sequence or phasing during the work.

END OF SECTION

SECTION 01050

JOB CONDITIONS

PART 1 - GENERAL

1.01 LAYOUT OF WORK

A. The Contractor shall lay out his work and shall be held responsible for all measurements in connection therewith. The Contractor shall furnish, at his own expense, all stakes, templates, platforms, equipment, tools, and materials and labor as may be required in laying out any part of the work. The Contractor will be held responsible for the execution of the work to such lines and grades as may be established or indicated by the Owner's Representative. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks established by the Owner's Representative until authorized to remove them. If such marks are destroyed, by the Contractor or through his negligence, prior to their authorized removal, they may be replaced by the Owner's Representative at his discretion. The expense of replacement will be deducted from any amounts due or to become due the Contractor.

B. The limits of work are as shown on the Drawings.

1.02 PHYSICAL DATA

A. Data and information furnished or referred to below is for the Contractor's information. The Architect/Engineer and Owner's Representative will not be responsible for any interpretation or conclusion drawn from the data or information by the Contractor.

1.03 UTILITIES

A. Availability of Utilities: It shall be the responsibility of the Contractor to provide for all utility hook-ups to utility service he may require during the entire life of the contract. Subject to coordination with the Owner's Representative, the Contractor shall make his own investigation and determinations as to the adequacy of on-site utilities for his use for construction purposes and domestic consumption. He shall install and maintain all necessary supply lines, connections, and piping, but only at such locations and in such manner as approved by the Owner's Representative. Before final acceptance of work under this contract, all temporary supply lines, connections and piping installed by the Contractor shall be removed by him in a manner satisfactory to the Owner's Representative.

B. Existing Utilities:

1. The Contractor may use building electrical and water service. Coordinate with the Owner's Representative for use of electrical and water service.
2. Coordinate with local utility companies and the Owner's Representative for service connections and interruption. All utility modifications, interruptions, and outages must be coordinated with the Owner's Representative.
3. Contractor shall not cut, disconnect, switch, open, or otherwise interrupt any utility systems, piping systems, electric services, etc., without prior approval of the Owner's Representative.
4. Contractor shall be responsible for locating and preventing damage to known utilities. If damage occurs, repair utility at no additional expense to the Owner.

5. If damage occurs to an unknown utility, repair utility. An equitable adjustment will be made in accordance with the contract.
6. Upon completion of work, restore all connections and utility service affected by the work process.
7. Do not permit debris, or other contaminants deleterious to the sewer system, to be washed down drains or discharged into site drainage system.

1.04 STORAGE OF MATERIALS

A. Storage of any materials shall be only at locations and in amounts as directed and approved by the Owner's Representative. Prior to selective demolition, the Contractor shall submit to the Owner's Representative his plan for confining, collecting and disposal of waste material as a result of his operations.

B. There shall be no storage of any materials on roofs.

C. Storage of materials shall be at the discretion of the Owner's Representative. Material permitted to be stored shall be limited to loads that will not damage existing structure or substrate on which the materials are stored. Existing substrate shall be completely protected from damage caused by storage. All damaged areas shall be repaired at no cost to Owner.

D. Storage of materials shall comply with all manufacturer's restrictions including but not limited to ambient temperature constraints and shelf life. All materials shall be kept dry and free of moisture.

1.05 DISPOSAL OF MATERIAL AND EQUIPMENT

A. All removed, dismantled or demolished material and/or equipment including rubble, scrap, and debris not specified or indicated to be salvaged for reuse, reinstalled under this contract, or otherwise retained will become the property of the Contractor and shall be promptly removed from the site and disposed of by the Contractor at his own expense and responsibility.

B. The Contractor shall remove all constructed debris including all hazardous materials off-site. The Contractor shall properly dispose of all hazardous materials and debris.

C. The Contractor shall maintain the premises and public properties free from accumulations of waste, debris, and rubbish caused by the Contractor's operations on a daily basis.

D. At completion of work, the Contractor shall remove waste materials, rubbish, tools, equipment, machinery, and surplus material from the premises. All exposed horizontal and vertical surfaces shall be washed with low pressure water (less than 200 psi) and all sight-exposed surfaces shall be cleaned. Leave the project area clean for use.

E. NOTE: Existing passenger elevators shall not be used for any debris removal. All debris must be removed through existing stairs or through openings in exterior walls made during window removal and replacement.

1.06 COMPLIANCE WITH SITE REGULATIONS

A. Comply with applicable OSHA regulations, standard 29 CFR 1926. Comply with all federal, state, and local rules and regulations covering general safety, security, sanitary requirements,

pollution control, traffic regulations, and parking. Information regarding these requirements may be obtained by contacting the Owner's Representative, who will provide such information or assist in obtaining same from appropriate authorities. The Contractor shall confine all operations to areas permitted by law, ordinances, regulations, permits, and the Contract Documents.

B. Contractor's Use of Premises:

1. Contractor's access to areas of work shall be coordinated with Owner's Representative.
2. Coordinate access to site, staging, and storage with Owner's Representative. The Contractor will be limited to the use of parking spaces at the rear of the upper parking lot for on site staging and materials and equipment storage. Contractor shall provide for all staging, storage, dumpster, site office, and other materials and equipment at other locations as needed. Contractor shall obtain all permits and permission required by City for use of public spaces.
3. Basement access for temporary office and utility use will be coordinated after contractor award. Contractor shall provide site trailer if needed for Contractor office.
4. Coordinate locations and times of deliveries, storage, and blockages with the Owner's Representative.
5. No on-site parking, other than designated spaces, is available for Contractor personnel. Adjacent street parking is available surrounding the site.
6. Coordinate vehicular access for work equipment with the Owner's Representative.
7. Assume full responsibility for the protection and safekeeping of products stored on the premises.
8. No access by Contractor personnel to the interior of units shall be allowed without prior written approval by the Owner's Representative and at the sole discretion of the Owner. If Contractor requires specific access to interior for any reason, provide notification to Owner's Representative at least 24 hours in advance of required interior access. All interior access shall also be coordinated with the Property Manager's Representative.
9. Contractor shall have use of existing toilet rooms and locker room facilities in basement. Owner's Representative may prohibit contractor use of toilet and locker rooms if acceptable cleanliness is not maintained. Contractor may provide portable toilet facilities on site at location approved by Owner's Representative.
10. Contractor shall not have use of existing telephone system.

C. Public Access: Contractor shall at all times conduct his operations to ensure the least inconvenience to the public.

1. Maintain all building entrances and means of egress for use by tenants during the work. Maintain and protect swimming pool areas at building for access and use by tenants during the work.
2. The Contractor shall not unreasonably encumber the site with materials or equipment.
3. The Contractor shall protect the public by installing perimeter fencing, locked gates, and other barricades as needed to prevent injury from the unauthorized entry of personnel into work areas. Warning signs shall be erected as necessary to indicate construction areas.

D. Hard Hats and Protective Equipment Areas: The hard hat area shall be posted by the Contractor in a manner satisfactory to the Owner's Representative. It is the Contractor's responsibility to require all those working on or visiting the site to wear hard hats and other necessary protective equipment at all times. As a minimum, provide six hard hats for use by visitors.

E. Environmental Protection

1. Water and Air Pollution
    a. The Contractor shall exercise every reasonable precaution throughout the life of the project to prevent pollution of rivers, streams, and water impoundments. Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage, and other harmful waste shall not be discharged into or alongside of rivers, streams, or impoundments, or into natural or man made channels leading thereto.
    b. The Contractor shall comply with all federal, state, and local air and water pollution regulations throughout the life of the project.
2. Dust Control: The Contractor shall control dust throughout the life of the project within the project area and at all other areas affected by the construction of the project, including, but not specifically limited to sidewalks, streets, parking areas, subject and adjacent buildings, access roads, disposal sites, borrow and material sources, and production sites.
3. Noise Control: The Contractor shall exercise every reasonable precaution throughout the life of the project to prevent excessive and unnecessary noise.

F. Protection of Existing Features:

1. The Contractor shall perform a pre-construction survey, including but not limited to; roof, exterior walls, and site and submit survey documentation to the Owner's Representative prior to the start of work. The Owner reserves the right to review and verify pre-construction survey information.

2. The Contractor shall protect all components and elements of the building throughout the work to prevent damage. All existing components shall be protected from damage, staining, and discoloration during the work.

3. Do not load the structure with weight that will endanger the structure.

4. No temporary supports, lifting, or scaffolding structure may be attached to the materials of the building in any way that creates holes or other damage to existing materials.

5. Do not damage building elements and features adjacent to the work areas. Protect all adjacent property including landscaping, parked cars, and other site features. Protect all existing non-Contractor owned equipment and materials within the work area, and in any areas outside the work area accessed by the Contractor's personnel from damage caused by construction operations. Existing work damaged by construction operations, as determined by the Owner's Representative, shall be promptly repaired by the Contractor at his own expense.

6. To protect property and to isolate his work, the Contractor shall provide, at no additional expense to the Owner, drop cloths, plastic film draping, taping, barriers, wood enclosures, weatherproof coverings, and temporary dust-proof enclosures and partitions.

7. Contractor shall provide all necessary weather protection to protect both the work of this project and existing building features not affected by the work. Protect all mechanical, electrical, and plumbing systems components on interior and exterior of building and on site. Provide temporary enclosures to protect wet lines from freezing during cold weather.

8. Contractor shall protect all landscape and site features from damage during the work.

9. Protection Submittal: Prior to beginning work on the building, the Contractor shall submit for approval by the Owner's Representative a plan detailing the specific protection measures to be employed on the project.

10. Restore any building or site features that are damaged during construction at no additional cost to the Owner.

G. Openings: Any exterior openings to the building shall be closed and secured at the end of each workday. Openings may be left open only with the approval of the Owner's Representative.

H. Fire Protection: No welding or torch cutting shall be performed unless adequate fire protection is provided. The Contractor shall maintain a fire watch for the duration of the welding or torch cutting operations for at least 30 minutes after the "hot" work has stopped. The Contractor shall provide adequate ventilation to prevent air contamination of the accumulation of toxic materials. Schedule welding or torch cutting operations with the Owner's Representative at least 24 hours in advance of the beginning of work each day.

1.07 WORKING HOURS AND CALENDAR

A. The Contractor shall confine his hours of operation to those required by federal, state, and local laws and ordinances.

B. Standard hours of work are limited to 8:00 AM. to 5:00 PM. No work-related activities that cause noise or any possible disturbance to residents of the buildings may occur outside of those hours. Contractor personnel may not arrive on site earlier than 7:30AM.

C. Work days are Monday through Friday subject to federal, state, and local official holidays as applicable. Contractor shall not work outside of standard hours of work (weekdays outside of standard work hours, weekends, and federal, state, and city holidays), without prior approval of the Owner's Representative.

D. Work may, at the Owner's sole discretion, be permitted to occur at other times with prior written approval of the Owner.

1.08 SCAFFOLDING

A. Provide access to all areas of work for the Architect/Engineer.

B. Submit shop drawings certified by a registered professional engineer in the Commonwealth of Massachusetts, showing actual scaffolding, the sizes and types of items and members to be used in the total scaffolding system. Providing scaffolding that is in compliance with contract requirements is solely the Contractor's responsibility. Install scaffold system in accordance with manufacturer's recommendations and approved shop drawings.

C. The scaffolding shall not be fastened or secured to exterior wall or other building elements without prior written authorization from the Architect/Engineer.

D. The scaffold supports shall bear on stain-free materials, of sufficient size to prevent damage to sidewalk pavement or other building elements used to support scaffold.

E. Prior to using of roofing and building structure for support of scaffolding, it is the responsibility of the Contractor to survey the roof and support areas and notify the Owner's Representative of any damage or deficiencies noted.

F. Provide protection at all times against access by persons other than authorized personnel to personnel lifts, suspended scaffolding, or pipe scaffolding erected or on site for purposes of the work. Incorporate all measures necessary to eliminate any security and/or safety issues during non-work hours.

PART 2 - MATERIALS

Not used

PART 3 - EXECUTION

All contractor and subcontractor personnel shall abide by the Promenade East Rules for Construction Personnel and shall review and sign the following attached acknowledgement of the jobsite rules.

Promenade East Condominiums

RULES FOR CONSTRUCTION PERSONNEL

1. Everyone must use the designated construction entrance(s) at all times when entering or exiting the facility. This includes lunch and break times.

2. Everyone entering the facility must sign the appropriate register and display the proper identification badge at all times while in the building. All workers must sign out at the end of each work shift.

3. All tool boxes, lunch containers and packages are subject to inspection while in the facility and at all times when exiting.

4. Possession or use of alcohol or any illegal drugs prior to or during the work day is prohibited.

5. Possession of firearms on the premises is prohibited.

6. Thefts or misappropriation of funds, property or other's personal property from the facility will be referred to the appropriate legal authorities for prosecution.

7. Personnel must remain in the scheduled work areas. Entry into other areas is strictly prohibited.

8. Smoking is not permitted inside of the building, on the roof, or on suspended scaffolding, or sidewalk canopy, or other scaffolding.

9. You must maintain a safe environment while working inside of the facility. Report all accidents and injuries immediately to the Owner's Representative.

10. Bathroom(s) for construction personnel use shall be designated by the owner. The Contractor must maintain good housekeeping practices when using these facilities.

11. Radios are not permitted on the site.

12. Personnel found violating these rules will be prohibited from entering the facility. Any questions about the rules or requests for exceptions must be cleared through the Owner's Representative.

I have read the above listed Rules. I understand them and agree to comply with them.

PRINT NAME DATE SIGNATURE

END OF SECTION

SECTION 01060

SAFETY

PART 1 - GENERAL

1.01 Worker safety is of paramount importance. The Contractor shall comply with all OSHA requirements and guidelines.

1.02 SAFETY PROGRAM

A. The Contractor shall designate an employee responsible for overall supervision of accident prevention activities. Such duties shall include assuring applicable safety requirements are incorporated in work methods and inspecting the work to ensure that safety measures and instructions are actually applied. The proposed safety supervisor's name and qualifications shall be submitted in writing for approval to the Owner's Representative. This individual must have prior experience as a safety engineer or be able to demonstrate his/her familiarity and understanding of the safety requirements over a prescribed trial period. The safety engineer shall have the authority to act on behalf of the Contractor's general management to take whatever action is necessary to assure compliance with safety requirements. The safety supervisor is required to be on the site when work is being performed.

B. Prior to commencement of any work at a job site, a preconstruction safety meeting shall be held between the Contractor and the Owner's Representative to discuss the Contractor's safety program and in particular to review the following submittals:

1. Contracts Accident Prevention Plan: An acceptable accident prevention plan, written by the prime Contractor for the specific work, shall be submitted for Owner's Representative approval.

2. Activity Phase Hazard Analysis Plan: Prior to beginning each major phase of work, an activity hazard analysis (phase plan) shall be prepared by the Contractor for that phase of work and submitted to the Owner's Representative for approval. A phase is defined as an operation involving a type of work presenting hazards not experienced in previous operations or where a new subcontractor or work crew is to perform work. The analysis shall address the hazards for each activity performed in the phase and shall present the procedures and safeguards necessary to eliminate the hazards or reduce the risk to an acceptable level.

3. Subsequent job site safety meetings shall be held as follows:

a. A safety meeting shall be held at least once a month for all supervisors on the project to review past activities, to plan ahead for new or changed operations, and to establish safe working procedures to anticipated hazards. Meeting minutes of each monthly meeting shall be submitted to the Owner and Owner's Representative.

b. At least one safety meeting shall be conducted weekly, or whenever new crews begin work, by the appropriate field supervisors or foremen for all workers. An outline report of the meeting giving date, time, attendance, subjects discussed, and persons conducting and attending the meeting shall be maintained and copies furnished to the designated authority on request.

1.03 ACCIDENTS:

A. Chargeable accidents are to be investigated by both Contractor personnel and the Owner's Representative.

B. ACCIDENT REPORTING: The prime Contractor shall report all injuries to his employees or subcontractors that result in lost time and all damage to property and/or equipment in excess of $2,000 per incident. Verbal notification of such accident shall be made to the Owner's Representative within 24 hours. A written report on the above noted form shall be submitted to the Owner's Representative within 72 hours following such accidents. The written report shall include the following:

1. A description of the circumstances leading up to the accident, the cause of the accident, and corrective measures taken to prevent recurrence.
2. A description of the injury and name and location of the medical facility giving examination and treatment.
3. A statement as to whether or not the employee was permitted to return to work after examination and treatment by the doctor, and if not, an estimate or statement of the number of days lost from work. If there have been days lost from work, state whether or not the employee has been re-examined and declared fit to resume work as of the date of the report.

C. OSHA Requirements:

1. OSHA Log: A copy of the Contractor's OSHA Log of Injuries shall be forwarded monthly to the Owner's Representative.
2. OSHA Inspections: Contractors shall immediately notify the Owner's Representative when an OSHA Compliance official (Federal or State representative) presents his/her credentials and informs the Contractor that the workplace will be inspected for OSHA compliance. Contractors shall also notify the Owner's Representative upon determination that an exit interview will take place upon completion of the OSHA inspection.

1.04 SUBMITTALS

A. The Contractor shall submit the following information to the Owner's Representative for approval prior to beginning of work.

1. Written designation of safety representative.
2. Written project specific accident prevention plan.
3. Written activity hazard plan by schedule item.
4. Emergency evacuation plan.

PART 2 - MATERIALS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01070

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Perform cutting, filling or patching of Work as required to:

1. Make several parts fit properly.
2. Uncover work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove and replace work not conforming to contract requirements.
5. Remove samples of installed work as specified for testing.
6. Install specified work in existing construction.

B. In addition to Contract requirements, upon written instructions of Architect/Engineer:

1. Uncover work to provide for observation of covered work.
2. Remove samples of installed materials for testing.
3. Remove work to provide for alteration of existing work.

C. Do not endanger work by cutting or altering work or any part of it.

1.02 SUBMITTALS

A. Prior to cutting which affects structural safety of Project, or work of another Contractor, submit written notice to Architect/Engineer requesting consent to proceed with cutting, including:

1. Project identification.
2. Description of affected work.
3. Necessity for cutting.
4. Effect on other work, on structural integrity of Project.
5. Description of proposed work. Designate:
   a. Scope of cutting and patching.
   b. Contractor and trades to execute the work.
   c. Products proposed to be used.
   d. Extent of refinishing.

No work shall proceed until the Architect/Engineer's consent is received.

B. Should conditions of work or schedule indicate change of materials or methods, submit recommendation to Architect/Engineer including:

1. Condition indicating change.
2. Recommendation for alternative materials or methods.
3. Submittal as required for substitutions.

1.03 PAYMENT FOR COSTS

A. Costs caused by ill-timed or defective work, or work not conforming to Contract Documents, including costs for additional services of Architect/Engineer or Owner's Representative are to be paid by the party responsible for the ill-timed, rejected, or non-conforming work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. For replacement of work removed, comply with Specifications for type of work to be performed.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect existing conditions of work, including elements subject to movement or damage during cutting and patching.

B. After uncovering work, inspect conditions affecting installation of new products.

3.02 PREPARATION

A. Prior to cutting:

1. Provide shoring, bracing, and support as required to maintain structural integrity of project.
2. Provide protection for other portions of the project.
3. Provide protection from elements.

3.03 PERFORMANCE

A. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances and finishes.

B. Execute cutting by methods that will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work.

C. Restore work that has been cut or removed. Install new products to provide completed work in accord with Contract requirements.

D. Refinish entire surfaces as necessary to provide an even finish and in accordance with samples prepared as required by the technical sections of this Specification.

END OF SECTION

SECTION 01200

PROJECT MEETINGS AND SCHEDULES

PART 1 - GENERAL

1.01 PRECONSTRUCTION MEETING

A. The Contractor shall schedule a preconstruction conference to be held at the project site before construction work begins.

B. Attendance: Contractor, Subcontractors, Architect/Engineer, and Owner's Representative.

C. Agenda to include:

1. List of major Subcontractors
2. Construction schedule
3. Critical work sequencing and phasing
4. Relation and coordination of prime Contractor and Subcontractors
5. Designation of responsible personnel
6. Processing of field decisions, change orders, and daily construction reports
7. Submittal of shop drawings, product data, and samples
8. Procedures for maintaining record documents
9. Use of premises:
    a. Office and storage areas
    b. Owner's requirements
    c. Provisions for field personnel
    d. Coordination with Property Manager's Representative and tenants
10. Major equipment deliveries and priorities
11. Safety and first aid procedures
12. Security procedures
13. Housekeeping procedures
14. Quality control/quality assurance program

D. Any other questions that the Contractor or his Subcontractors have about the work or its scheduling shall be raised at this meeting.

1.02 WEEKLY PROGRESS MEETINGS

A. Attend weekly meetings and called meetings as progress of work dictates.

B. Designate a Contractor's representative to preside at meetings. Use the same individual throughout the course of the project.

C. The meetings shall be held at the project site.

D. Attendance: Owner's Representative, Contractor, subcontractors, and others as required for specific meeting.

E. The minimum agenda for these meetings shall include the following:

1. Review of work progress since last meeting and progress schedule adjustments
2. Review of field observations, problems, and decisions
3. Identification of problems that impede planned progress
4. Review of off-site fabrication progress
5. Contractor's proposal for corrective measures and procedures to regain schedule

F. The Contractor's project superintendent shall be on site each day during the progress of the work.

G. Meeting meetings for all project meetings will be taken and distributed by Owner's Representative.

1.03 CONSTRUCTION SCHEDULE

A. The Contractor shall submit the Construction Schedule to the Architect/Engineer and the Owner's Representative within seven days of notice to proceed. When directed, resubmit within five business days after return of reviewed copy. The Contractor shall maintain and update schedule throughout the project.

1.04 PROGRESS SCHEDULES

A. Update and provide Progress Schedule monthly. Indicate:

1. Progress of each activity since previous submission
2. Projected completion dates for all activities
3. Activities modified since previous submission.

B. Submit updated Progress Schedules accurately depicting progress to first day of each month.

C. At the Owner's request, provide weekly updates of Progress Schedule.

1.05 FORM OF SCHEDULES

A. Schedules shall be in the form of a Critical Path Method schedule with a separate horizontal bar column identified for each trade, class of work, operation, or long lead item.. Columns should follow table of contents of Project Manual. A horizontal time scale shall be provided by identifying the first workday of each week. The Construction Schedule shall be on a minimum sheet size of 8-1/2 inches by 11 inches, providing adequate spacing to allow for updating.

1.06 CONTENT OF THE SCHEDULES

A. Provide a complete sequence of the construction by activity, including shop drawing and sample submittals and review periods.

B. Identify decision dates, procurement dates, fabrication time, and delivery dates.

C. Identify the work of separate levels (top of slab or bottom of slab), or separate phases, or other logically grouped activities. Show all logic ties.

D. Show dates for beginning and completion of each element of construction.

E. Show the projected percentage of completion for each item of work as of the first day of each week.

F. The initial schedule shall be reviewed during the preconstruction meeting. Progress schedules accurately depicting the actual progress to date shall be reviewed during progress meetings.

G. The construction schedule shall strictly adhere to approved work sequence parameters.

1.07 DISTRIBUTION

A. Distribute copies of approved schedules to:

1. Job site file
2. Subcontractors and suppliers on as-needed basis
3. Owner
4. Owner's Representative
6. Architect/Engineer

END OF SECTION

SECTION 01210

ALLOWANCES

GENERAL

SUMMARY

This Section includes administrative and procedural requirements governing allowances.

SELECTION AND PURCHASE

At the earliest practical date after award of the Contract, advise Architect/Engineer 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.

At Architect/Engineer's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

Purchase products and systems selected by Architect from the designated supplier.

SUBMITTALS

Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

COORDINATION

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

ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner under allowance and shall include taxes, freight, and delivery to Project site.

B. Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner under allowance shall be included as part of the Contract Sum and not part of the allowance.

CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.

D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

PRODUCTS

NOT USED

EXECUTION

3.01 SCHEDULE OF ALLOWANCES

A. The new breathable coating bid amount is an allowance. For bid purposes, provide bid amount based on the Dow AllGuard System including primer coat. Provide per square foot unit costs for material and separate per square foot cost for application of each layer of coating. Actual coating to be applied will be identified at future date. Cost of actual coating will be based on actual material cost per square foot and number of coating layers required.

B. Allowances for individual items of work as shown in Base Bid Quantity Schedule in Section 00300 – Bid Form.

END OF SECTION

SECTION 01230

ALTERNATES

GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.02 DEFINITIONS

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

1. 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.

1.03 PROCEDURES

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

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

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

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

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

PRODUCTS

NOT USED

EXECUTION

3.01 SCHEDULE OF ALTERNATES

LOUVER ALTERNAES:

Add Alternate #1A: Remove Existing Louver Face Screen, Shop Clean and Paint, Reinstall.

Add Alternate #1B: Install new epoxy painted face screen matching original louver configuration and function.

Add Alternate #2: Remove AC Unit and Replace in kind. Unit specifications will be issued in Addenda.

END OF SECTION

SECTION 01300

SUBMITTALS AND SAMPLES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Submit to the Architect/Engineer product data and samples required by the technical Specifications.

1.02 SUBMITTALS

A. Prior to beginning the work, Contractor shall submit to Owner’s Representative a list of all submittals, samples, and mock-ups to be provided for review as part of the work of this project. Provide list in Microsoft Word or Excel format.

B. The Contractor shall submit product data, samples, testing results, and all other items required by this Specification to the Architect/Engineer for approval in accordance with the individual sections of this Specification.

C. With respect to manufacturer's standard descriptive product data, the Contractor shall:

1. Clearly mark and modify each copy to identify pertinent materials, products or models and to delete information, which is not applicable to this project.
2. Show dimensions and clearances required.
3. Show performance characteristics and capacities.
4. Supplement standard information to provide additional information applicable to this project.

D. Contractor Responsibilities:

1. Review product data and samples prior to submission.
2. Verify field measurements, field construction criteria, catalog numbers, and similar data.
3. Coordinate each submittal with the requirements of the work and of the Contract Documents.
4. The Contractor's responsibility for errors and omissions in submittals is not relieved by the Architect/Engineer's review of submittals.
5. The Contractor's responsibility for deviations in submittals from requirements of the Contract Documents is not relieved by the Architect/Engineer's review of submittals, unless the Architect/Engineer gives written acceptance of specific deviations. The Contractor shall notify the Architect/Engineer of all such deviations in the submittals at the time of submission.
6. Begin no work that requires submittals until the return of submittals with the Architect/Engineer's stamp and initials or signature indicating review.
7. After the Architect/Engineer's review, distribute copies as directed.

E. Submissions shall be scheduled at least 14 days before dates when reviewed submittals will be needed. Work shall not begin until approval of submitted items is received from the Architect/Engineer.

F. The Contractor shall submit six copies of product data and product samples, which he requires for distribution. Submittals shall include:

1. Date and revision dates
2. Project title and number
3. The names of:
   a. Architect/Engineer
   b. Contractor
   c. Subcontractor if applicable
   d. Supplier
   e. Manufacturer
   f. Separate detailer when pertinent
4. Identification of product or material
5. Material Safety Data Sheets (MSDS) for all products submitted for use on this project
6. Relation to adjacent structure or materials
7. Field dimensions, clearly identified as such
8. Specification section number
9. Applicable standards, such as ASTM number or federal specification number
10. A blank space 4 inches x 6 inches for the Architect/Engineer's stamp
11. Identification of deviations from Contract Documents
12. Contractor's stamp, initialed or signed, certifying his review of the submittal, verification of field measurements and compliance with Contract Documents.

G. Accompany submittals with a transmittal form containing the following information:

1. Date
2. Project title and number
3. Contractor's name and address
4. Submittal number, date, and subject
5. The number of each product data sheet and sample submitted
6. Notification of deviations from Contract Documents
7. Other pertinent data
8. Number of copies of submittal provided

H. The Architect/Engineer will check and review, with reasonable promptness, all submitted documents and samples only for conformance with the design concept of the project and information given in the Contract Documents. The Architect/Engineer's review of a separate item does not constitute a review of an assembly in which the item functions.

I. The Contractor shall revise and resubmit all submitted items that are returned by the Architect/Engineer as unacceptable.

J. Required Submittals include, but are not limited to:

Window and Door Shop Drawings
Metal Stud Shop Drawings
Shelf Angle Shop Drawings

END OF SECTION

SECTION 01410

TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 TESTING AGENCY

A. All tests as described within this Specification shall be performed by a testing agency approved by the Owner's Representative (Owner-approved Testing Agency), except as noted in the technical Specifications.

1.02 PREPARATION OF TEST SAMPLES

A. The Contractor shall provide representatives of the Owner-approved Testing Agency with access to the site and appropriately prepared samples of the materials to be tested. The Contractor shall remove all waste materials that are a product of sample preparation and testing.

1.03 STANDARDS

A. All tests performed by the Owner-approved Testing Agency shall be done in accordance with the standards as described in the Specification Sections in which the materials are described.

1.04 NONCONFORMING MATERIALS

A. All materials that are determined not to be in accordance will be identified as such by the Owner-approved Testing Agency.

1. Tests at site: The laboratory representative shall report nonconforming materials immediately to the Owner's Representative, Contractor, and Architect/Engineer. Reports of non-conformance shall be confirmed in writing to all of those parties.
2. Laboratory tests: Reports of laboratory tests shall indicate where materials were found to be in non-conformance with Specifications. Copies of reports shall be submitted to the Owner's Representative, the Contractor, and the Architect/Engineer within three days of completion of the laboratory test work.

END OF SECTION

SECTION 01510

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 TEMPORARY FACILITIES

A. The Contractor shall arrange for, obtain, and pay for all temporary utilities necessary to complete the work except as stated otherwise in these Specifications.

B. Water: The Contractor may use the existing water supply. The Contractor shall provide any additional temporary water supply necessary for his operations. The Contractor shall provide whatever valves, fittings, and lines are necessary to distribute water from the existing supply fixtures.

C. Electrical and lighting: The Contractor may use the existing electrical supply. Any use of extension cords inside owners units shall be installed to prevent tripping hazards. The Contractor shall provide additional temporary electric power generators and lighting necessary for his operations.

D. Drains, sumps and sewers:

1. The Contractor shall not permit debris or other contaminants deleterious to the sewer system to be washed down drains or otherwise discharged into the sewer system.
2. Prior to the start of work, the Contractor shall inspect the condition of the drains and drainage system components in areas affected by the Contractor's work to determine that they are clean and in proper working order. The Owner's Representative shall be notified of any elements that are not working properly.
3. During and at the completion of the project, the drains and drainage system components associated with the building and immediate site shall be in working order.

E. The Contractor shall provide temporary first-aid facilities on the site.

F. The Contractor shall provide temporary fire protection as required by federal, state, and local laws and ordinances.

G. The Contractor shall post emergency first aid, ambulance and fire department information at the project site in an unobstructed location.

H. The Contractor shall provide temporary ventilation as required to control dust and fumes in work areas.

I. The Contractor shall provide adequate heat in the work areas as required to properly conduct the work.

J. The Contractor shall provide on site office in space provided by Owner (subject to availability) or in site trailer as needed for Contractor office.

K. The Contractor shall maintain cleanliness of toilet service and equipment provided by the Owner.

L. The Contractor shall provide his own telephone service and equipment.

PART 2 - CONTROLS

2.01 TRAFFIC MAINTENANCE AND CONTROLS

A. The Contractor shall provide necessary signs, barricades, lights, warning devices, and flagmen as necessary to protect pedestrians and traffic during the course of the work. Notify Owner's Representative at least 48 hours in advance of interruption of traffic at roads and parking areas adjacent to the project site.

B. The Contractor shall be responsible for damage to vehicles at the roads or parking areas adjacent to the project site resulting from his operations.

2.02 SECURITY

A. The Contractor shall provide for the security of materials, supplies and equipment stored at the site. Material and equipment shall not be stored in areas that are open to the public. The Contractor shall store equipment and materials only in areas approved by the Owner's Representative.

B. All work areas (including but not limited to material, equipment, and temporary waste storage) shall, during non-work hours, incorporate any necessary protections to prevent access by children or others.

C. All shipments shall be addressed to the Contractor and he shall be responsible for their receipt, unloading, handling and storage at the site. The Owner's Representative will not accept deliveries on behalf of the Contractor or his Subcontractors or assume any responsibility for security of materials, equipment, or supplies delivered to the site.

2.03 SPECIAL CONTROLS

A. Use of open flames, highly volatile solvents, or noxious chemicals is prohibited.

B. All internal combustion engines used in the Contractor's work and operating in a fixed location while running shall have their exhaust directed away from this building or any adjacent structures so as to prevent accumulation of fumes or carbon stains on the surfaces of the structure.

C. The Contractor shall restrict the use of and vent all objectionable or noxious vapors produced during the work. The Contractor shall assume full responsibility for any and all health damage claims caused by noxious vapors produced during work operations.

D. Hazards control:

1. Propane, fuel oil, kerosene and other volatile or flammable materials shall not be stored at the project site without prior approval by the Owner's Representative. Store such materials only in covered metal containers and at locations as required by federal, state, and county legal requirements and as approved by the Owner's Representative. Remove such containers from the premises daily.

2. Prevent the accumulation of wastes that create hazardous conditions.
3. Provide adequate ventilation during the use of volatile or noxious substances.

E. The Contractor shall provide heat and ventilation as required to maintain adequate environment conditions, to meet specified minimum conditions for the installation of materials, and to protect materials and finishes from damage.

END OF SECTION

SECTION 01630

SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1 - GENERAL

1.01 CONTRACTOR'S OPTIONS

A. For products specified only by reference standards, select any product meeting standards, by any manufacturer.

B. For products specified by naming several products or manufacturers, select any of the products and manufacturers listed.

C. For products specified by naming one or more products, but indicating the option of selecting equivalent products by stating "or approved equal" after specified product, if the Contractor selects a product which is not specified by name and which meets the requirements of the Specifications, it shall meet the requirements for substitutions as described in this section.

D. For products specified by naming only one product and manufacturer, there is no option, and no substitution will be allowed.

1.02 SUBSTITUTIONS

A. No requests for product substitutions will be considered prior to the bid opening. The bid must be based upon the use of the materials specified herein. Formal written requests for product substitutions must be submitted by the Contractor selected to perform the work no later than 21 days following the Notice to Proceed.

B. Within 14 days after date of Contract, Architect/Engineer will act upon formal requests received from the Contractor for substitution of products in place of those specified.

C. Submit five copies of the request for substitution to Architect/Engineer.

D. Substitutions will not be considered if:

1. They are indicated or implied on shop drawings or product data submittals without a formal request submitted in accordance with this section.
2. Acceptance will require a substantial revision of the Contract Documents as determined by the Architect/Engineer.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SUBSTANTIAL COMPLETION

A. Contractor:

1. Notify the Owner's Representative and Architect/Engineer that project, or designated portion thereof is substantially complete.
2. Submit list of major items to be completed or corrected.

B. Owner’s Representative and Architect/Engineer will make preliminary inspection after receipt of Contractor's notification.

C. Should Owner’s Representative consider that work is substantially complete:

1. Owner's Representative and/or Architect/Engineer will prepare a punch list of items to be completed or corrected, as determined by the inspection.
2. Owner's Representative will prepare a letter of substantial completion containing:
   a. Date of substantial completion
   b. Punch list of items to be completed or corrected.
3. Contractor: Complete work listed for completion or correction within designated time.

D. At time of inspection, should substantial completion not be certified, complete the work and resubmit declaration in accordance with this specification section.

1.02 FINAL INSPECTION

A. Contractor shall submit written declaration to Owner’s Representative.

1. All aspects of Contract Documents have been complied with.
2. All items on substantial completion punch list have been completed.
3. All tools, construction equipment and surplus materials have been removed from site.

B. Contractor with Owner’s Representative and Architect/Engineer will make final inspection to ensure completion of all Contract requirements.

1.03 FINAL APPLICATION FOR PAYMENT

A. Final application for payment in accordance with Contract Documents.

B. Contractor's Affidavit of Release of Liens:

1. Consent of surety to final payment; all releases and final waivers of lien from Contractor and each Subcontractor and material supplier as set forth in the Contract Documents; Contractor's sworn statement; all backup invoices, bills of lading and similar documentation as may be required supporting such Application for Payment.
2. Contractor's release of waiver of liens.

3. Separate releases of waivers of liens for Subcontractors, suppliers and others with lien rights against property.

C. Duly execute all submittals before delivery to the Owner's Representative.

D. Submit duly executed warranties from both the Contractor and material manufacturer commencing from the date established by the Owner's Representative during the final inspection. All terms of the warranties shall be as specified elsewhere in this Specification.

E. Submit final accounting statement to the Owner's Representative. Reflect all adjustments.

1. Original Contract sum
2. Additions and deductions resulting from all change orders
3. Total Contract sum, as adjusted
4. Previous payments
5. Sum remaining due

F. Architect/Engineer will process final certificate in accordance with Conditions of Contract provisions.

END OF SECTION

SECTION 01710

CLEANING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Maintain premises free from accumulations of waste, debris, and rubbish, caused by operations.

B. At completion of work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces, leave project clean for occupancy, in a condition equivalent to that prior to Contractor's mobilization on the site.

C. Remove minor debris remaining on site from prior work projects.

1.02 SAFETY REQUIREMENTS

A. Hazards Controls:

1. Store volatile wastes in covered metal containers and remove from premises daily.
2. Prevent accumulation of wastes, which create hazardous conditions.
3. Provide adequate ventilation during the use of volatile or noxious substances.
4. Provide Manufacturer’s Safety Data Sheets for all products used.

B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

1. Do not dispose of volatile wastes such as mineral spirits, oil paint thinner in storm and sanitary drains.
2. Do not dispose of wastes into sanitary sewers, streams or waterways.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

B. Repair of damage to any surfaces due to improper cleaning methods or materials shall be performed by the Contractor, to the Owner’s Representative’s satisfaction, at no cost to the Owner.

C. No cleaning materials containing strong acids shall be permitted.

PART 3 - EXECUTION

3.01 DURING CONSTRUCTION

A. Remove waste material and general debris that remains on site and inside the building from prior work projects and legally dispose of off Owner's property.

B. Execute cleaning at the end of every work day to ensure that the project site is maintained free from accumulations of dirt, pollutants, waste materials, rubbish, tools, equipment, and unused materials.

C. Remove waste materials, debris, and rubbish from site and legally dispose of at locations off Owner's property, at least on a weekly basis.

D. Passenger Elevators shall not be used for any debris removal.

3.02 FINAL CLEANING

A. Upon completion of work, remove all debris, construction material, protective coverings, equipment, empty containers, unused materials, and the like from the site. Leave site in clean condition.

B. Employ experienced workmen, or professional cleaners, for final cleaning at the closeout of the project.

C. In preparation of final completion, conduct a final inspection of sight-exposed exterior surfaces.

D. Repair, patch, and touch-up marred surfaces to the original finish and profile, to match adjacent existing surfaces.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Maintenance of project record documents on the job site for the duration of the project.

1.02 MAINTENANCE OF CONTRACT DOCUMENTS ON THE JOB SITE

A. Maintain at job site, one copy of:

1. Project Manual (Drawing and Specifications)
2. Addenda
3. Reviewed product submittals
4. Field orders
5. Other modifications to Contract

B. Maintain documents in clean, dry, legible condition.

C. Make documents available at all times for reference or inspection by Architect/Engineer, Owner, and Owner's Representative.

1.03 AS-BUILT DOCUMENTS

A. Contractor shall provide as-built drawings for all work performed prior to approval of final payment.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01740

WARRANTIES

PART 1 - GENERAL

1.01 WARRANTIES

A. Provide all warranties and guarantees required by the technical sections of the Specifications.

B. All other Contractor work and materials related to project shall be free of defects in workmanship and materials for a period of two years after final completion of work.

1.02 QUALITY CONTROL

A. Quality Control will be the responsibility of the Contractor. Contractor is responsible for training of workmen, controlling material quality, and monitoring of installation techniques. These guarantees reflect the Contractor's control over and responsibility for quality workmanship.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. Coordination Drawings.
   2. Project meetings.

1.2 COORDINATION

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

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

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of Contractor's Construction Schedule.
   2. Preparation of the Schedule of Values.
   3. Installation and removal of temporary facilities and controls.
   4. Delivery and processing of submittals.
   5. Progress meetings.
   6. Preinstallation conferences.
   7. Project closeout activities.
   8. Startup and adjustment of systems.
   9. Project closeout activities.

1.3 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
   1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
      a. Indicate functional and spatial relationships of components of architectural, structural, mechanical, and electrical systems.
      b. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
   2. Sheet Size: At least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
   3. Number of Copies: Submit two opaque copies of each submittal. Architect will return one copy..
   4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.

1.4 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
   1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
   2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
   3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 7 days after execution of the Agreement. Hold the conference at Project site. Conduct the meeting to review responsibilities and personnel assignments.
   1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
   2. Agenda: Discuss items of significance that could affect progress, including the following:
      a. Tentative construction schedule.
      b. Phasing.
      c. Critical work sequencing and long-lead items.
      d. Designation of key personnel and their duties.
      e. Procedures for processing field decisions and Change Orders.
      f. Procedures for requests for interpretations (RFIs).
      g. Procedures for testing and inspecting.
      h. Procedures for processing Applications for Payment.

i. Distribution of the Contract Documents.
j. Submittal procedures.
k. Preparation of Record Documents.
l. Use of the premises and **existing building**.
m. Work restrictions.
n. Owner's occupancy requirements.
o. Responsibility for temporary facilities and controls.
p. Construction waste management and recycling.
q. Parking availability.
r. Office, work, and storage areas.
s. Equipment deliveries and priorities.
t. Security.
u. Progress cleaning.
v. Working hours.

3. Minutes: Record and distribute meeting minutes.

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

4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at biweekly intervals. Coordinate dates of meetings with preparation of payment requests.
   1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
   2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
      a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
         1) Review schedule for next period.
      b. Review present and future needs of each entity present, including the following:
         1) Interface requirements.
         2) Sequence of operations.
         3) Status of submittals.
         4) Deliveries.
         5) Off-site fabrication.
         6) Access.
         7) Site utilization.
         8) Temporary facilities and controls.
         9) Work hours.
         10) Progress cleaning.
         11) Quality and work standards.
         12) Status of correction of deficient items.
         13) Field observations.
         14) Requests for interpretations (RFIs).
         15) Status of proposal requests.
         16) Pending changes.
         17) Status of Change Orders.
         18) Pending claims and disputes.
         19) Documentation of information for payment requests.
   3. Minutes: Record and distribute to Contractor the meeting minutes.
   4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
      a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

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

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
   2. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. See Divisions 2 through 16 Sections for specific test and inspection requirements.

1.2 DEFINITIONS

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

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

C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. **Approved mockups establish the standard by which the Work will be judged.**

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

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

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

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

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

I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
   1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

J. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.3 CONFLICTING REQUIREMENTS

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

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

1.4 SUBMITTALS

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

B. Reports: Prepare and submit certified written reports that include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address, and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making tests and inspections.
   6. Description of the Work and test and inspection method.
   7. Identification of product and Specification Section.
   8. Complete test or inspection data.
   9. Test and inspection results and an interpretation of test results.
   10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

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

1.5 QUALITY ASSURANCE

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

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

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

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

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

F. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

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

H. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
   1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.

2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

1.6 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
   1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
   2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.

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

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 "Submittal Procedures."

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

E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
   3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

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

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

1.7 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Comply with the Contract Document requirements for Division 1 “Cutting and Patching.”

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

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

END OF SECTION

SECTION 02070

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish all labor, materials, tools and equipment and perform all Work necessary for and incidental to the removal of designated items as shown on the Drawings and specified herein. Work shall include, but not be limited to, removal of existing windows, removal of existing interior finishes and light gage metal studs, removal of existing rigid insulation, removal of existing brick.

1.02 RELATED WORK

A. Section 04500 - Masonry Restoration

B. Section 08521 - replacement Aluminum Windows

1.03 SUBMITTALS

A. Permits and notices authorizing demolition.

B. Permits for transport and disposal of debris.

C. 48 hour advance notice of commencement shall be give to the Project Manager.

D. Submit a Demolition Schedule (proposed method and sequence of demolition and removal operations) for review at least 10 business days prior to start of the Work. The schedule shall allow the window supplier adequate time to obtain all dimensions as required and select samples for subsequent removal.

1.04 QUALITY ASSURANCE

A. Codes and Permits:

1. Conform to codes and requirements of governing authority.
2. Obtain and pay for all permits for demolition; protection of the public and property; transportation and disposal of debris.

B. The Contractor shall issue a written certification to the Owner that all materials have been removed, handled, transported and disposed of in conformance with the requirements and codes of the governing authorities.

1.05 PROJECT CONDITIONS

A. Occupancy: The building will remain in full operational use during the work. No means of egress or access to the street shall be blocked without approval of the Owner and establishment of alternative means of egress. All work activity shall be fully coordinated with the Owner.

B. Condition of Structures: The Owner and the Architect/Engineer assume no responsibility for the actual condition of materials to be demolished.

C. Salvageable and Disposable Items:

1. Items designated by the Owner to be salvaged shall be removed intact and stored or delivered by the Contractor as directed by the Owner
2. Removal items of salvageable value shall become the property of the Contractor unless otherwise noted
3. Items must be transported from the site as they are removed.
4. Storage and sale of removed items on the site will not be permitted.
5. Outgoing debris and materials, as well as incoming, shall not be moved through the interior of the building.

D. Explosives: The storage or use of explosives on the job site is not permitted.

E. Condition Survey: The Contractor shall coordinate with the Owner to jointly survey the work areas and the areas adjacent to and below them for signs of damage or distress existing prior to the start of demolition. The existing conditions should be documented as to their nature and location and kept on file for the duration of the Work.

F. Method: The Contractor will select a demolition method, or a selection of demolition methods, to minimize disturbance to the Owner and tenants, including considerations of dust, noise, daily and overall duration, and fumes.

G. Traffic: Conduct demolition operations and the removal of debris to ensure minimum interference with the Owner, building tenants, roads, streets, walks, and other adjacent occupied or used facilities.

H. Protection: Ensure the safe passage of persons around the area of demolition. Conduct operations to prevent injury to the structure, other facilities, and persons.

I. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement or collapse of structures or building materials during demolition. Contractor shall design shoring as required.

J. Provide temporary canopies, walls, and signage to protect building users, and to maintain a safe condition at all times. Exits shall not be blocked at any time during the Work.

K. Provide temporary protection of existing construction from the weather until removed portions are completely replaced with new construction. Any damage associated with improper protection from weather and elements shall be repaired at Contractor's cost.

L. Protect paving and areas to remain from demolition and removal operations.

M. Protect and safely store items identified to be reinstalled after completion of the work.

N. Damages: Promptly repair any damage caused by demolition operations to the remaining structures at no cost to the Owner. The Contractor shall promptly notify the Owner and Architect/Engineer in writing of any damage and the proposed method of repair.

O. Utility Services: Maintain existing utilities, keep in service, and protect against damage during demolition operations. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by the Owner. Provide temporary services during interruptions to existing utilities.

P. Place scaffold loads to avoid damaging the roof and existing elements to remain.

Q. Conduct demolition and removal operations in a manner to minimize traffic over areas to remain or newly installed areas. Protect completed installation areas and installations in progress from damage resulting from demolition and removal operations.

1.06 COORDINATION

A. Coordinate demolition and removal operations with the new installation specified in the other sections of this Project Manual and as indicated in the Contract Documents.

B. Coordinate all work activities with the Owner, Building Management, or other designated responsible person.

1.07 POLLUTION CONTROL

A. Use water sprinkling, temporary enclosures, and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to environmental protection.

1. Do not use water when it may create hazardous or objectionable conditions such as flooding and pollution.
2. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 DEMOLITION

A. Demolish indicated items completely and remove from the site. Use such methods as required to complete the Work within the limitations of governing regulations.

B. The Contractor will select a demolition method or a selection of demolition methods to minimize disturbance to the tenants and Owner, including considerations of dust, noise, daily and overall duration, and fumes.

C. Proceed with demolition in a systematic manner and as indicated on the Drawings.

D. After uncovering work, inspect conditions. Notify the Architect/Engineer immediately of any conditions that are in conflict with the Contract Documents before proceeding with the Work.

E. Do not remove existing materials when precipitation is imminent.

F. Do not remove more existing material than can be replaced with new material or made watertight by the end of the workday.

3.02 DISPOSAL OF DEMOLISHED MATERIALS

A. General: The Contractor shall be responsible for ordering receptacles of adequate size and number for debris removal. If Contractor is found overloading containers, any subsequent violations or fines will be Contractor’s responsibility. It shall be the Contractor's responsibility to clean any debris that falls onto the street or sidewalk during loading or pick-up. Remove trash, debris, equipment and parts from job site upon completion of project. Dispose of all debris in legal and appropriate manner. Please recycle any materials when appropriate (i.e. take old copper and aluminum to the scrap metal dealer).

B. Locate the dumpster(s) as directed by the Owner. Remove demolished materials from the site and legally dispose of debris, rubbish, and other materials resulting from demolition operations on a daily basis. Burning of removed materials is not permitted on the site.

C. Stockpiling debris on the roof is not permitted without approval of the Architect/Engineer and Owner.

D. Fully loaded dumpsters shall be promptly covered and removed from the job site.

E. At the end of the workday, all partially filled dumpsters shall be securely covered or removed from the job site.

3.03 REPAIRS

A. Repair any areas of demolition in excess of that required and any damage to adjoining construction. Repairs must, as a minimum standard, restore the condition which existed prior to the start of demolition. In the absence of photographic or other agreed documentation, the Owner's decision shall be final.

B. Where removals expose damaged or unfinished original surfaces or materials, restore and refinish existing work in conformance with applicable requirements of the specifications, except as follows:

1. Materials for use in repair of original surfaces, but not otherwise specified, shall conform to the highest standards of the trade involved, and be in accordance with approved industry standards and shall be as required to match existing surfaces.
2. Workmanship for repair of existing materials shall, unless otherwise specified, be equal to similar workmanship existing in or adjacent to the space where the work is being done.

3.04 CLEANUP

A. Clean adjacent construction and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to the start of the work.

END OF SECTION

SECTION 04500

MASONRY RESTORATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Work of this section includes, but is not limited to, the following.

1. Removal and replacement of brick masonry where indicated on the drawings or identified in the field.
2. Removal of existing window head flashing and installation of new steel lintels where indicated.

1.02 RELATED WORK

A. Carefully examine all of the Contract Documents for requirements which affect the work of this section.

B. Other specification sections which directly relate to the work of this section include, but are not limited to the following:

1. Section 02070 - Selective Demolition
2. Section 04520 - Masonry Repointing
3. Section 07600 - Flashing and Sheet Metal
4. Section 07900 - Joint Sealers.

1.03 REFERENCES

A. ASTM C207, Hydrated Lime for Masonry Purposes.

B. ASTM C216, Facing Brick.

C. ASTM C150, Portland Cement.

D. BIA Technical Note #1, Cold Weather Construction.

E. ASTM C270, Mortar for Unit Masonry.

F. ASTM C144, Aggregate for Masonry Mortar.

G. ANSI A41.1, Building Code Requirements for Masonry.

H. ACI 530/ASCE 5, Building Code Requirements for Masonry Structures (current edition)

I. ASTM C476 - Mortar and Grout for Reinforced Masonry

J. ASTM C90 – Load Bearing Concrete Masonry Units

1.04 SUBMITTALS

A. Samples

1. Submit five full-size samples of each brick showing extreme variations in color and texture.
2. Submit two samples of each type of anchorage and joint reinforcement of type to be used.
3. Certified test reports showing compliance with specifications for: face brick, backup brick, mortar materials, and grout. Perform additional tests of brick for initial rate of absorption and efflorescence as specified in ASTM C 67 or submit test results from tests that were performed within the past two years.
4. Submit manufacturer's product literature for ties, anchors, weep vent, foam pads, steel primer and paint materials.

B. Certification: Provide manufacturer's certificates stating compliance with specifications.

C. Product Literature: Submit product literature for all items used.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle materials in strict compliance with manufacturer's instructions and recommendations. Protect from all possible damage. Sequence deliveries to avoid delays, but minimize on-site storage.

1.06 QUALITY ASSURANCE

A. Source: For each type of material required for the work of this section, provide the products of one manufacturer.

B. Mock-ups: Before beginning primary work of this section, at locations acceptable to the Architect/Engineer, provide mock-ups and obtain Architect/Engineer's acceptance for:

1. Face Brick Rebuild: one area on each building (minimum 4 square feet each)
2. New Brick Masonry: one lintel area per building
3. Brick Crack Repair: two areas of crack repair (minimum 5 brick courses in height each)

1.07 ENVIRONMENTAL REQUIREMENTS

A. Hot Weather Protection: Use mortar within 1-1/2 hours after mixing. Discard all mortar over 1-1/2 hours old and all mortar that has stiffened due to hydration (setting). Do not retemper colored mortar.

B. Cold Weather Protection: Strictly comply with recommendations of Brick Industry Association Technical Note No. 1 - All Weather Construction of March 1992 and the recommendations of the Portland Cement Association.

1.08 PROJECT CONDITIONS

A. Protection: Cover work at the end of each day and whenever work is not in progress. Extend cover down both sides of walls at least 24 inches and hold securely in place.

B. Staining: Prevent mortar from staining face of masonry that is to be left exposed. Clean exposed masonry immediately (at least each day) using soft brushes and water only. Protect sills, ledges and projections from mortar droppings.

1.09 STRUCTURAL INSPECTION

A. Architect/Engineer shall be given the opportunity to visually inspect the masonry substrates at each area exposed after removal of brickwork. Contractor shall inform the Architect/Engineer of areas to be exposed 24 hours in advance.

PART 2 - PRODUCTS

2.01 BRICK AND CONCRETE MASONRY

A. Face Brick: All brick shall comply with ASTM C216-94, Type FBS, grade SW. Manufacturer to be approved by Architect/Engineer. Waiver of the saturation coefficient requirements shall be at the discretion of the A/E. Existing Brick at Site may be used if they comply with above requirements.

1. Size: Match existing as approved by Architect/Engineer
2. Grade: Provide grade SW for all work
3. Color/Finish/Texture: Match existing brick as approved by Architect/Engineer.

2.02 MASONRY REINFORCING, TIES AND ANCHORS

A. Repair Anchors: Repair anchors by Dur-O-Wal Masonry Accessories, Folcroft, Pennsylvania. Anchor series, and vertical and horizontal spacing of anchors to be based on type of backup material at installation location.

B. Corrugated Wall Ties: Provide 16 gauge 1-1/2 inch wide stainless steel wall ties at 16 inches on center maximum horizontally and vertically. Length of tie shall be as required to engage a minimum of 2-1/2 inches into the face brick. For fastening ties to masonry or concrete provide 2 x 1/4 inch diameter stainless steel nail drive anchors equal to Rawl Zamac Nailin (or approved equal). For fastening ties to metal, provide corrosion resistant 12-14 x 2HWH No. 5 Kwik-Cote metal-to-metal screws with 1-1/4 inch thread length manufactured by Hilti, Tulsa, Oklahoma (or approved equal).

C. Stainless Steel Dowels: 1/2 inch diameter (unless otherwise noted) threaded type 304 stainless steel.

D. Epoxy: For anchoring to masonry with voids, use Hilti Hit HY20 Anchoring system by Hilti, Inc. with stainless steel screen tubes and threaded rods (or approved equal). For anchoring to solid concrete, use Hilti Hit HY150 Anchoring System by Hilti, Inc. (or approved equal).

2.03 SHELF AND CLIP ANGLES

A. Steel Replacement Angles and New Lintel Angles: Provide ASTM A36 rolled steel sections. Shop paint with epoxy paint. Match existing size and anchorage method unless otherwise noted

on the drawings or as required to provide minimum 2/3 bearing of brick on the horizontal leg of angle. Portions of new angles that will be exposed to view shall be painted as directed by A/E.

B. Strap Anchors: Stainless steel strap anchors by Heckmann Building Products Inc., Chicago, IL 800-621-4140. Screw–On anchors Nos. 274, 275, 276, 285, 287, 295 depending on configuration. Size as shown on drawings or as required by calculation.

2.04 MORTAR MATERIALS

A. Portland Cement: ASTM C150, Normal Type I, free from water soluble salts and alkalies. Provide cement that exhibits no efflorescence when tested in accordance with standard efflorescence test ASTM C67, modified to use 2 x 7 x 2 1/2 inch mortar samples, consisting of 1 part troy weight of cement under test and 2 parts of sand mixed to a flow of 100 percent with water. NOTE: Use of masonry cement is not permitted.

Contractors option: Pre-blended portland cement-lime mortar may be used in lieu of site batched mortar. An acceptable pre-blended mortar is Glen-Gery Color Mortar Blend. Color as selected by Architect/Engineer

1. Cement Color: Provide inorganic cement color as necessary to provide mortar color as determined by the Architect/Engineer (to match pointing mortar).

B. Lime: ASTM C 207, hydrated, Type S, non-air-entrained.

C. Mortar Aggregate: Complying with ASTM C144, well graded.

D. Water: Clean and potable.

E. Grout Aggregate: Comply with ASTM C 404.

F. Pigment: Natural and synthetic oxides of iron and chrome, compounded for use in mortar. Use only inorganic pigments with proven record of satisfactory performance. Mortar colors are to be selected by the Architect/Engineer.

2.05 MORTAR MIXES

A. Mortar: Provide mortar complying with ASTM C 270 by proportion only. Masonry cement will not be permitted.

1. Type: Provide Type N mortar for new brick. (Note repointing mortar is Type S) Measure and batch ingredients using a known, precise measure; do not batch by shovel. Mix consistently and uniformly.
2. Color: Color mortar to match existing, as approved by the Architect/Engineer. Do not exceed pigment to mortar ratio of 1:10. Do not re-temper mortar containing color pigments.

B. Admixtures: None permitted.

C. Contractor's Option: In lieu of a site batched mortar, a pre-blended portland cement-lime mortar equal to Glen-Gery Color Mortar Blend may be used. Color as selected by Architect/Engineer.

D. Grout: Provide grout complying with ASTM C 476 with consistency appropriate to conditions so that grout will completely fill all spaces intended to receive grout. Grout mixes containing gypsum shall not be permitted.

2.06 ACCESSORIES

A. Weep Vents: Polypropylene cell vent as manufactured by Dur-O-Wal.

B. Neoprene Foam Pad: Size as required.

2.07 PAINT

A. Steel: Power wire brush clean and prime with Chembuild Series 135 manufactured by Tnemec, Kansas City, MO. Provide one top coat of Endura-Shield II Series 1075 manufactured by Tnemec, Kansas City, MO. Install coating in accordance with manufacturers written instructions. Color as approved by Architect/Engineer in the field.

PART 3 - EXECUTION

3.01 INSPECTION (Existing Exposed Steel Elements)

A. Grind all steel members exposed during the work to bright metal and paint (primer and top coat).

B. Notify Architect/Engineer of all locations where loss of steel is 20% or greater.

3.02 INSTALLATION - GENERAL

A. Strictly comply with industry standards and recommendations of Brick Industry Association, except where more restrictive requirements are specified in this section. Beginning work means installer accepts substrates and conditions.

B. Lay face brick in running bond pattern (or to match existing) to create an interlocked wall to match existing construction.

1. Brick shall be plumb, true to line, with level courses accurately spaced and joints aligned vertically. Drifting of joints shall be cause for rejection of work.
2. Match existing coursing and bond.

C. Tool joints slightly concave as work proceeds. Compress mortar to form a dense, smooth weather-tight surface. Rake out mortar where sealants are to be installed.

D. Lay masonry plumb and level with full bed and head joints, fully buttered and shoved into place. Do not slush joints. Do not allow mortar to block weep tubes.

E. Remove, clean and reset with fresh mortar all masonry units that are disturbed after laying.

F. Cut masonry units with power saw designed for cutting masonry with sharp, unchipped edges. Cut masonry to form special shapes as indicated.

G. Install work with random color variations with no groups of lighter or darker units. Take masonry units from stacks randomly to avoid noticeable color variations.

H. Layout walls in advance for accurate spacing, uniform joint widths, and accurate bond pattern. Avoid the use of less-than-half size units.

I. Tooth new brickwork into existing adjacent brickwork.

J. Wet brick masonry before installation if results of initial rate of absorption tests are greater than 20 g/min.

K. Prime New Cut Angles or Other Galvanized Coatings with zinc rich steel primer where galvanized coating has been breached.

3.03 FLASHING INSTALLATION AND COORDINATION

A. Coordinate the installation of flashings with the masonry work (Section 07600).

B. Prepare masonry surfaces to receive flashings smooth and free of projections. Parge back-up as required to provide smooth substrate.

3.04 TOLERANCES

A. Match existing adjacent construction for plumb and level coursing and bond.

3.05 CLEANING

A. Remove excess mortar at the end of each day.

B. Point or replace defective mortar. Match adjacent work.

C. Clean soiled surfaces using a non-acidic solution which will not harm masonry or adjacent materials (glass, window frames, storefronts, etc.). Consult masonry manufacturer and Architect/Engineer for acceptable cleaners. Use non-metallic tools in cleaning operations. Chemical cleaners shall not be permitted unless approved by the Architect/Engineer. If approved, manufacturer's written instructions (for application, protection, dilution, etc.) shall be followed.

END OF SECTION

SECTION 04520

MASONRY REPOINTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Furnish all materials, labor, tools, and equipment necessary to perform the Work, as shown on the Drawings and specified herein.

B. The Work of this section includes repointing mortar joints in brick masonry where indicated to match the color, texture, and tooling of acceptable original work. Repointing work is intended to seal mortar joints.

C. Related work specified elsewhere:

1. Section 04500 - Masonry Restoration

1.02 QUALITY ASSURANCE

A. Contractor must have a minimum of five (5) years experience in construction and supervision of masonry work. Subcontractor must have at least three years experience in work of the type required by this section and shall employ skilled and experienced masons who must have a minimum of three (3) years experience in the preparation of masonry mortar.

B. Single Source responsibility for mortar materials: Obtain mortar ingredients of uniform quality from one manufacturer for each cementitious component and from one source and producer for each aggregate, to ensure uniformity of final color and cleaning. Materials shall be obtained only from manufacturers who will, if required, send a qualified technical representative to the project site, for the purpose of advising the Contractor of the procedures and precautions for the use of the materials.

C. Field Quality Control: Work in place shall be subject to inspection and testing. Work found to be unacceptable shall be replaced with new, acceptable work.

D. Mock-Ups: Before beginning primary work of this section, provide mock-ups for each color and type of joint at locations acceptable to the Architect/Engineer and obtain Architect/ Engineer's acceptance of visual qualities. Samples shall be prepared by qualified personnel who will be performing the work. Before work commences, the sample shall be approved by the Owner and Architect/Engineer. Protect and maintain acceptable mock-ups throughout the work of this section to serve as criteria for acceptance of future work.

1. Repointing: Provide the following mock-ups to demonstrate Contractor's methods and workmanship:

a. Provide a sample of the method of removing mortar from the joints in an area of twenty-five (25) square feet.

b. Provide a sample of each mortar mixture to be used. The mortar shall match the existing color, composition, texture, particle size and appearance of original mortars as determined and selected by Architect/Engineer.
c. Pointing: Provide four square foot minimum sample of pointed masonry.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product data, installation instructions, use limitations, and recommendations for each material used, including all mortar materials, colorants, and pre-blended color mortars.

B. Samples: Submit representative samples of each material that to be used in the finished work, showing the full range of color and finish variations expected. Provide samples of pointing mortar in 4 inch long by 1/2 inch wide aluminum channels.

C. Submit the following prior to beginning the trial repair work:

1. Certificates attesting to compliance with the applicable specifications for grades, types, etc., included in this specification:

a. Portland cement
b. Lime
c. Sand gradation
d. Test reports from an independent laboratory for all required tests.

D. Submit test reports from testing agency for all required tests. Testing agencies must submit testing procedures to Owner and Architect/Engineer for review and approval prior to testing.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver materials and products in unopened factory labeled packages. Store and handle in strict compliance with manufacturers' instructions and recommendations. Protect from damage. Do not allow materials including sand to become wet.

1.05 PROJECT CONDITIONS

A. Weather: Perform exterior repointing work only when existing temperature is between 40ºF and 90ºF. Weather conditions shall also be within the limits established by manufacturers of the materials and products used. Protect newly finished work from direct rainfall.

B. Protection: Protect persons, property, motor vehicles, masonry surfaces, and site from injury or damage due to Contractor's operations.

C. Dust: Comply with all applicable laws and regulations applicable to dust and debris containment. Vacuum systems, water misting systems, or work enclosures shall be used as required to minimize and contain dust generated from repointing work.

D. Staining: Prevent mortar from staining face of masonry that is to be left exposed. Clean exposed masonry immediately (at least each day) using soft brushes and water only. Protect base of walls from splashed mud and other stains. Protect sills, ledges and projections from mortar droppings.

1.06 SEQUENCING AND SCHEDULING

A. Conference: Convene a pre-installation conference to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

B. Perform work on this section and other sections in the optimum sequence to avoid damaging new work and to avoid damaging repointed joints.

1.07 MORTAR TESTING

A. The Contractor shall engage and pay the costs for a testing laboratory approved by the Owner's representative.

PART 2 - PRODUCTS

2.01 MORTAR MATERIALS

A. Portland cement: ASTM C150, Type 1, non-staining without air entrainment. Masonry cements will not be permitted.

1. Cement Color: Use white or gray portland cement as necessary to provide mortar color as determined by Architect/Engineer.

B. Sand: ASTM C144, to match sand in original mortar in color and texture.

C. Lime: ASTM C207, fine hydrated lime, Type S (non-air-entrained).

D. Water: Clean and potable.

E. Pigment: Natural and synthetic oxides of iron and chrome, compounded for use in mortar. Use only inorganic pigments with proven record of satisfactory performance. Mortar colors are to be selected by Architect/Engineer.

F. Admixtures: None permitted. No additives or accelerators shall be used in any mortar at any time.

G. Pre-blended Color Mortar: As an option, the Contractor may use an approved portland cement/lime pre-blended/colored mortar. Glen Gery Color Mortar Blend or approved equal.

2.02 REPOINTING MORTAR MIXES

A. Measure and batch ingredients using a known, precise measure; do not batch by shovel. Mix consistently and uniformly. Mortar proportions shall conform with ASTM C270, Type S, made up of 1 part lime, 2 parts portland cement, and 9 parts sand by volume. No other mortars or mixes shall be used without prior approval by Architect/Engineer and Owner.

B. Color: Provide mortar with color as determined by Architect/Engineer. Only alkali-stable mineral oxide pigments shall be permitted. (If carbon is used as a colorant, content shall be limited to less than 2 percent by weight of cement.) To prevent color variation, do not re-temper mortar containing color pigments.

2.03 MATERIAL HANDLING AND STORAGE

A. All material shall be delivered, stored, and handled so as to prevent deterioration or the intrusion of any foreign matter. Packaged material shall be delivered and stored in the original packages. Materials in broken packages or showing evidence of damage will be rejected.

B. Materials shall not be stored in such a manner as to damage or place undue stress on the existing structure or the roof membrane of the building.

C. The contractor shall take the necessary precautions to meet the following conditions:

1. Store all material off ground to prevent contamination by mud, dust, or materials likely to cause staining or other defects.
2. Cover material to protect from elements and neglect.

PART 3 - EXECUTION

3.01 INSPECTION

A. Installer shall examine substrates, supports, and conditions under which this work is to be performed and notify Contractor, in writing, of conditions detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected. Beginning work means installer accepts substrates and conditions.

3.02 FIELD QUALITY CONTROL

A. Mortar testing for each type of pointing mortar used:

1. At least two weeks prior to the start of pointing work, one set of at least nine mortar cubes shall be taken from a batch of mortar prepared by the Contractor, in the presence of the testing laboratory personnel, with the materials to be used for the mortar during the pointing work, in accordance with ASTM C 270.
2. One set of at least nine cubes shall be taken at a random day and time up to ten times during the progress of the pointing work in accordance with ASTM C 270. In general a set will be taken once every two weeks during pointing work. The time that each set will be taken will be determined by the Architect/Engineer. Mortar cubes which do not meet test requirements will not be considered as one of the ten sets of cubes.
3. Three cubes from each set shall be tested at three, seven, and twenty-eight days in accordance with ASTM C 270.
4. The results achieved from the random sampling taken during the work will be expected to achieve results closely similar or better than that achieved from the set made prior to the start of pointing work.

B. All mortar mixing is to be accomplished using a mechanical mixer. Use a 1 cubic foot box or other device to ensure that mortar is properly proportioned in accordance with specifications.

C. Do not use frozen materials mixed with or coated with ice or frost. When temperature of surrounding air is 50°F and falling, take precautions to protect masonry materials from freezing. Comply with cold weather construction and protection recommendations per BIA Technical Note 1.

D. During hot weather, comply with hot weather masonry construction and protection recommendations per BIA Technical Note 1.

E. Do not use any admixtures or accelerators in mortar.

3.03 INSTALLATION/EXECUTION

A. Preparation of joints to be pointed or repointed:

1. Grind out the vertical and horizontal mortar joints to a depth of at least 3/4 inch or to sound mortar, whichever is deeper. Remove mortar for width of joint by cutting. For vertical joints, do not nick brick adjacent to head joint during cutting. Remove mortar to a depth of twice the width of the joint, up to a maximum of 2 inches, removing all unsound mortar. Adjacent brick shall not be damaged during grinding and cutting out of joints. Mortar shall be removed without loss or damage of adjacent brick.
2. All preparation of joints shall be in accordance with approved test sample.
3. Rake out all caulked joints. Remove mortar to depths specified above. Remove any traces of sealant in joint or at joint interface to be pointed.
4. Remove any traces of mortar at joint interface to be pointed. When cutting is complete, remove all loose material with a brush followed by blasting with oil free compressed air.
5. Light pneumatic tools may be used if their use does not damage the adjacent brick as determined by the Architect/Engineer. The use of any mortar removal technique or tool that damages the adjacent brick surfaces will not be allowed.
6. Reset loose brick in full mortar bed and head joints using repointing mortar.

B. Mixing of mortar

1. Thoroughly mix cement, lime and sand in accordance with requirements of BIA M1.

a. Mix materials, proportion by volume. The proportions are as follows:

Portland Cement:	2 parts
Hydrated Lime:	1 part
Sand:	9 parts

Control batching procedure to ensure proper proportions by measuring materials by volume. Do not measure mortar materials by shovels.

C. Pre-hydrate the mortar by thoroughly mixing all the dry ingredients. Then mix again, adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. After keeping mortar in this dampened condition for one to two hours, add enough water to bring it to proper consistency. Mortar may be retempered by adding water and remixing as required for workability. Do not use mortar if more than 1-1/2 hours has elapsed since the pre-hydration of mortar has been completed.

D. Joint Cleaning: Brush joints, then blast with oil free compressed air to remove all loose material and dust. Wash joint surfaces with water so that they are damp, but free of standing water at time of repointing. The masonry must absorb all surface water. Adjacent brick surfaces must be free of surface water

E. Repointing: Carefully insert pointing mortar into joints. Point joints up in thin tightly packed layers (1/4 inch maximum layer thickness). Do not spread mortar over brick faces and do not feather-edge mortar. Allow each layer to become thumbprint dry before applying next layer.

F. Tooling: Tool and compress joints to form dense, thumb print hard, weathertight surfaces. Size, tooling and appearance of finished work shall match original work in good condition and approved mock-ups. Tool joint to concave profile

G. Cure Mortar in a damp condition for not less than 72 hours.

3.04 FIELD QUALITY CONTROL

A. Contractor shall establish and maintain throughout the work of this section, an effective quality control program to ensure that work is performed as required by the Contract Documents. Contractor must also establish specific procedures to prevent damage to brick and edges during raking and feathering of mortar during repointing.

3.05 CLEANING AND PROTECTION

A. Repair minor damage to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired.

B. Clean wall surfaces after repointing, using city pressure water and brush methods recommended by Brick Industry Association. If not adequate, reclean using ProSoCo Mortar and Grout remover in accordance with manufacturer's written instructions. Protect all adjacent areas, including but not limited to glass, window frames, low roofs, storefronts, etc., from runoff. Cleaner concentration shall be based on an Architect/Engineer approved sample application. Remove and replace work that cannot be successfully cleaned.

C. Wipe excess mortar from surface of brick adjacent to mortar joint with damp sponge or cloth. Note: Use only sponge or cloth that is damp, not wet or saturated. Water shall not run from damp sponge or cloth when tightly squeezed. Surface of brick shall not have visible accumulation of water immediately after cleaning. Do not touch or disturb newly installed pointing mortar during cleaning. Clean until mortar and mortar haze are removed from adjacent stone surfaces.

D. No other cleaning systems shall be used after pointing without prior approval of Architect/Engineer and Owner.

END OF SECTION

SECTION 06610

FIBER REINFORCED POLYMER STRENGTHENING OF BRICK MASONRY

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Work in this section includes but is not limited to the following:

1. Cutting slots in brick masonry to accept the deformed fiber reinforced polymer (FRP) bars.
2. Mixing and application of the structural adhesive.
3. Installation and finishing of the FRP bars.

1.02 RELATED SECTIONS

A. Carefully examine all of the Contract Documents for requirements which affect the work of this section.

B. Other specification sections which directly relate to the work of this section include, but are not limited to the following:

1. Section 04500 - Masonry Repairs and Replacement
2. Section 04520 - Masonry Repointing

1.03 REFERENCES

ACI 440.2R-02 - Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures

ASTM D2584 - Standard Test Method for Ignition Loss of Cured Reinforced Resins

ASTM D4541-02 - Pull-Off Strength of Coatings Using Portable Adhesion Testers

1.04 SUBMITTALS AND MOCKUPS

A. Required prior to the commencement of installation of the FRP reinforcement:

1. Detailed shop drawings showing the placement of the reinforcement on the different wall panels.
2. Product Data: Submit manufacturer's product data, including material and mechanical properties for each FRP bar size and type.
3. Test Reports: Submit manufacturer's certified test reports for source quality control testing for material and mechanical properties performed by an independent testing agency for each FRP bar size and type.
4. Full-sized mockups, 3-feet wide minimum, showing the installation of the horizontal and vertical FRP reinforcement.

1.05 QUALITY ASSURANCE

A. Source: For each type of material required for the work of this section, provide the products of one manufacturer.

B. Mock-ups: Before beginning primary work of this section, at locations acceptable to the Architect/Engineer, provide mock-ups and obtain Architect/Engineer's acceptance for:

1. Cutting of slots in brick masonry wall panels to accept the FRP bars
2. Cleaning of the slots
3. Mixing and application of the structural adhesive
4. Embedment of the FRP reinforcement
5. Tooling of the epoxy surface and cleaning excess adhesive
6. Coordination with other work

C. Qualifications of installers: Employ only experienced craftsmen skilled in the installation of specified products.

1.06 PROJECT CONDITIONS

A. Conduct all work under temperature and climatic conditions as recommended by the manufacturer of the structural adhesive.

B. All resins should be cured in accordance with the manufacturer's recommendations.

1.07 WORK SEQUENCE

A. Do not install FRP reinforcement when precipitation is imminent.

B. Installation of FRP reinforcement shall be coordinated with all portions of the repair work.

1.08 DELIVERY, STORAGE AND HANDLING

A. Store all products in a manner to prevent damage, in a secure place, out of the way of construction operations, in accordance with the manufacturer's instructions to prevent damage.

B. Provide protection of FRP bars until ready to use:

1. Do not store FRP bars directly on the ground.
2. Cover stored FRP bars to avoid contamination from dust or other chemical substances and exposure to direct sunlight.

C. Handling: Use a spreader bar when hoisting bundles of FRP bars.

D. Store structural adhesive in dry conditions at 40-95 ^{o}F. Condition material at 45-85 ^{o}F before using.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Hughes Brothers, Inc., 210 North Street, Seward, Nebraska, 68434.
Phone: (402) 643-2991 or (800) 869-0359 Fax: (402) 643-2149
Email: doug@hughesbros.com Web: http://www.hughesbros.com

B. Sika Corporation, 201 Polito Avenue, Lyndhurst, New Jersey 07071
Phone: (800) 933-7452 Fax: (201) 933-6225
Email: sikainfo@sika-corp.com Web: http://www.sikaconstruction.com

2.02 CARBON FIBER REINFORCED POLYMER (CFRP) BARS FOR MASONRY REINFORCEMENT

A. Carbon Fiber Reinforced Polymer (CFRP) Bars: Hughes Brothers deformed and sand coated bars for masonry reinforcement. Surface of CFRP bar is provided with undulations and is sand coated to generate a mechanical and chemical bond to the substrate.

B. Binding Material: Binding material is composed of vinylester resin that is homogeneous throughout the cross-section of the bar.

C. Fiber Reinforcement:

1. Continuous fibers in bar: Carbon fibers
    a. Volume fraction: 70 percent minimum per ASTM D2584

D. Manufacturing Process:

1. Pultrusion process
2. Carbon rovings are drawn through a resin bath, surface undulations and sand are applied prior to thermoset of the polymeric resin.

E. Dimensions: Cross-sectional Area and Nominal Diameter, Aslan 200 CFRP bars

Bar Size (inches)	Cross-sectional Area (in^2)	Nominal Diameter (inches)
#2	0.0464	0.254”
#3	0.1019	0.362”

F. Tensile Properties: Aslan 200 CFRP bars

Bar Size (inches)	Tensile Strength (ksi)	Tensile Modulus of Elasticity (psi 10^6)
#2	120	5.92
#3	110	5.92

G. Coefficient of Thermal Expansion:

1. Longitudinal Direction: -4.0 to 0.0 x 10^{-6} per degree F
2. Transverse Direction: 41 to 58 x 10^{-6} per degree F

2.03 STRUCTURAL ADHESIVE FOR MASONRY REINFORCEMENT

A. Structural Adhesive: Sika Sikadur 30 Epoxy Adhesive

B Mechanical Properties: Sika Sikadur 30 Epoxy Adhesive

1.	Tensile Strength	3,600 psi
2.	Elongation at break	1 %
3.	Modulus of Elasticity	6.5 x 10^6 psi
4.	Flexural Strength	6,800 psi
5.	7-Day Water Absorption	0.03 %

2.04 SOURCE QUALITY CONTROL

A. Quality control shall be carried out by testing FRP bars before use to ensure required performance. Perform quality control tests to determine the tensile strength, tensile modulus of elasticity and ultimate strain.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Preparation of the Substrate:

1. Examine the surface condition of the substrate accepting the CFRP bars.
2. Do not proceed with the new installation until unsatisfactory conditions have been corrected in a manner approved by the Architect/Engineer.
3. Clean the substrate of obstructions and substances detrimental to the work. All laitance, dust, dirt, oil, curing compound and any other matter that could interfere with the bond of the FRP system to the brick substrate should be removed.

3.02 MIXING STRUCTURAL ADHESIVE

A. Pre-mix each component of the structural adhesive.

B. Only batch entire units.

C. Mix the structural adhesive thoroughly with a low speed paddle mixer (400-600 rpm) until uniform in color. Mix only the quantity that can be used within its pot life.

D. Minimum substrate and ambient temperature is 40 ^{o}F prior to application of the adhesive.

3.03 APPLICATION

A. Place FRP bars accurately in accordance with drawings, typical details and notes.

B. Field cut FRP bars with high speed grinding cutter, fine blade saw, diamond blade or masonry blade. Do not shear bars.

C. Do not field bend FRP bars.

D. Secure bars to prevent displacement by epoxy or settlement prior to curing of the structural adhesive.

3.04 TOLERANCES

A. Match existing adjacent construction for plumb and level lines.

B Grooves cut in the masonry shall be straight, such that the FRP bars may be installed to maintain straightness of the bar and a uniform thickness of adhesive surrounding the bar in the groove. Localized out-of-plane variations should not exceed 1/32 in.

3.05 CLEANING

A. Remove excess adhesive prior to the adhesive curing.

B. Do not use solvents to remove or clean already cured adhesive.

END OF SECTION

SECTION 07180

ELASTOMERIC COATINGS

PART 1 - GENERAL

1.01 SUMMARY

A. The work of this Section shall consist of providing the necessary labor, materials, and equipment for surface preparation and application of elastomeric coatings to the exterior surfaces indicated on the drawings.

B. Related Sections:

1. Division 1, Section “Alternates” for description of Work in this Section affected by alternates.

2. Section 04500 - Masonry Restoration

3. Section 07900 - Joint Sealers

1.02 DEFINITIONS

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

1.03 SUBMITTALS

A. Product Data: For elastomeric coating system specified.

1. Manufacturer’s Information: Technical information including label analysis and instructions for handling, storing, and applying coating material on a vertical surface.

2. Certification by elastomeric coating manufacturer that products supplied comply with local VOC regulations.

B. Samples for Initial Selection: Manufacturer’s color charts showing the full range of colors available for each type of finish-coat material indicated.

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

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has at least 5 years experience 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 has been approved by the manufacturer of the coating.

B. Source Limitations: Obtain all materials from same manufacturer as finish coats.

C. Mockups: Provide full-coat mockup on each substrate required. Comply with procedures specified in PDCA P5. Duplicate finish of approved sample submittals.

1. Architect will select one area of each brick type and each previously coated brick area to represent surfaces and conditions for application of elastomeric coatings.
   a. Wall Surfaces: Prepare samples on at least 50 square feet of wall surface.

2. Apply mockup according to requirements for the completed Work. Provide required sheen, color, and texture on each surface.

3. The application and subsequent testing shall be witnessed and approved by a representative of the coating manufacturer.

4. Approved mockups will be used to evaluate coating systems.

5. Obtain Architect's approval of mockup before starting application of coatings.

6. Colors shall match Owner approved color sample. Final approval of colors will be from mockups.

1.05 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. Product name or title of material.

2. Manufacturer's stock number and date of manufacture.

3. Contents by volume, for pigment and vehicle constituents.

4. Thinning instructions (if permitted).

5. Application instructions.

6. Color name and number.

7. Handling instructions and precautions.

8. 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.

1. Protect elastomeric coating materials from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure workers and work areas are protected from fire and health hazards resulting from handling, mixing, and applying coatings.

1.06 PROJECT CONDITIONS

A. Temperature Conditions: Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 40 and 100 deg F, unless otherwise permitted by manufacturer's written instructions.

B. Weather Conditions: Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; 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.

1.07 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under

requirements of the Contract Documents. The manufacturer and the applicator shall jointly guarantee the application against defects in material and application for a period of two years from the completion of the application.

B. Elastomeric Coating Warranty: Submit a written warranty, executed by the manufacturer, agreeing to repair or replace elastomeric coatings that fail within specified warranty period. Failures include, but are not limited to, water penetration through the coating.

C. Warranty Period for Elastomeric Coatings: Five year(s) from date of Substantial Completion.

1.08 EXTRA MATERIALS

A. 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.

1. Quantity: Furnish Owner with enough attic stock in 1 or 5 gallon containers of each color and each material of elastomeric coating materials applied to cover 2000 square feet of wall area.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide products of the following manufacturer:

1. Actual product to be applied is To Be Determined by testing not yet performed.

For Bid purposes, provide bid allowance amount assuming the Dow AllGuard Silicone Elastomeric coating system. Provide per square foot installed cost for AllGuard in accordance with manufacturer's recommendations and include separate line allowance for AllGuard Primer application. Actual product installation costs will be applied to this allowance item.

2.02 ELASTOMERIC COATING MATERIALS, GENERAL

A. 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.

B. Material Quality: Provide manufacturer's best-quality elastomeric coating materials that are factory formulated, comply with requirements in FS TT-C-555, and are recommended by manufacturer for the application indicated. Material containers not displaying manufacturer's product identification are not acceptable.

C. Colors and Textures: Match existing adjacent colors and textures. Final approval will be by Owner and Architect/Engineer.

2.03 ELASTOMERIC FINISH-COAT MATERIALS

1. Smooth Elastomeric Finish: Elastomeric coating applied at spreading rate and dry film thickness recommended by manufacturer. Actual product to be applied is To Be Determined by testing not yet performed.

For Bid purposes, provide bid allowance amount assuming the Dow AllGuard Silicone Elastomeric coating system. Provide per square foot installed cost AllGuard in

accordance with manufacturer's recommendations and include separate allowance for AllGuard Primer application. Provide unit cost breakdown per square foot including separate material cost and installation labor cost per layer of coating or primer. Assume roller application for bid.

Actual product installation costs will be applied to this allowance item based on product and application method selected during mockup testing.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Applicator present, under which elastomeric coating systems will be applied for compliance with manufacturer's requirements for coating application.

1. Proceed with coating application only after unsatisfactory conditions have been corrected and surfaces are thoroughly dry.

2. Start of coating application will be construed as Applicator's acceptance of surface conditions.

3.02 PREPARATION

A. General: 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. **Removal of any cell phone related equipment is not permitted and adequate protection of these items is required before coating application. Coordinate cell phone protection with utility.**

1. After completing coating operations, reinstall items removed, using workers skilled in trades involved.

2. Protect all existing cell phone tower equipment and raceways during application. Cell phone equipment operation shall not be disturbed.

B. Cleaning: Before applying coatings or other surface treatments, clean substrates of 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.

C. Surface Preparation: Clean and prepare surfaces to be coated according to manufacturer's written instructions for particular substrate conditions and as specified.

1. Provide barrier coats over incompatible primers or remove and reprime.

2. Cementitious Surfaces: Prepare brick, concrete, concrete unit masonry, stucco, and similar surfaces to receive elastomeric coatings. Remove efflorescence, chalk, dust, dirt, laitance, loose particles, release agents, grease, oils, and similar impediments to good adhesion by water blasting (maximum 400 psi) followed by a clear water rinse.
   a. Remove mildew and neutralize surfaces according to manufacturer's written instructions before patching materials are applied.
   b. Roughen as required to remove glaze. Use abrasive blast-cleaning methods if recommended by coating manufacturer.

c. If hardeners or sealers have been used to improve concrete curing, use mechanical methods for surface preparation.

d. Determine alkalinity and moisture content of surfaces to be coated by performing appropriate tests. If surfaces are sufficiently alkaline to cause finish paint to blister and burn, correct this condition before application. Do not apply coatings over surfaces where moisture content exceeds that permitted in manufacturer's written instructions.

3. Crack Repair: Fill cracks according to manufacturer's written instructions before coating surfaces. Recoating will primarily occur at repair areas where cracks will have already been treated. If more than minor cracking is encountered, notify Architect/Engineer.

4. Deep Hairline Cracks: Remove dust and dirt from around cracks. Remove mildew by sterilizing before filling. Apply manufacturer's recommended primer to cracks before patching. If shrinkage occurs after applying crack filler, apply additional filler material to cracks before initial application of elastomeric coatings.

a. Cracks up to 1/16 Inch: Clean surface around cracks in accordance with manufacturer's recommendations.

b. Cracks larger than 1/16 Inch: Repair cracks larger than 1/16" with a material compatible with actual product selected. For coating allowance assume Dow Corning 795 Silicone Building Sealant.

D. Allow sealants to cure prior to coating application.

E. 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.

F. Tinting: Do not tint.

3.03 APPLICATION

A. General: Apply elastomeric coatings according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Do not paint over conditions detrimental to formation of a durable coating film, such as dirt, rust, scale, grease, moisture, and scuffed surfaces.

B. 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.

C. Application Procedures: Apply elastomeric coatings by roller, according to manufacturer's written instructions.

1. 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.

D. 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.

E. 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. Match adjacent textures.

F. 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. Owner reserves the right to sample the installed coating per 1000 sq.ft. of coating application. Contractor to patch coating at all test locations.

B. Contractor to verify thickness of coating using method and frequency recommended by manufacturer but not less than one measurement per 200 sq.ft. of coating application.

C. 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 will 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 will perform appropriate tests for the following characteristics as required by Owner:
   a. Elongation.
   b. Accelerated weathering.
   c. Low-temperature flexibility.
   d. Moisture-vapor transmission.
   e. Wind-driven rain resistance.
   f. Minimum solids content by volume.

3. Owner may direct Contractor to stop coating application if test results show materials being used do not comply with requirements. Contractor shall remove noncomplying 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 coatings are not compatible.

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 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.

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/Engineer. Leave in an undamaged condition.

B. Protect surfaces not scheduled to receive coating, pedestrians, vehicles, plants, and other elements of the surrounding area from exposure to paint application.

C. 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.

END OF SECTION

SECTION 07241

EXTERIOR INSULATION AND FINISH SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Exterior insulation and finish system (EIFS) applied over the following:
      a. Masonry surfaces.
   2. Exterior insulation and finish system (EIFS) with drainage applied over the following:
      a. Premium exterior grade gypsum sheathing.

B. Related Sections include the following:
   1. Division 5 Section “Cold-Formed Metal Framing” for metal framing.
   2. Division 7 Section “Joint Sealants” for sealing joints in EIFS with elastomeric joint sealants.
   3. Division 9 Section “Gypsum Sheathing” for water-/weather-resistive barriers and gypsum sheathing.

1.2 DEFINITIONS

A. EIFS: Exterior Insulation and Finish System(s).

B. EIFS: A “nonload bearing, exterior wall cladding system that consists of an insulation board attached either adhesively, mechanically, or both to the substrate; an integrally reinforced base coat; and a textured protective finish coat.”

C. EIFS with Drainage: An EIFS installed over a moisture barrier with provision for drainage between the moisture barrier and the EIFS insulation.

1.3 PERFORMANCE REQUIREMENTS

A. EIFS Performance: Comply with the following:
   1. Bond Integrity: Free from bond failure within EIFS components or between system and supporting wall construction, resulting from exposure to fire, wind loads, weather, or other in-service conditions.
   2. Weather tightness: Resistant to water penetration from exterior into EIFS and assemblies behind it or through them into interior of building that results in deterioration of thermal-insulating effectiveness or other degradation of EIFS and assemblies behind it, including substrates, supporting wall construction, and interior finish.

1.4 SUBMITTALS

A. Product Data: For each type and component of EIFS indicated.

B. Samples for Initial Selection: For each type of finish-coat color and texture indicated.
   1. Include similar Samples of joint sealants and exposed accessories involving color selection.

C. Samples for Verification: 24-inch-square panels for each type of finish-coat color and texture indicated, prepared using same tools and techniques intended for actual work including custom trim, each profile, a typical control joint filled with sealant of color selected.
   1. Include sealants and exposed accessory Samples to verify color selected.

D. Manufacturer Certificates: Signed by manufacturers certifying that EIFS, substrates and joint sealants specified for the project comply with requirements.

E. Qualification Data: For Installer and testing agency.

F. Compatibility and Adhesion Test Reports: For joint sealants 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.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for EIFS.

H. Maintenance Data: For EIFS to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An installer who is certified in writing by EIFS manufacturer as qualified to install manufacturer's system using trained workers with at least five years experience.

B. Source Limitations: Obtain EIFS through one source from a single EIFS manufacturer and from sources approved by EIFS manufacturer as compatible with system components.

C. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution and set quality standards for fabrication and installation.
   1. Before EIFS installation, erect a mockup on-site that includes the following;
      a. Erect the mockup panel in a location as selected by the Architect/Engineer and Owner.
      b. Include weather resistive barrier and flashings.
      c. Install mockups for each type of coat and finish indicated.
      d. Mockup shall be on a minimum eight square feet
      e. The finish coat shall exhibit the texture that will be used in the Work.
      f. Include**,** expansion joint and backwrapping at the perimeters of the panel.
      g. Install each layer substrate, weather resistive barrier and flashings, base coat, reinforcing mesh and finish coat individually and allow for inspection, photography and approval by Architect/Engineer and Owner.
      h. The approved mockup photographs shall be used as the quality standard for the Work. Do not start other EIFS Work until all layers of the work have been accepted.
      i. Approved mockup may become part of the completed Work if undisturbed at time of Substantial Completion.
   2. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Architect in writing.

D. Preinstallation Conference: Conduct conference at Project site
   1. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
   2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   3. Review required repair procedures.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original, unopened packages with manufacturers' labels intact and clearly identifying products.

B. Store materials inside and under cover; keep them dry and protected from weather, direct sunlight, surface contamination, aging, corrosion, damaging temperatures, construction traffic, and other causes.
   1. Stack insulation board flat and off the ground.

1.7 PROJECT CONDITIONS

A. Weather Limitations: Maintain ambient temperatures above 40 deg F for a minimum of 24 hours before, during, and after adhesives or coatings are applied. Do not apply EIFS adhesives or coatings during rainfall. Proceed with installation only when existing and forecasted weather conditions and ambient outdoor air and substrate temperatures permit EIFS to be applied, dried, and cured according to manufacturers' written instructions and warranty requirements.

1.8 COORDINATION

A. Coordinate installation of EIFS with related Work specified in other Sections to ensure that wall assemblies, including sheathing, water-/weather-resistive barrier, flashing, trim, joint sealants, windows, and doors, are protected against damage from the effects of weather, age, corrosion, moisture, and other causes. Do not allow water to penetrate behind flashing and protective coating of barrier EIFS and the water-/weather-resistive barrier behind EIFS with drainage.

1.9 WARRANTY

A. Provide manufacturer's standard 10 year warranty at the completion of the project.
   1. Submit the Contract Documents to the manufacturer for review and comment prior to construction.
   2. Comply with manufacturer's Contract Document review comments and all requirements for issuance of the warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: The design for EIFS with drainage is based on Sto Premier Next. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
   1. Dryvit Systems, Inc.
   2. Senergy Inc.
   3. Parex, Inc.

2.2 MATERIALS

A. Compatibility: Provide substrates, water-/weather-resistive barriers, adhesive, fasteners, board insulation, reinforcing meshes, base- and finish-coat systems, sealants, and accessories that are compatible with one another and approved for use by EIFS manufacturer for Project.

B. Colors, Textures, and Patterns of Finish Coat: As selected by Architect from manufacturer's full range.

C. Water-/Weather-Resistive Barrier: Provide the following:
   1. Water-/Weather-Resistive-Barrier Coating: EIFS manufacturer's standard formulation and accessories designed for indicated use, compatible with substrate, and complying with performance requirements indicated.
      a. Sheathing Joint Compound and Tape: Type recommended by EIFS manufacturer for sealing joints between and penetrations through sheathing.

D. Primer/Sealer: EIFS manufacturer's standard substrate conditioner designed to seal substrates from moisture penetration and to improve the bond between substrate of type indicated and adhesive used for application of insulation.

E. Flexible-Membrane Flashing: Cold-applied, fully self-adhering, self-healing, rubberized-asphalt and polyethylene-film composite sheet or tape and primer. EIFS manufacturer's standard or product recommended in writing by EIFS manufacturer.
   1. Adhesive for Application of Insulation: EIFS manufacturer's standard formulation designed for indicated use, and compatible with substrate.

F. Reinforcing Mesh: Comply with EIFS manufacturer's requirements.
   1. High-Impact Reinforcing Mesh.
   2. Strip Reinforcing Mesh.
   3. Detail Reinforcing Mesh.
   4. Corner Reinforcing Mesh.

G. Base-Coat Materials: EIFS manufacturer's standard mixture.

H. Primer: EIFS manufacturer's standard factory-mixed elastomeric-polymer primer for preparing base-coat surface for application of finish coat.

I. Finish-Coat Materials: EIFS manufacturer's siliconized acrylic-based coating.

J. Water: Potable.

K. Mechanical Fasteners: EIFS manufacturer's standard corrosion-resistant fasteners consisting of thermal cap, standard washer and shaft attachments, and fastener indicated below; selected for properties of pullout, tensile, and shear strength required to resist design loads of application indicated; capable of pulling fastener head below surface of insulation board; and of the following description:
   1. For attachment to steel studs from 0.033 to 0.112 inch in thickness, provide steel drill screws complying with ASTM C 954.
   2. For attachment to masonry and concrete substrates, provide sheathing dowel in form of a plastic wing-tipped fastener with thermal cap, sized to fit insulation thickness indicated and to penetrate substrate to depth required to secure anchorage.

2.3 ELASTOMERIC SEALANTS

A. Elastomeric Sealant Products: Provide EIFS manufacturer's listed and recommended chemically curing, elastomeric sealant that is compatible with joint fillers, joint substrates, and other related materials, and complies with requirements for products and testing indicated in EIMA's "EIMA Guide for Use of Sealants with Exterior Insulation and Finish Systems, Class PB" and with requirements in Division 7 Section "Joint Sealants" for products corresponding to description indicated below:
   1. Low-modulus, nonacid-curing silicone sealant.

B. Sealant Color: As selected by Architect from manufacturer's full range.

2.4 MIXING

A. General: Comply with EIFS manufacturer's requirements for combining and mixing materials. Do not introduce admixtures, water, or other materials except as recommended by EIFS manufacturer. Mix materials in clean containers. Use materials within time specified by EIFS manufacturer or discard.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of EIFS.

B. Examine roof edges, wall framing, flashings, openings, substrates, and junctures at other construction for suitable conditions where EIFS will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect contiguous work from moisture deterioration and soiling caused by application of EIFS. Provide temporary covering and other protection needed to prevent spattering of exterior finish coats on other work.

B. Protect EIFS, substrates, and wall construction behind them from inclement weather during installation. Prevent penetration of moisture behind drainage plane of EIFS and deterioration of substrates.

C. Prepare and clean substrates to comply with EIFS manufacturer's written requirements to obtain optimum bond between substrate and adhesive for insulation.

D. Primer/Sealer: Apply over gypsum sheathing substrates to protect substrates from degradation and where required by EIFS manufacturer for improving adhesion of insulation to substrate.

E. Water-/Weather-Resistive-Barrier Coating: Apply over substrates to protect substrates from degradation and to provide water-/weather-resistive barrier.
   1. Tape and seal joints, exposed edges, terminations, and inside and outside corners of sheathing, unless otherwise indicated by EIFS manufacturer's written instructions.

F. Flexible-Membrane Flashing: Install over flashing, applied and lapped to shed water; seal at openings, penetrations, terminations, and where indicated by EIFS manufacturer's written instructions to protect wall assembly from degradation. Prime substrates, if required, and install flashing to comply with EIFS manufacturer's written instructions and details.

3.3 EIFS INSTALLATION

A. General: Comply with ASTM C 1397 and EIFS manufacturer's written instructions for installation of EIFS as applicable to each type of substrate indicated.

B. Trim: Apply trim accessories at perimeter of EIFS, at expansion joints, and elsewhere as indicated, according to EIFS manufacturer's written instructions. Coordinate with installation of insulation.
   1. Drip Screed/Track: Use at bottom edges of EIFS, unless otherwise indicated.
   2. Weep Screed/Track: Use at bottom termination edges, at window and door heads, and at floor line expansion joints of EIFS with drainage, unless otherwise indicated.

C. Expansion Joint: Install at locations indicated**;** where expansion joints are indicated in substrates behind EIFS; where EIFS adjoin dissimilar substrates, materials, and construction; at floor lines in multilevel wood-framed construction; and where wall height changes.

D. Board Insulation: Adhesively and mechanically attach insulation to substrate in compliance with ASTM C 1397, EIFS manufacturer's written requirements, and the following:
   1. Apply adhesive to insulation by notched-trowel method in a manner that results in coating the entire surface of drainage mat with adhesive once insulation is adhered to drainage mat.
   2. Press and slide insulation into place. Apply pressure over the entire surface of insulation to accomplish uniform contact, high initial grab, and overall level surface.
   3. Allow adhered insulation to remain undisturbed for period recommended by EIFS manufacturer, but not less than 24 hours, before installing mechanical fasteners, beginning rasping and sanding insulation, or applying base coat and reinforcing mesh.
   4. Apply insulation over drainage mat and dry substrates in courses with long edges of boards oriented horizontally.
   5. Begin first course of insulation from screed/track and work upward. Work from perimeter casing beads toward interior of panels if possible.
   6. Stagger vertical joints of insulation boards in successive courses to produce running bond pattern. Locate joints so no piece of insulation is less than 12 inches wide or 6 inches high. Offset joints not less than 6 inches from corners of window and door openings.
      a. Adhesive Attachment: Offset joints of insulation not less than 6 inches from horizontal and 4 inches from vertical joints in sheathing.

7. Place insulation with adhesive strips and channels, slots, or waves aligned in the vertical position for drainage. Align drainage channels, slots, or waves with channels, slots, or waves in insulation boards above and below.
8. Interlock ends at internal and external corners.
9. Abut insulation tightly at joints within and between each course to produce flush, continuously even surfaces without gaps or raised edges between boards. If gaps greater than 1/16 inch occur, fill with insulation cut to fit gaps exactly; insert insulation without using adhesive or other material.
10. Cut insulation to fit openings, corners, and projections precisely and to produce edges and shapes complying with details indicated.
11. Rasp or sand flush entire surface of insulation to remove irregularities projecting more than 1/16 inch from surface of insulation and to remove yellowed areas due to sun exposure; do not create depressions deeper than 1/16 inch.
12. Interrupt insulation for expansion joints where indicated.
13. Form joints for sealant application by leaving gaps between adjoining insulation edges and between insulation edges and dissimilar adjoining surfaces. Make gaps wide enough to produce joint widths indicated after encapsulating joint substrates with base coat and reinforcing mesh.
14. After installing insulation and before applying field-applied reinforcing mesh, fully wrap board edges. Cover edges of board and extend encapsulating mesh not less than 2-1/2 inches over front and back face, unless otherwise indicated on Drawings.
15. Treat exposed edges of insulation as follows:
    a. Encapsulate edges forming substrates of sealant joints within EIFS or between EIFS and other work with base coat and reinforcing mesh.
    b. At edges trimmed by accessories, extend base coat, reinforcing mesh, and finish coat over face leg of accessories.
16. Coordinate installation of flashing and insulation to produce wall assembly that does not allow water to penetrate behind flashing and water-/weather-resistive barrier.

E. Expansion Joints: Install at locations indicated, where required by EIFS manufacturer, and as follows:
1. Where expansion joints are indicated in substrates behind EIFS.
2. Where EIFS adjoin dissimilar substrates, materials, and construction.
3. Where wall height changes.

F. Base Coat: Apply to exposed surfaces of insulation in minimum thickness recommended in writing by EIFS manufacturer, but not less than 1/16-inch dry-coat thickness.

G. Reinforcing Mesh: Embed type indicated below in wet base coat to produce wrinkle-free installation with mesh continuous at corners and overlapped not less than 2-1/2 inches or otherwise treated at joints to comply with ASTM C 1397 and EIFS manufacturer's written requirements. Do not lap reinforcing mesh within 8 inches of corners. Completely embed mesh, applying additional base-coat material if necessary, so reinforcing-mesh color is not visible and mesh does not create a tactile texture in the base coat.
1. High-impact reinforcing mesh [**where indicated**] <**Insert location**>.

H. Additional Reinforcing Mesh: Apply strip-reinforcing mesh around openings extending 4 inches beyond perimeter. Apply additional 9-by-12-inch strip reinforcing mesh diagonally at corners of openings (re-entrant corners). Apply 8-inch-wide strip reinforcing mesh at both inside and outside corners unless base layer of mesh is lapped not less than 4 inches on each side of corners.

1. Embed strip-reinforcing mesh in base coat before applying first layer of reinforcing mesh.

I. Finish Coat: Apply over dry [**primer**] [**base coat**], maintaining a wet edge at all times for uniform appearance, in thickness required by EIFS manufacturer to produce a uniform finish of color and texture matching approved sample and free of cold joints, shadow lines, and texture variations.
   1. Embed aggregate in finish coat according to EIFS manufacturer's written instructions to produce a uniform applied-aggregate finish of color and texture matching approved sample.

J. Sealer Coat: Apply over dry finish coat, in number of coats and thickness required by EIFS manufacturer.

3.4 INSTALLATION OF JOINT SEALANTS

A. Prepare joints and apply sealants, of type and at locations indicated, to comply with applicable requirements in Division 7 Section "Joint Sealants" and in EIMA's "EIMA Guide for Use of Sealants with Exterior Insulation and Finish Systems, Class PB."
   1. Clean surfaces to receive sealants to comply with indicated requirements and EIFS manufacturer's written instructions.
   2. Apply primer recommended in writing by sealant manufacturer for surfaces to be sealed.
   3. Install sealant backing to control depth and configuration of sealant joint and to prevent sealant from adhering to back of joint.
   4. Apply masking tape to protect areas adjacent to sealant joints. Remove tape immediately after tooling joints, without disturbing joint seal.
   5. Apply joint sealants after base coat has cured but before applying finish coat.

3.5 CLEANING AND PROTECTION

A. Remove temporary covering and protection of other work. Promptly remove coating materials from window and doorframes and other surfaces outside areas indicated to receive EIFS coatings.

B. Provide final protection and maintain conditions, in a manner acceptable to Installer and EIFS manufacturer that ensure that EIFS are without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 07600

FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 DESCRIPTION

(1) Furnish all materials, labor, tools, and equipment necessary to perform the Work, as shown and specified.

(2) Work included but not limited to:

(a) New wall flashings at new EIFS soffits.
(b) New flashing at new shelf angle.

(3) All applicable provisions of Division 0 - Bidding Requirements and Division 1 - General Requirements apply to the work in this section.

1.02 REFERENCES

A. Reference Standards: Except as modified by the Drawings and Specifications, the following documents, or applicable portions thereof, govern the work.

1. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) "Architectural Sheet Metal Manual - Fourth Edition."

B. Contractor's Qualifications: Have successful installations of the specified materials in the local area for a minimum period of five years.

1.03 SUBMITTALS and MOCKUPS

A. Required prior to the commencement of installation of new standing seam sill:

1. Detailed shop drawings or full-sized mockups, 3 feet wide minimum, of new flashings.

B. Required prior to commencement of flashing work:

1. Full-sized mockup, 12 inch wide minimum of metal flashing.

1.04 QUALITY ASSURANCE

A. Qualifications of installers: Employ only experienced craftsmen skilled in the installation of specified products.

1.05 PROJECT CONDITIONS

A. Conduct all work under temperature and climatic conditions as recommended by standard practice.

1.06 WORK SEQUENCE

A. Do not install new sheet metal when precipitation is imminent.

B. Installation of new sheet metal shall be coordinated with all portions of the repair work.

1.07 GUARANTEE

A. Contractor's Guarantee:

1. By the sheet metal contractor.
2. Time Period: Two years after the date of completion and acceptance by the Owner.
3. Terms: All materials, labor, tools and equipment necessary for repair, restoration, or replacement of all new work damaged as a result of:

(i) Defects, imperfections, or faults in:

1. Materials
2. Workmanship.

(ii) Contractors correcting defects, imperfections, or faults in materials and/or workmanship.

(c) Corrections of defects, imperfections, and faults shall not relieve the Contractor from his responsibility for additional corrective work during the remaining time period.

1.08 STORAGE

A. Store all products in a manner to prevent damage, in a secure place, out of the way of construction operations. Provide protection until ready to use.

B. Handle all flashing with care as not to damage.

PART 2 - PRODUCTS

A. Sheet Metal Stock:

1. Stainless Steel Flashings: Type 304, 24 gage or as shown.

B. Miscellaneous Accessories:

1. Sealant: See Section 07920, Sealants and Caulking.
2. Self-Adhering Flashing Membrane and Accessories: Perm-A-Barrier Wall Flashing, Primer and Bituthene Elastomeric Mastic EM3000, as manufactured by W. R. Grace & Co., Cambridge, MA.
3. Wood Blocking (if required): Treated No. 2 "Wolmanized" dimensional lumber.

PART 3 - EXECUTION

A. PREPARATION OF SUBSTRATE

a. Examine the surface condition of the substrate under which sheet metal is to be installed.
b. Do not proceed with the new installation until unsatisfactory conditions have been corrected in a manner approved by the Architect/Engineer.
c. Clean the substrate of obstructions and substances detrimental to the work.
d. Proceeding with the work shall signify the Contractor's acceptance of the substrate being covered by the new sheet metal installation.

B. FABRICATION

a. Field document the required configuration and measurements of all new flashings prior to fabrication.
b. Shop fabricate new sheet metal shapes in 10 ft long sections, or as long as practical.
c. Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
d. Provide other materials not specifically described but required for a complete and proper installation as selected by the Contractor subject to the approval of the Architect/Engineer.

C. SHEET METAL INSTALLATION

a. Install new sheet metal fabrications and accessories as shown on the approved shop drawings.

b. Install new sheet metal fabrications true to lines and levels.

c. Lap seams in flashing shall be 6 in. minimum and shall, as a minimum, form watertight joint by sealing with butyl sealant in (5) parallel transverse lines of sealant extending from top of counter flashing to drip.

D. SELF-ADHERING FLASHING MEMBRANE

a. Install self-adhering flashing membrane and related accessories as shown and in accordance with manufacturer's recommendations.

E. CLEAN UP

a. Remove trash, debris, and equipment from the job site.

b. Repair damage and remove stains caused by the work.

END OF SECTION

SECTION 07900

JOINT SEALERS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide and install sealants at the exterior perimeters of selected replacement windows, doors, all joints between brick panels and select EIFS joints.

B. Install sealant between cast stone and architectural precast concrete units at locations shown on Drawings.

C. Related work specified elsewhere:

1. Section 08521 - Replacement Aluminum Windows
2. Section 04500 - Masonry Restoration
3. Section 07180- Exterior Insulation Finish System (EIFS)

1.02 QUALITY ASSURANCE

A. Contractor: Must have a minimum of five (5) years experience in construction and supervision of sealant work. Contractor shall be required to demonstrate this experience with names, dates, and locations of similar projects. The qualifying firm must designate a foreman for the duration of the work with commensurate experience who is approved by the Architect/Engineer.

B. Sealant installers: Must have a minimum of three (3) years experience in sealant work, and be approved by the Owner and the Architect/Engineer to perform the work under the contract documents.

C. Except as modified by the drawings and specifications, all sealant work shall be in accordance with ASTM standards and sealant manufacturer's recommendations and guidelines.

1.03 SUBMITTALS

A. Sealants:

1. Color samples of cured sealant for selection of color by the Owner and Architect/Engineer.
2. Sealant manufacturer's recommendations and specifications for each sealant.
3. Written statement from each sealant manufacturer stating that a representative has visited the site, reviewed all proposed sealant conditions, and that the manufacturer endorses the use of their sealant for the conditions and profiles required.

B. Backer Rods: One (1) foot section of each size of backer rod, with copy of manufacturer's printed information.

C. Quality Control Testing and Inspection Reports: Sealant compatibility and adhesion test report from Sealant Manufacturer indicating that installed joint sealants, including primers, which come in

contact with, or are in close proximity to, new or existing substrate materials have been tested for compatibility and adhesion with these materials. Both wet and dry adhesion tests shall be performed on each substrate.

D. Report from Sealant Manufacturer verifying that, based on testing, the proposed sealants will not stain any new or existing substrate materials which they may contact.

1.04 DELIVERY, STORAGE, AND HANDLING

A. All materials received at the site shall be unloaded with care and handled to avoid any damage or contamination of the materials.

B. All materials shall be stored, covered and protected from the weather in strict compliance with the manufacturer's recommendations. The location for storage shall be approved by the Owner.

PART 2 - PRODUCTS

2.01 SEALANT

A. Sealant for joints at perimeter of metal windows shall be silicone sealant. Sealant must be compatible with breathable elastomeric coating to be selected. For bid purposes assume acceptable sealant is:

1. "795" by Dow Corning
2. Or approved equal

Actual sealant used shall be coordinated with elastomeric coating.

B. The Owner and Architect/Engineer shall select the colors of the sealant to be used based upon sample test areas installed on the building by the Contractor.

C. Surface preparation and primer at sealant contact surfaces shall be as recommended by sealant manufacturers.

D. The Contractor shall consult with the sealant manufacturer. A sealant manufacturer representative shall visit the site to become familiar with the project. The sealant manufacturer representative shall also review all proposed sealant profiles and approve the use of their sealant for these applications. The sealant manufacturer shall perform necessary tests to verify compatibility of sealant with all materials that are in contact with sealant, brick, EIFS, and new window frames to determine which primers are needed on surfaces to receive sealant, and to determine if the existing sealant to be removed from the joints will adversely affect the new sealant in any way.

2.02 BACKER ROD

A. Closed cell polyethylene backer rod, compatible with sealant used and approved by the sealant manufacturer.

2.03 BOND BREAKER TAPE

A. Polyethylene bond breaker tape compatible with sealant used. Bond breaker tape shall be of width sufficient to prevent three-sided adhesion of sealant, as recommended by the sealant manufacturer for each joint condition.

2.04 MISCELLANEOUS MATERIALS

A. Joint Primer/Sealer/conditioner: Non-staining, non-corrosive type as recommenced by the sealant manufacturer for the particular joint surface materials and conditions.

PART 3 - EXECUTION

3.01 GENERAL

A. Protect work in progress from weather damage.

B. Prevent sealant and/or required primers from staining existing and new materials in and adjacent to area of work.

C. Do not perform any work when the ambient air temperature is less than or is expected to be less than 45° F.

3.02 SAMPLE OF WORK

A. Perform the preparation and joint sealant work specified below on representative sample areas of the building. One sample at least 3 feet in length shall be installed for each different joint condition and sealant material.

B. Sample areas shall be selected by Architect/Engineer.

C. Wet and dry adhesion tests shall be performed with and without primers on the aluminum and brick masonry surfaces. The manufacturer shall interpret results and make recommendations for primers and substrate preparation needed to obtain durable adhesion.

D. The samples will become the standard for the duration of the work upon approval by the Architect/Engineer for quality, material and workmanship.

E. No work shall be performed on the building until the above specified sample work is performed by the Contractor, and is accepted by the Owner and Architect/Engineer.

3.03 INSTALLATION OF SEALANTS

A. Completely remove all existing sealants from joints to receive new sealant.

B. Remove all dirt, grease, debris, and residues from existing sealants. The depth of existing sealants may vary from that shown on drawings.

C. Clean and prepare all sealant contact surfaces with sealant manufacturer's approved solvent and cleaner.

D. Apply sealant primer recommended by sealant manufacturer to sealant substrate surfaces.

E. Place bond breaker material in joint.

F. Mix two-part sealants in accordance with manufacturers recommendations

G. Place sealant in joints according to sealant manufacturer's recommendations.

H. Compress sealant in joints, and tool to a concave profile. Provide width to depth ratios in accordance with manufacturer's recommendations and with ASTM C962, "Standard Guide for Use of Elastomeric Joint Sealants."

I. Clean excess sealant from adjacent surfaces immediately after application using solvents or cleaners recommended by sealant manufacturer.

J. Cure sealants in accordance with manufacturer's instructions to attain maximum durability and adhesion to panels as soon as possible.

3.04 INSPECTION

A. Contractor shall permit Architect/Engineer to make random removals of completed sealant application for inspection purposes.

B. Contractor shall repair sealant inspection areas at no additional cost to Owner.

3.05 CLEAN-UP

A. Remove waste materials, debris and rubbish from site at the end of each working day.

B. Any existing sealant which is removed from joints shall be collected from building, sidewalks, and site and properly disposed of at the end of each working day.

C. Upon completion of work, remove all debris and construction material from site. Leave site in clean condition.

D. Completely remove excess sealant from all glass surfaces at completion of work.

END OF SECTION

SECTION 08521

REPLACEMENT ALUMINUM WINDOWS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes aluminum-framed glazed windows installed in existing window openings:
   1. Fixed windows.
   2. Horizontal-sliding windows.

B. Related Sections include the following:
   1. Section 05400 Cold-Formed Metal Framing
   2. Section 07210 - Building Insulation
   3. Section 07260 - Vapor Retarders and Air Barriers
   4. Section 07620 - Sheet Metal Flashing
   5. Section 07920 - Joint Sealants

1.2 PERFORMANCE REQUIREMENTS

A. General: Provide aluminum windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified and that are of test size indicated below:
   1. Minimum size required by gateway performance requirements for determining compliance with AAMA/NWWDA 101/I.S.2 for both gateway performance requirements and optional performance grades.

B. AAMA/NWWDA Performance Requirements: Provide aluminum windows of the performance class and grade indicated that comply with AAMA/NWWDA 101/I.S.2.
   1. Performance Class: AW.
   2. Performance Grade: 60.
   3. Exception to AAMA/NWWDA 101/I.S.2: In addition to requirements for performance class and performance grade, design glass framing system to limit lateral deflections of glass edges to less than 1/175 of glass-edge length or 3/4 inch, whichever is less, at design pressure based on testing performed according to AAMA/NWWDA 101/I.S.2, Uniform Load Deflection Test.

C. Condensation-Resistance Factor: Provide aluminum windows tested for thermal performance according to AAMA 1503, showing a CRF of 55.

D. Thermal Movements: Provide aluminum windows, including anchorage, that accommodate thermal movements of units resulting from the following maximum change (range) in ambient and surface temperatures without buckling, distortion, opening of joints, failure of joint sealants, damaging loads and stresses on glazing and connections, and other detrimental effects. Base engineering calculation on actual surface temperatures of materials due to solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F material surfaces.

E. Horizontal-Sliding Windows: Comply with AAMA/NWWDA 101/I.S.2 for the following tests:
   1. Operating Force.
   2. Deglazing: When tested according to ASTM E 987.

1.3 SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed within the last four years by a qualified testing agency, for each type, grade, and size of aluminum window. Test results based on use of down-sized test units will not be accepted.

B. Product Data: Include construction details, material descriptions, fabrication methods, dimensions of individual components and profiles, hardware, finishes, and operating instructions for each type of aluminum window indicated.

C. Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other Work, operational clearances, and the following:
   1. Mullion details, including reinforcement and stiffeners.
   2. Joinery details.
   3. Expansion provisions.
   4. Flashing and drainage details.
   5. Weather-stripping details.
   6. Thermal-break details.
   7. Glazing details.
   8. Window cleaning provisions.

D. Samples for Initial Selection: For units with factory-applied color finishes.

E. Samples for Verification: For aluminum window components required, prepared on Samples of size indicated below.
   1. Main Framing Member: 12-inch- long, full-size sections of extrusions with factory-applied color finish.
   2. Hardware: Full-size units with factory-applied finish.
   3. Weather Stripping: 12-inch- long sections.

F. Qualification Data: For Installer and testing agency.

G. Field Quality-Control Test Reports: From a qualified testing and inspecting agency engaged by Contractor.

H. Maintenance Data: For operable window sash operating hardware weather stripping window system operators and finishes to include in maintenance manuals.

I. Warranties: Submit sample warranties in accordance with Part 1, “Warranty” paragraph.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An installer with a minimum of 10 years experience in window installation, acceptable to aluminum window manufacturer for installation of units required for this Project. Provide installer’s AAMA certification if available.

B. Source Limitations: Obtain aluminum windows through one source from a single manufacturer.

C. Product Options: Information on Drawings and in Specifications establishes requirements for aluminum windows' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
   1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect/Engineer for review.

D. Fenestration Standard: Comply with AAMA/NWWDA 101/I.S.2, "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors," for minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
   1. Provide AAMA - certified aluminum windows with an attached label.

E. Glazing Publications: Comply with published recommendations of glass manufacturers and GANA's "Glazing Manual" unless more stringent requirements are indicated.

F. Mockups: Build mockups to verify selections made under sample Submittals; to demonstrate aesthetic effects and qualities of materials and execution; and to perform air and water testing to verify that window system meets those performance requirements.
   1. Build mockup in building envelope wall as indicated by Owner and Architect/Engineer.
   2. Testing Methodology: Testing of mockup shall be performed by a qualified independent testing and inspecting agency according to AAMA 502, Test Method B, by applying same test pressures required to determine compliance with AAMA/NWWDA 101/I.S.2 in Part 1 "Performance Requirements" Article.
   3. Test Reports: Shall be prepared according to AAMA 502.
   4. Repair mockup where test results indicate that it does not comply with specified requirements.
   5. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
   6. Approved mockups may become part of completed Work if installed with final Project requirements and approved by the Architect/Engineer.

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
   1. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
   2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   3. Review required testing and inspecting procedures.

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify aluminum window openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.6 WARRANTY

A. Special Warranty: Joint Installer/Manufacturer warranty for labor and material in which manufacturer and installer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:
   1. Failure to meet performance requirements.
   2. Structural failures including excessive deflection.
   3. Water leakage, air infiltration, or condensation.
   4. Faulty operation of movable sash and hardware.
   5. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

B. Warranty Period: Five years from date of Substantial Completion.

C. Warranty Period for Metal Finishes: 10 years from date of Substantial Completion.

D. Warranty Period for Insulating Glass Units: Manufacturer's written warranty agreeing to furnish replacement for defects identified within 10 years from date of Substantial Completion (excluding that due to glass breakage). Defects are defined to include intrusion of moisture or dirt, internal condensation at temperatures above -20^{o} F, deterioration of internal glass coating, and other visual evidence of seal failure or performance failure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Horizontal-Sliding Windows:
      a. Kawneer
      b. TRACO
      c. Approved Equal

2.2 MATERIALS, GENERAL

A. Aluminum Extrusions: Alloy and temper recommended by aluminum window manufacturer for strength, corrosion resistance, and application of required finish, but not less than 22,000-psi ultimate tensile strength, not less than 16,000-psi minimum yield strength, and not less than 0.062-inch thickness for main frame and sash members.

B. Fasteners: Nonmagnetic stainless steel Grade 304 or Grade 316, epoxy adhesive, or other materials warranted by manufacturer to be noncorrosive and compatible with aluminum window members, trim, hardware, anchors, and other components.
   1. Reinforcement: Where fasteners screw-anchor into aluminum less than 0.125 inch thick, reinforce interior with aluminum or nonmagnetic stainless steel to receive screw threads, or provide standard, noncorrosive, pressed-in, splined grommet nuts.
   2. Exposed Fasteners: Unless unavoidable for applying hardware, do not use exposed fasteners. For application of hardware, use fasteners that match finish of member or hardware being fastened, as appropriate.

C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel Grade 304 or Grade 316, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated. Cadmium-plated steel anchors, clips, and accessories are not permitted.

D. Reinforcing Members: Aluminum, nonmagnetic stainless steel grade 304 or Grade 316, nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated. Cadmium-plated steel reinforcing members are not permitted.

E. Sliding-Type Weather Stripping: Provide woven-pile weather stripping of wool, polypropylene, or nylon pile with resin-impregnated backing fabric and integral barrier fin or fins of semi-rigid, polypropylene sheet or polypropylene-coated material.. Comply with AAMA 701/702.

F. For sealants required within fabricated windows, provide window manufacturer's standard, permanently elastic, nonshrinking, and nonmigrating type recommended by sealant manufacturer for joint size and movement. Provide internal seals at intersections of metal framing to maintain water-tight construction.

2.3 GLASS AND GLAZING

A. Supply glass of type and quality specified herein and where indicated on Architectural drawings. Design glass in accordance with ASTM E1300 for selection of appropriate glass thickness and type of glass. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites.

B. Glass Sizes: Obtain sizes from shop drawings. Cut glass to fit opening with not less than minimum edge clearances and bite on glass as recommended by glass manufacturer. Provide glass with "clean-cut" edges.

C. Insulating-Glass Units, General: Factory-assembled units consisting of organically sealed lites of glass enclosing a hermetically sealed dehydrated air space, and complying with ASTM E 774 for Class CBA units and with requirements specified in this specification. Insulated glass shall be a high-quality dual-sealed unit with a silicone secondary seal which has been certified by an approved agency such as IGCC, with a CBA level or better. Compatibility of silicone glazing sealant with insulating glass secondary seal shall be verified.
   1. Comply with SIGMA, "Recommended Practices for Vertical Field Glazing of Organically Sealed Insulating Glass Units," unless more stringent requirements are specified elsewhere.
   2. Spacers shall be anodized aluminum and shall comply with SIGMA, "Voluntary Test Methods and Voluntary Performance Quality Assurance Criteria for Spacers for Sealed Insulating Glass Units."
      a. Desiccant: Molecular sieve or silica gel, or blend of both.
      b. Corner Construction: Manufacturer's standard corner construction.
   3. Test secondary seal compatibility with glazing compounds in accordance with SIGMA, "Test Method for Chemical Effects of Glazing Compounds on Elastomeric Edge Seals, SIGMA No. 73 8-2B."
   4. Dimensional Tolerance of Insulated Glass Units shall comply with SIGMA, "Voluntary Guidelines for Commercial Insulating Glass Dimensional Tolerances."

5. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and GANA "Glazing Manual".

D. Setting blocks, edge blocks and spacers shall be installed in accordance with glass manufacturer's and GANA "Glazing Manual".

E. Install wet-seal glazing as specified in GANA "Glazing Manual"

2.4 HARDWARE

A. General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with aluminum; designed to smoothly operate, tightly close, and securely lock aluminum windows and sized to accommodate sash or ventilator weight and dimensions. Cadmium-plated hardware is not permitted. Do not use aluminum in frictional contact with other metals. Where exposed, provide nonmagnetic stainless steel Grade 304 or Grade 316.

B. Sill Cap/Track: [Extruded-aluminum with natural anodized finish] [Rigid PVC or other weather-resistant plastic with manufacturer's standard integral color] track of thickness, dimensions, and profile indicated; designed to comply with performance requirements indicated and to drain to exterior.

C. Locks and Latches: Designed to allow unobstructed movement of sash across adjacent sash in direction indicated and operated from inside only.

D. Roller Assemblies: Low-friction design.

E. Horizontal-Sliding Windows: Provide the following operating hardware:
   1. Sash Rollers: Stainless-steel, lubricated ball-bearing rollers with nylon tires.
   2. Sash Lock: Spring-loaded plunger lock with keeper on meeting rail; two per sash.
   3. Removable Lift-Out Sash: Design windows and provide with tamperproof, key-operated hardware to permit removal of sash from inside for cleaning.

2.5 INSECT SCREENS

A. General: Design windows and hardware to accommodate screens in a tight-fitting, removable arrangement, with a minimum of exposed fasteners and latches. Locate screens on outside of window and provide for each operable exterior sash or ventilator.

B. Aluminum Insect Screen Frames: Manufacturer's standard aluminum alloy complying with SMA 1004. Fabricate frames with mitered or coped joints, concealed fasteners, and removable PVC spline/anchor concealing edge of frame.
   1. Extruded-Aluminum or Aluminum Tubular Framing Sections and Cross Braces: Not less than 0.050-inch wall thickness.
   2. Finish: Match aluminum window members.

C. Aluminum Wire Fabric: 18-by-16 mesh of 0.011-inch- diameter, coated aluminum wire.
   1. Wire-Fabric Finish: [Natural bright] [Charcoal gray] [Black].

2.6 FABRICATION

A. General: Fabricate aluminum windows, in sizes indicated, that comply with AAMA/NWWDA 101/I.S.2 for performance class and performance grade indicated. Include a complete system for assembling components and anchoring windows.

B. Fabricate aluminum windows that are reglazable without dismantling sash or ventilator framing.

C. Thermally Improved Construction: Fabricate aluminum windows with an integral, concealed, low-conductance thermal barrier; located between exterior materials and window members exposed on interior side; in a manner that eliminates direct metal-to-metal contact.
   1. Provide thermal-break construction that has been in use for not less than three years and has been tested to demonstrate resistance to thermal conductance and condensation and to show adequate strength and security of glass retention.
   2. Provide thermal barriers tested according to AAMA 505; determine allowable design shear flow per AAMA 505.

D. Weather Stripping: Provide full-perimeter weather stripping for each operable sash and ventilator.
   1. Horizontal-Sliding Windows: Provide operable sash with a double row of sliding weather stripping in horizontal rails and single- or double-row weather stripping in meeting or jamb stiles, as required to meet specified performance requirements. Provide compression-type weather stripping at perimeter of each movable panel where sliding-type weather stripping is not appropriate.

E. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.

F. Subframes: Provide subframes with anchor clips for window units as shown, of profile and dimensions indicated but not less than 0.062-inch- thick extruded aluminum. Miter or cope corners, and weld and dress smooth with concealed mechanical joint fasteners. Finish to match window units. Provide subframes capable of withstanding design loads of window units.

G. Factory-Glazed Fabrication: Glaze aluminum windows in factory where practical and possible for applications indicated. Comply with requirements in AAMA/NWWDA 101/I.S.2.

2.7 FINISHES

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

B. Finish designations prefixed by AA comply with system established by Aluminum Association for designating aluminum finishes.

C. High-Performance Organic Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
   1. Fluoropolymer Three-Coat System: Manufacturer's standard three-coat, thermocured system consisting of specially formulated inhibitive primer, fluoropolymer color coat, and clear fluoropolymer topcoat, with both color coat and clear topcoat containing not

less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.

a. Color and Gloss: As selected by Owner from manufacturer's full range.

PART 3 EXECUTION

3.1 SITE INSPECTION

A. Prior to commencing Work, examine surfaces to receive Work and verify dimensions. Commencing Work constitutes acceptance of Work surfaces and conditions.

B. Examine openings, substrates, structural support, anchorage, and conditions for compliance with requirements for installation tolerances; rough opening dimensions; levelness of sill plate; coordination with wall flashings, vapor retarders, and other built-in components; operational clearances and other conditions affecting performance of work.

1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
2. Metal Frame Walls: Well secured, dry, clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.

3.2 INSTALLATION

A. General: Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components; Drawings; and Shop Drawings.

B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement and anchor securely in place to structural support. Install windows in proper relation to wall flashing and other adjacent construction.

C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows harmlessly to exterior.

D. Metal Protection: Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified in "Dissimilar Materials" Paragraph in Appendix B in AAMA/NWWDA 101/I.S.2.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.

B. Testing Services: Testing and inspecting of installed windows shall take place as follows:

1. Testing Methodology: Testing of windows for air infiltration and water resistance shall be performed according to AAMA 502, Test Method B, by applying same test pressures required to determine compliance with AAMA/NWWDA 101/I.S.2 in Part 1 "Performance Requirements" Article.
2. Testing Extent: Up to 5 percent of windows as selected by Architect/Engineer and a qualified independent testing and inspecting agency. Windows shall be tested immediately after installation.
3. Test Reports: Shall be prepared according to AAMA 502.

C. Repair or replace windows where test results indicate that they do not comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.4 ADJUSTING

A. Adjust operating sashes and ventilators, screens, hardware, and accessories for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts.

3.5 PROTECTION AND CLEANING

A. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written recommendations.

B. Clean aluminum surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

C. Clean factory-glazed glass immediately after installing windows. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels and clean surfaces.

D. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION