PENNSYLVANIA CONVENTION CENTER

EXHIBIT HALL, EXTERIOR DOOR AND EXTERIOR FIRE STAIR DOOR REPLACEMENT

1101 ARCH STREET

PHILADELPHIA PENNSYLVANIA, 19107

100% SUBMISSION

DECEMBER 9, 2021

VITETTA

J+M ENGINEERING

DOCUMENT 00 0110 TABLE OF CONTENTS

PART 1 The specification sections noted below are included in this submission of the specification manual. The indicated authors (firms) are listed as follows:

PCC	Pennsylvania Convention Center
VTA	VITETTA, Architects and Engineers
JM	J+M Engineering
PA	State of Pennsylvania
AIA	American Institute of Architects

DOCUMENT 00 0115 LIST OF DRAWINGS

CS-101	Cover Sheet

Architectural

A-101	Street Level Door Replacement Plan
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Electrical

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End of Section

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work by Owner.
5. Work under separate contracts.
6. Access to site.
7. Coordination with occupants.
8. Work restrictions.
9. Specification and drawing conventions.
10. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: Pennsylvania Convention Center Trainshed Exterior Envelope Renovations, VITETTA Project Number 6309.0900.

1. Project Location: 1101 Arch Street, Philadelphia, PA 19107.

B. Owner: Pennsylvania Convention Center Authority.

1. Owner's Representative: Stephen Shepper, Director of Facilities, Pennsylvania Convention Center, 215-218-4742, sshepper@paconvention,com.

C. Architect: VITETTA, Architects and Engineers.

1. Architect’s Representative: Nan R Gutterman, FAIA, FAPT, Project Manager, 1510 Chester Pike, Suite 104, Eddystone, PA, 19022, 215-218-4883, gutterman@vitetta.com.

D. Engineer: J+ M Engineers

1. Engineer’s Representative: Chris Flouris, PE Partner, Project Engineer, 11 W. Thompson Street, Philadelphia, PA 19125, 215-454-2662, chris@jandmengineers.com.

E. PCCA Anti-Discrimination Policy:

1. Contractors are referred to the Authority's Anti-Discrimination Policy attached to the General Conditions. Bidders must comply with all requirements outlined in the Policy and submit evidence of their Best and Good Faith Efforts, which include their solicitation of and commitments with M/W/DSBEs, to the Authority due with the submission of their bid.

F. Field Supervision: General Contractor shall maintain an experienced full-time supervisor on the Site per Section 3.7 of the General Conditions.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Removal and replacement of select interior doors, frames and hardware at Exhibit Halls A, B, C and F .

2. Removal and replacement of select exterior door, frames and hardware with fiberglass doors and frames and new hardware at locations on 12th , 11th and Race Streets.

3. Removal and replacement of PCC fire stair doors that exit beneath the Reading Terminal Market. There are 3 sets of doors along Arch Street, 2 sets of doors on 12th Street and 4 sets of doors on Filbert Street. The work includes the repair of the existing wood or aluminum frames for the removal and replacement of the door hardware, surface prep, priming and repainting of all sides of the wood frames and adjacent windows in their entirety for one pair of doors on Arch Street and 4 pairs of doors along Filbert Street. The removal of the paint from the aluminum frames on 12th Street and the repair of the original finish. The Contractor shall test for lead paint at these openings and take all precautions as required by the law when completing wood repairs, surface prep, priming, painting as well as the removal and installation of the doors.

4. The Contractor is required and responsible for maintaining a secured opening when removing and replacing any/all of the exterior doors that are identified as part of this contract.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.5 PHASED CONSTRUCTION

A. The Work shall be conducted in phases in order to insure the continuous operations of the Convention Center. All doors into/from the Exhibit Hall, fire stairs and all exit doors from be in full operation whenever the PA Convention Center has schedule dan event in an area where the contractor is working. All doors in areas adjacent to the work area must be kept operable during construction.

1. Phasing of the Project: The Contractor shall anticipate the work being completed in a multi phases based on the availability of the building. The Contractor will need to work closely with the Convention Center to determine the phases and may need to work out of sequence based on a scheduled event. No work should start on any door unless the new door, frame and hardware are already on site and have been inspected for installation. The first phase shall commence within 30 days after the Notice to Proceed unless directed otherwise by the Owner.

2. The Contractor shall identify in their schedule and work plan how many doors will be worked on at a time and how the work coordinates with the Master Calendar of the Convention Center. As noted, no doors can be blocked at any time.

B. Before commencing Work of each phase, submit an updated copy of Contractor's construction schedule showing the sequence, commencement and completion dates for all phases of the Work.

1.6 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's schedule of events.

B. Use of Site: Limit use of Project site to areas within the Contract limits as indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to the areas provided by the Owner.

2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, Convention Center deliveries and all emergency vehicles at all times. Do not use these areas for parking or storage of materials except in locations indicated on the contract documents.

a. Schedule deliveries to minimize use of driveways and entrances by construction operations.

b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.7 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner will occupy the site during the entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with the day-to-day operations of the building. Maintain existing exits unless otherwise indicated or permitted. Owner will require access to all areas of the Project Site and the building during the entire Project duration.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction. All request and approvals must be in writing.

2. Notify Owner in writing not less than 72 hours in advance of activities that may affect Owner's operations.

1.8 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to normal business working hours defined as 7 a.m. to 5 p.m., Monday through Friday, unless otherwise indicated. The Contractor shall confirm and meet all requirements of the City of Philadelphia code.

1. Weekend Hours: Limit work to 8 am to 5 pm and as permitted by the City of Philadelphia. Weekend hours must be coordinated with the Pennsylvania Convention Center as these activities will take precedent over the contractor’s activities.

2. Early Morning Hours: Only with approval in writing by authorities having jurisdiction for restrictions on noisy work. The Contractor must comply with the City Noise Ordinance as specified in the Philadelphia Code Chapter 10-400.

3. If portions of the Work require construction activities to take place before or after Normal Working Hours, during weekends and/or on holidays. All costs to work before or after Normal Working Hours, including but not limited to, any differential labor rates are to be included in the Contractor's bid amount.

4. All loading and un-loading shall be coordinated by the Contractor with the Owner's schedule.

5. For any work to take place before or after Normal Working Hours, during weekends, or on national or City holidays, Contractors must have approval of the Authority having Jurisdiction and request in writing the Owner's approval a minimum of 72 hours in advance. This time limit shall not apply to unforeseeable instances when a particular operation must be performed in a continuous sequence that extends beyond the Normal Working Hours, but the Owner's Representative shall be notified immediately of such instances.

6. Contractors shall use overtime, premium time, and/or multiple-shift time as is necessary to meet the Project requirements. This includes any costs associated with requirements to meet the contract schedule; work in an Occupied Building; schedule work so as not to disrupt the tenants; and any other requirement set forth in the Contract Documents.

7. The need to perform work before or after Normal Working Hours, on weekends, and/or on holidays shall not be considered cause for an extension of Contract Time, or additional costs or a delay claim by a Contractor.

8. Failure by the Owner to approve a Contractor's request to perform Work before or after Normal Working Hours, on weekends, and/or on holidays shall not be considered cause for an extension of Contract Time or a delay claim by the Contractor.

9. Denial by the Owner of a Contractor's request to perform Work before or after Normal Working Hours, on weekends, and/or on holidays shall not be considered cause for an extension of Contract Time or a delay claim by the Contractor.

10. Hours for Utility Shutdowns: There should be no utility shutdowns required. If required, the Contractor shall coordinate with the Owner' schedule and shall include all costs in the Contractor's bid amount.

11. Comply with all regulations of governing authorities having jurisdiction relative to traffic, safety, erosion, noise, pollution control, and other matters of public concern and safety.

12. Limit use of the premises to the areas identified on the contract documents. Do not disturb or use portions of the site beyond the locations shown and scheduled except as required for approved means of egress.

13. Ensure that construction activities and operations do not unnecessarily impact upon or distract the building's occupants, visitors or the public. Control dust, noise and visual distraction.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner's representative and Architect in writing not less than two days in advance of proposed utility interruptions.

2. Obtain Owner's Representative written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner's Representative and Architect in writing not less than two days in advance of proposed disruptive operations.

2. Obtain Owner's Representative and Architect's written permission before proceeding with disruptive operations.

E. Nonsmoking Building: Smoking is not permitted on the scaffold or within 25 feet (8 m) of entrances, operable windows, or outdoor-air intakes. A designated smoking area will be identified by the Owner for the Contractor's use if requested in writing by the Contractor.

F. The use of radios playing music are not permitted. Walkie-talkie 2-way radios needed to coordinate the work are permitted.

G. Trash/Construction Debris

1. All materials that are disposed of shall be placed in a dumpster. Failure to place the materials in a dumpster in a timely manner or upon request of the Owner or the city will result in a back charge for the cost of moving the materials to the dumpster.

2. Placing construction debris in any of the Owner's dumpsters is not allowed.

3. There is limited space available for the contractor's dumpsters. General Contractor to submit proposed locations for review with the Owner and shall coordinate the locations with the Owner's operations. Placement/emptying dumpsters on the site shall not impact the Owner's operations.

H. Employee Identification: Owner will provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

I. Occupied Building: Contractors shall assume that the building is fully occupied during Normal Working Hours. Each Contractor shall take every reasonable precaution to minimize disruption to the building's occupants and visitors at all times during the Project. Additionally, the following specific restrictions shall be strictly adhered to:

1. Any work to be performed within the interior of the building -- and any work producing, welding flash, potentially hazardous fumes, fumes that irritate occupants or interfere with the occupancy or other materials that would penetrate into interior spaces -- shall be performed before or after Normal Working Hours, on weekends, and/or on holidays, unless the Contractor has requested in writing a specific exception (assuring the Owner that the work will not create any hazard for or disruption of the occupants) and received written approval of the exception from the Owner. Contractor shall not cause fumes, dirt, dust or noise to disrupt the occupants or operations of the building. If Owner, is disrupted for whatever reason, Contractor shall stop Work immediately clean-up, remove the source of the complaint and reschedule the Work so as to eliminate the disruption. All costs associated with this requirement are to be included in the Contractor's Bid.

2. The Contractor and his Sub-Contractors will be allowed by the Owner to use "designated" toilet facilities in the building. If the Contractor and his Sub-Contractors are found to be damaging the toilet facilities, this privilege will be taken away from the Contractor and other provisions will need to be made by the Contractor at no cost to the Owner.

3. All restrictions and constraints indicated in the Contract Documents shall be incorporated into the Construction Schedule to be prepared by the General Contractor. All associated costs shall be included in each Prime Contractor's bid.

1.9 PROTECTION OF FACILITIES AND MAINTENANCE OF BUILDING SERVICES

A. The General Contractor shall be responsible for providing the temporary protection measures required for the Project, to protect, throughout the duration of the entire Project, the building occupants, the public, and all elements, surfaces, and contents of the building and Project Site exposed to the construction activities and operations of the Contractors. The required temporary protection measures shall be coordinated with the Owner.

B. The Contractors shall be responsible for containment and proper disposal of paint scrapings and collection and disposal of all debris in accordance with the authorities having jurisdiction and the City of Philadelphia

C. Contractors shall restore all areas impacted by their construction activities and operations to the conditions prior to the impacts. This includes the complete repair of all damage to any element, surface, or contents of the building and Project Site exposed to the construction activities and operations of the Contractors, which repair shall be completed at no additional cost to the Owner and to the Owner's satisfaction.

1.10 SPECIFICATION ON SITE STORAGE

A. Contractor will not be permitted to use on-site storage or laydown areas other than the staging areas as designated by the Owner. The contractor shall adjust their schedule for delivering materials based on the available site storage and laydown areas.

B. The contractor is responsible for securing their materials.

C. Do not overload the building structure with stored materials.

1.11 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.

2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

1.12 THE OWNER AND THE DESIGN TEAM

A. The Owner and the Design Team shall have full and complete access to the Project Site during the entire Project. This includes access to observe all portions of the Work in progress at the locations where they are being performed.

B. The General Contractor shall provide any and all safety-related personal protection devices needed or requested by the Owner or the Design Team for their observation of any portion of the Work in progress.

C. The Owner and the Design Team shall have the required access to any specific location of Work at any time through the final acceptance of the specific Work.

1.13 ROLE OF THE DESIGN TEAM

A. The Design Team is defined as the Architect and/or Engineer.

B. The Design Team in conjunction with the Owner’s Representative will provide administration of the Contracts as described in the Contract Documents.

C. The Design Team will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of completed Work and to determine in general if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents.

D. Based on the Design Team’s observations, the Design Team will assist the Owner’s Representative in making recommendations to the Owner regarding payment of amounts due the Contractors on their Applications for Payment.

E. The Design Team will have authority to reject Work that does not conform to the Contract Documents.

F. The Design Team will review and take appropriate action upon the Contractors' submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

G. The Design Team in conjunction with the Owner's Representative will conduct inspections to determine the dates of Substantial Completion and the date of Final Completion.

H. The Design Team will interpret and, in conjunction with the Owner’s Representative, will decide matters concerning requirements of the Drawings and Specifications. Interpretations and decisions of the Design Team will be in writing and will be consistent with the intent of and reasonably inferable from the Drawings and Specifications. Subject to the final decisions of the Owner's Representative and the Owner, the Design Team’s decisions on matters relating to the interpretation of the Drawings and Specifications will be final.

1.14 ENVIRONMENTAL CONCERNS

A. All Contractors shall perform their work in a manner that shall minimize the possibility of air, water, ground or noise pollution. The existing sanitary drainage systems, rain water collection systems and site drainage systems at the Project Site shall not be used by the Contractors without the Contractors' having informed the Owner as to the content of waste-water run-off and without their having obtained the Owner's written consent. Consent may be withheld at the sole discretion of the Owner.

B. Contractors shall comply with all statutes and regulations of the Commonwealth of Pennsylvania concerning environmental quality control as administered by the Department of Environmental Protection. These include, but are not limited to, the Clean Streams Law, Clean Water Act, Pennsylvania Sewage Facilities Act, Air Pollution Control Act, Surface Mining Conservation and Reclamation Act, Bituminous Coal Open Pit Mining Conservation Act, Dams and Encroachments Act, Water Well Driller's Act, Water Works Act and Atomic Energy Act, all as amended to-date. Each Contractor shall be solely responsible for any violations and shall be responsible for securing all required permits, including an erosion control permit if required.

C. Contractor shall comply with all authorities having jurisdiction in regard to the collection and disposal of cleaning effluents. All cost related to collection and disposal shall be included in the bid for the project. Any fines or penalties related to the contractor’s failure to comply with City or State regulations will not be reimbursed by the Convention Center Authority.

D. Burning of materials shall not be permitted at the Project Site.

E. Storage, collection, transportation, processing and final disposal of solid waste shall be in accordance with the Solid Waste Management Act regulations and standards of DEP.

Immediately upon notice of award of contract, the Contractor shall apply for the necessary permit from DEP and conduct waste disposal on sites approved under this permit. A copy of this permit must be submitted to Owner before commencing waste disposal.

F. It is believed that the frames of the doors being replaced on Filbert and Arch Street are still coating with lead paint. The Contractor shall take all precautions and complete all remedial work required to safely complete the removal of the existing door and associated hardware and the installation of the new door and hardware. The Contractor will be required to prepare, prime and repaint these frames.

1.15 PERMITS, INSPECTIONS, LICENSES

A. The General Contractor shall pay for all building permits required for the entire Project and all additional inspections, permits, licenses and approvals required for the Project as a whole by authorities having jurisdiction over the Project.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

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

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.

2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

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

1. Substitution Request Form: Use CSI Form 13.1A.

2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.

b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.

c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

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

e. Samples, where applicable or requested.

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

g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.

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

i. Research reports evidencing compliance with building code in effect for Project.

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

k. Cost information, including a proposal of change, if any, in the Contract Sum.

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

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

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

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

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

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

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

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.

b. Substitution request is fully documented and properly submitted.

c. Requested substitution will not adversely affect Contractor's construction schedule.

d. Requested substitution has received necessary approvals of authorities having jurisdiction.

e. Requested substitution is compatible with other portions of the Work.

f. Requested substitution has been coordinated with other portions of the Work.

g. Requested substitution provides specified warranty.

h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions.".

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 20 calendar days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
c. Include costs of labor and supervision directly attributable to the change.
d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
e. Quotation Form: Use forms acceptable to Architect and Owner.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect and Owner.

1.5 ADMINISTRATIVE CHANGE ORDERS

A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

B. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.7 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect] may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

B. Related Requirements:

1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
2. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

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

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:

a. Application for Payment forms with continuation sheets.
b. Submittal schedule.
c. Items required to be indicated as separate activities in Contractor's construction schedule.

2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one-line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:

    a. Project name and location.
    b. Name of Architect.
    c. Architect's project number.
    d. Contractor's name and address.
    e. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.
3. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:

    a. Related Specification Section or Division.
    b. Description of the Work.
    c. Name of subcontractor.
    d. Name of manufacturer or fabricator.
    e. Name of supplier.
    f. Change Orders (numbers) that affect value.
    g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

        1) Labor.
        2) Materials.
        3) Equipment.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts. in excess of [five] <Insert number> percent of the Contract Sum.

    a. Include separate line items under Contractor and subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.

5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

6. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

    a. Differentiate between items stored on-site and items stored off-site. Provide evidence of insurance.

7. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

8. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

    a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.

9. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: Submit Application for Payment to Architect by the 25th day of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.

1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.

C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

    a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

F. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Products list (preliminary if not final).
5. Schedule of unit prices.
6. Submittal schedule (preliminary if not final).
7. List of Contractor's staff assignments.
8. List of Contractor's principal consultants.
9. Copies of building permits.
10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
11. Initial progress report.
12. Report of preconstruction conference.
13. Certificates of insurance and insurance policies.
14. Performance and payment bonds.
15. Data needed to acquire Owner's insurance.

I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.

4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. Requests for Information (RFIs).
4. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:
1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with 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 performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. 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.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

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

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

1.6 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.
5. Name of Architect.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.

f. Requests for interpretation of Architect's actions on submittals.
g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Use software log that is part of Project Web site. Include the following: [Software log with not less than the following:]

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.7 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 30 days after execution of the Agreement.

1. Conduct the conference to review responsibilities and personnel assignments.
2. Attendees: Authorized representatives of Owner. Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned

parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

3. 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. Lines of communications.
    f. Procedures for processing field decisions and Change Orders.
    g. Procedures for RFIs.
    h. Procedures for testing and inspecting.
    i. Procedures for processing Applications for Payment.
    j. Distribution of the Contract Documents.
    k. Submittal procedures.
    l. Preparation of record documents.
    m. Use of the premises and existing building.
    n. Work restrictions.
    o. Working hours.
    p. Owner's occupancy requirements.
    q. Responsibility for temporary facilities and controls.
    r. Construction waste management and recycling.
    s. Parking availability.
    t. Office, work, and storage areas.
    u. Equipment deliveries and priorities.
    v. First aid.
    w. Security.
    x. Progress cleaning.

4. Minutes: Contractor will record and distribute meeting minutes.

C. Progress Meetings: Conduct progress meetings at biweekly intervals.

1. Coordinate dates of meetings with preparation of payment requests.

2. Attendees: In addition to representatives of Owner and 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 meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

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

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

4. Minutes: Contractor will record and distribute the meeting minutes to each party present and to parties requiring information.

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's construction schedule.
3. Construction schedule updating reports.
4. Daily construction reports.
5. Material location reports.
6. Site condition reports.
7. Special reports.

B. Related Requirements:

1. Section 013300 "Submittal Procedures" for submitting schedules and reports.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

1.4 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file, where indicated.
2. PDF electronic file.

B. Startup construction schedule.

1. Approval of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Construction Schedule Updating Reports: Submit with Applications for Payment.

D. Daily Construction Reports: Submit at weekly intervals.

E. Site Condition Reports: Submit at time of discovery of differing conditions.

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

1.5 COORDINATION

A. Coordinate Contractor's construction schedule with the schedule of values,[list of subcontracts,] submittal schedule, progress reports, payment requests, and other required schedules and reports.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice of Award to date of final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each phase area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
3. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
4. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

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

1. Phasing: Arrange list of activities on schedule by phase.
2. Work Restrictions: Show the effect of the following items on the schedule:

a. Coordination with existing construction.
b. Limitations of continued occupancies.
c. Uninterruptible services.
d. Partial occupancy before Substantial Completion.
e. Use of premises restrictions.
f. Provisions for future construction.
g. Seasonal variations.
h. Environmental control.

3. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

    a. Subcontract awards.
    b. Submittals.
    c. Purchases.
    d. Mockups.
    e. Fabrication.
    f. Sample testing.
    g. Deliveries.
    h. Installation.
    i. Tests and inspections.
    j. Adjusting.

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

E. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

F. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for [commencement of the Work] [the Notice to Proceed] [the Notice of Award]. Base schedule on the startup construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.3 REPORTS

A. Daily Construction Reports: Prepare a daily construction report for each day that on-site work occurs, recording the following information concerning events at Project site as may be applicable:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Accidents.

8. Meetings and significant decisions.
9. Unusual events (see special reports).
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Construction Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.
19. Substantial Completions authorized.

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

2.4 SPECIAL REPORTS

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

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

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

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

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

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

B. Related Requirements:

1. Refer to other Division 01 sections and other Contract Documents for requirements for administrative submittals, which include, but are not limited to:

a. Permits.
b. Payment Applications.
c. Performance and Payment Bonds.
d. Insurance certificates.
e. Inspection and test reports.
f. Project Progress Schedule.
g. Schedule of Values.
h. Progress reports.
i. Listing of Subcontractors.

2. Submittal requirements for the following are specified in other sections of Division 01:

a. Maintenance agreements.
b. Workmanship bonds.
c. Survey data and reports.
d. Progress photographs.
e. Testing and certification reports.
f. Record drawings.
g. Field measurement data.
h. Maintenance manuals.

1.02 DESCRIPTION OF REQUIREMENTS

A. General: This Section specifies procedural requirements for non-administrative submittals including shop drawings, product data, samples and other miscellaneous Work-related submittals.

B. Classes of Submittals: Submittals are specified in 5 classes:

1. Product data includes standard printed information on manufactured products that has not been specially-prepared for this Project, including but not limited to:

   a. Manufacturer's product specifications and MSD sheets.
   b. Catalog cuts.

2. Compliance submittals include certifications or other evidence of compliance with specific requirements.

3. Color Selection submittals include printed color charts and, if specified, examples of finishes on actual substrates.

4. Shop drawings are technical drawings and data that have been specially prepared for this Project, including but not limited to:

   a. Removal plan and reinstallation drawings.

   b. Templates.

   c. Patterns/Profiles.

   d. Coordination drawings for use on-site.

   e. Schedules.

5. Samples are physical examples of Work, including but not limited to:

   a. Small cuts or containers of materials.

   b. Complete units of repetitively-used materials.

   c. Units of Work to be used for independent inspection and testing.

   d. Mock-ups are special forms of samples, which are too large or otherwise inconvenient for handling in the manner specified for sample submittals not requested.

C. Extent of Submittals: Submit only those submittals required by the Contract Documents. The Architect reserves the right to decline from reviewing other submittals.

1. Contractor may require additional documentation from Subcontractors or suppliers for its own use and at no additional cost to the Owner. Such documentation shall not be submitted for review without prior approval.

2. The Architect reserves the right to require additional samples and product data during the course of Work.

D. Use of Submittals: Request any clarifications and verifications of acceptability of substitutions or alternatives to requirements of Contract Documents by correspondence, accompanied by necessary supporting data and in accordance with requirements of the Contract Documents; do not make such requests by the submittal process specified in this Section.

E. Status of Submittals: Submittals, whether or not reviewed by Architect, are not Contract Documents and cannot in themselves change the requirements of the Contract Documents.

1.03 SCHEDULING

A. Submittals Schedule: Make all submittals in accordance with the finally reviewed Submittals Schedule.

B. Coordination:

1. Coordinate submittals with the performance of the Work. Coordinate each separate submittal with other submittals and related activities such as testing, purchasing, fabrication, and delivery.

2. Coordinate submittals of interrelated Work so that one submittal will not be delayed by need to review a related submittal. The Architect reserves the right to withhold action on any submittal until receipt of any related submittals.

C. Review Time: Allow sufficient time so that the Work will not be delayed as a result of the time required to properly process submittals, including time for resubmittal, if necessary. Advise on any submittal, if the Work would be expedited if processing time could be shortened.

1. Allow a minimum of ten (10) working days for the review of each submittal. Allow longer time periods when processing must be delayed for coordination with subsequent submittals, and when large quantities of closely-related documents are submitted at one time.

2. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

3. No extension of time will be authorized because of submittals which are not submitted in accordance with the Contract Documents or are not sufficiently complete for review.

1.04 QUANTITIES OF SUBMITTALS

A. Product Data and Compliance Submittals: Submit one (1) PDF copy including documents requiring color for legibility via email to VITETTA.

1.05 SUBMITTAL PROCEDURE SUMMARY

A. This Article briefly summarizes sequence of procedure. Each activity is specified in subsequent Articles of this Section.

B. Procedure:

1. Contractor: Prepare submittal.

2. Contractor: Transmit submittal to the Architect' and copy the Capitol Preservation Committee’s Project Manager.

a. For Samples: Send transmittal sheet (PDF) via email to the Architect, deliver physical sample to the Owner.

3. Architect will review submittal and will return to Contractor with findings of review in PDF format.

a. Architect will return submittal to Contractor with findings of review.

4. Contractor: Retain and distribute copies of submittals. Repeat procedure for submittals not finally reviewed.

5. All Contractors shall coordinate and process all their shop drawings, and in addition, the General Contractor shall review and coordinate shop drawings and other submitted data of all Contractors before submitting to the Architect. All shop and submittal data shall be processed through the Contractor for distribution to the Architect.

1.06 SUBMITTAL PREPARATION

A. General: Preparation includes all actions by the Contractor and its Subcontractors and suppliers preparatory to submittal for review, including:

1. Development or selection of submittal material.
2. Contractor review and verification.
3. Preparation of transmittals, and of other supporting documents if required.

B. Development of Submittal Material:

1. General:
   a. Document sizes and quantities are specified elsewhere in this Section.
   b. Relationship to Work: Clearly indicate, as part of each submittal, that part of Work to which it applies, by reference to Specifications section, and by contract drawing number, equipment item, space number, grid coordination, schedule code, or other reference as appropriate.
   c. Cross-reference between submittals by same preparer, to indicate related information.
   d. Include all information required by each section of the Specifications.
   e. Include all information necessary for coordination of adjacent and related work by other trades.
   f. On resubmittals, clearly identify revisions to previous submittals by highlight or other graphic indication.

2. Product Data:
   a. Clearly mark submittal to identify specific products or models being submitted. Identify all accessories and optional features included or required for complete unit.
   b. Show performance characteristics and capacities.
   c. Modify illustrations to delete information not applicable to the Work.
   d. Each data document constitutes a submittal.

3. Samples:

   a. Submit samples which demonstrate all characteristics specified for each required sample.
   b. Samples of products or materials which represent processes or components unique to this Work, such as custom color, alloy, dimension, aggregate mix or comparable feature, shall be accompanied by sufficient data to serve as a basis for revision and to assure that the sample can be replicated in the finished Work.
   c. Each sample, or group of samples indicating a range of color or finish, constitutes a submittal.

C. Contractor Review:

1. Prior to submittal, review all submittal documents, samples, and materials for compliance with the Contract Documents and for compatibility with other components of the Work.
2. On submittals prepared by Subcontractor or suppliers, Contractor, as part of its review, shall annotate submittals if necessary so that submittal as forwarded to the Architect represents Contractor's intent. Contractor shall initial such notations.
3. Forward for review only submittals which so comply and are so compatible.
4. To each submittal document or sample, affix Contractor's stamp, indicating Contractor's review and approval, with signature of Contractor's designated representative. For samples which cannot be so stamped, attach tags with signed stamps.

5. By approving and submitting documents and samples, Contractor represents that it has verified all field construction criteria, materials, catalog numbers and similar data, that it has determined and verified all required field measurements or will do so, and that it has checked and coordinated each document and sample with the requirements of the Work and of the Contract Documents.

D. Transmittals and Supporting Documents:

1. Architect's review sheet for submittal: The Architect will affix a review sheet to the PDF submittal copy to record the results and status of the review. A sample review sheet is included in this Section.
   a. Each review sheet copy will include the Transmittal Number, Submission Number, and Submittal Number, as hereinafter defined.

2. Prepare transmittal form for each submittal. Architect will furnish to Contractor a PDF transmittal form with fields to be filled in by the contractor. A sample transmittal form is included in this Section for reference. Note, on each transmittal form, the following information:
   a. Transmittal Number: A letter-number combination identifying trade group and sequence of submittal within each trade group, assigned by Contractor. Use following code letters for trade groups:

      A - ARCHITECTURAL

      Example: First Architectural submittal is **A-01**. This number does not change if material is resubmitted.
   b. Submission Number: Initial submission of each submittal is 1st submission. Only this number changes if item is resubmitted.
   c. Submittal Number: A combination of the Specification section number and consecutive numbering of submittals under that section. Each individual drawing or other item shall receive a separate number.

      Example: The Submittal Number for the first submittal under Section 00800 shall be 00800.01, the second shall be 00800.02. This number does not change if material is resubmitted.

   d. Project Number: Architect's project number, per Contract Documents and CPC project number.
   e. Contractor's name and address.
   f. Subcontractor's name (if applicable).
   g. Date forwarded: By Contractor.
   h. Project Title and Location.
   i. Title of Submittal: As assigned by preparer.
   j. Number of Items: Quantity submitted, of each type document or sample.

1.07 DELIVERY

A. Send submittals to the Architect's Office via email as PDF documents. The method of delivery for samples shall be at Contractor's option, but shall assure safe delivery *(without damage)* to The Owner in accordance with Submittals Schedule.

B. The Architect's Address is as follows:

VITETTA
105 Chesley Drive Suite 105
Media PA 19063

Attention: Nan Gutterman

C. The Architect's Email Address is as follows:
gutterman@vitetta.com

1.08 ARCHITECT'S REVIEW

A. Architect's review will be only for conformance with the design concept of the Project and with the information in the Contract Documents. Architect's review of a specific item will not imply review of an assembly of which the item is a component.
B. Architect's review will not relieve the Contractor of responsibility for fabrication or construction means, methods, techniques, sequences or procedures, or for safety precautions and procedures.
C. Architect's review will not relieve the Contractor of responsibility for any errors or omissions in submittals, or for compliance with the requirements of the Contract Documents.
D. Variations from the Contract Documents, proposed because of standard shop or manufacturing practices, if clearly identified on submittals, and if deemed by the Architect to be consistent with the intent of the Contract Documents, may be accepted by submittal review. Acceptance of such variations will not constitute a Change Order or be considered as the basis for a Change Order.
E. If, in the course of review, Architect determines that non-compliance with requirements of Contract Documents indicates inadequate review by Contractor, Architect will reject and return submittal without further review.
F. Architect will indicate the findings of its review on the Architect's review sheet and on the Submittals Transmittal, and if appropriate by notation on submittal, as follows:
    1. REVIEWED (**R**): Work may be fabricated and installed as described in submittal.
    2. REVIEWED WITH NOTATIONS (**R/N**): Work may be fabricated or procured as described in the submittal as modified by notations, but may not be delivered to site or installed. A resubmittal is required, verifying inclusion of notation information.
    3. REVISE AND RESUBMIT (**R/R**): Work may not be fabricated or procured. A resubmittal is required incorporating information found to be lacking or erroneous.
    4. REJECTED (**REJ**): Work may not be fabricated or procured. Submittal is considered inconsistent with requirements of Contract Documents. Resubmittal is required.
    5. NO ACTION TAKEN (**NAT**): Submittal has been processed for the project record only.
G. Submittal PDF in quantities and kind specified elsewhere in this Section will be returned to Contractor by means consistent with the Submittals Schedule.

1.09 RESUBMITTAL

A. For all submittals other than those indicated by Architect as "Reviewed" **(R),** resubmittal is required.
B. For all submittals indicated by Architect as "Reviewed with Notations" (R/N), resubmittal is not required, but may require subsequent written response by the contractor to confirm, certify or further describe noted inquiry items specific to the submittal.
C. Resubmittals shall carry the same Transmittal Number and Submittal Number as the initial submittal, and shall be processed in compliance with all requirements specified for submittals.
D. Resubmittals shall clearly indicate revisions based on notations to previous submittals, and any other revisions incorporated.
E. Submittals indicated as "Reviewed" shall be resubmitted if Contractor determines that revisions are required or final amended information is desired for the project record. All costs incurred due to additional reviews of submittals previously indicated as "Reviewed" shall be paid by the Contractor at the current billing rates of all parties incurring such costs.

1.10 DISTRIBUTION

A. Contractor shall prepare and distribute reproductions of returned shop drawings and other document submittals to its Subcontractors and suppliers as required and as it deems necessary.

B. If the Work is performed under multiple and separate prime contracts, Contractor making each submittal shall distribute, to each other Contractor, one (1) electronic (PDF) copy of each shop drawing and other document submittal, as follows:

1. When returned indicated as "Reviewed" or "Reviewed with Notations".
2. When such distribution will or may benefit the performance of the Work.
3. When requested by any other Contractor.

C. Contractor shall maintain, at the project site, not less than one (1) copy each of all submittals, including samples, with status of "Reviewed" or "Reviewed with Notations".

D. Contractor shall use "Reviewed" submittals as the basis for accepting and evaluating Work delivered to the job site, and shall not accept work which is not in accordance with "Reviewed" submittals.

1.11 FORMS

A. Examples of the Architect's Stamp and the Submittals Form are included in this Section, for information. Forms as furnished may differ in detail from these examples.

Transmittal Form:

B. Architect's Review Stamp:

Pennsylvania Convention Center Exhibit Hall Doors

Convention Center
Philadelphia, Pennsylvania
Project Number: 6309.20

Submittal Title:
Important Data

Review Notes:

Submittal No: 00000.00
Submission No.: 1 Transmittal No.: A-00

SUBMITTAL REVIEW STATUS
- [x] • REVIEWED
- [ ] • REVIEWED WITH NOTATIONS
- [ ] •• REVISE & RESUBMIT
- [ ] •• REJECTED
- [ ] NO ACTION TAKEN OR REQUIRED

• Fabrication may be undertaken. Action does not authorize changes to Contract Sum.
•• Fabrication may not be undertaken. Revise and resubmit submittal.

Reviewing is only for conformance with the design concept of the Project and compliance with the information given in the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the site, for information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction, and for coordination of the work of all trades.

Date: 00/00/0000
By:

VITETTA

Submission Number **1** Transmittal **A-00**

Page 1

PART 2. PRODUCTS – NOT USED

PART 3. EXECUTION – NOT USED

END OF SECTION

SECTION 01 4100 CODES, REGULATIONS AND STANDARDS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section describes each the Contractor's responsibilities regarding codes, regulations and standards included in the Contract Documents by reference.

1.3 APPLICABLE CODES AND REGULATIONS

A. The Work shall comply with all applicable codes, regulations and standards, including but not limited to all City of Philadelphia building codes, other codes and regulations.

B. It is not the intent of the Contract Documents to conflict with any Code or Regulation. Report any conflicts to the Architect for clarification.

1.4 REFERENCED STANDARDS

A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes or intended use.

B. The referenced standards shall have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

C. Should referenced standards conflict with the Contract Documents, request clarification from the Architect before proceeding, but generally the more stringent requirement shall apply.

D. In the absence of specific instructions in the specifications, materials, products, equipment, and their installation shall conform to the applicable codes, regulations and standards.

E. The contractual relationship of the parties to the Contract shall not be altered from what is indicated in the Contract Documents by mention or inference otherwise in any referenced document.

F. Dates of standards specifically referenced in the Specifications shall be as indicated in the Specifications or if not indicated shall be the latest date prior to the date of issue of the Contract Documents. In cases where standards specifically referenced in the Specifications have been subsequently modified or replaced by the applicable codes and their supplements and amendments adopted by the authorities having jurisdiction, request clarification from the Architect before proceeding,

G. Each entity engaged in construction of the Project shall be familiar with industry standards applicable to its construction activity. If unfamiliar, obtain copies and review with all workers.

Obtain copies of standards when required by individual specification sections. Maintain copies at job site until Substantial Completion.

1.5 ASSOCIATIONS, INSTITUTIONS AND SOCIETIES

A. Associations, Institutions, and Societies and their abbreviations if any, appearing in the Specifications or elsewhere in the Contract Documents, shall be as generally recognized in the industry. Refer to the “Encyclopedia of Associations” published by Gale Research Company for abbreviations, addresses and phone numbers.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 4500 CONTRACTOR’S QUALITY CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

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

B. Related Sections include the following:

1. Section 013300 Submittal Procedures for administrative requirement for submittal procedures.
2. Section 016100 Products and Materials for requirements for material and product quality.

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

E. 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.

F. Experienced: When used with an entity, "experienced" means – unless defined differently in other Sections of these Specifications for particular entities – having successfully completed a minimum of three (3) previous projects within the last five (5) years similar in size and scope to this Project, demonstrating familiarity with the special requirements indicated for this Project.

1.04 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.

1.05 SUBMITTALS

A. Qualification Data: For testing agencies 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. Test Reports: After each test/inspection, promptly submit two copies of the report as submittal to the Architect, Owner and appropriate Contractors.

C. Prepare and submit certified written test reports promptly 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. Type of Test/Inspection
10. Date of Test/Inspection
11. Test and inspection results and an interpretation of test results.

12. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

13. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.

14. Name and signature of laboratory inspector.

15. Recommendations on retesting and reinspecting.

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

1.06 TESTING AND INSPECTION AGENCIES

A. The Contractor shall employ an independent testing agency to perform specified testing as required by the Contract Documents.

B. Employment of agency in no way relieves the Contractor or any Sub-Contractor of the obligation to perform the work in accordance with the requirements of the contract documents.

1.07 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 products that are similar to those indicated for this Project in material, design, and extent.

F. Mockups: Before installing portions of the Work requiring mockups, complete mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Complete mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect no less than seven (7) 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. Allow no less than seven days for initial review and each re-review of each mockup.
6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Remove mockups when directed, unless otherwise indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

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

B. Repair and protection are the Contractor's responsibility, regardless of the Contractor's assignment to others of the performing of any of the required quality-control services.

3.02 CONTROL OF INSTALLATION

A. Monitor Quality Control over Suppliers, manufacturers, products, services, site conditions, and workmanship to produce work of specified quality,

B. Comply with manufacturer's instructions including each step in sequence.

C. Should manufacturers' instruction conflict with contract documents, request clarification from Architect before proceeding.

D. Comply with specified standards as a minimum quality for work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Confirm that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion and disfigurement.

H. Do not anchor any equipment, piping, etc. to historic fabric without prior written approval of the Architect.

3.03 TESTING AND INSPECTION

A. Testing Agencies Responsibilities

1 Provide qualifies personnel at Site, Cooperate with Architect, Owner, Engineers and Contractor in the performance of services.

2 Perform specified sampling and testing of products in accordance with specified standards.

3 Ascertain compliance of materials and mixes with requirements of contract documents.

4 Promptly notify Architect, Owner and appropriate Contractor or sub-contractor of observed irregularities or non-conformance of work or products.

5 Perform additional tests and inspections as required by the results of the tests or as requested by the Architect or Owner.

6 Submit copies of all reports of all tests/inspections as specified.

B. Limits on testing/inspection agency authority

1 Agency may not release, revoke, alter, or enlarge on requirements of contract documents.
2 Agency may not approve or accept any portion of the work.
3 Agency may not assume any duties of contractor.
4 Agency has no authority to stop the work.

C. Contractor responsibilities:

1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel, and provide access to the work and to manufacturers' facilities.
3. Provide incidental labor and facilities:
   a. To provide access to work to be tested/inspected.
   b. To obtain and handle samples at the site or at source of products to be tested/inspected.
   c. To facilitate tests/inspections.
   d. To provide storage and curing of test samples.
4. Notify Architect, Owner and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by contractor beyond specified requirements but the Township must be informed immediately of any additional work being required before it is undertaken. .
6. If results do not meet the requirements on the contract, aarrange and pay for additional samples, tests, and inspections as required beyond specified requirements.

D. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by the Architect and the Owner.

E. Re-testing required because of non-conformance to specified requirements shall be paid for by contractor at no additional cost to the Owner.

END OF SECTION

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

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

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

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

1.4 INFORMATIONAL SUBMITTALS

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

B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

C. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.

1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.

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

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

1. Locations of dust-control partitions at each phase of work.
2. Waste handling procedures.
3. Other dust-control measures.

1.5 QUALITY ASSURANCE

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

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

1.6 PROJECT CONDITIONS

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

PART 2 - PRODUCTS

2.1 EQUIPMENT

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

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

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

1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."

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

3.2 TEMPORARY UTILITY INSTALLATION

A. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

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

1. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
2. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

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

D. Lighting: Provide temporary lighting with local switching that provides adequate illumination for door modification operations, observations, inspections, and traffic conditions.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

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

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Parking: No on-site parking will be provided.

D. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities if caused by the contractor before substantial completion is scheduled.

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

1. Comply with work restrictions specified in Section 011000 "Summary."

C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

D. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

B. Related Requirements:

1. Section 012300 "Alternates" for products selected under an alternate.

2. Section 012500 "Substitution Procedures" for requests for substitutions.

1.3 DEFINITIONS

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

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.

2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.

3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

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

1.4 ACTION SUBMITTALS

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

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

2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

    a. Form of Approval: As specified in Section 013300 "Submittal Procedures."

    b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

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

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.

2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.

2. Store materials in a manner that will not endanger Project structure or impede access or exit pathways.

3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

4. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

5. Protect stored products from damage and liquids from freezing.

6. Delete subparagraph below if Owner provides own storage facilities.

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

1.7 PRODUCT WARRANTIES

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

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

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

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.

2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.

3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

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

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

4. Where products are accompanied by the term "as selected," Architect will make selection.

5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

2.2 COMPARABLE PRODUCTS

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

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.

2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

3. Evidence that proposed product provides specified warranty.

4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.

5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 01 7329 CUTTING AND PATCHING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Procedural requirements for cutting and patching.

1.03 DEFINITIONS

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

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

C. In-place Construction: New construction of these Contracts requiring alteration during execution of the work.

1.04 ACTION SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.

2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.

3. Products: List products to be used and firms or entities that will perform the Work.

4. Dates: Indicate when cutting and patching will be performed.

5. Design Professional's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.05 QUALITY ASSURANCE

A. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that result in increased maintenance or decreased operational life or safety.

B. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity that results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety. Miscellaneous elements include the following:

1. Equipment supports.

2. Piping and equipment.

C. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the interior or in occupied spaces in a manner that would, in Design Professional's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

D. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections.

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

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.

2. Report to unsatisfactory conditions to Architect. Do not proceed until directed.

3.02 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

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

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.03 PERFORMANCE

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

B. Do not cut or alter the work without written consent of the Owner and the Architect.

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

D. Remove excess materials resulting from cutting and patching and dispose of legally off site.

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

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Proceed with patching after construction operations requiring cutting are complete.

F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Match joint type and coursing of existing masonry. Provide materials and comply with installation requirements specified in other Sections.

1. Patch surfaces which will be exposed to weather in the finished work to be airtight and weather tight.

2. Patch surfaces to comply with fire ratings, smoke tight ratings, acoustical criteria and other performance criteria indicated.

3. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

4. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing as acceptable to the Owner and the Design Professional.

a. Clean conduit and similar features before applying paint or other finishing materials.

b. Restore damaged pipe covering to its original condition.

c. If surface to be cut and patched is indicated or specified to be covered by painting or other finish system, and if cutting and patching is performed prior to installation of finish, then finishing of cut and patched area shall be included as work of finishing Section and shall not be part of cutting and patching work.

G. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01 7329

SECTION 01 7400 - CLEANING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

A. This Section describes the Contractor’s responsibilities for cleaning of the Work and work areas during construction and before completion.

PART 2 PRODUCTS

2.1 MATERIALS

A. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned.

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

PART 3 EXECUTION

3.1 PERIODIC CLEANING

A. Employ experienced workers for cleaning.

B. Maintain work areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

C. Collect and remove waste materials, debris, and rubbish from site daily and dispose of legally off-site.

G. Maintain cleaning until Project or portion thereof is reviewed for substantial Completion and Certificate of Substantial Completion is issued. If minor work is required after Substantial Completion, clean affected areas to the satisfaction of the Architect and Owner.

3.2 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations. Employ experienced workers or professional cleaners. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for Final Completion for a portion of Project:

a. Clean Project in areas disturbed by construction activities, of rubbish, waste material, litter, and other foreign substances.

b. Remove tools, construction equipment, machinery, and surplus material from Project site.

c. Clean exposed exterior surfaces of the building affected by the construction operations to a dirt-free condition, free of dirt, stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces.

d. Repair and restore marred exposed finishes.

B. Comply with safety standards for cleaning. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

B. Related Requirements:

1. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected *(Contractor's punch list),* indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.

3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

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

2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."

2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

4. Submit pest-control final inspection report.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

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

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

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

1. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

2. Include the following information at the top of each page:

a. Project name.

b. Date.

c. Name of Architect.

d. Name of Contractor.

e. Page number.

3. Submit list of incomplete items in the following format:

a. MS Excel electronic file. Architect will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. On advice of Owner's legal counsel, revise "Partial Occupancy" Paragraph below to suit Project. Sometimes, extended warranties may be necessary.

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

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

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

PART 2 - PRODUCTS

2.1 MATERIALS

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

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

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

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

C. Construction Waste Disposal: Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

END OF SECTION 017700

SECTION 01 7820 WARRANTIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

A. This Section describes the Contractor's procedural requirements for executing, assembling, and submitting warranties.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. All materials and workmanship shall be completely warranted from all defects for a minimum period of two years or as identified in the individual specification sections for a longer warranty period. The start of all warranties is the date of Approval by the Owner of the final Payment Application. This warranty period does not preclude any specific requirements for warranties, special warranties or service/maintenance contracts as identified in the individual specification sections.

1.4 SUBMITTAL REQUIREMENTS

A. Submit two (2) sets of original signed copies of warranties and bonds, executed by the respective manufacturers, suppliers, and contractors.

B. Contents - Neatly type, in orderly sequence, the following information for each item.

1. Product or work item.
2. Contractor's, supplier's, and manufacturer's names, addresses, and telephone numbers.
3. Date of beginning and duration time of warranty, bond, or service and maintenance contract.
4. Proper procedure for making claims against warranty or bond.
5. Instances which might affect the coverage of the warranty or bond.

C. Bind each set in 8 1/2 inch by 11-inch commercial quality, three-ring binders with plastic covers. Identify each binder with typed or printed title "Warranties," with title of project and location.

1.5 TIME OF SUBMITTALS

A. Make other submittals within ten (10) days after Date of Substantial Completion, prior to final request for payment.

B. For items of work, where acceptance is delayed materially beyond the Date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing the date of acceptance as the start of the warranty period.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 079200 JOINT SEALANT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Nonstaining silicone joint sealants.
   2. Latex joint sealants.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data:

   1. Joint-sealants.
   2. Joint sealant backing materials.

B. Samples for Initial Selection: Manufacturer's standard color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

   1. Joint-sealant application, joint location, and designation.
   2. Joint-sealant manufacturer and product name.
   3. Joint-sealant formulation.
   4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

A. Field Quality-Control Submittals:

   1. Field-Adhesion-Test Reports: For each sealant application tested.

B. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Warranty Documentation:

1. Manufacturers' special warranties.
2. Installer's special warranties.

1.6 QUALITY ASSURANCE

A. Qualifications:

1. Installers: Authorized representative who is trained and approved by manufacturer.
2. Testing Agency: Qualified in accordance with ASTM C1021 to conduct the testing indicated.

1.7 MOCKUPS

A. Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.8 PRECONSTRUCTION TESTING

A. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Conduct field tests for each kind of sealant and joint substrate.
3. Notify Architect seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.

    a. Test Method: Test joint sealants in accordance with Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.

        1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.9 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.10 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

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

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain joint sealants from single manufacturer for each sealant type.

2.2 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 NONSTAINING SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested in accordance with ASTM C1248.

B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.

1. Pecora Corporation
2. Sika Corporation
3. Dow Chemical Corporation
4. Tremco Incorporated

2.4 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

1. Pecora Corporation
2. Sherwin Williams Company
3. Tremco Incorporated

2.5 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

1. Construction Foam Products
2. Master Builders Solutions

B. Cylindrical Sealant Backings: ASTM C1330, Type C closed-cell material with a surface skin, Type O (open-cell material, or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.6 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

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

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Masonry.
    b. Gypsum wallboard

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. If recommended by manufacturer, install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile in accordance with Figure 8A in ASTM C1193 unless otherwise indicated.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

A. Exterior joints in vertical surfaces and horizontal nontraffic surfaces[JS-#1 - Exterior]:

1. Joint Locations:
    a. Perimeter Joints between new fiberglass door/window frames and masonry.

2. Joint Sealant: Silicone, nonstaining, Type S, Use NT, Class 50.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement[JS-#2 - Masonry]:

1. Joint Locations:
    a. Perimeter joints between interior wall surfaces and frames of interior doors.

2. Joint Sealant: Latex joint sealant.
3. Joint-Sealant Color: Paintable and as selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 SUMMARY

A. Section includes:

1. Interior standard steel doors and frames.
2. Interior custom hollow-metal doors and frames.

B. Related Requirements:

1. Section 087111 "Door Hardware" for door hardware for hollow-metal doors.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings in accordance with NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
7. Details of anchorages, joints, field splices, and connections.
8. Details of accessories.
9. Details of moldings, removable stops, and glazing.

C. Samples for Initial Selection: For hollow-metal doors and frames with factory-applied color finishes.

D. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.

B. Product Test Reports: For each type of fire-rated hollow-metal door and frame assembly for tests performed by a qualified testing agency indicating compliance with performance requirements.

1.8 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable manufacturers are as follows:

1. Ceco Doors, ASAA ABLOY

2. Curries Company: ASSA ABLOY

3. North American Door Company

4. Pioneer Industries

5. Republic Door and Frames

6. Steelcraft; an Allegion brand

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated on Drawings, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.

1. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing in accordance with UL 1784 and installed in compliance with NFPA 105.

B. Fire-Rated, Borrowed-Lite Assemblies: Assemblies complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing in accordance with NFPA 257 or UL 9.

2.3 INTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.4, Level A at all interior doors.

1. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches (44.5 mm).
c. Face: Uncoated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
d. Edge Construction: Model 2, Seamless.
e. Edge Bevel: Provide manufacturer's standard beveled or square edges].

f. Fire-Rated Core: Manufacturer's standard vertical steel stiffener laminated mineral board core for fire-rated doors.

2. Frames:

a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
b. Construction: Knocked down.

3. Exposed Finish: Prime.

2.4 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches (610 mm) of frame height above 7 feet (2.1 m).
3. Postinstalled Expansion Anchor: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.

2.5 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Inserts, Bolts, and Fasteners: Hot-dip galvanized in accordance with ASTM A153/A153M.

2.6 FABRICATION

A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch (19 mm) beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

B. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by rigid mechanical anchors].

2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping in accordance with ANSI/SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

2.7 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
b. Install frames with removable stops located on secure side of opening.

2. Fire-Rated Openings: Install frames in accordance with NFPA 80.
3. Floor Anchors: Secure with post-installed expansion anchors.

4. Solidly pack mineral-fiber insulation inside frames.
5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
1. Fire-Rated Doors: Install doors with clearances in accordance with NFPA 80.

3.3 FIELD QUALITY CONTROL

A. Inspections:

1. Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, Section 5.2.
2. Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements in accordance with NFPA 101, Section 7.2.1.15.

B. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

C. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

D. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80 and NFPA 101.

3.4 REPAIR

A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

B. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

SECTION 08 1115 STEEL DOORS

1.1 RELATED DOCUMENTS:

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

1.2 SUMMARY

A. Section includes:

1. Custom steel doors to be installed into existing frames, weatherstripped double, swing-out configurations.

2. Factory applied Hope's Power of 5 Finishing System.

B. Related work specified elsewhere:

1. Joint Sealants Section 07 9200

2. Door Hardware Section 08 7113

3. Glass, glazing and glazing materials, Section 08 8000.

1.3 QUALITY ASSURANCE

A. Manufacturer shall have not less than 10 years of experience in the fabrication of custom formed steel doors.

B. Installation of doors shall be done by experienced door installers.

C. Allowable tolerances: Size dimensions + 1/16 inch.

D. Quality of Power of 5 finishing process shall meet or exceed the following designations:

1. Quality of Power of 5:

a. Paint Blistering: ASTM D714.

b. Humidity: ASTM D4585.

c. Salt Spray (Fog): ASTM B117.

d. Painted Products in Corrosive Environments: ASTM D1654.

e. Cyclic Fog/Dry (Prohesion): ASTM G85.

f. Slat Fog/UV Painted Metal: ASTM D5894.

g. Pull off Strength of Coating: ASTM D4541.

1.4 SUBMITTALS

A. Samples :

1. Typical 6" door profile with glazing beads.

2. Sample of specified muntin, showing welded intersections and glazing beads.

3. Color sample of finish.

B. Shop drawings and manufacturer's literature:

1. Submit for approval shop drawings showing door and installation details, including anchorage, fastening and recommended sealing methods.

2. Dimensioned elevations showing door opening and door sizes.

3. The manufacturer shall not commence any work until shop drawings have been approved.

4. Color charts for finishes.

1.4 PRODUCT, STORAGE AND HANDLING

A. The Contractor shall be responsible for the protection and storage of the doors after delivery to the site.

B. Store in designated areas in an upright position on wood slats or on a dry floor in a manner that will prevent damage. Ventilate canvas or plastic coverings to prevent humidity buildup.

1.5 WARRANTY

A. Provide 10 year Limited Warranty.

PART 2 - PRODUCT AND FABRICATION

2.1 Manufacturers:

A. Furnish all labor and materials to complete the fabrication of doors as shown on architect's drawings and as specified herein. All doors covered by this specification shall be domestically manufactured in the U.S.A.

B. Manufacturers: Subject to compliance with requirements covered in this specification, the basis of design doors is manufactured by Hope's Windows, Inc. – Jamestown, NY (phone: 716-665-5124, e-mail: sales@hopeswindows.com) whose name and products. This product shall be used as the design standard of workmanship if the contractor elects to provide doors fabricated by another manufacturer. The specified door shall be based on the 5000 series.

C. Substitutions: Written approval necessary 10 days prior to bid through submission of the following:

1. Full-size window/door samples matching required scope.

2. Applicable test reports as outlined in Quality Assurance Section 1.2

3. List of (5) recently completed projects of similar size and scope.

4. List of 5 project where the doors have been installed for a minimum of five years. Provide current photographs of the installed doors. Provide name and phone number of the door owner or a representative for contact by the design team.

2.2 MATERIALS

A. Door shall be manufactured from 12 gauge galvanized steel.

B. Muntins *:*

1. *True Divided Lite muntins*:

a. Muntins shall be manufactured from solid hot-rolled steel, size to be determined by design.

b. Glazing rebate surfaces must be perpendicular to the stem of this profile. Rebate surfaces that are tapered will not be acceptable.

c. 1-3/4" tee shall weigh 1.62 pounds per lineal foot, the 1-3/8" tee shall weigh 1.44 pounds per lineal foot and the 7/8" tee shall weigh 1.19 pounds per lineal foot (specify).

d. All steel muntin profiles must be a minimum of 1-3/4″ in depth.

C. Glazing beads shall be extruded aluminum Alloy 6063-T5 with a minimum thickness of .062 inches.

D. Hardware reinforcements shall be 7, 10 or 12 gauge steel to suit specified hardware.

E. All screws that are furnished by Hope's, for hardware, trim, covers, anchoring, weather bars, water dams, screens, etc. shall be non-ferrous brass or stainless steel. Glazing bead screws are plated steel.

F. Power of 5 Finishing:

1. Cleaning.
2. Pretreatment.
3. Epoxy E-Coat primer.
4. Epoxy powder primer.
5. Ultrathane polyurethane top coat.

2.3 FABRICATION

A. Each pair of doors shall be fabricated to match the existing doors with stiles and rails, inset both flat and raised panels and glass lites. The profile for all the glazing stops and all the panels shall match the existing doors.

B. Fabricate steel doors in accordance with approved shop drawings.

C. Perimeter frame corners shall be coped and fully welded for maximum strength and weather tightness with face welds dressed smooth.

D. Head and jamb door stops shall be an integral portion of the frame with a 5/8" high rebate.

E. Door leaves shall have inside and outside skins laser cut from single sheet and joined at the door style.

F. Doors and door frames shall be mortised, reinforced, drilled and tapped to receive specified hardware.

G. Muntins *(select from 1 and 2)*:

1. True Divided Lite muntins shall be coped and welded to the perimeter frame. Muntin intersections shall be slotted, cross notched and welded. All interior and exterior muntin joints shall be face welded and ground smooth.

H. Glazing

1. All doors shall be designed for inside glazing.
2. Provide replaceable continuous snap-in glazing beads to suit the glass as specified.
3. Glazing beads shall be cut and shop fitted to each glass lite prior to shipment.
4. Manufacturer to provide correct glazing wedge and tape in accordance with the tested assembly.

I. Anchoring shall be located at each hinge for maximum support.

2.4 FACTORY FINISHING

A. Cleaning

1. All hot-rolled steel profiles must be acid pickled as defined by SSPC – SP8 to ensure a pristine, white metal substrate prior to fabrication.

B. Pretreatment

1. Following welding and all machining operations, hot-rolled products and accessories are subjected to the following pretreatments geared specific to projects proximity to corrosive environment. Cold-rolled, formed sheet steel components are manufactured from A60 galvannealed sheet and subjected to applicable processes outlined below.
2. 12-stage process
    a. Alkaline cleaning spray
    b. Alkaline cleaning – submersion
    c. Water immersion rinse combo
    d. Water immersion rinse clean
    e. Acid immersion
    f. Neutralizing rinse
    g. Water immersion rinse clean
    h. Conditioner immersion
    i. Zinc phosphate immersion
    j. Rinse immersion
    k. Sealer immersion
    l. Water reverse osmosis rinse immersion
3. Power of 5 Overview (non-coastal):
    a. Combined overall dry film thickness (DFT) shall be a minimum of 4.6 mils.
    b. Overall process shall provide full documented compliance with the following criteria:
        i. Acid Pickling: SSPC-SP8.
        ii. Paint Blistering: ASTM D714.
        iii. Humidity: ASTM D4585.
        iv. Painted Products in Corrosive Environment: ASTM D1654.
        v. Salt Spray (Fog): ASTM B117.
        vi. Cyclic Fog/Dry (Prohesion): ASTM G85.
        vii. Salt Fog/UV Painted Metal: ASTM D5894.
        viii. Pull Off Strength of Coating: ASTM D4541.

2.5 OPERABLE HARDWARE

A. In coordination with the specifications section 087111, the following hardware is highly recommended by Hope to be used on their doors

B. Hinges:

1. Hager:
    a. #BB168 (5 knuckle ball bearing hinge)
    b. #BB1199 (5 knuckle ball bearing hinge)

C. Locksets:

1. Schlage:

a. #L9453 mortise lock (with #12 lever handles, thumb turn, and key cylinder, typical)

b. Series L EL/EU (electrified mortise lockset)

c. To be coordinated with the Convention Center's master keying system.

D. Exit devices:

1. Von Duprin

a. #98/99 heavy duty push pads

E. Push/pull hardware

1. Rockwood (thru bolt, back to back, surface concealed)

F. Closers:

1. LCN

a. #9553 (Overhead surface mounted closer)

G. Thresholds:

H. Existing threshold to remain. If it cannot remain, Contractor to provide and install new threshold to match existing.

I. Weatherstripping

1. See Hardware Specifications, Section 087111.

PART 3 - EXECUTION

3.1 INSPECTION

A. The Door openings shall conform to details, dimensions and tolerances shown on the door manufacturers approved shop drawings.

B. Conditions which may adversely affect the door installation must be corrected before installation commences.

C. The wash down of the adjacent masonry or surrounding substrate must be completed before erection commences to prevent damage to the finish by the cleaning materials.

3.2 INSTALLATION

A. Remove the existing doors only when the new doors have arrived on site or if the Contractor plans to install temporary doors. No opening shall be left unsecured during anytime of the project..

B. Repair the hollow metal or wood frames to be inconspicuous after the existing doors and hardware have been removed if the existing locations will not work with the installation of the new door hardware.

C. Prepare the existing frames to receive the new door hardware. Doors specified under this section shall be installed by experienced personnel.

D. Install doors in openings in strict accordance with approved shop drawings.

1. Set units plumb, level and true to line, without warp or rack of frames.

2. Anchor units securely to surrounding construction with approved fasteners.

3. The exterior joints between the doors, trim and mullions shall be properly sealed water-tight with an approved sealant and neatly pointed.

E. Attach door hardware, as required, and adjust doors to operate smoothly free from twist and to be weather-tight when closed.

F. Repair any abraded areas of the factory finish.

3.3 CLEANING

A. Door installer shall leave door surfaces clean after installation and ready to receive glass and glazing. The General Contractor will be responsible for final cleaning.

END OF SECTION

SECTION 08 17 43 COMPOSITE FIBERGLASS DOOR

1.1 RELATED DOCUMENTS:

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

1.2 SUMMARY

A. Section includes:

1. AF-200 Smooth Composite Fiberglass Door with Expanded Polystyrene Core installed in AF-250 Pultruded Fiberglass Framing for new exterior door sand frames.

B. Related Requirements:

1. Section 08 1113 “hollow Metal Doors and Frames for interior hollow metal door sand frames.
2. Section 087111 "Door Hardware" for door hardware.
3. Section 080680 “Glazing schedule” for glazing of vision lites.

1.3 REFERENCES

A. ASTM-D256 – Standard Test Methods for Determining the Pendulum Impact Resistance of Plastics.
B. ASTM-D570 – Standard Test Method for Water Absorption of Plastics.
C. ASTM-D638 – Standard Test Method for Tensile Properties of Plastics.
D. ASTM-D695 – Standard Test Method for Compression Properties of Rigid Plastics.
E. ASTM-D696 – Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 °C and 30 °C with a Vitreous Silica Dilatometer.
F. ASTM-D790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
G. ASTM-D792 – Standard Test Method for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
H. ASTM-D2344 – Standard Test Method for Short-Beam Strength of Polymer Matrix Composite Materials and Their Laminates.
I. ASTM-D2583 – Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impresser.
J. ASTM-D6670 – Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/ Products.
K. ASTM-E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications. - Continuously engaged in manufacturing of doors of similar type to that specified, with a minimum of 25 years concurrent successful experience.
B. Door and frame components must be fabricated by same manufacturer.
C. Evidence of a documented complaint resolution quality management system.

1/.7 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings and finishes.
2. Shop Drawings: Include the following:
   a. Elevations of each door type.
   b. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
   c. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
   d. Locations of reinforcement and preparations for hardware.
   e. Details of each different wall opening condition.
   f. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
   g. Details of anchorages, joints, field splices, and connections.
   h. Details of accessories.
   i. Details of moldings, removable stops, and glazing.
3. Samples for Initial Selection: For hollow-metal doors and frames with factory-applied color finishes.
4. Testing and Evaluation Reports.
5. Submit testing reports and evaluations provided by manufacturer conducted by and accredited independent testing agency certifying doors and frames comply with specified performance requirements listed in Section 2.04.
6. Manufacturer Project References.
   a. Submit list of successfully completed projects including project name, location, name of architect, type, and quantity of doors manufactured.

1.8 INFORMATIONAL SUBMITTALS

A. Qualification Data: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.

B. Product Test Reports: For each type of fire-rated hollow-metal door and frame assembly for tests performed by a qualified testing agency indicating compliance with performance requirements.

1.9 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.
B. Submit manufacturer's maintenance and cleaning instructions for doors and frames including maintenance and operating instructions for hardware.

C. Warranty: Submit Manufacturer's standard warranty with a start date of substantial completion. Warrant doors, frames, and factory installed hardware against failure in materials and workmanship, including excessive

deflection, faulty operation, defects in hardware installation, and deterioration of finish or construction in excess of normal weathering.

1. Standard Period. - Ten years starting on date of shipment.
2. Limited lifetime - Covers failure of corner joinery, core deterioration, and delamination or bubbling of door skin and corrosion of all-fiberglass products while the door is in its specified application in its original installation.
3. Finish Painted AF-200 - 3 years.
4. Thresholds do not have a finish warranty.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.
2. Labels clearly identifying opening, door mark and manufacturer.

B. Store doors and frames vertically under cover at Project site with head up in accordance with manufacturer's written instructions. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PART 2 PRODUCTS

2.1 COMPOSITE FIBERGLASS DOOR

a. Manufacturer. -Special-Lite, Inc.

PO Box 6, Decatur, Michigan 49045.

Toll Free (800) 821-6531, Phone (269) 423-7068, Fax (800) 423-7610.

Web Site www.special-lite.com.

E-Mail info@special-lite.com.

2.2 DESCRIPTION

A. Model. AF-200FR Smooth Fire Rated Fiberglass Door.

B. Door Opening Size. See door schedule

C. Door Construction.

1. Door Thickness. -1-3/4".
2. Stiles.
   a. Single Swing.
      i. Hinge and lock stile, 2" minimum tectonite with Palusol P-100 Intumescent and 0.090" thick fiberglass edge painted to match door face.
   b. Standard Pairs.
      i. Hinge stile, 2" minimum tectonite with Palusol P-100 Intumescent and 0.090" thick fiberglass edge painted to match door face.

ii. Meeting edge, 3” minimum with Palusol P-100 Intumescent and 0.090” thick fiberglass edge painted to match door face.

3. Rails.

   a. Top rail, 6” minimum tectonite with Palusol P-100 Intumescent and 0.090” thick fiberglass edge painted to match door face.
   b. Bottom rail, 4” minimum for single swing, 4-1/2” minimum for pairs tectonite with 0.090” thick fiberglass edge painted to match door face.

4. Core.

   a. WSCP-412 proprietary mineral core.
   b. 1-1/2” nominal thickness.
   c. 18 pcf minimum density.
   d. 5 pieces maximum for single swing and 3 pieces per leaf maximum for standard pairs.

5. Corners. – Mitered with a secured with pultruded fiberglass corner clip chemically welded to stiles and rails. Mechanical fasteners to secure corner joints not acceptable

6. Face Sheet.

   a. 0.090” thick, smooth fiberglass painted with two-part aliphatic polyurethane coating.
   b. Bonded to core with adhesive according to manufactures listing.

7. Cutouts.

   a. Manufacture doors with cutouts for required vision lites per the manufactures listing.

8. Hardware.

   a. Pre-machine doors in accordance with templates from specified hardware manufacturers. Surface mounted closures will be reinforced for but not prepped or installed at factory

   b. Reinforcements. -Solid high-density polyurethane shapes chemically welded to stiles, rails and/ or core. No metallic reinforcements will be allowed

   c. Field apply factory supplied gaskets and seals, full width intumescent and smoke seal required at top of door, smoke seals required on both jambs.

2.3 FRAMING

A. FR-Series Framing

1. Materials.

   a. ¼” thick, solid, pultruded, FRP profiles.

   b. No corrosive components or reinforcements.

   c. Solid tectonite filler.

   d. No steel or aluminum filler is allowed.

2. Perimeter Frame Members.

   a. Factory fabricated.

   b. Integral 5/8” x 2-1/4” doorstop.

   c. Mitered with 4” x 4” x 3/8” pultruded FRP angle reinforcement with interlocking pultruded FRP brackets.

   d. 5-3/4” or 6-3/4” jamb depth.

   e. 2” face on jambs.

f. 2” or 4” face on header.
g. Knocked down for field assembly.

3. Anchors -Factory furnished as specified by drawings.

B. PERFORMANCE

1. Face Sheet. - Standard Interior and Exterior Class C 0.090” thick, smooth finish.

a. Flexural Strength, ASTM-D790: 14 x 10^3 psi.

b. Flexural Modulus, ASTM-D790: 0.4 x 10^6 psi.

c. Tensile Strength, ASTM-D638: 6 x 10^3 psi.

d. Tensile Modulus, ASTM-D638: 0.4 x 10^6 psi.

e. Barcol Hardness, ASTM-D2583: 35.

f. Izod Impact, ASTM-D256: 5.0 ft-lb/in.

g. Chemical Resistance - Excellent Rating.

i. Acetic Acid, Concentrated.
ii. Acetic Acid, 5%.
iii. Bleach Solution.
iv. Detergent Solution.
v. Distilled Water.
vi. Ethyl Acetate.
vii. Formaldehyde.
viii. Heptane.
ix. Hydrochloric Acid, 10%.
x. Hydrogen Peroxide, 3%.
xi. Isooctane.
xii. Lactic Acid, 10%.

h. USDA/FSIS Requirements.

i. FRP face sheet with surfaseal is a finished outer surface material that is rigid; durable; non-toxic; non-corrosive; moisture resistant; a light, solid color such as white; easily inspected; smooth or an easily cleaned texture.
ii. FRP face sheet with surfaseal does not contain any known carcinogen, mutagen, or teratogen classified as hazardous substances; heavy metals or toxic substances; antimicrobials; pesticides or substances with pesticidal characteristics.

2. Door Assembly. 90 min for Type B all openings with temperature rise @ 30 min, 250 °F when vision lites do not exceed 100 in².

C. MATERIALS

1. Fiberglass. See above

2. Fasteners.

a. All exposed fasteners will have a finish to match material being fastened.
b. 410 stainless steel or other non-corrosive metal.
c. Must be compatible with items being fastened.

D. FABRICATION

1. Factory Assembly.

a. Door and frame components from the same manufacturer.
b. Required size for door and frame units, shall be as indicated on the drawings.

c. Maintain continuity of line and accurate relation of planes and angles.
d. Secure attachments and support at mechanical joints with hairline fit at contact surfaces.

2. Shop Fabrication

a. All shop fabrication to be completed in accordance with manufactures process work instructions.
b. Quality control to be performed before leaving each department.

E. FINISHES

1. Door. FRP Face Sheets Painted.

a. 2-part aliphatic polyurethane low VOC industrial coating, 5 mills thick, and gloss finish.
b. Impact Resistance ASTM D2794 @ 5 mills thick, 140 in·lbs.
c. Taber Abrasion, 1 kg load, 1000 cycles, CS-17 wheels, 60.2 mg.
d. Custom Color

2. Frame -Painted - Custom Color

F. ACCESSORIES

1. Vision Lites.

a. Factory Glazing.
b. Stainless Steel vison kit with 3/16" NGP Firelite NT, clear.
c. Size and location as indicated on the drawings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas to receive doors.
B. Notify architect of conditions that would adversely affect installation or subsequent use.
C. Do no proceed with installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Ensure openings to receive frames are plumb, level, square, and in tolerance.

3.3 ERECTION

A. Install doors in accordance with manufacturer's instructions.

B. Install doors plumb, level, square, true to line, and without warp or rack.

C. Anchor frames securely in place.

D. Separate aluminum from other metal surfaces with bituminous coatings or other means approved by architect.

E. Set thresholds in bed of mastic and back seal.

F. Install exterior doors to be weathertight in closed position.

G. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by architect.

H. Remove and replace damaged components that cannot be successfully repaired as determined by architect.

3.4 FIELD QUALITY CONTROL

A. Manufacture’s Field Services. Manufacturer’s representative shall provide technical assistance and guidance for installation of doors.

3.5 ADJUSTING

A. Adjust doors, hinges, and locksets for smooth operation without binding.

3.6 CLEANING

A. Clean doors promptly after installation in accordance with manufacturer’s instructions.
B. Do not use harsh cleaning materials or methods that would damage finish.

3.7 PROTECTION

A. Protect installed doors to ensure that, except for normal weathering, doors will be without damage or deterioration at time of substantial completion.

END OF SECTION

SECTION 087111 - DOOR HARDWARE (DESCRIPTIVE SPECIFICATION)

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Commercial door hardware for the following:

a. Swinging doors.

2. Cylinders

3. Electrified door hardware.

B. Related Requirements:

1. Section 081113 "Hollow Metal Doors and Frames" for astragals provided as part of labeled fire-rated assemblies and for door silencers provided as part of hollow-metal frames.
2. Section 081743 "Fiberglass Doors" for exterior fiberglass doors and frames with astragals provided as part of assembly and for door silencers provided as part of fiberglass frames.
3. Section 087113 "Power Door Operators" for low-energy power operators and low-energy power-assist operators.
4. Section 284621.11 "Addressable Fire-Alarm Systems" for connections to building fire-alarm system – refer to electrical drawings.

1.2 COORDINATION

A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

B. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

C. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

D. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Conference participants shall include Installer's Architectural Hardware Consultant and Owner's security consultant.
2. Incorporate conference decisions into keying schedule after reviewing door hardware keying system including, but not limited to, the following:

    a. Flow of traffic and degree of security required.
    b. Preliminary key system schematic diagram.
    c. Requirements for key control system.
    d. Requirements for access control.
    e. Address for delivery of keys.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For electrified door hardware.

1. Include diagrams for power, signal, and control wiring.
2. Include details of interface of electrified door hardware and building safety and security systems.

C. Samples: For each exposed product in each finish specified, in manufacturer's standard size.

1. Tag Samples with full product description to coordinate Samples with door hardware schedule.

D. Samples for Verification: For each type of exposed product, in each finish specified.

1. Sample Size: Full-size units or minimum 2-by-4-inch (51-by-102-mm) Samples for sheet and 4-inch (102-mm) long Samples for other products.

    a. Full-size Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

2. Tag Samples with full product description to coordinate Samples with door hardware schedule.

E. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
3. Content: Include the following information:

    a. Identification number, location, hand, fire rating, size, and material of each door and frame.
    b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
    c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
    d. Description of electrified door hardware sequences of operation and interfaces with other building control systems.
    e. Fastenings and other installation information.
    f. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
    g. Mounting locations for door hardware.
    h. List of related door devices specified in other Sections for each door and frame.

F. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and Architectural Hardware Consultant.

B. Product Certificates: For each type of electrified door hardware.

1. Certify that door hardware for use on each type and size of labeled fire-rated doors complies with listed fire-rated door assemblies.

C. Product Test Reports: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.

D. Field quality-control reports.

E. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

B. Schedules: Final door hardware and keying schedule.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Door Hardware: 2 spare sets (pair of doors) of exterior door hardware and 4 spare sets (pair of doors) of interior door hardware.
2. Electrical Parts: 2 sets of electrical components for the doors.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.

1. Warehousing Facilities: In Project's vicinity.
2. Scheduling Responsibility: Preparation of door hardware and keying schedule.
3. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as an Architectural Hardware Consultant (AHC) and an Electrified Hardware Consultant (EHC), Architectural Openings Consultant (AOC).

1. Electrified Door Hardware Consultant Qualifications: A qualified Architectural Hardware Consultant who is experienced in providing consulting services for electrified door hardware installations.

C. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

D. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252.

1. Test Pressure: Test at atmospheric pressure After 5 minutes into the test, neutral pressure level in furnace shall be established at 40 inches (1016 mm) or less above the sill.

E. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

F. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." In addition to Owner, Construction Manager, Contractor, and Architect, conference participants shall also include Installer's Architectural Hardware Consultant and Owner's security consultant. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2. Preliminary key system schematic diagram.
3. Requirements for key control system.
4. Address for delivery of keys.

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to electrified door hardware including, but not limited to, the following:

1. Inspect and discuss electrical roughing-in and other preparatory work performed by other trades.
2. Review sequence of operation for each type of electrified door hardware.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review required testing, inspecting, and certifying procedures.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

1.10 COORDINATION

A. Coordinate layout and installation of recessed pivots with floor construction. Cast anchoring inserts into concrete. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Electrical System Roughing-in: Coordinate layout and installation of electrified door hardware with connections to power supplies, fire alarm system and detection devices, access control system, security system, and/or building control system.

D. Existing Openings: Where new hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide for proper operation.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including excessive deflection, cracking, or breakage.
b. Faulty operation of doors and door hardware.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Two years from date of Substantial Completion unless otherwise indicated below:

a. Electromagnetic Locks: Five years from date of Substantial Completion.
b. Exit Devices: Three years from date of Substantial Completion.
c. Manual Closers: 10 years from date of Substantial Completion.

1.12 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door hardware operation. Provide parts and supplies same as those used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of door hardware from single manufacturer.

1. Provide electrified door hardware from same manufacturer as mechanical door hardware unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.

B. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that complies with requirements of assemblies tested in accordance with UL 1784 and installed in compliance with NFPA 105.

C. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

E. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the USDOJ's "2010 ADA Standards for Accessible Design" and/or ICC A117.1.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22.2 N).
2. Comply with the following maximum opening-force requirements:

    a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
    b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.
5. Adjust spring hinges so that, from an open position of 70 degrees, the door will take at least 1.5 seconds to move to the closed position.

2.3 HINGES

A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and frames and fiberglass doors and frames.

1. Hager Companies
2. McKinney Products
3. Stanley Commercial Hardware

B. Antifriction-Bearing Hinges:

1. Mounting: Full mortise (butts).
2. Bearing Material: Manufacturer's standard antifriction bearing.
3. Grade 1 (heavy weight).
4. Base and Pin Metal:

a. Exterior Hinges: Stainless steel with stainless steel pin – heavy duty.
b. Interior Hinges: Steel with steel pin – heavy duty.
c. Hinges for Fire-Rated Assemblies: Steel with steel pin – heavy duty.

5. Pins: Nonremovable.

a. Outswinging Exterior Doors: Nonremovable.
b. Outswinging Corridor Doors with Locks: Nonremovable.

6. Tips: Flat button.

7. Corners: Square 1/4-inch (6-mm) radius.

8. Fasteners: Machine screws for all doors and frames – installed into drilled and tapped holes

2.4 PIVOTS AND PIVOT HINGES

A. Manufacturers:

1. DORMA Architectural Hardware; Member of The DORMA Group North America (DAH).
2. Hager Companies (HAG).
3. IVES Hardware; an Ingersoll-Rand Company (IVS).
4. McKinney Products Company; an ASSA ABLOY Group company (MCK).
5. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
6. Stanley Commercial Hardware; Div. of The Stanley Works (STH).

2.5 MECHANICAL LOCKS AND LATCHES

A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

A. Electrified Locking Devices: BHMA A156.25.

B. Lock Trim:

1. Levers: Cast.
2. Escutcheons (Roses): Cast.
3. Dummy Trim: Match lever lock trim and escutcheons.

C. Lock Functions: As indicated in door hardware schedule.

D. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Mortise Locks: Minimum 3/4-inch (19-mm) latchbolt throw.
2. Deadbolts: Minimum [1-inch (25-mm)] [1.25-inch (32-mm)] bolt throw.

E. Lock Trim:

1. Description: To match existing.
2. Levers: Cast.
    a. Construction: Solid, vandal resistant.

3. Escutcheons (Roses): Cast.
4. Dummy Trim: Match lever lock trim and escutcheons.

F. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Interconnected Locks and Latches: BHMA A156.12.
3. Strikes for Auxiliary Deadlocks: BHMA A156.5.
4. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
5. Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.

G. Mortise Locks: BHMA A156.13; Operational Grade 1; stamped steel case with steel or brass parts; Series 1000.

1. Lockset Designs: Schlage L Series, 12A Design, to match existing. No Substitutions

2.6 MECHANICAL LOCKS AND LATCHES

A. Mortise Locks:

1. Manufacturers:

    a. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH). No Substitutions.

B. Interconnected Locks:

1. Manufacturers:

    a. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH). No Substitutions.

2.7 AUXILIARY LOCKS AND LATCHES

A. Auxiliary Locks:

1. Manufacturers:

a. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH). No Substitutions.

B. Push-Button Combination Locks:

1. Manufacturer:

a. Schlage Commercial Lock Division; an Ingersoll Rand Company (SCE). No Substitutions.

2.8 ELECTRIC STRIKES

A. Electric Strikes: BHMA A156.31; Grade 1; with faceplate to suit lock and frame.
1. Alllegion/Schlage to match existing
2. Material: Steel or Stainless steel (exterior).
3. Mounting: Mortised.
4. Fire-Rated Door Assemblies: Use fail-secure electric strikes with fire-rated devices.

2.9 AUTOMATIC AND SELF-LATCHING FLUSH BOLTS

A. Automatic Flush Bolts: BHMA A156.3, Type 25; minimum 3/4-inch (19-mm) throw; designed for mortising into door edge. Include wear plates.

1. Allegion

2. Door Controls International

3. Trimco.

2.10 DOOR BOLTS

A. Bolt Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Mortise Flush Bolts: Minimum 3/4-inch (19-mm) throw.

B. Dustproof Strikes: BHMA A156.16.

C. Manual Flush Bolts: Designed for mortising into door edge.

1. Manufacturers:

a. Hager Companies (HAG).

b. IVES Hardware; an Ingersoll-Rand Company (IVS).
c. Rockwood Manufacturing Company (RM).

d. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
e. Trimco (TBM).

D. Automatic and Self-Latching Flush Bolts: Designed for mortising into door edge.

1. Manufacturers:

a. Hager Companies (HAG).
b. IVES Hardware; an Ingersoll-Rand Company (IVS).
c. Trimco (TBM).

2.11 EXIT DEVICES

A. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

B. Exit Devices for Means of Egress Doors: Comply with NFPA 101. Exit devices shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

C. Fire Exit Devices: Devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.

D. Outside Trim: Pull with cylinder; material and finish to match locksets, unless otherwise indicated.

E. Manufacturer:

1. Von Duprin; an Ingersoll-Rand Company (VD). No Substitutions.

2.12 LOCK CYLINDERS

A. Cylinders: Manufacturer's standard tumbler type, constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:

1. Number of Pins: Match Existing.
2. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
3. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
4. Bored-Lock Type: Cylinders with tailpieces to suit locks.

B. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:

1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.

C. Construction Keying: Comply with the following:

1. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

a. Replace construction cores with permanent cores as indicated in Division 01 Section “Closeout Procedures.”

D. Manufacturer:

1. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH). No Substitutions.

2.13 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference, and as follows:

1. Existing System: Master key or grand master key locks to Owner's existing system.

B. Keys: Nickel silver.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

a. Notation: "DO NOT DUPLICATE."

2. Quantity: In addition to one extra key blank for each lock, provide the following:

a. Cylinder Change Keys: Three.
b. Master Keys: Five.
c. Grand Master Keys: Five.
d. Great-Grand Master Keys: Five.

2.14 KEY CONTROL SYSTEM

A. Key Control Cabinet: Provide new metal cabinet with baked-enamel finish, to match existing cabinet; containing key-holding hooks, labels, 2 sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of 150 percent of the number of locks.

1. Wall-Mounted Cabinet: Cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.

B. Cross-Index System: Match and expand existing index system. Set up by Installer.

2.15 ELECTRIC STRIKES

A. General: Use fail-secure electric strikes with fire-rated devices.

B. Manufacturers:

1. Adams Rite Manufacturing Co. (ARM).
2. Folger Adam Security Inc.; an ASSA ABLOY Group company (FAS).
3. Locknetics; an Ingersoll-Rand Company (LSE).
4. Von Duprin; an Ingersoll-Rand Company (VD).

2.16 CLOSERS

A. BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force

B. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Comply with the following maximum opening-force requirements:

a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

C. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.

D. Hold-Open Closers/Detectors: Coordinate and interface integral smoke detector and closer device with fire alarm system.

E. Flush Floor Plates: Provide finish cover plates for floor closers unless thresholds are indicated. Match door hardware finish, unless otherwise indicated.

F. Power-Assist Closers: As specified in Division 08 Section "Automatic Door Operators" for access doors for peope with disabilities or where listed in the door hardware sets.

G. Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and

anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

H. Surface Closers: Provide type of arm required for closer to be located on non-public side of door, unless otherwise indicated.

1. Manufacturer:

a. LCN Closers; an Ingersoll-Rand Company (LCN). No Substitutions.

2.17 OPERATING TRIM

A. Operating Trim: BHMA A156.6; aluminum for interior doors and stainless steel for exterior doors unless otherwise indicated.

B. Manufacturers:

1. Hager Companies (HAG).
2. IVES Hardware; an Ingersoll-Rand Company (IVS).
3. Rockwood Manufacturing Company (RM).
4. Trimco (TBM).

C. Flat Push Plates: With square corners and beveled edges; secured with exposed screws.

1. Thickness: 1/8 inch (3.2 mm).
2. Size: 4 inches wide by 16 inches high (102 mm wide by 406 mm high).

2.18 ACCESSORIES FOR PAIRS OF DOORS

A. Coordinators: BHMA A156.3; consisting of active-leaf, hold-open lever and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release[; and with internal override].

B. Carry-Open Bars: BHMA A156.3; prevent the inactive leaf from opening before the active leaf; provide polished brass or bronze carry-open bars with strike plate for inactive leaves of pairs of doors unless automatic or self-latching bolts are used.

C. Flat Overlapping Astragals: BHMA A156.22; flat material to be the same as the doors surface mounted on face of door with screws; minimum 1/8 inch (3.2 mm) thick by 2 inches (51 mm) wide by full height of door.

2.19 PROTECTIVE TRIM UNITS

A. Size: 1-1/2 inches (38 mm) less than door width on push side and 1/2 inch (13 mm) less than door width on pull side, by height specified in door hardware sets.

B. Fasteners: Manufacturer's standard machine or self-tapping screws.

C. Metal Protective Trim Units:

1. Material: 0.050-inch- (1.3-mm-) thick stainless steel.
2. Manufacturers:

    a. Hager Companies (HAG).
    b. IVES Hardware; an Ingersoll-Rand Company (IVS).
    c. Rockwood Manufacturing Company (RM).
    d. Trimco (TBM).

2.20 STOPS AND HOLDERS

A. Stops and Bumpers: BMHA A156.16.

1. Provide floor stops for doors unless wall or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Where floor or wall stops are not appropriate, provide overhead holders.

B. Silencers for Metal Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame.

C. Manufacturers:

1. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
2. Hager Companies (HAG).
3. IVES Hardware; an Ingersoll-Rand Company (IVS).
4. Rockwood Manufacturing Company (RM).
5. Trimco (TBM).

2.21 DOOR GASKETING

A. General: Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
2. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
3. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

B. Air Leakage: Not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283.

C. Smoke-Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke-control ratings indicated, based on testing according to UL 1784.

1. Provide smoke-labeled gasketing on 20-minute-rated doors and on smoke-labeled doors.

D. Fire-Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252.

1. Test Pressure: Test at atmospheric pressure. After 5 minutes into the test, neutral pressure level in furnace shall be established at 40 inches (1016 mm) or less above the sill.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Gasketing Materials: ASTM D 2000 and AAMA 701/702.

G. Manufacturers:

1. Hager Companies (HAG).
2. National Guard Products (NGP).
3. Reese Enterprises (RE).
4. Zero International (ZRO).

2.22 THRESHOLDS

A. Accessibility Requirements: Where thresholds are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.

B. Thresholds for Means of Egress Doors: Comply with NFPA 101. Maximum 1/2 inch (13 mm) high.

C. Manufacturers:

1. National Guard Products (NGP).
2. Reese Enterprises (RE).
3. Zero International (ZRO).

2.23 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.

C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially

recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.

1. Fire-Rated Applications:

    a. Wood or Machine Screws: For the following:

        1) Hinges mortised to doors or frames
        2) Strike plates to frames.
        3) Closers to doors and frames.

    b. Steel Through Bolts: For the following unless door blocking is provided:

        1) Surface hinges to doors.
        2) Closers to doors and frames.
        3) Surface-mounted exit devices.

2. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
3. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.24 FINISHES

A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

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

3.2 PREPARATION

A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames in accordance with ANSI/SDI A250.6.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

D. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule, but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches (750 mm) of door height greater than 90 inches (2286 mm).

E. Lock Cylinders: Install construction cores to secure building and areas during construction period.

1. Replace construction cores with permanent cores as directed by Owner.
2. Furnish permanent cores to Owner for installation.

F. Boxed Power Supplies: Locate power supplies as indicated or, if not indicated. Verify location with Architect.

1. Configuration: Provide least number of power supplies required to adequately serve doors with electrified door hardware.

G. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."

H. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.

I. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

1. Do not notch perimeter gasketing to install other surface-applied hardware.

J. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

K. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.

B. Occupancy Adjustment: Approximately three months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

3.7 DEMONSTRATION

A. Engage Installer to train Owner's maintenance personnel to adjust, operate, and maintain door hardware.

3.8 DOOR HARDWARE SCHEDULE

Hardware Set A -Single door exterior – fiberglass door and frame (Doors 109, 110, 111, 123, 124)
1 ½ pair heavy duty hinges – McKinney T4A3386, 4 ½ X 4 ½ inch
Surface Closer – LCN 9553
Exit Device – Von Duprin 98/99 heavy duty push pads
Rockwood Cylinder Pull Plate with Schlage cylinder
1 kickplate Rockwood K1050, 10 x width of door
Sill Gasketing NGP 200NA-36"
Perimeter Gasketing – NGP PF 180-120"
Door Silencer – Rockwood 608-RKW
New door monitoring at Doors 110, 111, 123 and 124
Prepare door frame and door to reconnect Door Monitoring at Door 109
New card swipe at Door 123

Hardware Set B -Exterior Pair of Doors - fiberglass doors and frame (Doors 107, 108,112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122).
3 pairs of heavy duty hinges McKinney T4A3386, 4 ½ X 4 ½ inch
2 Surface Closer – LCN 9553
2 Exit Device – Von Duprin 98/99 heavy duty push pads
1 Rockwood Cylinder Pull Plate with Schlage cylinder on active leaf
Removable astragal
2 kickplates Rockwood K1050, 10 x width of door
2 sets Sill Gasketing NGP 200NA-36"
2 sets Perimeter Gasketing – NGP PF 180-120"
Door Silencer – Rockwood 608-RKW
New Glass transoms at Doors 107 and 108
New card swipes at Doors 112 and 122
Prepare door frame and door to reconnect door monitoring at 107, 108, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121 and 122

Hardware Set C- Single door interior Door 235, 246
1 ½ pair heavy duty hinges – McKinney T4A3386, 4 ½ X 4 ½ inch
Surface Closer – LCN 9553
Exit Device – Von Duprin 98/99 heavy duty push pads and
Door pull with backplates
Schlage cylinder with pull on back plate to open exit device
1 kickplate Rockwood K1050, 10 x width of door
Sill Gasketing NGP 200NA-36"
Perimeter Gasketing – NGP PF 180-120"
Door Silencer – Rockwood 608-RKW

Hardware Set D- Single door interior (no exit device) Door 227, 233, 234, 240, 241, 247
1 ½ pair heavy duty hinges – McKinney T4A3386, 4 ½ X 4 ½ inch

Surface Closer – LCN 9553
Lever on backplate each side- office
Schlage cylinder
1 kickplate Rockwood K1050, 10 x width of door
Sill Gasketing NGP 200NA-36"
Perimeter Gasketing – NGP PF 180-120"
Door Silencer – Rockwood 608-RKW

Hardware Set E -Interior Pair of Doors with key switch and tied to fire alarm system Doors 204, 205, 206, 207, 208, 209, 218, 219, 220, 221, 222, 223, 101 ,102, 103, 104, 105, and 106.
3 pair heavy duty hinges – McKinney T4A3386, 4 ½ X 4 ½ inch
2 Closers Norton 6021/D6021 Low energy power operators connected to key switch and fire alarm system
Exit Device – Von Duprin 98/99 heavy duty push pads and Door pull with backplates on active leaf of doors 204, 218 and 101
Schlage cylinder
2 kickplates Rockwood K1050, 10 x width of door
At each leaf Sill Gasketing NGP 200NA-36"
At each leaf Perimeter Gasketing – NGP PF 180-120"
Door Silencer – Rockwood 608-RKW
Key Switch for doors At Hall C (Doors 204, 205, 206, 207, 208, 209), Hall A (218, 219, 220, 221, 222, 223) and Hall F (101,102, 103,104, 105, 106)
New card swipe at Hall F- Door 101

Hardware Set F -Interior Pair of Doors 201, 202, 203, 210, 212,213,214,215,216, 217, 224, 225, 226, 228,229,230,231,232,236, 237, 238, 239, 242,243, 244, 245, 248, 249, 250, 251, 252
1 ½ pair heavy duty hinges – McKinney T4A3386, 4 ½ X 4 ½ inch
Surface Closer – LCN 9553
Exit Device – Von Duprin 98/99 heavy duty push pads and Door pull with backplates
Schlage cylinder
1 kickplate Rockwood K1050, 10 x width of door
At each leaf Sill Gasketing NGP 200NA-36"
At each leaf Perimeter Gasketing – NGP PF 180-120"
Door Silencer – Rockwood 608-RKW
Reconnect monitoring at Doors 201, 202, 203, 210, 211, 216, 217,224,225,226,228,229,230,231,232, 236,237, 238, 239,242,243,244,245,248,249,250,251 and 252.

Reading Terminal Trainshed Fire Stair Exit Doors

Hardware Set G -Exterior Pair of Doors - Steel doors set into an existing frame (Doors 001- East end of Arch street).
4 pairs of heavy duty hinges McKinney T4A3386, 4 ½ X 4 ½ inch
2 Surface Closer – LCN 9553
2 Exit Device – Von Duprin 98/99 heavy duty push pads
1 Rockwood Cylinder Pull Plate with Schlage cylinder on active leaf
2 kickplates Rockwood K1050, 8 x width of door
2 sets Sill Gasketing NGP 200NA-36"
2 sets Perimeter Gasketing – NGP PF 180-120"
Door Silencer – Rockwood 608-RKW

Hardware Set H -Exterior Pair of Doors - steel doors set into an aluminum frame (Doors 003).
2 pairs of door pivots (top and bottom) Rixson Model L147 heavy duty offset pivot hardware
2 Surface Closer – LCN 9553
2 Exit Device – Von Duprin 98/99 heavy duty push pads
1 Rockwood Cylinder Pull Plate with Schlage cylinder on active leaf
2 kickplates Rockwood K1050, 8 x width of door
2 sets Sill Gasketing NGP 200NA-36"
2 sets Perimeter Gasketing – NGP PF 180-120"
Door Silencer – Rockwood 608-RKW

Hardware Set I -Exterior Pair of Doors - steel doors set in aluminum frames (Doors 002/004//005 Arch Street/12th Street).
3 pairs of heavy duty hinges McKinney T4A3386, 4 ½ X 4 ½ inch
2 Surface Closer – LCN 9553
2 Exit Device – Von Duprin 98/99 heavy duty push pads
1 Rockwood Cylinder Pull Plate with Schlage cylinder on active leaf
2 kickplates Rockwood K1050, 10 x width of door
2 sets Sill Gasketing NGP 200NA-36"
2 sets Perimeter Gasketing – NGP PF 180-120"
Door Silencer – Rockwood 608-RKW

Hardware Set J -Exterior Pair of Doors - steel door set into existing wood frames (Doors 006, 007. 008. 009/Filbert Street).
4 pairs of heavy duty hinges McKinney T4A3386, 4 ½ X 4 ½ inch
2 Surface Closer – LCN 9553
2 Exit Device – Von Duprin 98/99 heavy duty push pads
1 Rockwood Cylinder Pull Plate with Schlage cylinder on active leaf
2 kickplates Rockwood K1050, 10 x width of door
2 sets Sill Gasketing NGP 200NA-36"
2 sets Perimeter Gasketing – NGP PF 180-120"
Door Silencer – Rockwood 608-RKW

END OF SECTION 087111

SECTION 087113 - POWER DOOR OPERATORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Low-energy door operators for swinging doors.

1.2 DEFINITIONS

A. AAADM: American Association of Automatic Door Manufacturers.

B. Activation Device: A control that, when actuated, sends an electrical signal to the door operator to open the door.

C. Safety Device: A control that, to avoid injury, prevents a door from opening or closing.

D. For automatic door terminology, see BHMA A156.10 and BHMA A156.19 for definitions of terms.

1.3 COORDINATION

A. Coordinate sizes and locations of recesses in concrete floors for recessed control mats that control power door operators. Concrete, reinforcement, and formwork requirements are specified elsewhere.

B. Templates: Distribute for doors, frames, and other work specified to be factory prepared and reinforced for installing power door operators.

C. Coordinate hardware for doors with operators to ensure proper size, thickness, hand, function, and finish.

D. Electrical System Roughing-in: Coordinate layout and installation of power door operators with connections to the following:

1. Power supplies.
2. Access-control system.
3. Remote activation devices.
4. Remote monitoring systems.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for power door operators.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For power door operators.

1. Include plans, elevations, sections, hardware mounting heights, and attachment details.
2. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Indicate locations of activation and safety devices.
4. Include diagrams for power, signal, and control wiring.

C. Samples: For each exposed product and for each color and texture specified, manufacturer's standard size.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of power door operator. For each operator for fire-rated door assemblies, certify that operator is listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for use on types and sizes of labeled fire doors required.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For power door operators, safety devices, and control systems, to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer for installation and maintenance of units required for this Project and who employs a Certified Inspector.

1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.

B. Certified Inspector Qualifications: Certified by AAADM.

1.9 WARRANTY

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A. Special Warranty: Manufacturer agrees to repair or replace components of power door operators that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Faulty or sporadic operation of power door operator, including controls.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering or use.

2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain power door operators, including activation and safety devices, from Norton- Assa Abloy. The selected product shall be the 6021/D6021 models low energy power operator, heavy duty unit.

2.2 POWER DOOR OPERATORS, GENERAL

A. General: Provide operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, maintenance-free operation under normal traffic load for occupancy type indicated; and in accordance with UL 325. Coordinate operator mechanisms with door operation, hinges, and activation and safety devices.

1. Fire-Rated Doors: Provide door operators for fire-rated door assemblies that comply with NFPA 80 for fire-rated door components and are listed and labeled by a qualified testing agency.
2. Wind Load: Provide door operators on exterior doors that will open and close doors and maintain them in fully closed position when subjected to wind load of 90 mph..

B. Electromechanical Operating System: Self-contained unit powered by permanent-magnet dc motor; with closing speed controlled mechanically by gear train and dynamically by braking action of electric motor, connections for power and activation- and safety-device wiring, and manual operation, including spring closing when power is off.

C. Hinges: See Section 087111 "Door Hardware (Descriptive Specification)"] for hinge type for each door that door operator shall accommodate.

D. Cover for Surface-Mounted Operators: Fabricated from 0.125-inch- (3.2-mm-) thick, extruded or formed aluminum; continuous over full width of operator-controlled door opening, with enclosed end caps, provision for maintenance access, and fasteners concealed when door is in closed position.

E. Brackets and Reinforcements: Fabricated from aluminum with nonstaining, nonferrous shims for aligning system components.

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F. Fire-Door Package: Consisting of UL-listed latch mechanism, power-reset box, and caution signage for fire-rated doors. Latch mechanism shall allow door to swing free during automatic operation; when fire is detected, latch actuator shall cause exit hardware to latch when door closes. Provide latch actuators with fail-secure design.

G. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.3 LOW-ENERGY DOOR OPERATORS FOR SWINGING DOORS

A. Standard: BHMA A156.19.

B. Performance Requirements:

1. Opening Force if Power Fails: Not more than 15 lbf (67 N) required to release latch if provided, not more than 30 lbf (133 N) required to manually set door in motion, and not more than 15 lbf (67 N) required to fully open door.
2. Entrapment-Prevention Force: Not more than 15 lbf (67 N) required to prevent stopped door from closing or opening.

C. Configuration, Pair: Operator to control pair of swinging doors.

1. Traffic Pattern: Two way.
2. Operator Mounting: Surface.

D. Operation: Power opening and power-assisted spring closing. Provide time delay for door to remain open before initiating closing cycle as required by BHMA A156.19. When not in automatic mode, door operator shall function as manual door closer, with or without electrical power.

E. Operating System: Electromechanical.

F. Microprocessor Control Unit: Solid-state controller.

G. Features:

1. Adjustable opening speed.
2. Adjustable opening force.
3. Adjustable backcheck.
4. Adjustable hold-open time from zero to 30 seconds.
5. Adjustable time delay.
6. Adjustable acceleration.
7. Obstruction recycle.
8. On-off/hold-open switch to control electric power to operator; key operated].

H. Activation Device: Key switch on each side of door to activate door operator.

I. Exposed Finish: Finish matching door hardware.

2.4 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Extrusions: ASTM B221 (ASTM B221M).
2. Sheet: ASTM B209 (ASTM B209M).

B. Fasteners and Accessories: Corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

2.5 CONTROLS

A. General: Provide controls, including activation and safety devices, in accordance with BHMA standards; for condition of exposure; and for long-term, maintenance-free operation under normal traffic load for occupancy type indicated. Coordinate activation and safety devices with door operation and door operator mechanisms.

B. Motion Sensors: Self-contained, K-band-frequency, microwave-scanner units; fully enclosed in plastic housing; adjustable to provide detection field sizes and functions required by BHMA A156.10.

1. Provide capability for switching between bidirectional and unidirectional detection.
2. For one-way traffic, sensor on egress side shall not be active when doors are fully closed.

C. Presence Sensors: Self-contained, active-infrared scanner units; adjustable to provide detection field sizes and functions required by BHMA A156.10. Sensors shall remain active at all times.

D. Photoelectric Beams: Pulsed infrared, sender-receiver assembly for recessed mounting. Beams shall not be active when doors are fully closed.

E. Key Switch: Recess-mounted, door control switch with key-controlled actuator; enclosed in 2-by-4-inch (50-by-100-mm) junction box. Provide faceplate engraved with text indicating switch functions.

1. Faceplate Material: Stainless steel as selected by Architect from manufacturer's full range.
2. Functions: On-off, momentary contact.
3. Mounting: As indicated on Drawings, recess mounted.] [Recess mounted, semiflush in wall] [Recess mounted in door jamb] [Surface mounted on wall] [Surface mounted on post].

F. Electrical Interlocks: Unless units are equipped with self-protecting devices or circuits, provide electrical interlocks to prevent activation of operator when door is locked, latched, or bolted.

2.6 FABRICATION

A. Factory fabricate power door operators to comply with indicated standards.

B. Form aluminum shapes before finishing.

C. Fabricate exterior components to drain condensation and water-passing joints within operator enclosure to the exterior.

D. Use concealed fasteners to greatest extent possible. Where exposed fasteners are required, use countersunk Phillips flat-head machine screws, finished to match operator.

2.7 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary, protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

2.8 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, [AA-M12C22A41, Class I, 0.018 mm] [AA-M12C22A31, Class II, 0.010 mm] or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances, door and frame preparation and reinforcements, and other conditions affecting performance of power door operators.

B. Examine roughing-in for electrical systems to verify actual locations of power connections before power door operator installation.

C. Examine roughing-in for compressed-air piping systems to verify actual locations of piping connections before power door operator installation.

D. Verify that full-height finger guards are installed at each door with pivot hinges, where door has a clearance at hinge side greater than 1/4 inch (6 mm) and less than 3/4 inch (19 mm) with door in any position.

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

3.2 INSTALLATION, GENERAL

A. Install power door operators in accordance with manufacturer's written instructions and cited BHMA standard for type of door operation and direction of pedestrian travel, including signage, controls, wiring, remote power units if any, and connection to building's power supply.

1. Do not install damaged components. Fit joints to produce hairline joints free of burrs and distortion.
2. Install operators true in alignment with established lines and door geometry without warp or rack. Anchor securely in place.

B. Controls: Install activation and safety devices in accordance with manufacturer's written instructions and cited BHMA standard for operator type and direction of pedestrian travel. Connect control wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

C. Access-Control System: Connect operators to access-control system as specified in Section 281500 "Access Control Hardware Devices."

D. Signage: Apply on both sides of each door as required by cited BHMA standard for type of door operator and direction of pedestrian travel.

3.3 ADJUSTING

A. Adjust power door operators to function smoothly, and lubricate as recommended by manufacturer; comply with requirements of applicable BHMA standards.

1. Adjust operators on exterior doors for tight closure.

B. After completing installation of power door operators, inspect exposed finishes on doors and operators. Repair damaged finish to match original finish.

C. Readjust power door operators and controls after repeated operation of completed installation equivalent to three days' use by normal traffic (100 to 300 cycles).

3.4 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of power door operator Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

1. Engage a Certified Inspector to perform safety inspection after each adjustment or repair and at end of maintenance period. Furnish completed inspection reports to Owner.
2. Include 24-hour-per-day, seven-day-per-week, emergency callback service.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain power door operators.

END OF SECTION 087113

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Glass products.
2. Laminated glass.
3. Glazing sealants.
4. Glazing tapes.
5. Miscellaneous glazing materials.

B. Related Requirements:
1. Section 083115 "Steel Doors."

1.2 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

C. IBC: International Building Code.

1.3 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review temporary protection requirements for glazing during and after installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Glass Samples: For each type of ; 12 inches (300 mm) square.
   1. Laminated glass/tempered glass assembly.

C. Glazing Accessory Samples: For sealants and, in 12-inch (300-mm) lengths. Install sealant Samples between two strips of material representative in color of adjoining framing system.

D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer of fabricated glass units.

B. Product Certificates: For glass.

C. Product Test Reports: For fabricated glass and glazing sealants, for tests performed by a qualified testing agency.

   1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.

D. Preconstruction adhesion and compatibility test report.

E. Sample Warranties: For special warranties.

1.7 QUALITY ASSURANCE

A. Fabricated-Glass Manufacturer Qualifications: A qualified manufacturer of fabricated glass units who is approved by primary glass manufacturer.

B. Installer Qualifications: A qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors and who employs glazing technicians certified under the Architectural Glass and Metal Technician (AGMT) certification program.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F (4.4 deg C).

1.10 WARRANTY

A. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Heat-Soaked Tempered Glass: Manufacturer agrees to replace heat-soaked tempered glass units that spontaneously break due to nickel sulfide (NiS) inclusions at a rate exceeding 0.3 percent (3/1000) within specified warranty period. Coverage for any other cause is excluded.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Glass: Obtain glass from single source from single manufacturer.

B. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined in accordance with the IBC and ASTM E1300:

1. Design Wind Pressures: Determine design wind pressures applicable to Project in accordance with ASCE/SEI7.
   a. Basic Wind Speed: 100 mph (44 m/s).
   b. Importance Factor: 1.0.
   c. Exposure Category: B.
2. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch (25 mm), whichever is less.

3. Thermal Loads: Design glazing to resist thermal stress breakage induced by differential temperature conditions and limited air circulation within individual glass lites and insulated glazing units.

C. Windborne-Debris-Impact Resistance: Exterior glazing shall pass ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone [2] for basic protection.

D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
2. For laminated-glass lites, properties are based on products of construction indicated.
3. Visible Reflectance: Center-of-glazing values, in accordance with NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. NGA Publications: ["Laminated Glazing Reference Manual" and]"Glazing Manual."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than thickness indicated.

1. Minimum Glass Thickness for Exterior Lites: [6 mm] <Insert thickness designation>.

D. Strength: Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

A. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear).

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

2.5 LAMINATED GLASS

A. Windborne-Debris-Impact-Resistant Laminated Glass: Comply with the following requirements
   1. Construction: Laminate glass with polyvinyl butyral interlayer reinforced with polyethylene terephthalate film or ionoplast interlayer to comply with interlayer manufacturer's written instructions.
   2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
   3. Interlayer Color: Clear unless otherwise indicated.

2.6 GLAZING SEALANTS

A. General:

   1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
   2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
   3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors].

B. Neutral-Curing Silicone Glazing Sealant, Class 50: Complying with ASTM C920, Type S, Grade NS, Use NT.

2.7 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:

   1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.

2.8 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks:

   1. EPDM with Shore A durometer hardness of 85, plus or minus 5.

2. Type recommended in writing by sealant or glass manufacturer.

D. Spacers:

1. Neoprene blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
2. Type recommended in writing by sealant or glass manufacturer.

E. Edge Blocks:

1. EPDM blocks with Shore A durometer hardness per manufacturer's written instructions.
2. Type recommended in writing by sealant or glass manufacturer.

2.9 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

a. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

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

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch- (3-mm-) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

3.5 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.6 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.7 LAMINATED GLASS SCHEDULE

A. Clear Laminated Glass Type : Two plies of fully tempered float glass.

1. Basis-of-Design Product: Oldcastle fully tempered, laminated glass shall be the basis of design.
2. Minimum Thickness of Each Glass Ply: 6 mm.
3. Interlayer Thickness: 0.030 inch (0.76 mm).

END OF SECTION 088000

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Gypsum wallboard.
2. Gypsum board, Type X.
3. Gypsum ceiling board.

1.3 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.4 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. Gypsum Wallboard: ASTM C1396/C1396M.
   1. Georgia Pacific Gypsum
   2. National Gypsum Company
   3. USG Corporation
   4. Thickness: To match existing or 1/2 inch (12.7 mm) min..
   5. Long Edges: Tapered.

B. Gypsum Board, Type X: ASTM C1396/C1396M.
   1. Georgia Pacific Gypsum
   2. National Gypsum Company
   3. USG Corporation
   4. Thickness: to match existing or 5/8 inch (15.9 mm) min..
   5. Long Edges: Tapered.

C. Gypsum Ceiling Board: ASTM C1396/C1396M.
   1. Georgia Pacific Gypsum
   2. National Gypsum Company
   3. USG Corporation
   4. Thickness: 1/2 inch (12.7 mm).
   5. Long Edges: Tapered.

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

   1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
   2. Shapes:

      a. Cornerbead.
      b. LC-Bead: J-shaped; exposed long flange receives joint compound.
      c. L-Bead: L-shaped; exposed long flange receives joint compound.
      d. U-Bead: J-shaped; exposed short flange does not receive joint compound.
      e. Expansion (control) joint.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.

C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
2. Fill Coat: For second coat, use drying-type, all-purpose compound.
3. Finish Coat: For third coat, use drying-type, all-purpose compound.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

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

3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

A. Comply with ASTM C840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.

G. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

3.3 INSTALLATION OF INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Wallboard Type: Vertical or horizontal surfaces unless otherwise indicated.
2. Type X: Where required for fire-resistance-rated assembly

B. Single-Layer Application:
1. On soffits, apply gypsum panels horizontally (perpendicular to framing)] unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
2. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 INSTALLATION OF TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges.

D. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

E. Prefill open joints, rounded or beveled edges, and damaged surface areas.

F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:
   1. Level 4: At panel surfaces that will be exposed to view.

3.5 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Primers.
2. Water-based finish coatings.

B. Related Requirements:

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include preparation requirements and application instructions.
2. Indicate VOC content.

B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product Schedule: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.4 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.

a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).

b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

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

4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures of less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each paint product from single source from single manufacturer. Paint manufacturer shall be provided by the Pennsylvania Convention Center

2.2 PAINT PRODUCTS, GENERAL

A. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

B. Colors: To match existing paint colors

2.3 PRIMERS

A. Interior Latex Primer Sealer: Water-based latex sealer used on new interior plaster, concrete, and gypsum wallboard surfaces.

B. Interior, Institutional Low-Odor/VOC Primer Sealer: Water-based primer sealer with low-odor characteristics and a VOC of less than 10 grams per liter for use on new interior plaster, concrete, and gypsum wallboard surfaces that are subsequently to be painted with latex finish coats.

2.4 WATER-BASED FINISH COATS

A. Interior, Latex,: Pigmented, water-based paint for use on primed/sealed interior plaster and gypsum board, and on primed wood and metals.

1. Gloss and Sheen Level: To match existing finishes.

2. VOC content; To meet the requirements of the PA Convention Center.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Gypsum Board: 12 percent.
2. Plaster: 12 percent.

C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Plaster Substrates: Verify that plaster is fully cured.

E. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.

F. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

G. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

3.3 INSTALLATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
3. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Dry-Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry-film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry-film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry-film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
3. Allow empty paint cans to dry before disposal.
4. Collect waste paint by type and deliver to recycling or collection facility.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. Steel Substrates:

1. Institutional Low-Odor/VOC Latex System – Interior Doors and Frames:

a. Prime Coat: Water-based rust-inhibitive primer.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Interior, latex, institutional low odor/VOC, to match existing finishes

B. Gypsum Board Substrates:

1. Latex over Latex Sealer System : Gypsum wallboard Soffits and Walls

a. Prime Coat: Interior latex primer sealer.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Interior, latex, To match Existing.

2. Institutional Low-Odor/VOC Latex System – If required by the Convention Center for Gypsum Wallboard soffits and walls :

a. Prime Coat: Interior, institutional low-odor/VOC primer sealer.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Interior, latex, institutional low odor/VOC, to match existing.

END OF SECTION 099123

DOOR SCHEDULE

DOOR No.	ROOM		DOOR								FRAME			FIRE RATING	HDWR SET	REMARKS (key at end of schedule)
	NAME	No.	SIDE 1 (OUTSIDE)	SIDE 2 (INSIDE)	TYPE	SIZE WIDTH	SIZE HEIGHT	SIZE THICK	FINISH	GLASS	TYPE	JAMB / HEAD / SILL TYPES	FINISH			
FIRST FLOOR																
101	Exhibit Hall D (37E021K)		E. Arch St. Concourse	Hall D Entry Foyer	HM-A	(2) 3'-0"	7'-10"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
102	Exhibit Hall D (37E021L)		E. Arch St. Concourse	Hall D Entry Foyer	HM-A	(2) 3'-0"	7'-10"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
103	Exhibit Hall D (37E021M)		E. Arch St. Concourse	Hall D Entry Foyer	HM-A	(2) 3'-0"	7'-10"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
104	Exhibit Hall D (37E021N)		E. Arch St. Concourse	Hall D Entry Foyer	HM-A	(2) 3'-0"	7'-10"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
105	Exhibit Hall D (37E021P)		E. Arch St. Concourse	Hall D Entry Foyer	HM-A	(2) 3'-0"	7'-10"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
106	Exhibit Hall D (37E021Q)		E. Arch St. Concourse	Hall D Entry Foyer	HM-A	(2) 3'-0"	7'-10"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
107	Lobby (37E061B)		North 11th Street	Lobby	FG-A	(2) 3'-8"	7'-2"	1-3/4"	PREFIN		FG-C	2 / 9 / 1	PREFIN		38	
108	Lobby (37E061A)		North 11th Street	Lobby	FG-B	(2) 3'-8"	7'-2"	1-3/4"	PREFIN	IG-1	FG-C	2 / 9 / 1	PREFIN		38	
109	Stair #E1 (37EST1)		Race Street	Stair #E1	FG-A	3'-8"	7'-2"	1-3/4"	PREFIN		FG-A	2 / 2 / 1	PREFIN		45	
110	East Truck Dock (37E001B)		Race Street	East Truck Dock	FG-A	3'-8"	7'-2"	1-3/4"	PREFIN		FG-A	2 / 2 / 1	PREFIN		45	
111	East Truck Dock (37E001A)		North 12th Street	East Truck Dock	FG-A	3'-8"	7'-2"	1-3/4"	PREFIN		FG-A	2 / 2 / 1	PREFIN		45	
112	Lobby (37E006A)		North 12th Street	East Truck Dock Lobby	FG-A	(2) 3'-0"	7'-2"	1-3/4"	PREFIN		FG-B	2 / 2 / 1	PREFIN		38	
113	Stair #E5 (37EST5B)		North 12th Street	Stair #E5	FG-A	(2) 3'-0"	7'-2"	1-3/4"	PREFIN		FG-B	2 / 2 / 1	PREFIN		49	
114	Stair #E5 (37EST5A)		North 12th Street	Stair #E5	FG-A	(2) 3'-0"	7'-2"	1-3/4"	PREFIN		FG-B	2 / 2 / 1	PREFIN		49	
115	Corridor (37E009C)		North 12th Street	Corridor to Hall D	FG-A	(2) 3'-0"	7'-2"	1-3/4"	PREFIN		FG-B	2 / 2 / 1	PREFIN		38	
116	Corridor (37E009B)		North 12th Street	Corridor to Hall D	FG-A	3'-8"	7'-2"	1-3/4"	PREFIN		FG-A	2 / 2 / 1	PREFIN		39	
117	Corridor (37E009A)		North 12th Street	Corridor to Hall D	FG-A	3'-8"	7'-2"	1-3/4"	PREFIN		FG-A	2 / 2 / 1	PREFIN		39	
118	Stair #E9 (37EST9B)		North 12th Street	Stair #E9	FG-A	(2) 3'-0"	7'-2"	1-3/4"	PREFIN		FG-B	2 / 2 / 1	PREFIN		4	
119	Stair #W9 (37WST9B)		North 12th Street	Stair #W9	FG-A	(2) 3'-0"	7'-2"	1-3/4"	PREFIN		FG-B	2 / 2 / 1	PREFIN		49	
120	Stair #W9 (37WST9A)		North 12th Street	Stair #W9	FG-A	(2) 3'-0"	7'-2"	1-3/4"	PREFIN		FG-B	2 / 2 / 1	PREFIN		4	
121	Lobby (37W156)		North 12th Street	Shops Lobby	FG-A	(2) 3'-0"	7'-2"	1-3/4"	PREFIN		FG-B	2 / 2 / 1	PREFIN		38	
122	Aux. Phone (37W155)		North 12th Street	Aux. Phone / Office	FG-A	(2) 3'-0"	7'-2"	1-3/4"	PREFIN		FG-B	2 / 2 / 1	PREFIN	B	21	
123	West Truck Dock (37W042B)		North 12th Street	West Truck Dock	FG-A	3'-8"	7'-2"	1-3/4"	PREFIN		FG-A	2 / 2 / 1	PREFIN		46	
124	West Truck Dock (37W042A)		Race Street	West Truck Dock	FG-A	3'-8"	7'-2"	1-3/4"	PREFIN		FG-A	2 / 2 / 1	PREFIN		45	

DOOR SCHEDULE

DOOR No.	ROOM		DOOR								FRAME					REMARKS (key at end of schedule)
	NAME	No.	SIDE 1 (OUTSIDE)	SIDE 2 (INSIDE)	TYPE	SIZE WIDTH	SIZE HEIGHT	SIZE THICK	FINISH	GLASS	TYPE	JAMB / HEAD / SILL TYPES	FINISH	FIRE RATING	HDWR SET	
SECOND FLOOR																
201	Exhibit Hall C (63W038A)		Exit Vestibule	Exit Foyer	HM-A	(1) 3'-0" (1) 2'-0"	7'-2"	1-3/4"	PTD		HM-B	3 / 3 / -	PTD	B	14	
202	Exhibit Hall C (63W038B)		Exit Vestibule	Exit Foyer	HM-A	(1) 3'-0" (1) 2'-0"	7"-2"	1-3/4"	PTD		HM-B	3 / 3 / -	PTD	B	14	
203	Stair #W7 (63WST#7B)		Exhibit Hall C	Stair #W7	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	1
204	Exhibit Hall C (63W051A)		Exhibit Hall C Foyer	Hall C Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
205	Exhibit Hall C (63W051B)		Exhibit Hall C Foyer	Hall C Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
206	Exhibit Hall C (63W051C)		Exhibit Hall C Foyer	Hall C Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
207	Exhibit Hall C (63W051D)		Exhibit Hall C Foyer	Hall C Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
208	Exhibit Hall C (63W051E)		Exhibit Hall C Foyer	Hall C Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
209	Exhibit Hall C (63W051F)		Exhibit Hall C Foyer	Hall C Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
210	Stair #W8 (63WST#8B)		Exhibit Hall C	Stair #W8	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	1
211	Stair #W9 (63WST#9B)		Exhibit Hall B	Stair #W9	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	1
212	Exhibit Hall B (63W118A)		Exhibit Hall B Foyer	Hall B Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
213	Exhibit Hall B (63W118B)		Exhibit Hall B Foyer	Hall B Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
214	Exhibit Hall B (63W118C)		Exhibit Hall B Foyer	Hall B Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
215	Exhibit Hall B (63W118D)		Exhibit Hall B Foyer	Hall B Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
216	Stair #E9 (63EST#9A)		Exhibit Hall B	Stair #E9	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	1
217	Stair #E8 (63EST#8B)		Exhibit Hall A	Stair #E8	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	1
218	Exhibit Hall A (63E033A)		Exhibit Hall A Foyer	Hall A Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
219	Exhibit Hall A (63E033B)		Exhibit Hall A Foyer	Hall A Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
220	Exhibit Hall A (63E033C)		Exhibit Hall A Foyer	Hall A Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
221	Exhibit Hall A (63E033D)		Exhibit Hall A Foyer	Hall A Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
222	Exhibit Hall A (63E033E)		Exhibit Hall A Foyer	Hall A Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
223	Exhibit Hall A (63E033F)		Exhibit Hall A Foyer	Hall A Entry Vestibule	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	4 / 4 / -	PTD	B	14	1
224	Stair #E7 (63EST#7B)		Exhibit Hall A	Stair #E7	HM-A	(2) 3'-0"	7"-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	14	1
225	Exhibit Hall A (63E077A)		Exit Vestibule	Exit Foyer	HM-A	(1) 3'-0" (1) 2'-0"	7"-2"	1-3/4"	PTD		HM-B	3 / 3 / -	PTD	B	14	1
226	Exhibit Hall A (63E077B)		Exit Vestibule	Exit Foyer	HM-A	(1) 3'-0" (1) 2'-0"	7"-2"	1-3/4"	PTD		HM-B	3 / 3 / -	PTD	B	14	1
227	Storage (63E055)		Exhibit Hall A	Storage	HM-A	3'-0"	7'-2"	1-3/4"	PTD		HM-A	1 / 1 / -	PTD		19	

DOOR SCHEDULE

DOOR No.	ROOM		DOOR								FRAME			FIRE RATING	HDWR SET	REMARKS (key at end of schedule)
	NAME	No.	SIDE 1 (OUTSIDE)	SIDE 2 (INSIDE)	TYPE	SIZE WIDTH	SIZE HEIGHT	SIZE THICK	FINISH	GLASS	TYPE	JAMB / HEAD / SILL TYPES	FINISH			
SECOND FLOOR																
228	Stair #E2 (63EST2B)		Exhibit Hall A	Stair #E2	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
229	Stair #E2 (63EST2A)		Exhibit Hall A	Stair #E2	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
230	Stair #E3 (63EST3B)		Exhibit Hall A	Stair #E3	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
231	Stair #E3 (63EST3A)		Exhibit Hall A	Stair #E3	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
232	Corridor (63E054B)		Exhibit Hall A	Corridor to Storage	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	7	
233	First Aid (63E043B)		Exhibit Hall A	First Aid	HM	3'-0"	7'-2"	1-3/4"	PTD		HM-A	1 / 1 / -	PTD		8	
234	Office (63E008)		Exhibit Hall A	Office	HM	3'-0"	7'-2"	1-3/4"	PTD		HM-A	1 / 1 / -	PTD		8	
235	Dock Vestibule (63E006B)		Exhibit Hall A	Aux. Dock Vestibule	HM	3'-0"	7'-2"	1-3/4"	PTD		HM-A	1 / 1 / -	PTD		1	
236	Stair #E4 (63EST4B)		Exhibit Hall A	Stair #E4	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
237	Stair #E4 (63EST4A)		Exhibit Hall A	Stair #E4	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
238	Stair #E5 (63EST5B)		Exhibit Hall A	Stair #E5	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
239	Stair #E5 (63EST5A)		Exhibit Hall A	Stair #E5	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
240	Wall Storage (63W087)		Exhibit Hall A	Wall Storage	HM	3'-0"	7'-2"	1-3/4"	PTD		HM-A	1 / 1 / -	PTD		19	
241	First Aid (63W060A)		Exhibit Hall B	First Aid	HM	3'-0"	7'-2"	1-3/4"	PTD		HM-A	1 / 1 / -	PTD		8	
242	Stair #W5 (63WST5B)		Exhibit Hall B	Stair #W5	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
243	Stair #W5 (63WST5A)		Exhibit Hall B	Stair #W5	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
244	Stair #W4 (63WST4B)		Exhibit Hall B	Stair #W4	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
245	Stair #W4 (63WST4A)		Exhibit Hall B	Stair #W4	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
246	Dock Vestibule (63W095B)		Exhibit Hall B	Aux. Dock Vestibule	HM	3'-0"	7'-2"	1-3/4"	PTD		HM-A	1 / 1 / -	PTD		1	
247	Wall Storage (63W021)		Exhibit Hall C	Wall Storage	HM	3'-0"	7'-2"	1-3/4"	PTD		HM-A	1 / 1 / -	PTD		19	
248	Corridor (63W006)		Exhibit Hall C	Corridor to Storage	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	7	
249	Stair #W3 (63WST3B)		Exhibit Hall C	Stair #W3	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
250	Stair #W3 (63WST3A)		Exhibit Hall C	Stair #W3	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
251	Stair #W2 (63WST2B)		Exhibit Hall C	Stair #W2	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	
252	Stair #W2 (63WST2A)		Exhibit Hall C	Stair #W2	HM	(2) 3'-0"	7'-2"	1-3/4"	PTD		HM-B	1 / 1 / -	PTD	B	46	