PROJECT SPECIFICATIONS

State of Rhode Island Department of Labor and Training



Bathroom Renovations 1330 Main Street West Warwick, RI

ARCHITECT:

Northeast Collaborative Architects 650 Ten Rod Road, Box 4 North Kingstown, RI 02852

NCA Project #22330

MEP ENGINEERS:

Engineering Design Services 141 Industrial Drive Slatersville, RI 02876

100% CONSTRUCTION DOCUMENTS

JUNE 30, 2023

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011100 SUMMARY OF WORK

- A. Project Location: RI Department of Labor & Training, 1330 Main Street, West Warwick, RI 02893
- B. Summary of the Work: The Project shall provide for renovations to the bathrooms and breakroom area of the building, including but not limited to the following: selective demolition, concrete slab patching, indicated masonry walls for exhaust fan penetrations, doors, frames, openings, finishes, and equipment shall be new. The project will be completed in two phases, to allow for an active toilet room while the construction is ongoing. The building will be occupied during construction.
- C. Include all items required to carry out the intent of the work as described, shown, and implied in the Contract Documents.
- D. Upon discovery, Contractor shall immediately notify the Architect, in writing, discovery of unknown existing conditions, discrepancies, inconsistencies and instances of non-compliance with applicable codes and regulations within the documents, and of any work, which will not fit or properly function if installed as indicated on the Contract Documents. Any additional costs arising from the Contractor's failure to provide such notification shall be borne by the Contractor.
- E. The Work will be constructed under a single lump sum.
- F. The Work can occur during hours that the building is occupied from 8am-4pm, but the contractor shall also plan to schedule work that is disruptive by noise/dust/fumes after hours from 4pm+ Monday to Friday or on weekends.
- G. Owner: The Owner is: State of Rhode Island, Department of Labor & Training.
- H. The Owner's Representative is Sarah Bramblet, Assistant Director, Email: Sarah.Bramblet@dlt.ri.gov Telephone: 401.462.8812
 - 1. The Owner Representative has the administrative authority for the facility and or site where the work is being performed and has the authority to change the contract documents or direct the contractor.
- I. The Architectural Firm is Northeast Collaborative Architects LLC and is located at 650 Ten Rod Road, Box 4, North Kingstown, RI 02852. The Architect representing the firm for this project is Andrea T. Baranyk, Principal, Email: <u>abaranyk@ncarchitects.com</u> Telephone: 401.846.9583.
 - 1. The Architect and Engineer or their accredited representatives are referred to in the Contract Documents as Architect, Engineer, or by pronouns that imply them. As information for the Contractor, the Architect's status is defined as follows:
 - 2. The Architect and Engineer will not make interpretations or decisions directly to the Contractor. All interpretations or decisions will be conveyed through the Construction Administrator or Owner.
 - 3. As the authorized representative of the Owner, the Architect is responsible for review of shop drawings, materials, and equipment intended for the work, in accordance with the General Conditions, and the Supplementary Conditions.
 - 4. Wherever the Architect is mentioned in the documents with an administrative function, it shall include the Project Manager in that function except for shop drawings.

011120 EXAMINATION OF SITE

- A. It is not the intent of the Documents to show all existing conditions. Contractors shall visit and examine the site prior to submitting bids and finalizing the Contract.
- B. Contractor shall confirm the conditions affecting the Work, including, but not limited to, conditions regarding transportation, disposal, handling and storage of materials, availability of labor, water, electric power, uncertainties of weather, roads or similar physical conditions of the site, equipment, and facilities needed prior to and during the prosecution of the Work. Contractor shall further confirm the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, as well as from information presented by the Contract Documents. Any failure by the Contractor to review and confirm the available information shall not relieve the Contractor from the responsibility for properly estimating the difficulty and cost of successfully performing the Work.

011130 PROJECT DOCUMENTS

A. The Specifications and Drawings are intended to describe and illustrate the materials and labor necessary for the Work to construct this Project.

011140 DOCUMENTS FURNISHED

- A. The Contractor shall be responsible for securing and printing copies of drawings and project manual for the execution of the Work.
- B. The Contractor shall receive one (1) set of AutoCAD compatible (latest version) floor plans at no cost on or about the time of execution of the Contract from the Architect. A CAD file release form shall be completed prior to Architect and any of the Architect's Consultants releasing CAD files.

011160 OCCUPANCY REQUIREMENTS Edit as required for the Project

- A. Full Owner Occupancy During Construction: The Owner will occupy the site and existing building during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate Owner usage. Do not interfere with the Owner's operations.
 - 1. Provide adequate building and fire code egress from the buildings during the renovation process. Contractor shall be responsible to maintain and protect egress ways during the construction sequence. Contractor shall be responsible for preparing egress plans for Owner approval and for approval by Local or State Building Official and Fire Marshal, if required.
- B. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the Work.

- 1. Should it become necessary or advisable and possible for the Owner to occupy a portion of the building prior to final acceptance, the Contractor shall cooperate in completing such areas and making the areas accessible for Owner occupancy.
- 2. The Owner's Representative will determine whether such occupancy or use is possible and, if so, will make arrangements for scheduling an Substantial Completion inspection with the Contractor, and Architect.
- 3. A comprehensive list of items to be completed or corrected as issued by the General Contractor, together with the status of completion and terms of occupancy, shall be forwarded to the Architect.
- 4. Prior to partial Owner occupancy, mechanical, plumbing, and electrical systems shall be fully operational and required inspections and tests shall be successfully completed. Upon occupancy, the Owner will operate and maintain mechanical, plumbing and electrical systems serving the occupied portions of the building.
- 5. The Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner occupancy.
- 6. A letter from the Owner to the Contractor will state the terms and conditions of occupancy and that proper insurance coverage has been requested, the effective date of which will indicate to the Contractor that he may cancel insurance coverage for that portion of the project.
- 7. Upon occupancy, the Owner will assume responsibility for maintenance and custodial service for occupied portions of the building.
- 8. Work after Partial Owner Occupancy:
 - a. Contractor shall be responsible for all costs associated with working in an occupied building for all work to complete the area occupied, including, but not limited to, warranty work, balancing and commissioning of systems, repair of latent defects and adjustments after partial occupancy and other items necessary to achieve Final Completion of the Work.
- C. Final Owner Occupancy:
 - 1. A comprehensive list of items to be completed or corrected as issued by the Contractor, together with the status of completion and terms of occupancy, shall be forwarded to the Architect.
 - 2. The Owner's Representative will determine whether such occupancy or use is possible and, if so, will make arrangements for scheduling an Substantial Completion inspection with the Contractor, Owner's Representative, and Architect.
 - 3. Prior to Owner occupancy, mechanical, plumbing, and electrical systems shall be fully operational and required inspections and tests shall be successfully completed. Upon occupancy, the Owner will operate and maintain mechanical, plumbing, and electrical systems serving occupied portions of the building.
 - 4. The Architect will prepare a Certificate of Substantial Completion for the Work to be occupied prior to Owner occupancy.
 - 5. A letter from the Owner to the Contractor will state the terms and conditions of occupancy and that proper insurance coverage has been requested, the effective date of which will indicate to the Contractor that he may cancel insurance coverage for that portion of the project.
 - 6. Upon occupancy, the Owner will assume responsibility for maintenance and custodial service for occupied portions of the building.
 - 7. Work after Owner Occupancy:
 - a. Contractor shall be responsible for all costs associated with working in an occupied building for all work to complete the area occupied, including, but not

limited to, warranty work, balancing and commissioning of systems, repair of latent defects and adjustments after partial occupancy and other items necessary to achieve Final Completion of the Work.

011413 CONTRACTOR'S USE OF PREMISES

- A. Confine operations, including storage of apparatus, equipment and materials to the contract limit lines as shown in the Construction Documents.
- B. The areas and/or spaces, including their access, shall be maintained free and clear throughout the contract term.
- C. Parking for Contractor's employees will be limited to an area (or areas) designated by the Owner. Contractor may be required, at Owner's discretion, to provide identification stickers for employees' cars.

012000 PRICE AND PAYMENT PROCEDURES

- A. Allowances:
 - 1. There are no Allowances on the Project.
- B. Unit Prices General:
 - 1. There are no Unit Prices on the Project.

012500 EQUALS AND SUBSTITUTIONS

- A. Definitions: Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.
 - 1. Equals and Substitutions General: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract.
 - 2. Equal: Any deviation from the specification, which is defined as follows: A replacement for the specified material, device, procedure, equipment, etc., which is recognized and accepted as substantially equal to the listed manufacturer or procedure specified. After review by the Architect the proposed equal may be rejected or approved at the sole discretion of the Owner. Equals must be substantially equivalent to the product or procedure listed in the Specifications with reference to all of the following:
 - a. Quality
 - b. Workmanship
 - c. Operation and function
 - d. Durability
 - e. Suitability for purposes intended
 - f. Size
 - g. Rating
 - h. Cost
 - i. Proposed equal does not constitute a modification in the scope of Work, the Schedule or Architect/Engineer's design intent of the specified material, device, procedure, equipment.

- 3. Substitution: Any deviation from the specified requirements, which is defined as follows: A replacement for the specified material, device, procedure, equipment, which is not recognized or accepted as equal to the manufacturer or procedure listed in the Specification. After review by the Architect the proposed substitution may be rejected or approved at the sole discretion of the Owner. A substitution may be rejected if it is not equal in comparison to the product or procedure listed in the Specifications in one or more of the following areas:
 - a. Quality
 - b. Workmanship
 - c. Operation and function
 - d. Durability
 - e. Suitability for purposes intended
 - f. Size
 - g. Cost
 - h. Rating
 - i. Substitution constitutes a modification in the scope of Work, the Schedule or the Architect/Engineer's design intent of the specified material, device, procedure, equipment.
- 4. The following are not considered requests for Equals or Substitutions:
 - a. Revisions to the Contract Documents requested by the Owner or Architect
 - b. Specified options of products and construction methods included in the Contract Documents
 - c. The Contractor's review and recommendation that the proposed Equal or Substitution is necessary to comply with regulations and orders issued by governing authorities having jurisdiction

B. Submittals:

- 1. Equals and Substitution Request Submittals: The Owner will consider requests for equals or substitutions if received within thirty (30) days after the start of the contract. Requests received after that date will be rejected.
 - a. Submit electronic copies of the required data for the product or procedure listed in the specification section and the proposed Equal or Substitution with reference to all of the evaluation criteria noted above.
 - b. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
 - c. Provide complete documentation showing compliance with the requirements for equals or substitutions, and the following information, as appropriate on a Substitution Request form as required by the Owner:
 - 1) Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors, that will be necessary to accommodate the proposed Equal or Substitution
 - 2) Detailed comparison chart of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect
 - 3) Product Data, including Shop Drawings and descriptions of products and fabrication and installation procedures

- 4) Samples, where applicable or requested
- 5) A statement indicating the effect on the Contractor's Construction Schedule or CPM Schedule compared to the schedule without approval of the Equal or Substitution. Indicate the effect on overall Contract Time
- 6) Cost information, in adequate detail, including a proposal of the net change, if any, in the Contract Sum
- 7) The Contractor's certification that the proposed Equal or Substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated
- 8) The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the Equal or Substitution to perform adequately
- 2. Architect's Action: If necessary, the Architect will request additional information or documentation for evaluation within one week of receipt of the original request for equal or substitution request. The Architect will notify the Owner's Representative with a recommendation to accept or reject the proposed equal or substitution, within two (2) weeks of receipt of the request, or one (1) week of receipt of additional information or documentation, whichever is later. The Owner's Representative will give final acceptance or rejection by the Owner not less than one (1) week after notification.
 - a. Any request deemed an Equal and accepted by the Owner will result in written notification to the Contractor and will <u>not</u> be in the form of a change order for an Equal.
 - b. Any request deemed a Substitution and rejected or approved by Owner's Representative, Architect, and Owner may result in written notification to the Contractor and <u>may</u> be in the form of a change order if the Substitution is approved.
- C. Equal or Substitutions:
 - 1. Conditions: The Architect will review the Contractor's request for Equal or Substitution of a product or method of construction when one or more of the following conditions are satisfied, as determined by the Architect, in consultation with the Owner. If the following conditions are not satisfied, the Architect will return the requests to the Contractor without action except to record noncompliance with these requirements.
 - a. The proposed request does not require extensive revisions to the Contract Documents.
 - b. The proposed request is in accordance with the general intent of the Contract Documents.
 - c. The proposed request is timely, fully documented, and/or properly submitted.
 - d. The proposed request can be provided within the Contract Time. However, the Architect will not consider the proposed request if it is a result of the Contractor's failure to pursue the Work promptly or coordinate activities properly.
 - e. The proposed request will offer the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume. However, if the proposed request requires the Owner to incur additional responsibilities, including but not limited to, additional compensation to the Architect for redesign and evaluation services,

increased cost of other construction by the Owner or similar considerations, then the Owner will have just cause to reject the request for Equal or Substitution.

- f. The proposed request can receive the necessary approvals, in a timely manner, required by governing authorities having jurisdiction.
- g. The proposed request can be provided in a manner that is compatible with the Work as certified by the Contractor.
- h. The proposed request can be coordinated with the Work as certified by the Contractor.
- i. The proposed request can uphold the warranties required by the Contract Documents as certified by the Contractor.
- 2. The Contractor's submission and the Architect's review of Submittals, including but not limited to, Samples, Manufacturer's Data, Shop Drawings, or other such items, which are not clearly identified as a request for an Equal or Substitution, will not be considered or accepted as a valid request for an Equal or Substitution, nor does it constitute an approval.

012600 MODIFICATION PROCEDURES

- A. Request for Information:
 - 1. In the event that the contractor or subcontractor determines that some portion of the drawings, specifications, other contract documents, or construction condition requires clarification or interpretation by the Architect, the contractor shall submit a Request for Information (RFI) in writing to the Architect. Requests for Information may only be submitted by the contractor and shall only be submitted on Request for Information forms as required by the Owner. In the Request for Information, the contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed from the Architect.
 - a. In the Request for Information, the contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.
 - b. The Architect will review the Request for Information to determine whether it is a Request for Information within the meaning of this term. If it is determined that the document is not a Request for Information, it will be returned to the contractor, without review.
 - c. A response to the Request for Information shall be issued within seven (7) Working Calendar Days of receipt of the request from the contractor unless the Owner or Architect determines that a longer time is necessary to provide an adequate response. If a longer time is necessary, the Owner or Architect will, within seven (7) Working Calendar Days of receipt of the request, notify the contractor of the anticipated response time. If the contractor submits a Request for Information on an activity with seven (7) Working Calendar Days or less of float on the current project schedule, the contractor shall not be entitled to any time extension due to the time it takes the Architect to respond to the request.
 - d. The response to the Request for Information from the Architect will not change any requirement of the contract documents. In the event the contractor believes that the response to the Request for Information Response will cause a change to the requirements of the contract document, the contractor shall immediately give written notice to the Architect stating that the contractor believes the response to the Request for Information will result in a Change Order and the reason for the

Change Order. Failure to give such written notice immediately shall waive the contractor's right to seek additional time or cost.

- B. Architect's Request for Information:
 - 1. If Architect observes construction that does not conform to the intent of the Construction Documents, the Architect may submit a "Request for Information" to the Contractor. The Contractor shall have seven (7) days to respond with a solution for correcting the non-conforming construction. The Architect will review the response and take appropriate action to, with Owner's approval, accept the corrective measures, or determine that the proposed resolution is not acceptable. Contractor shall provide additional information on how the non-conforming construction will be corrected.
- C. Minor Changes in the Work
 - 1. The Architect will issue supplemental instruction authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract time.
- D. Proposal Request:
 - 1. Architect/Owner-Initiated Requests For Proposals: The Architect or Owner will issue a detailed description of proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 2. A Proposal Request is issued for information only. It is not instruction to stop work in progress or to execute the proposed change.
 - 3. Within Seven (7) Working Calendar Days of receipt of a Proposal Request, submit a Change Order Proposal with the required information necessary for review by the Architect and Owner.
 - 4. Include a list of quantities of products, unit costs, labor hours, and labor rates, with the total amount of each. Where requested, furnish survey data to substantiate quantities.
 - a. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
 - b. Include costs for General Conditions, overhead, profit and subcontractor markup, and other associated costs, in accordance with the Owner-Contractor contract.
 - c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
 - d. Dollar values shown on the Schedule of Values shall not be the governing (or deciding) final amounts for change orders involving either additional charges or deletions.
- E. Change Order Proposal:
 - 1. When either a Request for Information from the Contractor or a Proposal Request from the Architect or Owner results in conditions that may require modifications to the Contract, the Contractor may propose changes by submitting a Change Order Proposal to the Architect.
 - a. Include statements outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change.
 - b. Indicate the effect of the proposed change on the Contract Sum.
 - c. Include a list of quantities of products required, unit costs, and labor hours, labor rates, with the total amount of each.

- d. When requested, furnish survey data to substantiate quantities.
- e. Include costs for General Conditions, overhead, profit and subcontractor markup, and other associated costs, in accordance with the Owner-Contractor contract.
- f. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
- g. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
- h. Comply with requirements in Section Equals and Substitutions if the proposed change requires an equal or substitution of one product or system for a product or system specified.
- 2. A Change Order Proposal shall not be submitted without submission of a Request for Information from the Contractor or as a response to a Proposal Request submitted by the Architect or Owner.
- F. Construction Change Directive:
 - 1. Construction Change Directive: When the Owner and the Contractor disagree on the terms of a Change Order Proposal resulting from either a Request for Information or Proposal Request, the Architect may issue a Construction Change Directive. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - a. The Construction Change Directive will include a description of the change in the Work. It will also designate the method to be followed to determine change in the Contract Sum or Contract Time.
 - 2. Documentation: The Contractor shall maintain detailed records on a time and material basis for work required by the Construction Change Directive.
 - a. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
 - b. The final value shall be negotiated based on the supporting data to determine the value of the work.
- G. Change Order: Upon the Owner's approval of a Contractor's Change Order Proposal, or the acceptance of final itemized account from a Construction Change Directive, the Architect will issue a Change Order for signatures the Owner, Contractor, and Architect.

012976 APPLICATIONS FOR PAYMENT

- A. Schedule of Values: Submit the Schedule of Values to the Architect at the earliest possible date but no later than twenty-one (21) Calendar Days after the Contract Start Date. A separate Schedule of Values shall be provided for each Phase of the Project identified in Section 011110 Summary of Work, Work Sequence Phase(s).
 - 1. Format and Content: Use the Project Manual Table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line item for each of the Specification Section.
 - 2. Identification: Project identification on the Schedule of Values shall include, but not be limited to, the following:
 - a. Owner
 - b. Project Number
 - c. Project Name

- d. Project Location
- e. Vendor or Sub Contractor's name and address
- 3. Arrange the Schedule of Values in tabular format, containing separate columns including, but not limited to, the following Items:
 - a. Item Number
 - b. Description of Work with related Specification Section or Division Number
 - c. Scheduled Values broken down by description number, type material, units of each material
 - d. Name of subcontractor
 - e. Name of manufacturer or fabricator
 - f. Name of supplier
 - g. Retainage
 - h. Contract sum in sufficient detail
- 4. Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
- 5. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Break principal subcontract amounts down into several line items.
- 6. Round amounts to nearest whole dollar. The total shall equal the Contract Sum.
- 7. Unit-Cost Allowances: Show the line-item value of unit-cost allowances, as a product of the unit cost, multiplied by the measured quantity. Estimate quantities from the best indication in the Contract Documents.
- 8. General Conditions: Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin 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 the Contractor's option.
- B. General: Each Application for Payment shall be consistent with previous applications and payment as certified by the Architect and paid by the Owner.
 - 1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment, involve additional requirements.
 - 2. Payment-Application Terms: The Contractor may submit and the Owner will process monthly progress payments.
 - 3. Payment-Application Forms: Use the Application for Payment form as required by the Owner.
 - 4. For each item, provide a column including but not limited to the following items:
 - a. Item Number
 - b. Description of Work and Related Specification Section or Division
 - c. Scheduled Value, break down by units of material and units of labor
 - d. Work completed from previous application
 - e. Work completed this period
 - f. Materials presently stored

- g. Total completed and stored to date of application
- h. Percentage of Completion
- i. Balance to Finish
- j. Retainage
- 5. Application Preparation: Complete every entry on the Application form. The Architect will return incomplete Applications without action.
 - a. Entries shall match data on the Schedule of Values.
 - b. Include amounts of Change Orders issued prior to the last day of the construction period covered by the application.
- 6. Transmittal: Except for final payment, submit to the Architect by a method ensuring receipt within forty-eight (<u>48</u>) hours. Submit one (<u>1</u>) signed and notarized original of each Application for Payment, including lien waivers and similar attachments, when required, along with three (<u>3</u>) copies.
 - a. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Architect.
- 7. Administrative: Provide the following administrative actions and submittals before, or with, the first Application for Payment, and updated as required for subsequent Applications for Payment including, but not limited to, the following items:
 - a. List of subcontractors and suppliers' name, FEIN/Social Security numbers, and Rhode Island Tax Registration Numbers
 - b. List of principal suppliers and fabricators
 - c. Schedule of Values
 - d. Contractor's Construction Schedule
 - e. List of Contractor's staff assignments
 - f. List of Contractor's principal consultants
 - g. Copies of all applicable permits
 - h. Copies of authorizations and licenses from governing authorities for performance of the Work
 - i. Proof that as-built documents are updated as required by Section 017700 Contract Closeout
 - j. Initial as-built survey and damage report, if required
- C. Application for Payment at Substantial Completion:
 - 1. Include partial Certificates of Substantial Completion if issued previously for Owner occupancy of designated portions of the Work.
 - 2. Provide the following administrative actions and submittals before, or with, this Application for Payment, including, but not limited to, the following:
 - a. Occupancy permits and similar approvals
 - b. Warranties (guarantees) and maintenance agreements
 - c. Test/adjust/balance records
 - d. Maintenance instructions
 - e. Startup performance reports
 - f. Changeover information related to Owner's occupancy, use, operation, and maintenance
 - g. Final cleaning
 - h. Application for reduction of retainage and consent of surety
 - i. Advice on shifting insurance coverage

- j. Final progress photographs
- k. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion
- D. Final Payment Application: Provide an executed Application for Payment by a person authorized to sign legal documents on behalf of the Contractor. Provide the following administrative actions and submittals before, or with, this Application for Payment, including, but not limited to, the following:
 - 1. Completion of Project Closeout requirements
 - 2. Completion of list of items remaining to be completed as indicated on the attachment to the Certificate of Substantial Completion
 - 3. Ensure that unsettled claims will be settled
 - 4. Ensure that incomplete Work is not accepted and will be completed without undue delay
 - 5. Transmittal of required Project construction records to the Owner, including as-built documents indicated in Section 017700 Contract Closeout
 - 6. Certified property survey
 - 7. Proof that taxes, fees, and similar obligations were paid
 - 8. Removal of temporary facilities and services
 - 9. Removal of surplus materials, rubbish, and similar elements
 - 10. Completion of the requirements of the General Conditions and Supplementary Conditions for Final Acceptance, Final Completion, Final Inspection, and Final Payment
 - 11. Asbestos, Lead or other hazardous material manifests

013100 COORDINATION

- A. Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly progress of the Work. Coordinate construction operations that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required obtaining 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.
 - 4. Construction Mobilization:
 - a. Cooperate with the Owner's Representative and Architect in the allocation of mobilization areas of the site, for field offices and sheds, for Owner facility access, traffic, and parking facilities.
 - b. During Construction, coordinate use of site and facilities through the Architect and Owner's Representative.
 - c. Comply with approved procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
 - d. Comply with instructions for use of temporary utilities and construction facilities.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

- 1. Prepare similar memoranda for the Architect, Owner and separate contractors where coordination of their work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules
 - 2. Installation and removal of temporary facilities
 - 3. Delivery and processing of submittals
 - 4. Progress meetings
 - 5. Preinstallation conferences
 - 6. Project closeout activities
 - 7. Startup of system
- D. Coordination of Inspections:
 - 1. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed and coordinate such inspections with the Owner, Architect, and authorities having jurisdiction. If unsatisfactory conditions exist notify the Owner's Representative and Architect, immediately. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
 - 2. The Contractor shall coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.
- E. Coordination Drawings: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
 - 1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed

resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

2. Review: Architect will review coordination drawings to confirm that in general the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.

013119 PROJECT MEETINGS

- A. Pre-construction Conference:
 - 1. The Contractor shall attend a Pre-construction Conference before starting construction, as scheduled by the Architect or Owner. This meeting will take place within fourteen (14) Calendar Days after the written Notice to Proceed and before the Contract Start Date.
 - 2. Attendees shall include Owner, Architect, Architect's consultants, Contractor and its Project Manager and Superintendent, major subcontractors. All participants shall be familiar with the 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. Critical work sequencing
 - c. Progress meeting schedule
 - d. Designation of responsible personnel
 - e. Procedures for processing field decisions and Change Orders
 - f. Procedures for processing Applications for Payment
 - g. Distribution of Contract Documents
 - h. Submittal of Shop Drawings, Product Data, and Samples
 - i. Preparation of record documents
 - j. Use of the premises
 - k. Parking availability
 - 1. Office, work, and storage areas
 - m. Equipment deliveries and priorities
 - n. Safety procedures
 - o. First aid
 - p. Security
 - q. Housekeeping
 - r. Working hours
- B. Progress Meetings:
 - 1. The Contractor shall conduct progress meetings at the Project Site at regular intervals as determined at the Pre-construction Conference. The Contractor shall notify the Owner and the Architect of the scheduled Progress Meeting dates. Coordinate dates of Progress Meetings with preparation of Application for Payment requests.
 - 2. Attendees: In addition to representatives of the Contractor, Building Users, Owner and the Architect, subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities may be requested to attend these meetings on an as needed basis. All participants at the meeting shall be familiar with the Project and authorized to conclude matters

relating to the Work. The Contractor shall include the site superintendent as a minimum.

- 3. Agenda: Progress Meetings shall review and correct or approve minutes of the previous Progress Meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.
 - a. Construction Schedule: Review progress since the last Progress Meeting. Determine where each activity is in relation to the required Contractor's Construction Schedule and whether each activity is on time or ahead or behind Schedule. Determine how Work that is behind Schedule will be expedited; secure commitments from parties involved to do so. Discuss whether Schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.
 - b. Review the present and future needs of each entity present.
- 4. Reporting: Contractor shall promptly distribute minutes of each meeting, no later than three (3) days prior to next meeting, to each attendee, and others as determined.

013216 CONSTRUCTION SCHEDULE

- A. Construction Schedule Format:
 - 1. Format: Horizontal bar chart with a separate bar for each major portion of the Work or operation, identifying first work day of each week
 - 2. Sequence of Listings: Use Table of Contents of this Project Manual and the chronological order of the start of each item of work
 - 3. Scale and Spacing: Provide space for notations and revisions
- B. Content:
 - 1. Show complete sequence of construction by activity, with beginning and completion of each element of construction.
 - 2. Identify work of separate phases and other logically grouped activities.
 - 3. Show accumulated percentages of completion of each item, and total percentage of Work completed, as of the first day of each month.
 - 4. Provide separate schedule of submittal dates for shop drawings, product data, and samples, Owner furnished products and any products identified as Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.
 - 5. Indicate delivery dates for Owner furnished products and any products identified as Allowances.
 - 6. Coordinate with Schedule of Values specified in Section 012976 Application for Payment.
 - 7. Indicate critical path with original baseline indicated.
- C. Submittals And Revisions To Schedules:
 - 1. Indicate progress of each activity on date of submittal, and projected completion date of each activity.
 - 2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
 - 3. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.
 - 4. Submit revised Construction Schedules with each Application for Payment.

D. Distribution:

- 1. Distribute copies of the Construction Schedules to, Architect, Owner, Subcontractors, suppliers, and other concerned parties.
- 2. Instruct recipients to promptly report, in writing, problem anticipated by projections indicated in schedules.

013300 SUBMITTALS

- A. Summary
 - 1. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including but not limited to the following:
 - a. Submittal Procedures
 - b. Submittal schedule
 - c. Daily Construction reports
 - d. Shop Drawings
 - e. Shop Drawings for Fire Protection Systems
 - f. Product Data
 - g. Samples
 - h. Quality assurance submittals
 - i. Architects Action
- B. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:
 - 1. Permits
 - 2. Applications for Payment
 - 3. Performance and payment bonds
 - 4. Construction schedule
 - 5. Daily construction reports
 - 6. Construction Photographs
 - 7. Insurance certificates
 - 8. List of subcontractors
 - 9. Subcontractors/Suppliers FEIN and Rhode Island tax registration numbers
- C. Definitions
 - 1. Coordination Drawings show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or to function as intended and as identified in the Specification Division 2 through 16.
 - 2. Preparation of Coordination Drawings is specified in Division 1 Section 013100 Coordination and may include components previously shown in detail on Shop Drawings or Product Data.
 - 3. Field samples are full-size physical examples erected on-site to illustrate finishes, coatings, or finish materials. Field samples are used to establish the standard by which the Work will be judged.
 - 4. Mockups are full-size assemblies for review of construction, coordination, testing, or operation.
- D. Submittal Procedures

- 1. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
- 2. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
- 3. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
 - b. The Architect reserves the right to reject incomplete submitted packages.
- 4. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
 - a. Allow two (2) weeks for initial review. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow two (2) weeks for reprocessing each submittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- E. Submittal Preparation: Place a permanent label, title block or 8-1/2 inches x 11 inches cover page, acceptable by the Architect, on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
 - 1. Submittals shall be submitted and distributed electronically, in PDF format unless large-scale drawings are required and electronic submission is not possible.
 - 2. Provide a space approximately 4 inches by 5 inches on the label, beside the title block or on the cover page on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 - 3. Include the following information on the label for processing and recording action taken.
 - a. Project Name
 - b. Date
 - c. Name and address of the Architect and Owner
 - d. Name and address of the Contractor
 - e. Name and address of the subcontractor
 - f. Name and address of the supplier
 - g. Name of the manufacturer
 - h. Number and title of appropriate Specification Section
 - i. Drawing number and detail references, as appropriate
 - j. Indicate either initial or resubmittal
 - k. Indicate deviations from Contract Documents
 - 1. Indicate if equal or substitution
- F. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal electronically from the Contractor to the Architect using a transmittal form. The Architect will return submittals to the Contractor after

action is taken. The Architect will not accept submittals received from sources other than the Contractor.

- 1. Include Contractor's certification that information complies with Contract Document requirements.
- G. Shop Drawings
 - 1. Submit information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.
 - 2. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:
 - a. Dimensions
 - b. Identification of products and materials included by sheet and detail number
 - c. Compliance with specified standards
 - d. Notation of coordination requirements
 - e. Notation of dimensions established by field measurement
 - f. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 36 by 48 inches
 - g. Shop drawings shall be submitted in electronic PDF format unless hard copies are required due to size of files
 - h. Details shall be large scale and/or full size
 - 3. The Contractor shall review Shop Drawings, signify that the Shop Drawing complies with the Contract Documents with a stamp and signature, and submit them with reasonable promptness and in orderly sequence so as to cause no delay in the Work or in the Work of any subcontractor. Shop Drawings shall be properly identified as specified for item, material, workmanship, and specification section. At the submission, the Contractor shall inform the Architect, in writing of any deviation in the shop drawings from the requirements of the Contract Documents.
 - 4. The Architect will review and comment on shop drawings with reasonable promptness, but only for conformance with the design concept of the project and with the information given in the Contract Documents. Shop Drawings that indicate insufficient study of drawings and specifications, illegible portions or gross errors, will be rejected. Such rejections shall not constitute an acceptable reason for granting the Contractor additional time to perform the work.
 - 5. The Contractor shall make corrections required by the Architect and shall resubmit shop drawings for review.
 - 6. The Architect's review and comments on shop drawings shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents.
 - 7. Only final reviewed shop drawings shall be used on the project site.
 - 8. The Work installed shall be reviewed in accordance with the shop drawings and Contract Documents. Final Review of the shop drawings by the Architect shall not constitute acceptance by the Owner and the Architect of a variation or deviation from the Contract Documents unless the variation or deviation is clearly identified on the Shop Drawings. A variation or deviation from the reviewed shop drawings or from

the Contract Documents shall not be used as a reason for the Contractor to issue a change order.

- H. Product Data
 - 1. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, schedules, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.
 - 2. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information.
 - 3. Include the following information:
 - a. Manufacturer's printed recommendations
 - b. Compliance with trade association standards
 - c. Compliance with recognized and specified testing standards
 - d. Application of specified testing labels and seals
 - e. Notation of dimensions verified by field measurement
 - f. Notation of coordination requirements
 - 4. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 - 5. Submittals: Submit electronic copy in PDF format unless the size of the submittal or size of drawings do not permit electronic submission.
 - 6. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - a. Do not permit non-reviewed copies of Product Data to be used for construction.
- I. Samples
 - 1. Submit full-size and fully fabricated Samples, cured and finished as specified, and physically identical with the material or product proposed. Samples include partial or full sections of manufactured or fabricated components, multiple materials to illustrate variations, color range sets, and swatches showing color, texture, and pattern. When the Architect provides Samples, prepare Samples to match.
 - 2. Store, mount or display Samples on site in the manner to facilitate review. If requested by Architect, arrange for distribution of samples to the Architect. Include the following:
 - a. Specification Section number and reference
 - b. Generic description of the Sample
 - c. Sample source
 - d. Product name or name of the manufacturer
 - e. Compliance with recognized standards
 - f. Availability and delivery time
 - 3. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

- a. Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least three (3) multiple units that show approximate limits of the variations.
- b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
- c. Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. Indicate special requests regarding disposition of Sample submittals.
- d. Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.
- 4. Preliminary Submittals: Submit a full set of choices where Samples are submitted for selection of color, pattern, texture, or similar characteristics from a range of standard choices, unless otherwise noted.
 - a. The Architect will review and return preliminary submittals with the Architect's notation, indicating selection and other action.
- 5. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit two (2) sets. The Architect will return one set marked with the action taken.
- 6. Maintain sets of Samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.
 - a. Reviewed Samples may be used for comparison for final acceptance of the construction.
- 7. Field samples are full-size examples erected on-site to illustrate finishes, coatings, or finish materials and to establish the Project standard.
 - a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.
- J. Quality Assurance Submittals
 - 1. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required.
 - 2. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation comply with specified requirements, submit a certification from the manufacturer certifying compliance with specified requirements.
 - a. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.
 - 3. Inspection and Test Reports: Requirements for submittal of inspection and test reports from independent testing agencies are specified in Division 1 Section Quality Control.
- K. Architect's Action
 - 1. Except for submittals for the record or information, where action and return is required, the Architect will review each submittal, mark to indicate action taken, and return.

- a. Compliance with the Contract Documents is the Contractor's responsibility.
- 2. Action Stamp: The Architect will stamp each submittal and will mark the stamp to indicate the action taken, as follows:
 - b. Final Unrestricted Release: When the Architect marks a submittal "No Exceptions Taken," the Work covered by the submittal may proceed, provided it complies with requirements of the Contract Documents.
 - c. Final-But-Restricted Release: When the Architect marks a submittal "Make Corrections Noted," the Work covered by the submittal may proceed, provided it complies with notations or corrections on the submittal and requirements of the Contract Documents.
 - d. Returned for Resubmittal: When the Architect marks a submittal "Rejected, or Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations and resubmit. Repeat if necessary to obtain different action mark.
 - 1) If more than one re-submission is required, Architect will notify Owner. Owner may require a deduct Change Order to compensate Architect for additional time to review multiple re-submissions.
 - 2) Do not use, or allow others to use, submittals marked "Rejected, or Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.
 - Other Action: Where a submittal is for information, record purposes, special processing, or other activity, the Architect will return the submittal marked "Action Not Required."
 - e. Unsolicited Submittals: The Architect will discard unsolicited submittals without action.

014100 REGULATORY REQUIREMENTS

- A. Permits, Licenses, and Certificates: Contractor shall be responsible for obtaining all local and state municipal documentation, including permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, as required for contractor to obtain a Building Permit and Certificate of Occupancy.
- B. Municipal Inspections: Contractor shall be responsible for obtaining all required municipal inspections from municipal departments that have jurisdiction over the project.

014220 REFERENCE STANDARDS & DEFINITIONS

- A. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. References to standard specifications and codes refer to the editions current at the date bids were received. References include their addenda and errata, if any, and shall be considered a part of these specifications as if they were printed herein in full.
- C. Manufacturers' standard warranties or guarantees shall apply when their products are used on this project, unless more stringent warranties are specified.

D. Flame Spread Ratings: All materials that are required to meet specified Flame Spread Ratings shall be submitted to the owner as part of the submittal process.

014500 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
 - 2. Payment for these services will be made by Owner from testing and inspection allowances or as authorized by Change Orders.
 - 3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
 - 4. Materials and assemblies for this project will be tested and construction operations inspected as the work progresses. Failure to detect any defective work or material shall not prevent later rejection when such defect is discovered nor shall it obligate the Owner for final acceptance.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Provide testing, inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. All tests required by the individual specification sections are required to be scheduled and notification given to the Testing Agency and Owner a minimum of twenty-four (24) hours in advance of the test/inspection as applicable.
 - 1. Cost for all Contractor's testing and inspection services will be paid by the Owner.
 - 2. Where testing services are indicated as Contractor's responsibility, engage a qualified testing agency to perform quality-control services.
 - a. Engage inspection and testing service agencies, including independent testing laboratories, that are pre-qualified as complying with the National Voluntary Laboratory Accreditation Program and that specialize in the types of inspections and tests to be performed.
 - b. Each independent inspection and testing Agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.
 - c. Agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.
 - d. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 - 3. Notify testing agencies at least twenty-four (24) hours in advance of time when Work that requires testing or inspection will be performed.
 - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 6. Owner will issue a deduct Change Order for the Contractor to reimburse the Owner for payment of tests due to the following conditions:

- a. When the Contractor notifies the Testing Agency less than twenty-four (24) hours before the expected time of testing.
- b. When the Contractor requires testing for his own convenience.
- c. When the Contractor schedules a test and is not ready for the required test.
- 7. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- 8. The Owner's use of testing and inspection services shall not relieve the contractor of the responsibility to furnish materials and finished construction in full compliance with the Contract Documents.
- C. Retesting: The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.
 - 1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.
 - 2. The Owner will issue a credit change order to the Contractor to cover all costs incurred related to all re-tests/re-inspection due to non-compliance to the contract documents, including but not limited to the Owners costs and the Consultants costs.
- D. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the Owner sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:
 - 1. Provide access to the Work.
 - 2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
 - 3. Take adequate quantities of representative samples of materials that require testing or assist the Owner in taking samples.
 - 4. Provide facilities for storage and curing of test samples.
 - 5. Deliver samples to testing laboratories.
 - 6. Provide an approved design mix proposed for use for material mixes that require control by the testing Owner.
 - 7. Provide security and protection of samples and test equipment at the Project Site.
- E. Duties of the Testing Agency: The independent testing Agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Contractor, Architect and Owner's Representative in performance of the testing Agency's duties. The testing Agency shall provide qualified personnel to perform required inspections and tests.
 - 1. The testing Agency shall notify the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. The testing Agency is not authorized to modify requirements of the Contract Documents or approve or accept any portion of the Work.
 - 3. The testing Agency shall not perform any duties of the Contractor.
- F. Fire Alarm/Acceptance Testing Procedures:
 - 1. Fire alarm testing shall be as required by the authority having jurisdiction.
- G. Test and Inspection Reports:

- 1. Submit a certified written report of each inspection, test, or similar service to the Architect and Owner's Representative.
- 2. Submit additional copies of each written report, when applicable or when requested by the Authority Having Jurisdiction.
- 3. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
 - a. Date of issue
 - b. Project title and number
 - c. Name, address, and telephone number of testing Owner
 - d. Dates and locations of samples and tests or inspections
 - e. Names of individuals making the inspection or test
 - f. Designation of the Work and test method
 - g. Identification of product and Specification Section
 - h. Complete inspection or test data
 - i. Test results and an interpretation of test results
 - j. Ambient conditions at the time of sample taking and testing
 - k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements
 - 1. Name and signature of laboratory inspector
 - m. Recommendations on re-testing
- H. Conflicting Information
 - 1. The Contract Documents are complimentary. They describe the intent of the final product. The contractor's performance is expected to meet the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated final product.
 - 2. If compliance with two or more standards or instructions is specified and these standards establish different or conflicting requirements for minimum quantities or quality levels, contractor shall comply with the most stringent, more costly, and/or more time consuming requirement. Refer conflicting requirements to Architect for a decision before proceeding.
 - 3. 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.
 - 4. The order of information describing the Work is as follows:
 - a. Schedules shall override Specifications
 - b. Specifications shall override drawing details
 - c. Drawn details shall override building or wall sections
 - d. Drawn building or wall sections shall override drawing plans or elevation views
 - 5. Interpretation:
 - a. The Contractor shall provide the final decisions and coordination for any means and methods conflicts that arise with the Work.
 - e. The Architect shall provide the final interpretation of any conflicting information on the Construction Documents.
- I. Copies of Standards:

- 1. Each entity engaged in construction on the Project shall be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
- 2. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.
- J. Repair and Protection:
 - 1. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes.
 - 2. Protect construction exposed by or for quality-control service activities, and protect repaired construction.
 - 3. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

015035 CONSTRUCTION EQUIPMENT

- A. The Contractor shall furnish tools, apparatus and appliances, hoists and/or cranes and power for same, scaffolding, runways, ladders, temporary supports and bracing and similar work or material necessary to insure convenience and safety in the execution of the Contract, except where this is otherwise specified in any Specification Section. Responsibility for design, strength and safety shall remain with the Contractor. All such items shall comply with Federal OSHA regulations and applicable codes, statutes, rules, and regulations, including compliance with the requirements of the current edition of the Manual of Accident Prevention in Construction published by the A.G.C. and the standards of the State Labor Department.
- B. Staging, exterior and interior, required for the execution of this Contract, shall be furnished, erected, relocated if necessary, and removed by the Contractor. Staging shall be maintained in a safe condition.

015045 PROTECTION

- A. Protect buildings, equipment, furnishings, grounds and plantings from damage. Any damage shall be repaired or otherwise made good at no expense to the Owner.
- B. Provide protective coverings and barricades to prevent damage. The Contractor shall be held responsible for, and must repair or replace construction, at no cost to the Owner, any damage due to improper coverings. Protect the public and building personnel from injury.
- C. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.
- D. Provide protective coverings for walls, projections, jambs, sills and soffits of openings. Protect finished floors and stairs from traffic, movement of heavy objects and storage. Prohibit traffic and storage on waterproofed and roofed surfaces and on lawn and landscaped areas.
- E. Provide temporary partitions and ceilings to separate work areas from Owner-occupied areas to prevent penetration of dust and moisture into Owner-occupied areas and equipment. Erect framing and sheet materials with closed joints and sealed edges at intersections with existing surfaces.

015050 SECURITY

- A. Provide security program and facilities to protect work, existing facilities and Owner's operations from unauthorized entry, vandalism and theft. Coordinate with Owner's security program.
- B. The Contractor shall be solely responsible for damage, loss or liability due to theft or vandalism.

CONDUCT WHILE ON THE SITE

- A. DO NOT communicate with any persons under the age of 18.
- B. Smoking, including e-cigarettes, is not permitted on and within 100 feet of the property.
- C. Drinking alcoholic beverages is not permitted on and within 100 feet of the property.
- D. Use of any banned substances will be immediately reported to police and personal will be prosecuted to the fullest extent provided by law.

015055 TRAFFIC WAYS

- A. The Contractor may use on-site paved roads and parking areas but shall not encumber same or their access. Public highways shall not be blocked by standing trucks, parked cars, material storage, and construction operations or in any other manner.
- B. Public roads and existing paved roads, drives and parking areas on Owner's property shall be kept free from scrap or debris due to construction operations and any damage to their surface caused by the Contractor shall be repaired at no expense to the Owner.
- C. If the work of the Contract affects public use of any street, road, highway or thoroughfare, the Contractor, shall confer with the police authority having jurisdiction to determine if and how many police are needed for public safety in addition to any barriers and signals that may be needed. Owner will not be responsible for payment of any needed police services.

015113 TEMPORARY ELECTRICITY AND LIGHTING

A. Connect to existing electric power service. Maintain equipment in a condition acceptable to Owner. Provide branch wiring and distribution boxes located to provide power and lighting by construction-grade extension cords. Take measures to conserve energy. Provide lighting for construction operations. At the termination of construction, remove temporary lighting and power and restore or provide permanent power and lighting as required by the Contract Documents.

015116 FIRE PROTECTION

A. The Contractor shall be responsible for loss or damage by fire to the work of the Contract until completion. Any fire used within the structure for working purposes shall be extinguished when not in use. Bitumen or tar shall be melted on the ground only. No flammable material shall be stored in the structure in excess of amounts allowed by the authorities. No gasoline shall be stored in or close to the building at any time. The Contractor shall assign a responsible employee to be in charge of fire protection measures.

B. If a single-ply roof is included in the work that requires cleaning of mating surfaces of laps with combustible liquids, limit the amount of combustible liquids on roof to 2 gallons, which shall be in U.L., listed containers. Also provide one 30 B:C fire extinguisher within 75 feet of any point on the roof.

015136 TEMPORARY WATER

A. Water for construction purposes may be taken from the existing service. The Contractor shall provide connections, approved backflow prevention device, meter and pipe to the water main or nearest hydrant, subject to the approval of Authorities Having Jurisdiction (AHJ). Upon completion of work, the Contractor shall remove the temporary connections and backfill if necessary. If new water service is installed before construction is complete, the new system may be used provided it is returned to the Owner in as-new condition.

015219 TEMPORARY SANITARY FACILITIES

- A. The Contractor shall provide, where directed, chemical toilets with toilet tissue, plus wash basins with water, soap, and paper towels. Provide adequate facilities for each gender. The Contractor shall maintain the facilities in a sanitary condition.
- B. If acceptable by Owner, designated existing toilets may be used during construction. It is the responsibility of the Contractor to maintain the facilities in a clean and sanitary condition and return them to their original condition after use.

015400 TEMPORARY CONTROLS

- A. Temporary Environmental Controls: Contractor shall provide the following controls:
 - 1. Dust Control (construction and demolition)
 - 2. Noise Control

015600 BARRIERS AND ENCLOSURES

- A. Provide barriers to prevent public entry into construction areas and to protect existing facilities from damage by construction operations.
- B. Barriers and enclosures shall be in conformance with code requirements. Do not block egress from occupied buildings unless necessary to further the work of the Contract. In this case, secure the Department's approval of an alternate egress plan.

015800 PROJECT SIGNS

- A. Project Signs: Engage an experienced sign company to apply graphics. Comply with details to be furnished by the Owner's Representative.
 - 1. Project Sign: Fabricate sign of 48" x 96" x 3/4", exterior grade, A-B plywood. Mount sign on preservative treated 4" x 4" x 96" posts. The Owner will provide design, color selection, font type and sizes, and illustration to be included on the Project Sign. Paint both sides and all edges of sign and the posts with two coats of exterior,

white, alkyd primer. Paint the sign with paint recommended by sign company for exterior use or use film coatings suitable for exterior signs. Erect the sign within two weeks after execution of the Contract and remove the sign within one week after completion of the project, in location determined by Owner.

015850 IDENTIFICATION BADGES / HELMET STICKERS

- A. Identification Badges for Contractor's Personnel, Visitors:
 - 1. If requested by Owner, provide each person working or visiting at the site with an identification badge, bearing the name of the Contractor and a number.

016600 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Materials and Equipment: Shall be delivered, stored and handled to prevent intrusion of foreign matter and damage by weather or breakage. Packaged materials shall be delivered and stored in original, unbroken packages.
 - 1. Promptly inspect shipments to assure that products comply with requirements, that quantities are correct and products are undamaged.
 - 2. Packages, materials and equipment showing evidence of damage will be rejected and replaced at no additional cost to the Owner.
- B. Storage and Protection:
 - 1. Store products in accordance with manufacturers' instructions with seals and labels intact and legible. Store sensitive products in weathertight enclosures; maintain within temperature and humidity range required by manufacturer.
 - 2. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
 - 3. Store loose granular material on solid surfaces in a well-drained area; prevent mixing with foreign matter.
 - 4. Arrange storage to provide access for inspection. Periodically inspect to insure products are undamaged and are maintained under required conditions. Keep log showing date, time and problems, if any.
 - 5. Stone, masonry units and similar materials shall be stored on platforms or dry skids and shall be adequately covered and protected against damage.
 - 6. Prepare, as directed by the Owner, one area or space in the building for storage of Owner equipment.

017329 CUTTING AND PATCHING

- A. Openings and chases may not be shown on the Drawings. Examine the Contract Documents and provide chases, channels or openings where needed.
- B. Install sleeves, inserts and hangers furnished by the trades needing same.
- C. Close all openings after installing work into openings, channels and/or chases. Restore finishes to new work shall match the original. The trade customarily responsible for the particular kind of work shall do Restoration Work.
- D. Permission shall be obtained from the Owner's Representative and Architect before cutting beams, arches, lintels or other structural members.

- E. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
 - 1. Provide a Cutting and Patching proposal for review and obtain approval from the Architect/Engineer before cutting and patching the following structural elements:
 - a. Foundation construction
 - b. Bearing and retaining walls
 - c. Structural concrete
 - d. Structural steel
 - e. Lintels
 - f. Structural decking
 - g. Miscellaneous structural metals
 - h. Equipment supports
 - i. Piping, ductwork, vessels, and equipment
- F. Perform cutting and patching to integrate all elements of the work. Provide penetrations of existing surfaces. Provide samples for testing. Seal penetrations through floors, walls, ceilings and roofs, as applicable. Restore or preserve fire-rated and smoke-barrier construction. Construction and finishes shall match original work.
- G. Verify dimensions for built-in work and/or work adjoining that of other trades before ordering material and performing work. Discrepancies shall be submitted to the Owner's Representative and Architect for review and approval before proceeding with the work.

017350 RENOVATION, ALTERATION AND DEMOLITION PROJECT PROCEDURES

- A. This Section includes requirements for renovations, alterations and selective demolition.
- B. Products For Patching and Extending Work:
 - 1. New materials: As specified in product sections, match existing products, work and appearance.
 - 2. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary. Refer to existing construction as a standard.
- C. Inspection- General:
 - 1. Verify that demolition is complete and areas are ready for installation of new Work.
 - 2. Beginning of restoration Work means acceptance of existing conditions.
- F. Preparation:
 - 1. Cut, move, or remove items necessary for access to alterations and renovation Work. Replace and restore at completion to match new or existing construction and materials.
 - 2. Remove unsuitable material not marked for salvage. Replace materials as specified for finished Work.
 - 3. Remove debris and abandoned items from area and from concealed spaces.
 - 4. Remove surface finishes and prepare surfaces to provide proper installation of new Work and finishes.
 - 5. Close openings in exterior surfaces to protect existing Work.
- G. Installation:
 - 1. Coordinate Work of alterations and renovations to expedite completion and, if required, sequence Work to accommodate Owner occupancy.

- 2. Remove, cut and patch Work in a manner to minimize damage and to provide restoring products and finishes to original or specified condition in accordance with Section 01045 "Cutting and Patching."
- 3. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with neat transition to adjacent finishes in accordance with Section 017329 "Cutting and Patching."
- 4. In addition to specified replacement of equipment and fixtures, restore existing plumbing, heating, ventilation, air conditioning, fire protection, electrical, and other systems to full operational condition.
- 5. Recover and refinish Work that exposes mechanical and electrical Work exposed accidentally during the Work.
- 6. Install Products as specified in individual sections.
- H. Transitions:
 - 1. Where new Work abuts or aligns with existing, perform a smooth and even transition. Patch work to match existing adjacent Work in texture and appearance.
 - 2. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect/Engineer.
- I. Adjustments:
 - 1. Where removal of partitions or walls result in adjacent spaces becoming one space, or remaining voids requiring patching, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
 - 2. Where a change of plane of ¹/₄ inch in 12 inches or more occurs, request recommendation from Architect for providing a smooth transition.
 - 3. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.
 - 4. Fit Work at penetrations of surfaces as specified in Section 017329 "Cutting and Patching."
- J. Repair of Damaged Surfaces:
 - 1. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing imperfections.
 - 2. Repair substrate prior to patching finish.
- K. Finishes:
 - 1. Finish surfaces as specified in individual Product sections.
 - 2. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.
- L. Cleaning:
 - 1. In addition cleaning specified in Section 017400 "Cleaning," and Section 017700 "Contract Closeout," clean Owner occupied areas of Work.

017400 CLE	ANING
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- A. Maintain areas under Contractor's control free of waste materials, debris and rubbish. Maintain in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces and other closed or remote spaces before closing the space.

- C. Periodically clean interior areas before start of surface finishing and continue cleaning on an as-needed basis.
- D. Control cleaning operations so that dust and other particulates will not adhere to products and finishes prior to manufacturer's recommended curing times.
- E. Remove waste materials, debris and rubbish from site daily and dispose legally off-site. No debris shall remain inside the building or anywhere on site upon final acceptance of the project.

017700 CONTRACT CLOSEOUT

- A. Substantial Completion:
 - 1. Preliminary Procedures: Before requesting inspection for Certification of Substantial Completion, complete the following. List exceptions in the request.
 - a. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
 - 1) Include supporting documentation for completion as indicated in the Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - 2) If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete items, and reasons the Work is not complete.
 - b. Advise the Owner of pending insurance changeover requirements.
 - c. Submit specific warranties, bonds, maintenance agreements, final certifications, and similar documents.
 - d. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include Certificates of Occupancy, operating certificates, and similar releases.
 - e. Submit record drawings, maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - f. Deliver tools, spare parts, extra stock, and similar items.
 - g. Advise the Owner's personnel of changeover in security provisions.
 - h. Demonstrate, through operation and testing, the functions of all systems and/or equipment to the satisfaction of the Owner.
 - i. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
 - 2. Inspection Procedures: The Contractor shall be ready and prepared when requesting an inspection for a Substantial Completion. If the inspection reveals that the work is not complete, there are extensive punchlist items and the items listed above are not complete, the Owner's Representative, Architect, and Owner will either not provide the inspection or, if the inspection was provided, will determine the inspection has failed.
 - 3. The Contractor is responsible for all costs to re-inspect due to a failed inspection. The Owner will issue a deduct Change Order to cover all costs for re-inspection.
 - a. The Architect will repeat inspection when requested and assured that the Work is substantially complete.
 - b. Results of the completed inspection will form the basis of requirements for final acceptance.

- B. Final Acceptance:
 - 1. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
 - a. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
 - b. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 - c. Submit a certified copy of the final inspection list of items to be completed or corrected, endorsed and dated by the Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - d. If required to verify final payment of utilities used during construction, submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the Owner took possession of and assumed responsibility for corresponding elements of the Work.
 - e. Submit consent of surety to Final Payment.
 - f. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 2. Final Inspection Procedure: Owner, Architect and Owner's Representative will inspect the Work upon receipt of notice from the Contractor that the Work, including inspection list items from earlier inspections, has been completed.
 - a. Upon completion of Final Inspection, the Owner's Representative will prepare a certificate of final acceptance.
- C. As Built Document Submittals:
 - 1. General: Do not use record documents for construction purposes. Protect Record Documents from deterioration and loss in a secure location. Provide access to record documents for the Architect's reference during normal working hours. Keep documents current; do not permanently conceal any work until required information has been recorded. Failure to keep documents current is sufficient cause to withhold progress payments.
 - 2. As-built Drawings: Maintain one clean, complete undamaged set of blue or black line white-prints of Contract Documents and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Contract Documents. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 - a. Mark all new information that is not shown on the Contract Documents.
 - b. Note related change-order numbers where applicable.
 - c. Organize record drawing sheets into manageable sets. Bind sets with durablepaper cover sheets; print suitable titles, dates, and other identification on the cover of each set.
 - d. Upon completion of the work, the Contractor shall submit Record Drawings to the Owner for the Owner's Records.
 - e. Submit electronic format data of all Coordination Drawings as required by the owner, at no additional cost.

- 3. Record Specifications: The Contractor shall maintain one complete copy of the Project Manual, including Addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.
 - a. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
 - b. Give particular attention to equals and substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
 - c. Note related record drawing information and Product Data.
 - d. Upon completion of the Work, submit record Specifications for the Owner's records.
- 4. Record Product Data: The Contractor shall maintain one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.
 - a. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.
 - b. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
 - c. Upon completion of markup, submit complete set of Record Product Data for the Owner's records.
- 5. Record Samples Submitted: Immediately prior to Substantial Completion, the Contractor shall meet with the Architect and the Owner's Representative at the Project Site to determine which Samples are to be transmitted to the Owner for record purposes. Comply with the Owner's instructions regarding delivery to the Owner's Sample storage area.
- 6. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records. Identify miscellaneous records properly and bind or file, ready for continued use and reference and submit for the Owner's records.
- 7. Maintenance Manuals: Organize operation and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual, heavy-duty, 2-inch (51-mm), 3-ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Maintenance Manuals shall also be submitted in electronic format, PDF files, as noted in Section 017823 "Operations & Maintenance Data." Included but not limited to the following types of information:
 - a. Emergency instructions
 - b. Spare parts list
 - c. Copies of warranties
 - d. Wiring diagrams
 - e. Recommended "turn-around" cycles
 - f. Inspection procedures
 - g. Shop Drawings and Product Data

- h. Fixture lamping schedule
- D. Closeout Procedures:
 - Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Provide all documents in PDF format and provide two (2) flash drives, of all documents, including a detailed review of the following items:
 - a. Maintenance manuals
 - b. Record documents
 - c. Spare parts and materials
 - d. Tools
 - e. Lubricants
 - f. Hazards
 - g. Cleaning
 - h. Warranties and bonds
 - i. Maintenance agreements and similar continuing commitments
- E. Final Cleaning:
 - 1. General: The General Conditions requires general cleaning during construction.
 - 2. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion and Certification of Occupancy.
 - 3. Interior:
 - a. Remove labels that are not permanent labels.
 - b. Clean transparent materials, including glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Remove paint spots. Wash and polish glass.
 - c. Clean exposed interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean.
 - 4. Exterior:
 - a. Remove rubbish, litter, and other foreign substances. Sweep paved areas broom clean. Remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth, even-textured surface.
 - b. Remove waste and surplus materials, rubbish and construction equipment and facilities from the site.
 - 5. Compliance: Comply with regulations of Authorities Having Jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site.
 - a. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Construction Administrator.

b. Leave building clean and ready for occupancy. If the Contractor fails to clean up, the Owner may do so, with the cost charged to the Contractor. The Owner will issue a credit change order to cover the costs.

017823 OPERATION AND MAINTENANCE DATA

- A. Instruct the Owner's designated personnel in the operation of new equipment and shall provide manuals and video data of basic maintenance of the equipment for training purposes. Provide qualified personnel for as long as necessary to instruct the Owner's personnel.
- B. Submit two (2) draft copies of the manuals in 3-ring, loose-leaf notebooks, or two (2) draft copies, in PDF, on flash drives, to the Architect for approval. Manuals may consist of approved shop drawings and catalog cuts. Architect will return both copies with comments, required additional information, and corrections. Upon completion of the manuals, submit two (2) final copies, including two (2) electronic copies on flash drives, to the Owner.
- C. Manuals shall include:
 - 1. Operating Procedures:
 - a. Written procedures for each mode of operation of each piece of equipment. Procedures shall indicate the status of each component of a system in each operating mode.
 - b. Procedures shall include names, symbols, valve tags, circuit numbers, schematic wiring diagrams, locations of thermostats, manual starters, control cabinets and other controls of each system.
 - 2. Emergency shutdown procedures for each piece of equipment or system, both automatic and manual, as appropriate.
 - 3. Maintenance Schedule:
 - a. Written schedule describing manufacturers schedule of maintenance and maintenance procedures
 - 4. Catalog Cuts:
 - a. To illustrate each piece of installed equipment, including options
 - b. Include equipment descriptions including physical, electrical and mechanical performance characteristics. installation and erection diagrams.
 - c. Include spare parts numbers and names, address and phone number of manufacturer and local representative or service department.
 - d. Written list of all subcontractors on the project, including name, address and phone number of local representative or service department.
 - 5. Manuals shall be indexed with dividers indicating each system or piece of equipment. Electronic Manuals shall have a tagged index.
 - 6. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

017830 WARRANTIES AND GUARANTEES

- A. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty, and special warranties, on the Work and products, as specified in the Project Manual. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors from countersigning special warranties with the Contractor.
- B. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure. If necessary, remove and replace other materials and construction to provide access for correction of warranted construction.
- C. Reinstatement of Warranty: When Work covered by a warranty has been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- D. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor shall be responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- E. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
- F. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.
- G. The warranty for this Project is noted in the Contract. Submit two (2) hard copies and two (2) flash drives of each warranty to the Owner in the supplier's standard form, and including all specified conditions of the warranty noted in the Contract Documents.
- H. Submittals:
 - 1. Submit written warranties prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
 - 2. Special Warranties: Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Submit a draft to the Owner, through the Construction Administrator, for approval prior to final execution.

- a. Refer to Divisions 2 through 17 Sections for specific content requirements and particular requirements for submitting special warranties.
- 3. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - a. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the 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 the Installer.
 - b. Identify each binder on the front and spine with the typed or printed title WARRANTIES, Project title or name, and name of the Contractor.
 - c. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

END OF DIVISION 1 - GENERAL REQUIREMENTS

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. This Section includes, but is not limited to, the following:
 - 1. Demolition and removal of other partitions, and/or portions of interior partitions, as indicated.
 - 2. Demolition and removal of portions of floor slabs, as indicated.
 - 3. Demolition and removal of finish systems, including ceilings, wall and floor finishes as indicated.
 - 4. Demolition and removal of doors, frames and associated hardware as indicated.
 - 5. Demolition and removal of toilet compartments and accessories.
 - 6. Demolition and removal of mechanical, electrical, and plumbing systems as indicated.
- B. Related Sections include the following:
 - 1. Division 01 Section "Summary of Work" for overall scope summary and use of premises.
 - 2. Division 01 Section "Cutting and Patching" for cutting and patching procedures.

1.3 DEFINITIONS

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

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 PRE-DEMOLITION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control, and for noise control. Indicate proposed locations and construction of barriers.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Locations of proposed dust- and noise-control temporary partitions and means of egress.
 - 5. Coordination of Owner's continuing occupancy of portions of existing building.
 - 6. Means of protection for items to remain and items in path of waste removal from building.
- D. Predemolition Photographs or Video: Submit before Work begins.
- E. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
 - 1. Comply with requirements specified in Division 01 Section "Summary of Work."
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain water, sewer, and electrical services to the facilities in service during selective demolition.

PART 2 - PRODUCTS

2.1 **PEFORMANCE REQUIREMENTS**

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate, and measure the nature and extent of conflict. Promptly submit a written report to Architect.

- E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.
- F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.
 - 2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
 - 1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."
 - 6. Comply with indoor air quality requirements specified in Division 01 Section "Indoor Air Quality Construction Plan."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

- 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
- 5. Maintain adequate ventilation when using cutting torches.
- 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
- 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
- 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- 9. Dispose of demolished items and materials promptly. Comply with requirements in Division 01 Section "Construction Waste Management and Disposal."
- B. Removed and Salvaged Items:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area designated by Owner.
 - 5. Protect items from damage during transport and storage.
- C. Removed and Reinstalled Items:
 - 1. Clean and repair items to functional condition adequate for intended reuse.
 - 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 - 3. Protect items from damage during transport and storage.
 - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
 - 5. Remove and salvage for reinstallation all existing face brick above new entry vestibule.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.
 - 1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property.
 - 1. Include cost of all transportation and disposal.
 - 2. Provide verification of all disposal trips.
 - 3. Hazardous materials are to be handled and disposed of in accordance with all State, Local, and Federal regulations.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02 41 19

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. This Section includes the following:
 - 1. Wood blocking, nailers, and plywood.
 - 2. Wood blocking in partition framing.
 - 3. Plywood backing panels.
 - 4. Door hardware installation.
- B. Related Sections include the following:
 - 1. Division 08 Section "Door Hardware" for door hardware and additional installation requirements.
 - 2. Division 10 Section "Toilet and Bath Accessories."

1.3 DEFINITIONS

- A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
 - 2. NLGA: National Lumber Grades Authority.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.

- 3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
- 4. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.5 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:
 - 1. Preservative-treated wood.
 - 2. Fire-retardant-treated wood.
 - 3. Power-driven fasteners.
 - 4. Powder-actuated fasteners.
 - 5. Expansion anchors.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fireretardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.
- B. Deliver interior wood materials that are to be exposed to view only after building is enclosed and weatherproof, wet work other than painting is dry, and HVAC system is operating and maintaining temperature and humidity at occupancy levels.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 - 3. Provide dressed lumber, S4S, unless otherwise indicated.

- B. Maximum Moisture Content of Lumber: 19 percent.
- C. Plywood: DOC PS 1.
 - 1. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
 - 2. Factory mark panels to indicate compliance with applicable standard.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic, chromium or chromated copper arsenate (CCA).
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat miscellaneous carpentry, including the following:
 - 1. Wood sills, sleepers, blocking, furring, and similar concealed members in contact with masonry or concrete.
- E. Manufacturers: Subject to compliance with requirements, provide products by one the following:
 - 1. Georgia Pacific.
 - 2. Hoover Treated Wood Products, Inc.
 - 3. Koppers Performance Chemicals.

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

- 1. Use treatment that does not promote corrosion of metal fasteners.
- 2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
- 3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
- 4. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664, and design value adjustment factors shall be calculated according to ASTM D 6841.
- C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
- E. Application: Treat the following:
 - 1. Concealed blocking in wall framing and window opening framing.
 - 2. Plywood backing panels.
- F. Products: Subject to compliance with requirements, provide products by one of the following:
 - 1. Dricon.
 - 2. Hoover Treated Wood Products, Inc.
 - 3. Koppers Performance Chemicals.

2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Furring.
- B. For items of dimension lumber size, provide Construction or No. 2 lumber with 15 percent maximum moisture content and the following species:
 - 1. Hem-fir (north); NLGA.
- C. For blocking not used for attachment of other construction Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.
- F. Application: Provide kiln dried lumber in the following locations:
 - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing.

2.5 PLYWOOD BACKING PANELS

A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness.

2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where carpentry is exposed to weather, in ground contact, fire retardant treated, or in area of high relative humidity, provide G185 galvanized steel fasteners, or fasteners with hot-dipped galvanized after fabrication, in compliance with Section 23 04 .9.5 of the Connecticut State Building Code.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1.
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- C. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- D. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
 - 1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
- E. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- F. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
- G. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

3.2 WOOD BLOCKING AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.3 WOOD FURRING INSTALLATION

- A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.
- B. Furring to Receive Plywood: Install 1-by-3-inch nominal- size furring vertically 24 inches o.c.

3.4 FIRE-RETARDANT-TREATED (FRT) MATERIALS INSTALLATION

- A. Cutting to length, drilling holes, joining cuts and light sanding are permissible. It is not necessary to field treat cut ends to maintain flame spread rating.
 - 1. Ripping, milling, and surfacing of FRT lumber is not permitted.
 - 2. FRT plywood can be cut in either direction without loss of fire protection.

3.5 FINISH HARDWARE INSTALLATION

- A. General: Comply with requirements indicated below and in Division 08 Section "Door Hardware."
- B. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
- C. 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 specified in Division 9 Sections. 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.
- D. Thresholds: Set thresholds for exterior doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

3.6 **PROTECTION**

A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 53

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. Silicone joint sealants.
 - 2. Urethane joint sealants.
 - 3. Latex joint sealants.
 - 4. Acoustical joint sealants.
- B. Related Sections include the following:
 - 1. Division 09 Section "Tiling" for sealing tile joints.

1.03 PRECONSTRUCTION TESTING

- A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
 - 1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
 - 2. Submit not fewer than eight pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
 - 3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 - 4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
 - 5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

1.04 PERFORMANCE REQUIREMENTS

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

1.05 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- 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.

1.06 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
- B. Qualification Data: For Installer.
- C. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- D. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.
- E. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- F. Warranties: Special warranties specified in this Section.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
 - 2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.
- D. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:
 - 1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.
 - 2. Each type of sealant and joint substrate indicated.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.08 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by jointsealant manufacturer or are below 40 deg F.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.09 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period for Urethane: Five years from date of Substantial Completion.
 - 2. Warranty Period for Silicone: 20 years from date of Substantial Completion.

- C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
 - 1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 - 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 - 3. Mechanical damage caused by individuals, tools, or other outside agents.
 - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):
 - 1. Architectural Sealants: 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 3. Sealant Primers for Porous Substrates: 775 g/L.
- C. Low-Emitting Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- D. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- E. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- F. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
- G. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.02 SILICONE JOINT SEALANTS

- A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 790.
 - b. Pecora Corporation; 890 NST.
 - c. Tremco Incorporated; Spectrem 1.
- B. Mildew Resistant, Single-Component, Nonsag, Acid-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 786 Mildew Resistant.
 - b. GE Silicones; Sanitary SCS1700.
 - c. Tremco; Tremsil 200 Sanitary.

2.03 URETHANE JOINT SEALANTS

- A. Multicomponent, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C 920. Type M, Grade P, Class 25, for Use T and I.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Corporation-Construction Systems; MasterSeal SL 2.
 - b. Pecora Corporation; Dynatrol II-SG.
 - c. Sherwin Williams; Loxon 2K SL.
 - d. Tremco; THC-900.

2.04 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. American Sealants, Inc.; ASI 174.
 - b. Pecora Corporation; AC-20+.
 - c. Sherwin Williams; 950A.
 - d. Tremco; Tremflex 834.

2.05 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following:
 1.
 - 2. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 3. Products: Subject to compliance with requirements, provide one of the following:
 - a. Green Glue; Green Glue Noiseproofing Sealant.
 - b. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - c. Sherwin Williams; 950A.
 - d. United States Gypsum Co.; SHEETROCK Acoustical Sealant.

2.06 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) 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 where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.07 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

3.01 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on 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 with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so 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 below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- G. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations.

3.04 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.

3.05 PROTECTION

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

3.06 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
 1. Joint Locations:
 - a. Perimeter joints at frames of steel framed doors and openings.
 - 2. Silicone Joint Sealant: Single component, nonsag, neutral curing, Class 100/50.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- B. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
 - 1. Joint Locations:
 - a. Penetrations in concrete slabs on grade.
 - b. Control and expansion joints in tile flooring.
 - c. Other joints as indicated.
 - 2. Urethane Joint Sealant: Multicomponent, pourable, traffic grade, Class 25.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors, for each material.
- C. Joint-Sealant Application: Interior joints in all other vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Locations:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints of exterior openings where indicated.
 - c. Tile control and expansion joints.
 - d. Vertical joints on exposed surfaces of interior unit masonry walls and partitions.
 - e. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
 - f. Other joints as indicated.
 - 2. Joint Sealant: Latex.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Sealant Location:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Other joints as indicated.

- 2. Joint Sealant: Single component, nonsag, mildew resistant, acid curing silicone.
- 3. Joint-Sealant Color: White.
- E. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces at counters and backsplashes.
 - 1. Joint Sealant Location:
 - a. Joints between counters and walls.
 - b. Joints between backsplashes and walls.
 - c. Joints between counters and backsplashes.
 - d. Other joints as indicated.
 - 2. Joint Sealant: Single component, nonsag, mildew resistant, acid curing silicone.
 - 3. Joint-Sealant Color: Clear.
- F. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Location:
 - a. Acoustical joints where indicated.
 - b. Other joints as indicated.
 - 2. Joint Sealant: Acoustical.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range.

END OF SECTION 07 92 00

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 hollow-metal work.
- B. Related Requirements:
 - 1. Division 08 Section "Door Hardware" for door hardware for hollow metal doors.
 - 2. Division 09 Section "Painting" for field painting hollow metal doors and frames.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or 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.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Architect, electrical contractor, security systems supplier, and hardware installers whose work interfaces with or affects hollow metal doors and frames.
 - 2. Review requirements for type of cut-out and back-box as part of the door and frame assembly.
 - 3. Document proceedings, including receipt of samples and approved shop drawings of security contact devices which accurately represent the installation of the device, backbox, and conduit terminations required.
 - 4. Distribute an installation book, including all manuals and instructions.

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 anchorages, joints, field splices, and connections.
 - 7. Details of accessories.
 - 8. Details of moldings, removable stops, and glazing.
 - 9. Details of conduit and preparations for power, signal, and control systems.
- C. Schedule: Provide a schedule of hollow-metal work 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. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal work 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. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ceco Door; ASSA ABLOY.

- 2. Curries Company; ASSA ABLOY.
- 3. DE LA FONTAINE.
- 4. Steelcraft; an Allegion brand.
- B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.2 **REGULATORY REQUIREMENTS**

A. Fire-Rated 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 at positive pressure according to NFPA 252 or UL 10C.

2.3 INTERIOR DOORS AND FRAMES

- A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2.
 - 1. Physical Performance: Level B according to SDI A250.4.
 - 2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Uncoated, cold-rolled steel sheet, minimum thickness of 0.042 inch (18 gauge).
 - 1) Provide 16 gauge face sheets for doors over 3'-0" wide.
 - d. Edge Construction: Model 2, Seamless.
 - e. Core: Vertical steel stiffener with fiberglass insulation.
 - f. Fire Rated Core: Mineral fiber.
 - 3. Frames:
 - a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (16 gauge).
 - b. Construction: Face welded.
 - 4. Exposed Finish: Prime.

2.4 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.

- B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows:
 - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.5 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.
- C. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- D. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- E. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

2.6 FABRICATION

- A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Hollow-Metal Doors:
 - 1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
 - 2. Fire Door Cores: As required to provide fire-protection ratings indicated.
 - 3. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches.
 - 4. Top Edge Closures: Close top edges of doors with inverted closures.
 - 5. Bottom Edge Closures: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets.
- C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 - 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

- 2. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
- 3. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high.
 - 2) Four anchors per jamb from 60 to 90 inches high.
 - 3) Five anchors per jamb from 90 to 96 inches high.
- 4. Head Anchors: Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.
- 5. 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.
- D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.
- E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to 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 applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.
- F. Hardware Reinforcement: Fabricate reinforcement plates from same material as frames to comply with manufacturer's standard gauges and sizes, but not less than the following minimum sizes.
 - 1. Hinges: Minimum 10 gauge by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
 - 2. Lock Face, Flush and Surface Bolts, Closers, and Concealed Holders: Minimum 14 gauge.
 - 3. Pull Plates and Bar: Minimum 16 gauge.
- G. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with mitered hairline joints.
 - 1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollowmetal work.
 - 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
 - 3. Provide fixed frame moldings on secure side of interior doors and frames.
 - 4. Provide loose stops and moldings on inside of hollow-metal work.

5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

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 SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.8 ACCESSORIES

A. Mullions: Join to adjacent members by welding or rigid mechanical anchors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 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.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

- B. Hollow-Metal Frames: Install hollow-metal frames for doors, transoms, sidelites, borrowed lites, and other openings, of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install frames with removable stops located on secure side of opening.
 - d. Install door silencers in frames before grouting.
 - e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 - 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
 - 4. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 - 5. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
 - 1. Non-Fire-Rated Steel Doors:
 - a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.

- d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.
- e. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.
- 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80, and the following:
 - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
 - c. Between Bottom of Door and Top of noncombustible Threshold: Maximum 3/8 inch.
 - d. Between Bottom of Door and Top of noncombustible Finish Floor (No Threshold): Maximum 3/4 inch.
 - e. Between Bottom of Door and all other Finish Floor Coverings: Maximum 1/2 inch.

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
- B. 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.
- C. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in Division 09 Section "Painting."

END OF SECTION 08 11 13

SECTION 087100 – DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section "Door Hardware Schedule".
 - 2. Division 08 Section "Hollow Metal Doors and Frames".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC International Building Code.
 - 3. NFPA 70 National Electrical Code.
 - 4. NFPA 80 Fire Doors and Windows.
 - 5. NFPA 101 Life Safety Code.
 - 6. NFPA 105 Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
 - 1. ANSI/BHMA Certified Product Standards A156 Series
 - 2. UL10C Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
 - 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
 - b. Complete (risers, point-to-point) access control system block wiring diagrams.

- c. Wiring instructions for each electronic component scheduled herein.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
 - 1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
- E. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
 - 1. Function of building, purpose of each area and degree of security required.

- 2. Plans for existing and future key system expansion.
- 3. Requirements for key control storage and software.
- 4. Installation of permanent keys, cylinder cores and software.
- 5. Address and requirements for delivery of keys.
- G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
 - 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 - 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 - 3. Review sequence of operation narratives for each unique access controlled opening.
 - 4. Review and finalize construction schedule and verify availability of materials.
 - 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to

source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for mortise locks and latches.

1.8 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.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
 - 1. Quantity: Provide the following hinge quantity:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
 - 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
 - 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
 - 4. Hinge Options: Comply with the following:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
 - 5. Manufacturers:
 - a. Best, dormakaba Group (BD)
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).
 - c. Stanley Door Hardware (ST)

2.3 DOOR OPERATING TRIM

- A. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
 - 1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 - 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
 - 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
 - 4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
 - 5. Manufacturers:
 - a. Best; dormakaba Group (BD)

2.4 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
- C. Cylinders: Original manufacturer cylinders complying with the following:
 - 1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
 - 2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 - 3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
 - 4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 - 5. Keyway: Manufacturer's Standard.
- D. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
 - 1. Removable Cores: Core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware. Provide removable core (small or large format) as specified in Hardware Sets.
- E. Patented Cylinders: ANSI/BHMA A156.5, Grade 1, certified cylinders employing a utility patented and restricted keyway requiring the use of patented controlled keys. Provide bump resistant, fixed core cylinders as standard with solid recessed cylinder collars. Cylinders are to be factory keyed where permanent keying records will be established and maintained.

- 1. Provide a 6 pin multi-level master key system comprised of patented controlled keys and security and high security cylinders operated by one (1) key of the highest level. Geographical exclusivity to be provided for all security and high security cylinders and UL437 certification where specified.
 - a. Level 1 Cylinders: Provide utility patented controlled keyway cylinders that are furnished with patented keys available only from authorized distribution.
 - b. Level 2 Cylinders: Provide utility patented controlled keyway and side bar locking incorporating unique angled bottom pins for geographical exclusivity. Cylinders constructed to provide protection against bumping and picking.
 - c. Level 3 Cylinders: Provide utility patented controlled keyway and side bar locking incorporating unique angled bottom pins for geographical exclusivity. Cylinders to be UL437 certified and constructed to provide protection against bumping, picking, and drilling.
 - d. Refer to hardware sets for specified levels.
- 2. Manufacturers:
 - a. Best; dormakaba Group (BD)
- F. Keying System: Each type of lock and cylinders to be factory keyed.
 - 1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
 - 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 - 3. New System: Key locks to a new key system as directed by the Owner.
- G. Key Quantity: Provide the following minimum number of keys:
 - 1. Change Keys per Cylinder: Three (3).
 - 2. Master Keys (per Master Key Level/Group): Five (5).
 - 3. Construction Keys (where required): Ten (10).
 - 4. Construction Control Keys (where required): Two (2).
 - 5. Permanent Control Keys (where required): Two (2).
- H. Construction Keying: Provide temporary keyed construction cores.
- I. Key Registration List (Bitting List):
 - 1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
 - 2. Provide transcript list in writing or electronic file as directed by the Owner.
- J. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.
 - 1. Manufacturers:

- a. Lund Equipment (LU).
- b. MMF Industries (MM).
- c. Telkee (TK).
- K. Key Control Software: Provide one network version of "Key Wizard" branded key management software package that includes one year of technical support and upgrades to software at no charge. Provide factory key system formatted for importing into "Key Wizard" software.

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
 - 1. Manufacturer:
 - a. Best; dormakaba Group (BD) 45H Series

2.6 AUXILIARY LOCKS

- A. Mortise Deadlocks, Small Case: ANSI/BHMA A156.36, Grade 1, small case mortise type deadlocks constructed of heavy gauge wrought corrosion resistant steel. Steel or stainless steel bolts with a 1" throw and hardened steel roller pins. Deadlocks to be products of the same source manufacturer and keyway as other specified locksets.
 - 1. Manufacturers:
 - a. Best; dormakaba Group (BD) 40H Series

2.7 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
 - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 - 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 - 3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
 - 4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.
- B. Standards: Comply with the following:
 - 1. Strikes for Mortise Locks and Latches: BHMA A156.13.
 - 2. Strikes for Bored Locks and Latches: BHMA A156.2.

- 3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
- 4. Dustproof Strikes: BHMA A156.16.

2.8 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
 - 1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
 - 2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 - 3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
 - 4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
 - 5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 - 6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
 - 7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.
 - 1. Manufacturers:
 - a. Best; dormakaba Group (BD)
 - b. Corbin Russwin Hardware (RU) DC8000 Series.
 - c. Norton Door Controls (NO) 9500 Series.
 - d. Sargent Manufacturing (SA) 281 Series.

2.9 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 - 1. Manufacturers:
 - a. Best; dormakaba Group (BD)
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
 - 1. Manufacturers:
 - a. Best; dormakaba Group (BD)
 - b. Rixson Door Controls (RF).

2.10 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. 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 perimeter gasketing at all smoke labeled openings.
- C. 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 UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.

- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- 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. Manufacturers:
 - 1. Best; dormakaba Group (BD)
 - 2. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).

2.11 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.12 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and 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 specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 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.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
- B. The supplier is responsible for handing and sizing all products and providing the correct option for the appropriate door type and material where more than one is presented in the hardware sets. Quantities listed are for each pair of doors, or for each single door.
- C. Refer to Section 087101, Door Hardware Sets, for hardware sets.

END OF SECTION 087100

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. This Section includes the following:
 - 1. Porcelain floor tile.
 - 2. Porcelain wall tile
 - 3. Crack-suppression membrane for thin-set tile installations.
 - 4. Stone thresholds installed as part of tile installations.
- B. Related Sections include the following:
 - 1. Division 07 Section "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.
- D. Facial Dimension: Nominal tile size as defined in ANSI A137.1.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.5 PERFORMANCE REQUIREMENTS

- A. Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per the DCOF AcuTest in accordance with ANSI A137.1 2012 standard.
 - 1. Level Surfaces: Minimum 0.42 wet.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
- C. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.
- D. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required.
 - 2. Full-size units of each type of trim and accessory for each color and finish required.
 - 3. Stone thresholds in 6-inch lengths.

1.7 INFORMATIONAL SUBMITTALS

- A. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- B. Product Certificates: For each type of product, signed by product manufacturer.
- C. Qualification Data: For Installer.
- D. Material Test Reports: For each tile-setting and -grouting product.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated.

1.9 QUALITY ASSURANCE

- A. Preconstruction Testing Service for Concrete: Engage a qualified independent testing agency to perform moisture vapor emission testing indicated below.
 - 1. ASTM F 1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
 - 2. ASTM F 2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in Situ Probes.
- B. Mockups: Build mockups to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution.
 - 1. Build mockup of each type of floor tile installation.
 - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Store liquid latexes and emulsion adhesives in unopened containers and protected from freezing.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.11 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Tile: Obtain all tile of same type and color or finish from one source or producer.

- 1. Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer for each product:
 - 1. Stone thresholds.
 - 2. Crack suppression membrane.

2.2 **PRODUCTS, GENERAL**

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements, unless otherwise indicated.
 - 2. For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.
- C. ISO 13007 Standards for Ceramic Tile, Adhesives and Grouts.
- D. FloorScore Compliance: Tile for floors shall comply with requirements of FloorScore Standard.
- E. Low-Emitting Materials: Tile flooring systems shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- F. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:
 - 1. As indicated by manufacturer's designations.
- G. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- H. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.3 TILE PRODUCTS

- A. Porcelain Floor Tile: Flat tile as follows:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide **Daltile** or comparable product by one of the following:
 - a. American Olean.
 - b. Marazzi.
 - 2. Composition: Porcelain.
 - 3. Module Size: 12 by 24 inches.
 - 4. Nominal Thickness: 5/16 inch.
 - 5. Finish: Glazed Matte.
 - 6. Color: 2 standard colors in pattern to be provided by Architect; or a standard color blend pattern (from Daltile Color Groups 1, 2, 3 and 4, or matching colors).
 - 7. Grout Color: As selected by Architect from manufacturer's full range.
 - 8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Base: see Porcelain Wall Tile below for Base.
- B. Porcelain Wall Tile: Flat tile as follows:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide **Daltile**; or comparable product by one of the following:
 - a. American Olean.
 - b. Marazzi.
 - 2. Composition: Porcelain.
 - 3. Module Size: 18 by 6 inches.
 - 4. Nominal Thickness: 3/8 inch.
 - 5. Finish: Glazed Matte
 - 6. Color: 2 standard colors (from Daltile Color Groups 1, 2 and 3, or matching colors) in pattern to be provided by Architect.
 - 7. Grout Color: As selected by Architect from manufacturer's full range.
 - 8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

2.4 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

- 1. Bevel edges at 1:2 slope, aligning lower edge of bevel with adjacent floor finish. Limit height of bevel to 1/2 inch or less, and finish bevel to match face of threshold.
- B. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.
 - 1. Description: Uniform, fine- to medium-grained white stone with gray veining.

2.5 SETTING AND GROUTING MATERIALS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Custom Building Products.
 - 2. LATICRETE International Inc.
 - 3. MAPEI Corporation.
- B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4 and ISO 13007 C2EP1, consisting of the following:
 - 1. Prepackaged dry-mortar mix containing dry, redispersible, ethylene vinyl acetate additive to which only water must be added at Project site.
 - a. Product: Subject to compliance with requirements, provide one of the following:
 - 1) Custom Building Products; Versa Bond.
 - 2) LATICRETE International, Inc.; 253 Gold.
 - 3) MAPEI Corporation; Ultraflex 2.
- C. Medium-Bed, Latex-Portland Cement Mortar (LHT Mortar): Comply with requirements in ANSI A118.4 and A118.15.
 - 1. Products: Subject to compliance with requirements, provide one of the following, or equal:
 - a. Custom Building Products; MegaLite Crack Prevention Mortar.
 - b. LATICRETE International Inc.; LHT Plus.
 - c. MAPEI Corporation; Kerabond T/Keralastic System.
- D. Epoxy Based Tile Grout: ANSI A118.3, color as selected by Architect from manufacturer's full range.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Custom Building Products; Ceg-Lite.
 - b. LATICRETE International Inc.; Laticrete SpectraLOCK Pro.
 - c. MAPEI Corporation; MAPEI Kerapoxy CQ.

2. Colors: As selected by Architect from manufacturer's full range for each tile indicated.

2.6 CRACK-SUPPRESSION MEMBRANES FOR THIN-SET TILE INSTALLATIONS

- A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Fabric-Reinforced, Fluid-Applied Product: System consisting of liquid-latex rubber and fabric reinforcement.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Custom Building Products; Custom 9240 Waterproofing and Anti-Fracture Membrane.
 - b. Laticrete International, Inc.; Laticrete 9235 Waterproof Membrane.
 - c. MAPEI Corporation; Mapelastic AquaDefense.

2.7 ELASTOMERIC SEALANTS

- A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements in Division 07 Section "Joint Sealants."
- B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

2.8 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
 - 1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F per ASTM D 87.
 - 2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.
- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.9 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
 - 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
 - 3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
 - 4. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - 5. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 to 5 lb. of water/1000 sq. ft. in 24 hours, as required by manufacturer's written recommendation for maximum moisture content.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.

- B. Provide concrete substrates for tile floors installed with thin-set mortar that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.
 - 1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
 - 2. Remove protrusions, bumps, and ridges by sanding or grinding.
- C. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- D. Field-Applied Temporary Protective Coating: Where indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 INSTALLATION, GENERAL

- A. Comply with the latest TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - 1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
 - a. Tile floors in wet areas.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.
- E. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 - 1. Locate joints in tile surfaces directly above joints in concrete substrates.

- 2. Comply with requirements in TCNA EJ171.
- 3. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."
- F. Grout tile to comply with requirements of the following tile installation standards:
 - 1. For ceramic tile grouts (sand-portland cement; dry-set, commercial portland cement; and latex-portland cement grouts), comply with ANSI A108.10.

3.4 CRACK-SUPPRESSION MEMBRANE INSTALLATION

A. Install crack-suppression membrane to comply with manufacturer's written instructions to produce membrane of uniform thickness bonded securely to substrate.

3.5 FLOOR TILE INSTALLATION

- A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCA installation methods and ANSI A108 Series of tile installation standards.
- B. Joint Widths: Install tile on floors with the following joint widths:
 - 1. Floor Tile: per manufacturers recommendations.
 - 2. Wall Tile: per manufacturers recommendations.
- C. Stone Thresholds: Install stone thresholds at locations indicated; set in same type of setting bed as abutting field tile, unless otherwise indicated.
 - 1. Set thresholds in latex-portland cement mortar for locations where mortar bed would otherwise be exposed above adjacent nontile floor finish.

3.6 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove epoxy and latex-portland cement grout residue from tile as soon as possible.
 - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
 - 3. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

- B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
- C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.
- E. Protect all installed floor tile work with heavy duty kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
 - 1. Protect tile floors with kraft paper and additional hardboard covering during entire construction period and for duration of subsequent phases including but not limited to FF&E and Technology installations.
 - 2. Remove coverings at Substantial Completion for final review by Architect. Reinstall protective coverings following review and correction of punch list items as required.

3.7 FLOOR TILE INSTALLATION SCHEDULE

- A. Interior Floor Installations, Concrete Subfloor:
 - 1. Tile Installation: TCNA F125A; interior floor installation on crack-suppression membrane over concrete; medium-bed mortar (LFT Mortar).
 - a. Tile Type: Porcelain.
 - b. Medium Bed Cement Mortar: Latex-portland cement mortar.
 - c. Grout: Epoxy based grout.

END OF SECTION 09 31 00

SECTION 096519 - RESILIENT TILE FLOORING

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. Homogenous Rubber floor tile.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Sustainable Design Submittals:
 - 1. Product Data: For adhesives, indicating VOC content.
 - 2. Laboratory Test Reports: For adhesives, indicating compliance with requirements for low-emitting materials.
 - 3. Product Data: For chemical-bonding compounds, indicating VOC content.
 - 4. Laboratory Test Reports: For chemical-bonding compounds, indicating compliance with requirements for low-emitting materials.
 - 5. Product Data: For sealants, indicating VOC content.
 - 6. Laboratory Test Reports: For sealants, indicating compliance with requirements for lowemitting materials.
- C. Shop Drawings: For each type of resilient floor tile.
 - 1. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
 - 2. Show details of special patterns.
- D. Samples: Full-size units of each color, texture, and pattern of floor tile required.
- E. Samples for Initial Selection: For each type of floor tile indicated.
- F. Samples for Verification: Full-size units of each color and pattern of floor tile required.
- G. Product Schedule: For floor tile.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Floor Tile: Furnish one box of each type, color, and pattern of floor tile installed.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Coordinate mockups in this Section with mockups specified in other Sections.
 - a. Size: Minimum 100 sq. ft. for each type, color, and pattern in locations directed by Architect.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F Store floor tiles on flat surfaces.

1.9 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than [70 deg F] or more than [95 deg F], in spaces to receive floor tile during the following periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than [55 deg F or more than [95 deg F].
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.
- B. Flooring products shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.2 RUBBER FLOOR TILE

- A. Basis of Design: Noraplan Convia
- B. Tile Standard: ASTM F 1344, Type 1 Grade 1.
- C. Hardness: Manufacturer's standard hardness, measured using Shore, Type A durometer according to ASTM D 2240.
- D. Wearing Surface: **Smooth**.
- E. Thickness: [0.08 inch (2mm)].
- F. Size: 24 by 24 inches (610 by 610 mm).
- G. Colors and Patterns: As selected from full range of manufacturer's standard colors.

2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
 - 1. Adhesives shall have a VOC content of [50] [60] <Insert value> g/L or less.
- C. Floor Polish: None. Post Installation cleaning must be performed before the area is occupied.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than **9** pH.
 - 4. Moisture Testing: Perform tests so that each test area does not exceed **200 sq. ft.** and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of **3 lb of water/1000 sq. ft.** in 24 hours.

- b. Relative Humidity Test: Using in-situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum [75] percent relative humidity level measurement.
- C. Access Flooring Panels: Remove protective film of oil or other coating using method recommended by access flooring manufacturer.
- D. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- E. Do not install floor tiles until materials are the same temperature as space where they are to be installed.
 - 1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.
- F. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.3 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay tiles square with room axis.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

H. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
 - 1. Remove adhesive and other blemishes from surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover floor tile until Substantial Completion.

END OF SECTION 096519

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. This Section includes surface preparation and the application of paint systems on the following substrates:
 - 1. Concrete wall surfaces.
 - 2. Concrete masonry units.
 - 3. Hollow metal doors and frames.
 - 4. Gypsum board.
- B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item, or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
 - 1. Painting includes field painting of exposed bare and covered pipes and ducts, hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
 - 1. Prefinished items include the following factory-finished components:
 - a. Prefinished wood doors.
 - b. Finished mechanical and electrical equipment.
 - c. Light fixtures and wiring devices.
 - d. Distribution cabinets in closets or equipment rooms.
 - 2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Foundation spaces.
 - b. Furred areas.
 - c. Ceiling plenums.
 - d. Pipe spaces.
 - e. Duct shafts.

- 3. Finished metal surfaces include the following:
 - a. Anodized or coated aluminum.
 - b. Stainless steel.
 - c. Chromium plate.
 - d. Copper and copper alloys.
 - e. Bronze and brass.
- 4. Operating parts include moving parts of operating equipment and the following:
 - a. Valve and damper operators.
 - b. Linkages.
 - c. Sensing devices.
 - d. Motor and fan shafts.
- 5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- D. Related Sections include the following:
 - 1. Division 05 Section "Metal Fabrications" for shop priming ferrous metal.
 - 2. Division 08 Section "Hollow Metal Doors and Frames" for factory priming steel doors and frames.
 - 3. Division 09 Section "Gypsum Board Assemblies" for surface preparation of gypsum board.
 - 4. Divisions 23 and 26 Sections for painting of mechanical and electrical equipment.

1.3 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
 - 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - 2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 - 3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
 - 4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

- 2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- C. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Architects and Owners, and other information specified.
- D. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 - 2. VOC content.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For coatings to include in maintenance manuals. Include the following:
 - 1. Area summary with Finish Schedule and area detail designating where each product, color, and finish is used.
 - 2. Product data pages.
 - 3. Material safety data sheets.
 - 4. Care and cleaning instructions.
 - 5. Touch-up procedures.
 - 6. Color samples of each color and finish (gloss level) used.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
 - 1. Quantity: Furnish an additional 1 gallon of each material and color applied.

1.7 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Mockups: Apply benchmark samples 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 specified in Part 3.
 - a. Wall Surfaces: Provide samples of at least 100 sq. ft. for each color and accent color.
 - 2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
 - 3. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.
 - 4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 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.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.9 PROJECT CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Benjamin Moore & Co., including affiliate the following affiliate brands:
 - a. Coronado Paint.
 - b. Insl-X and Corotech.
 - 2. PPG Industries Inc. (PPG).
 - 3. Sherwin-Williams Co.
 - 4. United Gilsonite Laboratories (UGL).

2.2 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. VOC Content for Interior Paints and Coatings:
 - 1. Provide paints and coatings used on the interior of the building that are certified as low-VOC products by one of the following organizations:
 - a. Scientific Certification Systems Indoor Advantage Gold.
 - b. GREENGUARD Certification Program.
 - c. Green Seal Standard for Paints and Coatings GS-11:
 - 1) Interior Flat Topcoat: 50 g/L.
 - 2) Interior Non-flat Topcoat: 100 g/L.
 - 3) Primer or Undercoat: 100 g/L.
 - 4) Floor Paint: 100 g/L.
 - 5) Anti-Corrosive Coating: 250 g/L.
 - d. If paints or coatings are not certified by any of the above organizations, the product must meet the requirements of South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings.
 - 1) Dry Fog Coatings: 150 g/L.

C. Colors: As selected by Architect from manufacturer's full range.

2.3 CONCRETE UNIT MASONRY BLOCK FILLERS

- A. Concrete Unit Masonry Block Filler: Factory-formulated high-performance latex block fillers (50 g/L).
 - 1. Benjamin Moore; Super Spec Masonry Hi-Build Block Filler 206: Applied at a dry film thickness of not less than 8.5 mils per coat. PROVIDE 2 COATS OR ACHIEVE A DRY FILM THICKNESS OF NOT LESS THAN 15 MILS TOTAL.
 - 2. PPG; 6-7 SpeedHide Interior/Exterior Masonry Latex Block Filler: Applied at a dry film thickness of not less than 7.1 mils. PROVIDE 2 COATS OR ACHIEVE A DRY FILM THICKNESS OF NOT LESS THAN 13 MILS TOTAL.
 - 3. Sherwin-Williams; Prep Rite Block Filler B25W25: Applied at a dry film thickness of not less than 8.0 mils. PROVIDE 2 COATS OR ACHIEVE A DRY FILMS THICKNESS OF NOT LESS THAN 14 MILS TOTAL.
- B. Concrete Unit Masonry Block Filler: Factory-formulated high performance block filler for use with epoxy finish coats (150 g/L):
 - 1. Benjamin Moore; Super Spec Masonry Hi-Build Block Filler 206: Applied at a dry film thickness of not less than 8.5 mils. PROVIDE 2 COATS OR ACHIEVE A DRY FILM THICKNESS OF NOT LESS THAN 15 MILS TOTAL.
 - 2. PPG; 6-15 Speedhide Interior/Exterior Masonry Hi Fill Latex Block Filler: Applied at a dry film thickness of not less than 7.0 mils. PROVIDE 2 COATS OR ACHIEVE A DRY FILM THICKNESS OF NOT LESS THAN 13 MILS TOTAL.
 - 3. Sherwin-Williams; Loxon Block Surfacer A24W200: Applied at a dry film thickness of not less than 8.0 mils. PROVIDE 2 COATS OR ACHIEVE A DRY FILMS THICKNESS OF NOT LESS THAN 14 MILS TOTAL.

2.4 INTERIOR PRIMERS

- A. General: Provide tinted primers as required for dark colors.
- B. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application (100 g/L).
 - 1. Benjamin Moore, Ultra Spec 500 Interior Latex Primer N534: Applied at a dry film thickness of not less than 1.8 mils.
 - 2. PPG; 6-2 Speedhide Interior Latex Sealer Quick-Drying: Applied at a dry film thickness of not less than 1.0 mil.
 - 3. Sherwin-Williams; ProMar 200 Zero VOC Primer B28W2600: Applied at a dry film thickness of not less than 1.5 mils.
- C. Interior Gypsum Board Primer for Epoxy Finish Coat: Factory-formulated waterborne acrylic epoxy for interior application (100 g/L).

- 1. Benjamin Moore; Fresh Start Multi-Purpose Latex Primer 023: Applied at a dry film thickness of not less than 1.2 mils.
- 2. PPG; 6-2 Speedhide Interior Latex Sealer Quick-Drying: Applied at a dry film thickness of not less than 1.0 mil.
- 3. Sherwin-Williams; ProMar 200 Zero VOC Primer B28W2600: Applied at a dry film thickness of not less than 1.5 mils.
- D. Interior Metal Primer: Factory-formulated metal primer (250 g/L).
 - 1. Benjamin Moore; Super Spec Acrylic Metal Primer No. P04: Applied at a dry film thickness of not less than 1.7 mils.
 - 2. PPG; 90-912 Series Pitt-Tech Interior/Exterior Primer/Finish DTM Industrial Enamel: Applied at a dry film thickness of not less than 2.0 mils.
 - 3. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Acrylic Primer B66 Series: Applied at a dry film thickness of not less than 2.0 mils.

2.5 INTERIOR PAINTS

- A. Interior Flat Acrylic Paint: Factory-formulated flat acrylic-emulsion latex paint for interior application ceilings and soffits (50 g/L).
 - 1. Benjamin Moore, Ultra Spec 500 Interior Flat N536: Applied at a dry film thickness of not less than 1.8 mils.
 - 2. PPG; 6-70 Series Speedhide Interior Latex Flat: Applied at a dry film thickness of not less than 1.3 mils.
 - 3. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Flat Wall Paint B30-2600 Series: Applied at a dry film thickness of not less than 1.6 mils.
- B. Interior Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel for walls (100 g/L).
 - 1. Benjamin Moore, Ultra Spec 500 Interior Eggshell N538: Applied at a dry film thickness of not less than 1.8 mils.
 - 2. PPG; 6-411 Series Speedhide Interior Enamel Latex Eggshell: Applied at a dry film thickness of not less than 1.5 mils.
 - 3. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Egg-Shell Enamel B20-2600 Series: Applied at a dry film thickness of not less than 1.6 mils.
- C. Interior Semi-Gloss Acrylic Enamel for Metal Surfaces: Factory-formulated semi-gloss acrylic interior enamel (250 g/L).
 - 1. Benjamin Moore; Super Spec HP DTM Acrylic Semi-Gloss Enamel HP29: Applied at a dry film thickness of not less than 1.5 mils.
 - 2. PPG; 4216HP Series Pitt-Tech Plus High Performance Waterborne DTM Acrylic Semi-Gloss: Applied at a dry film thickness of not less than 2.0 mils.
 - 3. Sherwin-Williams; Pro Industrial Acrylic B66 Series Semi-Gloss: Applied at a dry film thickness of not less than 2.5 mils.

- D. Interior Acrylic Enamel (Flat Dryfall): Factory-formulated enamel for overhead interior application ceilings and structural framing (150 g/L).
 - 1. Coronado Paint; Super Kote 5000 Latex Flat Dry Fall 110 Line: Applied at a dry film thickness of not less than 1.5 mils.
 - 2. PPG; SpeedHide Super Tech WB Interior Dry-Fog Flat Latex 6-725XI: Applied at a dry film thickness of not less than 2.2 mils.
 - 3. Sherwin-Williams; Low VOC Waterborne Acrylic Dryfall Flat B42W00081: Applied at a dry film thickness of not less than 1.7 mils.

2.6 EPOXY COATINGS

- A. Epoxy Low Luster Coating for Masonry and Gypsum Board Surfaces (100 g/L).
 - 1. Corotech; V342 Pre-Catalyzed Waterborne Epoxy Eggshell, applied at a dry film thickness of not less than 1.5 mils.
 - 2. PPG; 16-310 Series Pitt-Glaze WB1 Interior Eggshell Pre-Catalyzed Water-Borne Acrylic Epoxy: Applied at a dry film thickness of not less than 1.5 mils.
 - 3. Sherwin-Williams; Pro Industrial Water Based Catalyzed Epoxy B73-360 Series: Applied at a dry film thickness of not less than 2.0 mils.

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 work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Masonry (Clay and CMU): 12 percent.
 - 3. Wood: 15 percent.
 - 4. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 - 1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.

- E. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove plates, machined surfaces, and similar items already in place that 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.
 - 2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- D. Existing Concrete Surfaces: Remove all loose paint by scaping and/or sanding, and any dirt, oil, grease, and incompatible paints and encapsulants. Scrape and wire-brush all rust from any exposed steel and coat any exposed steel prior to any concrete coating application. Provide a light sand-blast over all existing concrete surfaces to be painted. Provide a low-pressure-water wash to clean all surfaces. Ensure that all surfaces achieve the proper moisture content prior to application of new coatings.
- E. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- F. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer. Power wash entire steel framing elements to remain following all Selective Demolition and before the installation of any Concrete Unit Masonry.
- G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- H. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
- 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.
- E. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:
 - 1. Mechanical Work:
 - a. Uninsulated metal piping.
 - b. Uninsulated plastic piping.
 - c. Pipe hangers and supports.
 - d. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
 - 2. Electrical Work:
 - a. Switchgear.
 - b. Panelboards.
 - c. Electrical equipment that is indicated to have a factory-primed finish for field painting.

3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE

- A. Concrete Unit Masonry: Provide the following finish systems over interior concrete masonry:
 - 1. Low-Luster Acrylic-Enamel Finish: Two finish coats over a filled surface.
 - a. Block Filler: Concrete unit masonry block filler: 2 coats or meet minimum mil thickness.
 - b. Finish Coats: Interior low-luster acrylic enamel.
 - 2. Low-Luster Epoxy Finish: Two finish coats over a filled surface.
 - a. Block Filler: Concrete unit masonry block filler for epoxy finish: 2 coats or meet minimum mil thickness.
 - b. Finish Coats: Epoxy low-luster finish.
- B. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:
 - 1. Flat Acrylic Finish (ceilings): Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior flat acrylic paint.
 - 2. Low-Luster Acrylic-Enamel Finish (Walls): Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.
 - 3. Low-Luster Epoxy Finish: Two finish coats over a primer.
 - a. Block Filler: Interior gypsum board primer for epoxy finish.
 - b. Finish Coats: Epoxy low-luster finish.
- C. Ferrous and Zinc-Coated Metal: Provide the following finish systems over ferrous metal:
 - 1. Semi-Gloss Acrylic-Enamel Finish: Two finish coats.
 - a. Primer: Metal primer, including surfaces with factory prime coat.
 - b. Finish Coats: Interior semi-gloss acrylic enamel for metal surfaces.

END OF SECTION 09 91 00

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. This Section includes the following:
 - 1. Panel signs.

1.3 DEFINITIONS

A. Accessible: In accordance with the accessibility standard.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details for signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
 - 3. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.
 - 4. Provide vector images or other digital media that may be required to enlarge small format logos, images, and symbols, furnished by Architect for application on all sign types.
- C. Samples for Initial Selection: For each type of sign material indicated that involves color selection.
 - 1. Include representative Samples of available typestyles and graphic symbols.
- D. Samples for Verification: For each of the following products and for the full range of color, texture, and sign material indicated, of sizes indicated:
 - 1. Panel Signs: Not less than 12 inches square.
- E. Sign Schedule: Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.
- B. Warranty: Special warranty specified in this Section.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative of signage manufacturer.
- B. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful inservice performance.
- C. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.
- D. Regulatory Requirements: Comply with handicapped accessibility requirements of the 2010 ADA Standards and ICC/ANSI A117.1.

1.8 COORDINATION

A. Coordinate placement of anchorage devices with templates for installing signs.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PANEL SIGNS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide ASI Sign Systems; InTouch, or a comparable product by one of the following:
 - 1. Advance Corporation; Braille-Tac Division.
 - 2. Best Sign Systems, Inc.

- 3. Mohawk Sign Systems, Inc.
- 4. Southwell Co. (The)
- B. Interior Panel Signs (Plastic): Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner, complying with the following requirements:
 - 1. Provide manufacturer's standard one-piece construction:
 - a. Phenolic-Backed Photopolymer Sheet: Provide light-sensitive, water-wash photopolymer face layer bonded to a phenolic base layer to produce a composite sheet with overall, face-layer, and base-layer thickness of 1/8-inch; and a Type D Shore durometer hardness of 80.
 - 2. Edge Condition: Square cut.
 - 3. Corner Condition: Square.
 - 4. Mounting: Unframed.
 - a. Wall mounted with mechanical fasteners or two-face tape required by substrate.
 - 5. Color: As selected by Architect from manufacturer's full range.
 - 6. Font: As selected by Architect from manufacturer's full range.
 - 7. Character proportion: Width to height ratio between 3:5 and 1:1, and a stroke-width-toheight ratio between 1:5 and 1:10.
 - 8. Size of characters and symbols:
 - a. Room numbers: 1-inch.
 - b. Room letters: 5/8-inch minimum.
 - 9. Pictograms: Accompanied by the equivalent verbal description placed directly below the pictogram. The border dimension of the pictogram to be no less than 6 inches in height.
 - 10. Finish and Contrast: Characters, symbols and background to be matte or other non-glare finish. Characters and symbols to be in contrasting color to the background; either light characters on a dark background or dark characters on a light background.
 - 11. Tactile Characters: Characters and Grade 2 Braille raised 1/32 inch above surface with contrasting colors. Glue-on characters or etched backgrounds are not permitted.
 - a. Manufacturer's standard process for producing text and symbols complying with 2010 ADA Standards and ICC/ANSI A117.1. Produce precisely formed characters with square-cut edges free from burrs and cut marks; Braille dots with domed or rounded shape.
 - b. Braille to be separated from corresponding raised characters or symbols by 1/2-inch.

2.2 ACCESSORIES

A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance.

B. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

2.3 FABRICATION

- A. General: Provide manufacturer's standard signs of configurations indicated.
- B. Signs with Changeable Message Capability: Fabricate signs to allow insertion of changeable messages as follows:
 - 1. For slide-in changeable inserts, fabricate slot without burrs or constrictions that inhibit function. Furnish initial changeable insert. Furnish two blank inserts for each sign for Owner's use.

2.4 FINISHES, GENERAL

A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.
- B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.
- C. Verify that anchor inserts are correctly sized and located to accommodate signs.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.

- 3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- 4. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls.
 - a. Locate sign with baseline of the lowest tactile character (Braille) 48" minimum above finish floor and the baseline of the highest tactile character not more than 60" above finish floor.
 - b. Locate signs so that clear floor area 18 inches minimum by 18 inches minimum centered on the tactile character, is provided beyond the arc of any door swing between the closed position and 45 degree open position.
 - c. At double doors with two active leafs, mount sign on wall to the right hand side of the door. At double doors with one inactive leaf, mount sign on inactive leaf unless otherwise indicated.
- B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.
 - 1. Mechanical Fasteners: Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
 - 2. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

3.3 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 10 14 00

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. Solid-plastic toilet compartments configured as toilet screens.
- B. Related Requirements:
 - 1. Division 06 Section "Miscellaneous Rough Carpentry" for wood blocking.
 - 2. Division 10 Section "Toilet and Bath Accessories" for toilet tissue dispensers, grab bars, and similar accessories.

1.03 REFERENCES

A. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.04 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 toilet compartments.
- B. Shop Drawings: For toilet compartments.
 - 1. Include plans, elevations, sections, details, and attachment details.
 - 2. Show locations of cutouts for compartment-mounted toilet accessories.
 - 3. Show locations of centerlines of toilet fixtures.
 - 4. Show locations of floor drains.
- C. Samples for Initial Selection: For each type of toilet compartment material indicated.
 - 1. Include Samples of hardware and accessories involving material and color selection.
- D. Samples for Verification: For the following products, in manufacturer's standard sizes unless otherwise indicated:

- 1. Each type of material, color, and finish required for toilet compartments, prepared on 6inch-square Samples of same thickness and material indicated for Work.
- 2. Each type of hardware and accessory.
- E. Product Schedule: For toilet compartments, prepared by or under the supervision of supplier, detailing location, and selected colors for toilet compartment material.

1.05 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of toilet compartment.

1.06 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet compartments to include in maintenance manuals.
- B. Warranty: Special warranty included in this Section.

1.07 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 and source.
 - 1. Door Hinges: Two hinges with associated fasteners.
 - 2. Latch and Keeper: Two latches and keepers with associated fasteners.
 - 3. Door Bumper: Two bumpers with associated fasteners.
 - 4. Door Pull: Two door pulls with associated fasteners.
 - 5. Fasteners: Ten fasteners of each size and type.

1.08 QUALITY ASSURANCE

- A. Coordination: Furnish inserts and anchorages which must be built into other work for installation of toilet compartments and related items. Coordinate delivery with other work to avoid delay.
 - 1. Coordinate with wall finishes indicated on the Finish Schedule. Allow for thickness of ceramic wall tile and tile wainscots as required.

1.09 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of phenolic partitions, including panels, doors, stiles, and continuous hinges that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Breakage, corrosion, delamination, and defects in factory workmanship.
 - 2. Warranty Period: 25 years from date of Substantial Completion.
 - 3. Warranty Period for Stainless Steel hardware: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Fire Hazard Classification: Fire Propagation Characteristics: Passes NFPA 286 testing.
- B. Regulatory Requirements: Comply with applicable provisions in the 2010 ADA Standards and ICC/ANSI A117.1 for toilet compartments designated as accessible.

2.02 SOLID-PLASTIC TOILET COMPARTMENTS

- A. Basis of Design Product: Subject to compliance with requirements, provide Scranton **Products; Hiny Hiders** or comparable product by one of the following:
 - 1. Accurate Partitions Corp.; ASI Group.
 - 2. Global Partitions; ASI Group.
- B. Toilet-Enclosure Style: Floor Mounted, Overhead braced.
- C. Door, Panel, and Pilaster Construction: Solid, high-density polyethylene (HDPE) panel material, not less than 1 inch thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.
 - 1. Heat-Sink Strip: Manufacturer's standard continuous, extruded-aluminum or stainlesssteel strip fastened to exposed bottom edges of solid-plastic components to hinder malicious combustion.
 - 2. Texture: Orange peel.
 - 3. Color: As selected by Architect from manufacturer's full range.
 - 4. Panel Edge: Shiplap.
- D. Pilaster Shoes and Sleeves (Caps): Manufacturer's standard design; stainless steel.

E. Brackets (Fittings):

1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

2.03 HARDWARE AND ACCESSORIES

- A. Hardware and Accessories: Manufacturer's heavy-duty operating hardware and accessories.
 - 1. Hinges: Manufacturer's minimum 16 gauge stainless-steel continuous, cam type that swings to a closed or partially open position, allowing emergency access by lifting door. Mount with through-bolts.
 - 2. Latch and Keeper: Manufacturer's heavy-duty surface-mounted cast-stainless-steel latch unit designed to resist damage due to slamming, with combination rubber-faced door strike and keeper, and with provision for emergency access. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible. Mount with through-bolts.
 - 3. Coat Hook: Manufacturer's heavy-duty combination cast-stainless-steel hook and rubbertipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories. Mount with through-bolts.
 - 4. Door Bumper: Manufacturer's heavy-duty rubber-tipped cast-stainless-steel bumper at out-swinging doors. Mount with through-bolts.
 - 5. Door Pull: Manufacturer's heavy-duty cast-stainless-steel pull at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible. Mount with through-bolts.
 - a. Mount an additional door pull on inside of handicapped accessible stalls at 36 inches above the floor, located at 6 inches from hinge side of door.
- B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.
- C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless-steel, hot-dip galvanized-steel, or other rust-resistant, protective-coated steel compatible with related materials.

2.04 MATERIALS

- A. Aluminum Castings: ASTM B 26/B 26M.
- B. Aluminum Extrusions: ASTM B 221.
- C. Stainless-Steel Sheet: ASTM A 666, Type 304, stretcher-leveled standard of flatness.
- D. Stainless-Steel Castings: ASTM A 743/A 743M.

2.05 FABRICATION

- A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories where required for attachment of toilet accessories.
- B. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.
- C. Door Size and Swings: Unless otherwise indicated, provide 24-inch-wide, in-swinging doors for standard toilet compartments and 36-inch-wide, out-swinging doors with a minimum 32-inch-wide, clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.
 - 1. Confirm location and adequacy of blocking and supports required for installation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
 - 1. Maximum Clearances:
 - a. Pilasters and Panels: 1/2 inch.
 - b. Panels and Walls: 1 inch.
 - 2. Full-Height (Continuous) Brackets: Secure panels to walls and to pilasters with fullheight brackets.
 - a. Locate bracket fasteners so holes for wall anchors occur in masonry or tile joints.
 - b. Align brackets at pilasters with brackets at walls.
- B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster

with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace when doors are in closed position.

C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.03 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 10 21 13.19

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. Solid-surface countertops and backsplashes.

1.3 SUBMITTALS

- A. Product Data: For countertop materials.
- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
- C. Samples for Verification:1. Countertop material, 6 inches square.
- D. Qualification Data: For Installer and fabricator.
- E. Sealant Compatibility Test Report: From sealant manufacturer, complying with requirements in Division 07 Section "Joint Sealants" and indicating that sealants will not stain or damage simulated stone.
- F. Maintenance Data: For countertops to include in maintenance manuals. Include Product Data for stone-care products used or recommended by Installer, and names, addresses, and telephone numbers of local sources for products.
- G. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate simulated stone countertops similar to that indicated for this Project and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of products, or installer approved by fabricator.
- C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

1. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions of construction to receive countertops by field measurements before fabrication and indicate measurements on Shop Drawings.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace solid-surface-material countertops that fail within specified warranty period.
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1.
 - 1. Basis of Design Product: Subject to compliance with requirements, provide Corian; Solid Surface or one of the following:
 - 2.
- a. Wilsonart.
- b. Formica.
- 3. Type: Provide Standard Type.
- 4. Color: As selected by Architect from manufacturer's full range

2.2 SOLID-SURFACE-MATERIAL COUNTERTOPS

- A. Configuration: Provide countertop with the following front and backsplash style:
 - 1. Front: As indicated.
 - 2. Backsplash: Straight, slightly eased at corner.
 - 3. Endsplash: Matching backsplash.
- B. Countertops: Solid surface material with front edge built up with same material.
 - 1. Thickness: 1/2"-inch thick, solid surface material

- C. Backsplashes: 1/2"-inch thick, solid surface material.
- D. Fabrication: Fabricate tops in one piece with shop-applied edges. Comply with solid-surfacematerial manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - 1. Fabricate with loose trim for field assembly.

2.3 ADHESIVES, SEALANTS, AND ACCESSORIES

- A. General: Use only adhesives formulated for simulated stone and recommended by their manufacturer for the application indicated.
- B. Water-Cleanable Epoxy Adhesive: ANSI A118.3.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Bonsal, W. R. Company.
 - b. Laticrete International, Inc.
 - c. MAPEI Corp.
- C. Joint Sealant: Silicone sealant to comply with Division 07 Section "Joint Sealants."
- D. Cleaner: Cleaner specifically formulated for simulated stone types, finishes, and applications indicated, as recommended by manufacturer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates indicated to receive countertops and conditions under which stone countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of countertops.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work acknowledges acceptance of substrates.

3.2 PREPARATION

A. Clean dirty or stained surfaces by removing soil, stains, and foreign materials before setting. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives. Allow stone to dry before installing.

3.3 CONSTRUCTION TOLERANCES

- A. Variation from Level: Do not exceed 1/16 inch in 120 inches.
- B. Variation in Joint Width: Do not vary joint thickness more than 1/4 of nominal joint width.
- C. Variation in Plane at Joints (Lipping): Do not exceed 1/64-inch difference between planes of adjacent units.
- D. Variation in Line of Edge at Joints (Lipping): Do not exceed 1/64-inch difference between edges of adjacent units, where edge line continues across joint.

3.4 INSTALLATION OF COUNTERTOPS

- A. General: Install countertops by adhering to supports with water-cleanable epoxy adhesive.
- B. Set countertops to comply with requirements indicated on Drawings and Shop Drawings. Shim and adjust countertops to locations indicated, with uniform joints of widths indicated and with edges and faces aligned according to established relationships and indicated tolerances. Install anchors and other attachments indicated or necessary to secure stone countertops in place.
- C. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
- D. Install backsplash by adhering to wall with water-cleanable epoxy adhesive. Leave 1/16-inch gap between countertop and trim for filling with sealant. Use temporary shims to ensure uniform spacing.
 - 1. Apply silicone sealant to gap between wall and trim.
- E. Apply sealant to joints; comply with Division 07 Section "Joint Sealants." Remove temporary shims before applying sealant.

3.5 ADJUSTING AND CLEANING

- A. In-Progress Cleaning: Clean countertops as work progresses. Remove adhesive and sealant smears immediately.
- B. Remove and replace simulated stone of the following description:
 - 1. Broken, chipped, stained, or otherwise damaged simulated stone. Simulated stone may be repaired if methods and results are approved by Architect.
 - 2. Defective countertops.
 - 3. Defective joints, including misaligned joints.
 - 4. Interior simulated stone countertops and joints not matching approved Samples and mockups.
 - 5. Interior simulated stone countertops not complying with other requirements indicated.
- C. Replace in a manner that results in countertops matching approved Samples and mockups, complying with other requirements, and showing no evidence of replacement.

D. Clean countertops not less than six days after completion of installation, using clean water and soft rags. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage simulated stone.

END OF SECTION 12 36 31