

## SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Use Charges: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated.
- B. Water and Electric Power: Available from Owner's existing system without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- C. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- D. Accessible Temporary Egress: Comply with applicable provisions in ICC A117.1.

## PART 2 - PRODUCTS

## 2.1 MATERIALS

- A. Wood Enclosure Fence: Plywood, 6 feet (1.8 m) high, framed with four 2-by-4-inch (50-by-100-mm) rails, with preservative-treated wood posts spaced not more than 8 feet (2.4 m) apart.

## 2.2 TEMPORARY FACILITIES

- A. Provide field offices, storage and fabrication sheds, and other support facilities as necessary for construction operations. Store combustible materials apart from building.

## 2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
  - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
  - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
  - 3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction.

## PART 3 - EXECUTION

### 3.1 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
  - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
- C. Heating and Cooling: Provide temporary heating and cooling required for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- D. Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

### 3.2 SUPPORT FACILITIES INSTALLATION

- A. Install project identification and other signs in locations approved by Owner to inform the public and persons seeking entrance to Project.
- B. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

### 3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- B. Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion and sedimentation-control Drawings and requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- D. Furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
- E. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

- F. Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
- G. Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
- H. Install and maintain temporary fire-protection facilities. Comply with NFPA 241.

#### 3.4 MOISTURE AND MOLD CONTROL

- A. Before installation of weather barriers, protect materials from water damage and keep porous and organic materials from coming into prolonged contact with concrete.
  - 1. Protect stored and installed material from flowing or standing water.
  - 2. Remove standing water from decks.
  - 3. Keep deck openings covered or dammed.
- B. After installation of weather barriers but before full enclosure and conditioning of building, protect as follows:
  - 1. Do not load or install drywall or porous materials into partially enclosed building.
  - 2. Discard water-damaged material.
  - 3. Do not install material that is wet.
  - 4. Discard, replace, or clean stored or installed material that begins to grow mold.
  - 5. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

#### 3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion.
- C. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period.

END OF SECTION 015000

## SECTION 016000 - PRODUCT REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- B. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced.
  - 1. Show compliance with requirements for comparable product requests.
  - 2. Architect will review the proposed product and notify Contractor of its acceptance or rejection.
- C. Basis-of-Design Product Specification Submittal: Show compliance with requirements.
- D. Compatibility of Options: If Contractor is given option of selecting between two or more products, select product compatible with products previously selected.
- E. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
  - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  - 2. Deliver products to Project site in manufacturer's original sealed container or packaging, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 3. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
  - 4. Store materials in a manner that will not endanger Project structure.
  - 5. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
- F. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

### PART 2 - PRODUCTS

#### 2.1 PRODUCT SELECTION PROCEDURES

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

1. Provide products complete with accessories, trim, finish, and other devices and components needed for a complete installation and the intended use and effect.
  2. Where products are accompanied by the term "as selected," Architect will make selection.
  3. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
- B. Where the following headings are used to list products or manufacturers, the Contractor's options for product selection are as follows:
1. Products:
    - a. Where requirements include "one of the following," provide one of the products listed that complies with requirements.
    - b. Where requirements do not include "one of the following," provide one of the products listed that complies with requirements or a comparable product.
  2. Manufacturers:
    - a. Where requirements include "one of the following," provide a product that complies with requirements by one of the listed manufacturers.
    - b. Where requirements do not include "one of the following," provide a product that complies with requirements by one of the listed manufacturers or another manufacturer.
  3. Basis-of-Design Product: Provide the product named, or indicated on the Drawings, or a comparable product by one of the listed manufacturers.
- C. Where Specifications require "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
- D. Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

## 2.2 COMPARABLE PRODUCTS

- A. Architect will consider Contractor's request for comparable product when the following conditions are satisfied:
1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  2. Detailed comparison of significant qualities of proposed product with those named in the Specifications.
  3. List of similar installations for completed projects, if requested.
  4. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

## SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

## PART 1 - GENERAL

## 1.1 EXECUTION REQUIREMENTS

- A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.
- B. Cutting and Patching:
  - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching.
  - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
  - 3. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

## 1.2 CLOSEOUT SUBMITTALS

- A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- B. Certified List of Incomplete Items: Final submittal at Final Completion.
- C. Operation and Maintenance Data: Submit one copy of manual.
- D. PDF Electronic File: Assemble manual into a composite electronically indexed file. Submit on digital media.
- E. Record Drawings: Submit one set(s) of marked-up record prints.
- F. Record Digital Data Files: Submit data file and one set(s) of plots.
- G. Record Product Data: Submit one paper copy of each submittal.

## 1.3 SUBSTANTIAL COMPLETION PROCEDURES

- A. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.

- B. Submittals Prior to Substantial Completion: Before requesting Substantial Completion inspection, complete the following:
1. Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  2. Submit closeout submittals specified in other sections, including project record documents, operation and maintenance manuals, property surveys, similar final record information, warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  3. Submit maintenance material submittals specified in other sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect.
  4. Submit test/adjust/balance records.
  5. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Before requesting Substantial Completion inspection, complete the following:
1. Advise Owner of pending insurance changeover requirements.
  2. Make final changeover of permanent locks and deliver keys to Owner.
  3. Complete startup and testing of systems and equipment.
  4. Perform preventive maintenance on equipment used prior to Substantial Completion.
  5. Advise Owner of changeover in heat and other utilities.
  6. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  7. Remove temporary facilities and controls.
  8. Complete final cleaning requirements, including touchup painting.
  9. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will proceed with inspection or advise Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will advise Contractor of items that must be completed or corrected before certificate will be issued.

#### 1.4 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting inspection for determining final completion, complete the following:
1. Submit a final Application for Payment.
  2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved.
  3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  4. Submit pest-control final inspection report.



- B. Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare final Certificate for Payment after inspection or will advise Contractor of items that must be completed or corrected before certificate will be issued.
  - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
- B. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

### 2.2 OPERATION AND MAINTENANCE DOCUMENTATION

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information.
- B. Organization: Unless otherwise indicated, organize manual into separate sections for each system and subsystem, and separate sections for each piece of equipment not part of a system.
- C. Organize data into three-ring binders with identification on front and spine of each binder, and envelopes for folded drawings. Include the following:
  - 1. Manufacturer's operation and maintenance documentation.
  - 2. Maintenance and service schedules.
  - 3. Maintenance service contracts. Include name and telephone number of service agent.
  - 4. Emergency instructions.
  - 5. Spare parts list and local sources of maintenance materials.
  - 6. Wiring diagrams.
  - 7. Copies of warranties. Include procedures to follow and required notifications for warranty claims

### 2.3 RECORD DRAWINGS

- A. Record Prints: Maintain a set of prints of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued. Mark to show actual installation where installation varies from that shown originally. Accurately record information in an acceptable drawing technique.

1. Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

## PART 3 - EXECUTION

### 3.1 EXAMINATION AND PREPARATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
- B. Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance.
  1. Verify compatibility with and suitability of substrates.
  2. Examine roughing-in for mechanical and electrical systems.
  3. Examine walls, floors, and roofs for suitable conditions.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Take field measurements as required to fit the Work properly. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication.
- E. Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- F. Surface and Substrate Preparation: Comply with manufacturer's written recommendations for preparation of substrates to receive subsequent work.

### 3.2 CONSTRUCTION LAYOUT AND FIELD ENGINEERING

- A. Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks.
- B. Engage a land surveyor to lay out the Work using accepted surveying practices.

### 3.3 INSTALLATION

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  1. Make vertical work plumb and make horizontal work level.
  2. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
  3. Maintain minimum headroom clearance of **96 inches (2440 mm)** in occupied spaces and **90 inches (2300 mm)** in unoccupied spaces.

- B. Comply with manufacturer's written instructions and recommendations.
- C. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- D. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed.
- E. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place. Where size and type of attachments are not indicated, verify size and type required for load conditions.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
- F. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- G. Use products, cleaners, and installation materials that are not considered hazardous.

#### 3.4 CUTTING AND PATCHING

- A. Provide temporary support of work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- D. Cutting: Cut in-place construction using methods least likely to damage elements retained or adjoining construction.
  - 1. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
- E. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
  - 1. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction in a manner that will minimize evidence of patching and refinishing.
  - 2. Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance.
  - 3. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

### 3.5 CLEANING

- A. Clean Project site and work areas daily, including common areas. Dispose of materials lawfully.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
  - 3. Remove debris from concealed spaces before enclosing the space.
- B. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion:
  - 1. Clean Project site, yard, and grounds, in areas disturbed by construction activities. Sweep paved areas; remove stains, spills, and foreign deposits. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
  - 2. Sweep paved areas broom clean. Remove spills, stains, and other foreign deposits.
  - 3. Remove labels that are not permanent.
  - 4. Clean transparent materials, including mirrors. Remove excess glazing compounds.
  - 5. Clean exposed finishes to a dust-free condition, free of stains, films, and foreign substances. Sweep concrete floors broom clean.
  - 6. Vacuum carpeted surfaces and wax resilient flooring.
  - 7. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and foreign substances. Clean plumbing fixtures. Clean light fixtures, lamps, globes, and reflectors.
  - 8. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

### 3.6 OPERATION AND MAINTENANCE MANUAL PREPARATION

- A. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- B. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
  - 1. Prepare supplementary text if manufacturers' standard printed data are unavailable and where the information is necessary for proper operation and maintenance of equipment or systems.
- C. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams.

### 3.7 DEMONSTRATION AND TRAINING

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system. Include a detailed review of the following:
  - 1. Include instruction for basis of system design and operational requirements, review of documentation, emergency procedures, operations, adjustments, troubleshooting, maintenance, and repairs.

END OF SECTION 017000

## SECTION 024119 - SELECTIVE DEMOLITION

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Items indicated to be removed and salvaged remain Owner's property. Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner[ **ready for reuse**]. Include fasteners or brackets needed for reattachment elsewhere.
- B. Predemolition Photographs: Show existing conditions of adjoining construction and site improvements. Submit before Work begins.
- C. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- D. It is not expected that hazardous materials will be encountered in the Work. If hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with EPA regulations and 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 DEMOLITION

- A. Maintain services/systems indicated to remain and protect them against damage during selective demolition operations. Before proceeding with demolition, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of the building.
- B. Locate, identify, shut off, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
- C. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to 40 CFR 82 and regulations of authorities having jurisdiction.

- D. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- E. Protect walls, ceilings, floors, and other existing finish work that are to remain. Erect and maintain dustproof partitions. Cover and protect furniture, furnishings, and equipment that have not been removed.
- F. 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.
- G. Provide temporary weather protection to prevent water leakage and damage to structure and interior areas.
- H. Requirements for Building Reuse:
  - 1. Maintain existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and nonstructural roofing material) not indicated to be demolished; do not demolish such existing construction beyond indicated limits.
  - 2. Maintain existing interior nonstructural elements (interior walls, doors, floor coverings, and ceiling systems) not indicated to be demolished; do not demolish such existing construction beyond indicated limits.
- I. 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.
- J. Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill. Do not burn demolished materials.
- K. 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 024119

## SECTION 033000 - CAST-IN-PLACE CONCRETE

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data, concrete mix designs, and submittals required by ACI 301.
- B. Ready-Mixed Concrete Producer Qualifications: ASTM C 94/C 94M.

## PART 2 - PRODUCTS

## 2.1 PERFORMANCE REQUIREMENTS

- A. Comply with ACI 301, "Specification for Structural Concrete," and with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

## 2.2 MATERIALS

- A. Reinforcing Bars: ASTM A 615/A 615M, **Grade 60** (Grade 420), deformed.
- B. Plain Steel Wire: ASTM A 82/A 82M, as drawn.
- C. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, as drawn, flat sheet.
- D. Portland Cement: ASTM C 150, Type I or II.
- E. Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded, with at least 10 years' satisfactory service in similar applications.
  - 1. Maximum Coarse-Aggregate Size: **1 inch** (25 mm) nominal.
- F. Air-Entraining Admixture: ASTM C 260.
- G. Chemical Admixtures: ASTM C 494, water reducing. Do not use calcium chloride or admixtures containing calcium chloride.
- H. Vapor Retarder: Reinforced sheet, ASTM E 1745, Class A.
- I. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- J. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
- K. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.



## 2.3 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301.
- B. Normal-Weight Concrete:
  - 1. Minimum Compressive Strength: 3500 psi (24.1 MPa) at 28 days.
  - 2. Slump Limit: 5 inches (125 mm), plus or minus 1 inch (25 mm).
  - 3. Air Content: Maintain within range permitted by ACI 301. Do not allow air content of floor slabs to receive troweled finishes to exceed 3 percent.

## PART 3 - EXECUTION

### 3.1 CONCRETING

- A. Construct formwork according to ACI 301 and maintain tolerances and surface irregularities within ACI 347R limits of Class A, 1/8 inch (3.2 mm) for concrete exposed to view and Class B, 1/4 inch (6 mm) for other concrete surfaces.
- B. Place vapor retarder on prepared subgrade, with joints lapped 6 inches (150 mm) and sealed.
- C. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- D. Install construction, isolation, and contraction joints where indicated. Install full-depth joint-filler strips at isolation joints.
- E. Place concrete in a continuous operation and consolidate using mechanical vibrating equipment.
- F. Protect concrete from physical damage, premature drying, and reduced strength due to hot or cold weather during mixing, placing, and curing.
- G. Formed Surface Finish: Smooth-formed finish for concrete exposed to view, coated, or covered by waterproofing or other direct-applied material; rough-formed finish elsewhere.
- H. Slab Finishes: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces. Provide the following finishes:
  - 1. Nonslip-broom finish to exterior concrete platforms, steps, and ramps.
- I. Cure formed surfaces by moisture curing for at least seven days. Begin curing concrete slabs after finishing. Keep concrete continuously moist for at least seven days.
- J. Contractor will engage a testing agency to perform field tests and to submit test reports.
- K. Protect concrete from damage. Repair and patch defective areas.

END OF SECTION 033000

## SECTION 042000 - UNIT MASONRY

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Allowances: Furnish face brick under the Face Brick Allowance specified in Section 012000 "Price and Payment Procedures."
- B. Submittals:
  - 1. Samples for face brick and colored mortar.
  - 2. Material Certificates: For each type of product indicated. Include statements of material properties indicating compliance with requirements.

## PART 2 - PRODUCTS

## 2.1 UNIT MASONRY

- A. Comply with TMS 602/ACI 530.1/ASCE 6.

## 2.2 MASONRY UNITS

- A. Clay Face Brick: ASTM C 216 or ASTM C 652, Class H40V,
  - 1. Match existing brick shapes, sizes, colors, textures, and surface finish.

## 2.3 MORTAR AND GROUT

- A. Mortar: ASTM C 270, proportion specification.
  - 1. Use portland cement-lime mortar.
  - 2. Do not use calcium chloride in mortar.
  - 3. For masonry below grade or in contact with earth, use Type M.
  - 4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions, and for other applications where another type is not indicated, use Type N.
  - 5. Colored Mortar: For face brick, use colored cement or cement-lime mix of color selected (match existing).
- B. Grout: ASTM C 476 with a slump of 8 to 11 inches (200 to 280 mm).
- C. Refractory Mortar: Ground fireclay mortar or other refractory mortar that passes ASTM C 199 test and is acceptable to authorities having jurisdiction.

## 2.4 REINFORCEMENT, TIES, AND ANCHORS

- A. Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60 (Grade 420).
- B. Joint Reinforcement: ASTM A 951/A 951M.
  - 1. Coating: Mill galvanized at interior walls and hot-dip galvanized at exterior walls.
  - 2. Wire Size for Side Rods: 0.148-inch (3.77-mm) diameter.
  - 3. Wire Size for Cross Rods: 0.148-inch (3.77-mm) diameter.
  - 4. Wire Size for Veneer Ties: 0.148-inch (3.77-mm) diameter.
  - 5. For single-wythe masonry, provide either ladder design or truss design.
  - 6. For multiwythe masonry, provide tab design with single pair of side rods.
- C. Corrugated-Metal Veneer Anchors: 7/8 inch (22 mm) wide and made from 0.030-inch- (0.76-mm-) thick steel sheet, galvanized after fabrication.
- D. Veneer Anchors: Hot-dip galvanized steel, two-piece adjustable masonry veneer anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to studs, and acceptable to authorities having jurisdiction.

## 2.5 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded strips complying with ASTM D 1056, Grade 2A1.
- B. Preformed Control-Joint Gaskets: Designed to fit standard sash block and to maintain lateral stability in masonry wall; made from styrene-butadiene rubber or PVC.
- C. Weep Holes: Free-draining polyethylene mesh, full height and width of head joint.
- D. Cavity Drainage Material: Free-draining polymer mesh, full depth of cavity with dovetail-shaped notches that prevent mortar clogging.
- E. Proprietary Acidic Masonry Cleaner: Product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Remove all loose, broken joint material, prior to re-pointing.
- B. Cut masonry units with saw. Install with cut surfaces and, where possible, cut edges concealed.
- C. Mix units for exposed unit masonry from several pallets or cubes as they are placed to produce uniform blend of colors and textures.
- D. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

- E. Stopping and Resuming Work: Step back units; do not tooth.
- F. Tool exposed joints slightly concave when thumbprint hard unless otherwise indicated (match existing).
- G. Keep cavities clean of mortar droppings and other materials during construction.
- H. Set firebox brick in full bed of refractory mortar with full head joints. Make joints approximately 1/8 inch (3 mm) wide and tool smooth.

### 3.2 FLASHING AND WEEP HOLES

- A. Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to the downward flow of water in the wall, and where indicated.
- B. Place through-wall flashing on sloping bed of mortar and cover with mortar. Seal penetrations in flashing before covering with mortar.
  - 1. Extend flashing 4 inches (100 mm) into masonry at each end and turn up 2 inches (50 mm) to form a pan.
- C. Trim wicking material used in weep holes flush with outside face of wall after mortar has set.

### 3.3 PARGING

- A. Parge masonry walls, where indicated, in two uniform coats with a steel-trowel finish. Form a wash at top of parging and a cove at bottom. Damp cure parging for at least 24 hours.

### 3.4 FIELD QUALITY CONTROL

- A. Testing and Inspecting:
  - 1. Inspections: TMS 402/ACI 530/ASCE 5.
  - 2. Mortar samples and mock-up is required to be prepared for SHPO review prior to commencement of any mortar repair work to ensure that the mortar matches the original in color and aggregate. Refer to the National Park Service's Preservation Brief #2 "Repointing Mortar Joints in Historic Masonry Buildings."

### 3.5 CLEANING

- A. Clean masonry as work progresses. Remove mortar fins and smears before tooling joints.
- B. Final Cleaning: After mortar is thoroughly cured, clean exposed masonry.
  - 1. Wet wall surfaces with water before applying acidic cleaner, then remove cleaner promptly by rinsing thoroughly with clear water.

2. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

END OF SECTION 042000

## SECTION 044313.16 - ADHERED STONE MASONRY VENEER - RE-POINTING

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: Samples for colored mortar.
- B. Submit qualification data for masonry contractor, including a list of completed projects.
- C. Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
- D. Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

## PART 2 - PRODUCTS

## 2.1 MORTAR

- A. Mortar for Stone Masonry Veneer: ASTM C 270, Proportion Specification, Type N for pointing.
  - 1. Use portland cement-lime mortar.
  - 2. Low-Alkali Cement: Use portland cement with not more than 0.60 percent total alkali according to ASTM C 114.
  - 3. Colored Pointing Mortar: Use colored cement product of color selected (match existing).

## PART 3 - EXECUTION

## 3.1 POINTING

- A. Remove all loose, broken joint material, prior to re-pointing.
- B. Point stone joints by placing and compacting pointing mortar in layers not more than 3/8 inch (10 mm) deep. Compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
- C. Tool joints, when pointing mortar is thumbprint hard, with a smooth jointing tool to produce joint profile indicated.

## 3.2 FIELD QUALITY CONTROL

- 1. Mortar samples and mock-up is required to be prepared for SHPO review prior to commencement of any mortar repair work to ensure that the mortar matches the original

in color and aggregate. Refer to the National Park Service's Preservation Brief #2 "Repointing Mortar Joints in Historic Masonry Buildings.

### 3.2 CLEANING

- A. In-Progress Cleaning: Clean masonry as work progresses. Remove mortar fins and smears before tooling joints.
- B. Final Cleaning: After mortar is thoroughly cured, remove large mortar particles, scrub, and rinse stone masonry veneer.
  - 1. Wet wall surfaces with water before applying cleaner; remove cleaner promptly by rinsing thoroughly with clear water.

END OF SECTION 044313.16

## SECTION 061000 - ROUGH CARPENTRY

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: ICC-ES evaluation reports for wood-preservative treated wood and metal framing anchors.

## PART 2 - PRODUCTS

## 2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: Provide dressed lumber, S4S, marked with grade stamp of inspection agency.
- B. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
  - 1. Allowable Design Stresses: Engineered wood products shall have allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be demonstrated by comprehensive testing.

## 2.2 TREATED MATERIALS

- A. Preservative-Treated Materials: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.
  - 1. Use treatment containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
  - 2. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.
  - 3. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- B. Provide preservative-treated materials for items indicated on Drawings, and the following:
  - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
  - 2. Wood sills, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
  - 3. Wood framing members that are less than 18 inches (460 mm) above the ground.
  - 4. Wood floor plates that are installed over concrete slabs-on-grade.



## 2.3 FRAMING

### A. Dimension Lumber:

1. Maximum Moisture Content: 15 percent.
2. Non-Load-Bearing Interior Partitions: Construction or No. 2.
3. Framing Other Than Non-Load-Bearing Interior Partitions: No. 2: Douglas fir-larch: WCLIB, or WWPA.
4. Exposed Framing: Provide material hand-selected for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.
  - a. Species: As specified for framing other than non-load-bearing interior partitions.
  - b. Grade: No. 1.

### B. Timbers **5-Inch Nominal** (117-mm Actual) Size and Thicker: : Douglas fir-larch, Douglas fir-larch (north), or Douglas fir-south: NLGA, WCLIB, or WWPA.

1. Maximum Moisture Content: 20 percent.

## 2.4 MISCELLANEOUS LUMBER

### A. Miscellaneous Dimension Lumber: Construction, or No. 2 grade with 15 percent maximum moisture content of any species. Provide for nailers, blocking, and similar members.

## 2.5 MISCELLANEOUS PRODUCTS

### A. Fasteners: Size and type indicated. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

1. Power-Driven Fasteners: CABO NER-272.
2. Bolts: Steel bolts complying with **ASTM A 307, Grade A** (ASTM F 568, Property Class 4.6); with **ASTM A 563** (ASTM A 563M) hex nuts and, where indicated, flat washers.

### B. Metal Framing Anchors: Structural capacity, type, and size indicated.

1. Use anchors made from hot-dip galvanized steel complying with ASTM A 653/A 653M, **G60 (Z180)** coating designation for interior locations where stainless steel is not indicated.
2. Use anchors made from stainless steel complying with ASTM A 666, Type 304 for exterior locations and where indicated.

### C. Sill Sealer: Glass-fiber insulation, **1 inch (25 mm)** thick, compressible to **1/32 inch (0.8 mm)**.

## PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Do not splice structural members between supports unless otherwise indicated.
- D. Securely attach rough carpentry to substrates, complying with the following:
  - 1. CABO NER-272 for power-driven fasteners.
  - 2. Published requirements of metal framing anchor manufacturer.
  - 3. Table 2304.9.1, "Fastening Schedule," in the IBC.

END OF SECTION 061000

## SECTION 064600 - WOOD TRIM

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: Shop Drawings and Samples for each type of finish.
- B. Fabricator Qualifications: Certified participant in AWI's Quality Certification Program or Licensee of WI's Certified Compliance Program.
- C. Installer Qualifications: Fabricator of products.
- D. Environmental Limitations for Interior Wood Trim: Do not deliver or install interior wood trim until building is enclosed, wet work is completed, and HVAC system is operating.

## PART 2 - PRODUCTS

## 2.1 WOOD TRIM

- A. Quality Standard: AWI, AWMAC, and WI's "Architectural Woodwork Standards."
- B. Exterior Trim: Custom grade, made from western red cedar.
- C. Interior Trim for Transparent Finish: Economy grade, made from eastern white pine, sugar pine, or western white pine, plain sliced/plain sawn.
- D. Interior Trim for Opaque Finish: Economy grade, made from eastern white pine, sugar pine, or western white pine.

## 2.2 MATERIALS

- A. Wood Moisture Content for Exterior Woodwork: 9 to 15 percent.
- B. Wood Moisture Content for Interior Woodwork: 5 to 10 percent.
- C. Medium-Density Fiberboard: ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde.
- D. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea formaldehyde.
- E. Blocking and Shims: Softwood or hardwood lumber, kiln dried.
- F. Water-Repellent Preservative-Treated Materials: Comply with AWPA N1 (dip, spray, flood, or vacuum-pressure treatment) for woodwork items indicated to receive water-repellent preservative treatment.

## G. Fasteners for Exterior Wood Trim:

1. Nails: hot-dip galvanized or stainless steel.
2. Screws: hot-dip galvanized or stainless steel.

## 2.3 FABRICATION

- A. Complete fabrication to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- B. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.

## 2.4 SHOP PRIMING

- A. Shop prime wood trim for opaque finish with one coat of specified wood primer.
- B. Backprime with one coat of sealer or primer, compatible with finish coats. Apply two coats to surfaces installed in contact with concrete or masonry and to end-grain surfaces.

## 2.5 SHOP FINISHING OF INTERIOR WOOD TRIM

- A. Finishes: Same grades as items to be finished.
- B. Shop finish transparent-finished interior wood trim at fabrication shop.
  1. Apply one coat of sealer or primer to concealed surfaces of wood trim. Apply two coats to end-grain surfaces.
  2. Apply a wash coat sealer to wood trim made from closed-grain wood before staining and finishing.
  3. After staining, if any, apply paste wood filler to open-grain woods and wipe off excess. Tint filler to match stained wood.
- C. Transparent Finish:
  1. System - 5: Conversion varnish.

## PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Before installation, condition wood trim to average prevailing humidity conditions in installation areas.
- B. Install wood trim to comply with referenced quality standard for grade specified.

- C. Install wood trim level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of **1/8 inch in 96 inches (3 mm in 2400 mm)**.
- D. Scribe and cut wood trim to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Anchor wood trim to anchors or blocking built into or directly attached to substrates. Fasten with countersunk concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed nailing, countersunk and filled flush with woodwork.
- F. Exterior Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than **36 inches (900 mm)** long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.
- G. Interior Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than **36 inches (900 mm)** long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.

END OF SECTION 064600

## SECTION 079200 - JOINT SEALANTS

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and color Samples.
- B. Environmental Limitations: Do not proceed with installation of joint sealants when ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (4.4 deg C).

## PART 2 - PRODUCTS

## 2.1 JOINT SEALANTS

- A. Low-Emitting Materials: Sealants shall comply with Section 018113.43 - Sustainable Design Requirements - ASHRAE 189.1.
- B. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under service and application conditions.
- C. Sealant for Use in Building Expansion Joints:
  - 1. Single-component, neutral-curing silicone sealant, ASTM C 920, Type S; Grade NS; Class 50; for Use NT.
- D. Sealant for General Exterior Use Where Another Type Is Not Specified, one of the Following:
  - 1. Single-component, neutral-curing silicone sealant, ASTM C 920, Type S; Grade NS; Class 25; for Use NT.
  - 2. Single-component, nonsag polysulfide sealant, ASTM C 920, Type S; Grade NS; Class 25; for Use NT.
- E. Sealant for Exterior Traffic-Bearing Joints, Where Slope Precludes Use of Pourable Sealant:
  - 1. Single-component, nonsag urethane sealant, ASTM C 920, Type S; Grade NS; Class 25; for Use T.
- F. Sealant for Exterior Traffic-Bearing Joints, Where Slope Allows Use of Pourable Sealant:
  - 1. Single-component, pourable urethane sealant, ASTM C 920, Type S; Grade P; Class 25; for Use T.
- G. Sealant for Use in Interior Joints in Ceramic Tile and Other Hard Surfaces in Kitchens and Toilet Rooms and around Plumbing Fixtures:

1. Single-component, mildew-resistant silicone sealant, ASTM C 920, Type S; Grade NS; Class 25; for Use NT; formulated with fungicide.
- H. Sealant for Interior Use at Perimeters of Door and Window Frames:
1. Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
- I. Acoustical Sealant:
1. Nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission as demonstrated by testing according to ASTM E 90.

## 2.2 MISCELLANEOUS MATERIALS

- A. Provide sealant backings of materials 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, of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.
- D. 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.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Comply with ASTM C 1193.
- B. Install sealant backings to support sealants during application and to produce cross-sectional shapes and depths of installed sealants that allow optimum sealant movement capability.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- D. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal perimeters, control joints, openings, and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions. Comply with ASTM C 919.

END OF SECTION 079200

## SECTION 081433 - STILE AND RAIL WOOD DOORS

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data, including factory-finishing specifications and Samples for factory-finished doors.

## PART 2 - PRODUCTS

## 2.1 STILE AND RAIL DOORS

- A. Low-Emitting Materials: Provide doors made with adhesives and composite wood products that do not contain urea formaldehyde.
- B. Safety Glass: Comply with testing requirements in 16 CFR 1201, for Category II materials.
- C. Exterior Doors and Sidelights: Stock doors complying with WDMA I.S.6, Standard grade assembled with wet-use adhesives and made from manufacturer's standard softwood species with raised panels (match existing exterior door).
  - 1. Glass: Uncoated, clear, fully tempered float glass, 5.0 mm thick.
- D. Interior Doors: Stock doors complying with WDMA I.S.6, Premium or Select grade made from manufacturer's standard softwood species with panels of same species or a wood-based panel product with raised panels (match existing interior doors).

## 2.2 FABRICATION AND FINISHING

- A. Factory-fit doors to suit frame-opening sizes and to comply with referenced quality standard.
  - 1. Provide **1/8-inch (3.2-mm)** clearance at jambs, heads, and meeting stiles and **1/2 inch (12.7 mm)** at bottom. At thresholds, provide **3/8-inch (9.5-mm)** clearance.
  - 2. Comply with NFPA 80 for fire-resistance-rated doors.
- B. Factory-machine doors for hardware that is not surface applied.
- C. Glaze doors at factory.
- D. Factory-treat exterior doors after fabrication with water repellent to comply with WDMA I.S.4.
- E. Factory-finish wood doors with manufacturer's standard stain and two-coat conversion varnish finish in color selected.



## PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Align and fit doors in frames with uniform clearances and bevels indicated below. Machine doors for hardware. Seal cut surfaces after fitting and machining.
  - 1. Provide **1/8-inch (3.2-mm)** clearance at jambs, heads, and meeting stiles and **1/8 inch (3.2 mm)** at bottom. At thresholds, provide **1/4-inch (6.4-mm)** clearance from bottom of door.
- B. Align factory-fitted doors in frames for uniform clearances.

END OF SECTION 081433

## SECTION 087100 - DOOR HARDWARE

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: Hardware schedule.

## PART 2 - PRODUCTS

## 2.1 HARDWARE (match existing hardware for all sections for types and finishes)

## A. Hinges:

1. Stanley
2. Stainless-steel or Brass/bronze hinges with stainless-steel pins for exterior.
3. Nonremovable hinge pins for exterior and public interior exposure.
4. Ball-bearing hinges for doors with closers and entry doors.
5. Two hinges for **1-3/8-inch-** (35-mm-) thick wood doors.
6. Three hinges for **1-3/4-inch-** (45-mm-) thick doors **90 inches** (2300 mm) or less in height; four hinges for doors more than **90 inches** (2300 mm) in height.

## B. Locksets and Latchsets:

1. Sargent or Schlage
2. BHMA A156.2, Series 4000, Grade 2 for bored locks and latches.
3. BHMA A156.3, Grade 1 for exit devices.
4. BHMA A156.5, Grade 2 for auxiliary locks.
5. BHMA A156.12, Series 5000, Grade 2 for interconnected locks and latches.
6. BHMA A156.13, Series 1000, Grade 2 for mortise locks and latches.
7. Lever handles on locksets and latchsets.
8. Provide trim on exit devices matching locksets.

## C. Key locks to Owner's existing master-key system.

1. Cylinders with six-pin tumblers.
2. Provide cylinders for locking doors that do not require other hardware.
3. Provide construction keying.
4. Provide key control system, including cabinet.

## D. Closers:

1. Sargent

2. Mount closers on interior side (room side) of door opening. Provide regular-arm, parallel-arm, or top-jamb-mounted closers as necessary.
  3. Adjustable delayed opening (accessible to people with disabilities) feature on closers.
- E. Provide wall stops or floor stops for doors without closers.
- F. Hardware Finishes:
1. Hinges: Primed for painting except at exterior doors or Matching finish of lockset/latchset.
  2. Locksets, Latchsets, and Exit Devices: Match existing.
  3. Closers: Match existing.
  4. Other Hardware: Matching finish of lockset/latchset.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Mount hardware in locations required to comply with governing regulations and according to SDI A250.8 and DHI WDHS.3.
- B. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet.
- C. Deliver keys to Owner.

#### 3.2 HARDWARE SCHEDULE

- A. Contractor to prepare and submit Hardware Schedule for review and approval.

END OF SECTION 087100

## SECTION 092900 - GYPSUM BOARD

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: Product data.

## PART 2 - PRODUCTS

## 2.1 PERFORMANCE REQUIREMENTS

- A. STC-Rated Assemblies: Provide materials and construction identical to those tested in assemblies per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing and inspecting agency.

## 2.2 PANEL PRODUCTS

- A. Provide in maximum lengths available to minimize end-to-end butt joints.
- B. Interior Gypsum Board: ASTM C 1396/C 1396M, in thickness indicated, with manufacturer's standard edges. Regular type unless otherwise indicated and Sag-resistant type for ceiling surfaces.
  - 1. [American Gypsum, Certainteed, Georgia-Pacific, US Gypsum.](#)
- C. Exterior Gypsum Soffit Board: ASTM C 1396/C 1396M, in thickness indicated, with manufacturer's standard edges. Regular type unless otherwise indicated.
  - 1. [American Gypsum, Certainteed, Georgia-Pacific, US Gypsum.](#)
- D. Water-Resistant Gypsum Backing Board: ASTM C 1396/C 1396M, in thickness indicated. Regular type unless otherwise indicated.
  - 1. [American Gypsum, Certainteed, Georgia-Pacific, US Gypsum.](#)
- E. Glass-Mat, Water-Resistant Gypsum Backing Board: ASTM C 1178/C 1178M, of thickness indicated. Regular type unless otherwise indicated.
  - 1. [American Gypsum, Certainteed, Georgia-Pacific, US Gypsum.](#)
- F. Cementitious Backer Units: ANSI A118.9, ASTM C 1288, or ASTM C 1325.
  - 1. [American Gypsum, Certainteed, Georgia-Pacific, US Gypsum.](#)

## 2.3 ACCESSORIES

- A. Trim Accessories: ASTM C 1047, formed from galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet. For exterior trim, use accessories formed from hot-dip galvanized-steel sheet, plastic, or rolled zinc.
  - 1. Provide cornerbead at outside corners unless otherwise indicated.
  - 2. Provide LC-bead (J-bead) at exposed panel edges.
  - 3. Provide control joints where indicated.
- B. Aluminum Accessories: Extruded-aluminum accessories indicated with manufacturer's standard corrosion-resistant primer Class II, clear anodic finish; AA-C12C22A31.
- C. Joint-Treatment Materials: ASTM C 475/C 475M.
  - 1. Joint Tape: Paper unless otherwise recommended by panel manufacturer.
  - 2. Joint Compounds: Setting-type taping compound and drying-type, ready-mixed, compounds for topping. Use setting-type compounds at exterior soffits.
  - 3. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound.
  - 4. Cementitious Backer Unit Joint-Treatment Materials: Products recommended by cementitious backer unit manufacturer.
- D. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
  - 1. Low-Emitting Materials: Comply with Section 018113.43 - Sustainable Design Requirements - ASHRAE 189.1.
- E. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant complying with ASTM C 834.
  - 1. Low-Emitting Materials: Comply with Section 018113.43 - Sustainable Design Requirements - ASHRAE 189.1.
- F. Sound-Attenuation Blankets: ASTM C 665, Type I (unfaced).
- G. Textured Finish: Polystyrene aggregate ceiling finish where indicated.
- H. Textured Finish: Aggregate finish where indicated.
- I. Textured Finish: Acoustical finish where indicated.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install gypsum board to comply with ASTM C 840.
  - 1. Isolate gypsum board assemblies from abutting structural and masonry work. Provide edge trim and acoustical sealant.

2. Single-Layer Fastening Methods: Fasten gypsum panels to supports with screws.
  3. Multilayer Fastening Methods: Fasten base layers and face layer separately to supports with screws.
- B. Install cementitious backer units to comply with ANSI A108.11.
- C. Fire-Resistance-Rated Assemblies: Comply with requirements of listed assemblies.
- D. Finishing Gypsum Board: ASTM C 840.
1. At concealed areas, unless a higher level of finish is required for fire-resistance-rated assemblies, provide Level 1 finish: Embed tape at joints.
  2. At substrates for tile, provide Level 2 finish: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges.
  3. Unless otherwise indicated, provide Level 4 finish: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges.
- E. Glass-Mat, Water-Resistant Backing Panels: Finish according to manufacturer's written instructions.
- F. Cementitious Backer Units: Finish according to manufacturer's written instructions.
- G. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture free of starved spots or other evidence of thin application or of application patterns.

END OF SECTION 092900

## SECTION 095113 - ACOUSTICAL PANEL CEILINGS

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and Samples.

## PART 2 - PRODUCTS

## 2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Standard: Acoustical panel ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B. Fire-Resistance-Rated Assemblies: Provide materials and construction identical to those tested in assemblies per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

## 2.2 ACOUSTICAL PANELS

- A. Tectum, US Gypsum, Armstrong World Technologies, or Certainteed.
- B. Classification: As follows, per ASTM E 1264:
- C. Use fire-rated acoustic panels, to match existing system.
  - 1. Type and Form: Type III, Form 1.
  - 2. Pattern: Match existing acoustic panels.
  - 3. LRC: Not less than 0.70.
  - 4. NRC: Not less than 0.50.
  - 5. CAC: Not less than 20.
  - 6. Surface-Burning Characteristics: Class A.
- D. Color: White.
- E. Edge Detail: Match existing acoustic panels.
- F. Thickness: 5/8 inch (15 mm).
- G. Modular Size: 24 by 48 inches (610 by 1220 mm).

## 2.3 CEILING SUSPENSION SYSTEM

- A. Use existing system.

## PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Replace existing acoustic panels and miscellaneous repairs in areas of meeting room, as noted on plans
- B. Install acoustical ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
  - 1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.
- C. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
- D. Arrange directionally patterned acoustical units, as per existing grid system.

END OF SECTION 095113



## SECTION 096519 - RESILIENT TILE FLOORING

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Submittals: Product data and Samples.
- B. Extra Materials: Deliver to Owner one box of each type and color of resilient floor tile installed.

### PART 2 - PRODUCTS

#### 2.1 VINYL COMPOSITION FLOOR TILE

- A. Armstrong
- B. Tile Standard: ASTM F 1066, tile. Match existing.
- C. Wearing Surface: Smooth.
- D. Thickness: 0.125 inch (3.2 mm).
- E. Size: 12 by 12 inches (304.8 by 304.8 mm).

#### 2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement- or blended-hydraulic-cement-based formulation provided or approved by flooring manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit floor covering and substrate conditions indicated.
  - 1. Low-Emitting Materials: Comply with Section 018113.43 - Sustainable Design Requirements - ASHRAE 189.1.
- C. Floor Polish: Protective liquid floor polish products as recommended by manufacturer.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Prepare concrete substrates according to ASTM F 710. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

- B. Lay out tiles so tile widths at opposite edges of room are equal and are at least one-half of a tile.
- C. Match tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged. Lay tiles in patterns to match existing.
- D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from floor covering before applying liquid floor polish.
  - 1. Apply two coat(s).

END OF SECTION 096519

## SECTION 099113 - EXTERIOR PAINTING

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

## A. Submittals:

1. Product Data: Include printout of MPI's "MPI Approved Products List" with product highlighted.
2. Samples.

- B. Extra Materials: Deliver to Owner **1 gal. (3.8 L)** of each color and type of finish-coat paint used on Project, in containers, properly labeled and sealed.

## PART 2 - PRODUCTS

## 2.1 PAINT

- A. **Manufacturers:** Subject to compliance with requirements, provide products by the following:

1. **Benjamin Moore & Co.**

- B. MPI Standards: Provide materials that comply with MPI standards indicated and listed in its "MPI Approved Products List."

1. Block Filler, Latex: MPI #4.
2. Primer, Alkali Resistant, Water Based: MPI #3.
3. Primer, Bonding, Water Based: MPI #17.
4. Primer, Bonding, Solvent Based: MPI #69.
5. Primer, Alkyd, Anticorrosive: MPI #79.
6. Primer, Galvanized, Water Based: MPI #134.
7. Primer, Quick Dry, for Aluminum: MPI #95.
8. Primer, Latex: MPI #6.
9. Primer, Alkyd: MPI #5.
10. Latex, Exterior Flat (Gloss Level 1): MPI #10.
11. Latex, Exterior Low Sheen (Gloss Level 3-4): MPI #15.
12. Latex, Exterior Semigloss (Gloss Level 5): MPI #11.
13. Latex, Exterior, Gloss (Gloss Level 6): MPI #119.
14. Light Industrial Coating, Exterior, Water Based (Gloss Level 3): MPI #161.
15. Light Industrial Coating, Exterior, Water Based, Semigloss (Gloss Level 5): MPI #163.
16. Light Industrial Coating, Exterior, Water Based, Gloss (Gloss Level 6): MPI #164.
17. Alkyd, Exterior Flat (Gloss Level 1): MPI #8.
18. Alkyd, Exterior, Semigloss (Gloss Level 5): MPI #94.
19. Alkyd, Exterior Gloss (Gloss Level 6): MPI #9.
20. Alkyd, Quick Dry, Semigloss (Gloss Level 5): MPI #81.
21. Alkyd, Quick Dry, Gloss (Gloss Level 7): MPI #96.

22. Floor Paint, Latex, Low Gloss (Maximum Gloss Level 3): MPI #60.
  23. Floor Enamel, Alkyd, Gloss (Gloss Level 6): MPI #27.
- C. Material Compatibility: Provide materials that are compatible with one another and with substrates.
1. 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.
- D. Colors: As selected.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Comply with recommendations in MPI's "MPI Architectural Painting Specification Manual" and "MPI Maintenance Repainting Manual" as applicable to substrates indicated.
- B. Remove hardware, lighting fixtures, and similar items that are not to be painted. Mask items that cannot be removed. Reinstall items in each area after painting is complete.
- C. Clean and prepare surfaces in an area before beginning painting in that area. Schedule painting so cleaning operations will not damage newly painted surfaces.

### 3.2 APPLICATION

- A. Comply with recommendations in MPI's "MPI Architectural Painting Specification Manual" and "MPI Maintenance Repainting Manual" as applicable to substrates indicated.
- B. Paint exposed surfaces, new and existing, unless otherwise indicated.
  1. Do not paint prefinished items, items with an integral finish, operating parts, and labels unless otherwise indicated.
- C. Apply paints according to manufacturer's written instructions.
  1. Use brushes only where the use of other applicators is not practical.
- 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.
  1. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

3.3 EXTERIOR PAINT APPLICATION SCHEDULE

A. Wood: Including wood trim, architectural woodwork, doors, windows, wood siding, exposed joists and exposed beams.

1. Flat Alkyd: Two coats over alkyd primer: MPI EXT 6.3B.

END OF SECTION 099113

## SECTION 099123 - INTERIOR PAINTING

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

## A. Submittals:

1. Product Data: Include printout of MPI's "MPI Approved Products List" with product highlighted.
2. Samples.

## B. Mockups: Full-coat finish Sample of each type of coating, color, and substrate, applied where directed.

## C. Extra Materials: Deliver to Owner 1 gal. (3.8 L) of each color and type of finish-coat paint used on Project, in containers, properly labeled and sealed.

## PART 2 - PRODUCTS

## 2.1 PAINT

A. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:

1. **Behr Process Corporation.**
2. **Benjamin Moore & Co.**
3. **Kelly-Moore Paint Company Inc.**

## B. MPI Standards: Provide materials that comply with MPI standards indicated and listed in its "MPI Approved Products List."

1. Block Filler, Latex: MPI #4.
2. Primer Sealer, Latex: MPI #50.
3. Primer, Alkali Resistant, Water Based: MPI #3.
4. Primer Sealer, Institutional Low Odor/VOC: MPI #149.
5. Primer, Latex, for Interior Wood: MPI #39.
6. Primer Sealer, Alkyd, Interior: MPI #45.
7. Primer, Bonding, Water Based: MPI #17.
8. Primer, Bonding, Solvent Based: MPI #69.
9. Primer, Alkyd, Anticorrosive: MPI #79.
10. Primer, Galvanized, Water Based: MPI #134.
11. Primer, Quick Dry, for Aluminum: MPI #95.
12. Latex, Interior, Flat, (Gloss Level 1): MPI #53.
13. Latex, Interior, (Gloss Level 2): MPI #44.
14. Latex, Interior, (Gloss Level 4): MPI #43.
15. Latex, Interior, Semigloss, (Gloss Level 5): MPI #54.

16. Latex, Interior, Gloss, (Gloss Level 6, except Minimum Gloss of 65 Units at 60 Degrees): MPI #114.
  17. Latex, Institutional Low Odor/VOC, Flat (Gloss Level 1): MPI #143.
  18. Latex, Institutional Low Odor/VOC, (Gloss Level 2): MPI #144.
  19. Latex, Institutional Low Odor/VOC, Semigloss (Gloss Level 5): MPI #147.
  20. Latex, High-Performance Architectural, (Gloss Level 2): MPI #138.
  21. Latex, High-Performance Architectural, Semigloss (Gloss Level 5): MPI #141.
  22. Alkyd, Interior, Flat (Gloss Level 1): MPI #49.
  23. Alkyd, Interior, Semigloss (Gloss Level 5): MPI #47.
  24. Alkyd, Interior, Gloss (Gloss Level 6): MPI #48.
  25. Alkyd, Quick Dry, Semigloss (Gloss Level 5): MPI #81.
  26. Alkyd, Quick Dry, Gloss (Gloss Level 7): MPI #96.
  27. Floor Paint, Latex, Low Gloss (Maximum Gloss Level 3): MPI #60.
  28. Floor Enamel, Alkyd, Gloss (Gloss Level 6): MPI #27.
- C. Material Compatibility: Provide materials that are compatible with one another and with substrates.
1. 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.
- D. Low-Emitting Materials: Comply with Section 018113.43 - Sustainable Design Requirements - ASHRAE 189.1.
- E. Colors: As selected.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Comply with recommendations in MPI's "MPI Architectural Painting Specification Manual" and "MPI Maintenance Repainting Manual" as applicable to substrates indicated.
- B. Remove hardware, lighting fixtures, and similar items that are not to be painted. Mask items that cannot be removed. Reinstall items in each area after painting is complete.
- C. Clean and prepare surfaces in an area before beginning painting in that area. Schedule painting so cleaning operations will not damage newly painted surfaces.

### 3.2 APPLICATION

- A. Comply with recommendations in MPI's "MPI Architectural Painting Specification Manual" and "MPI Maintenance Repainting Manual" as applicable to substrates indicated.
- B. Paint exposed surfaces, new and existing, unless otherwise indicated.
  1. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces.
  2. Paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  3. Paint the back side of access panels.

4. Color-code mechanical piping in accessible ceiling spaces.
  5. Do not paint prefinished items, items with an integral finish, operating parts, and labels unless otherwise indicated.
- C. Apply paints according to manufacturer's written instructions.
1. Use brushes only where the use of other applicators is not practical.
  2. Use rollers for finish coat on interior walls and ceilings.
- 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.
1. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

### 3.3 INTERIOR PAINT APPLICATION SCHEDULE

- A. Wood: Including wood trim, architectural woodwork, doors, and windows.
1. Semigloss Institutional Low-Odor/VOC Latex: Two coats over latex primer for wood:  
MPI INT 6.3V.
- B. Gypsum Board:
1. Flat Institutional Low-Odor/VOC Latex: Two coats over low-odor/VOC primer/sealer:  
MPI INT 9.2M.

END OF SECTION 099123



## SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data.

## PART 2 - PRODUCTS

## 2.1 TOILET AND BATH ACCESSORIES

- A. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:

1. **AJW Architectural Products.**
2. **American Specialties, Inc.**
3. **Bobrick Washroom Equipment, Inc.**
4. **Bradley Corporation.**
5. **GAMCO Specialty Accessories; a division of Bobrick.**
6. **Tubular Specialties Manufacturing, Inc.**

- B. Toilet Tissue Dispenser:

1. Basis-of-Design Product.
2. Type: Single-roll dispenser.
3. Mounting: Surface mounted with concealed anchorage.
4. Material: Stainless steel.
5. Capacity: Designed for **4-1/2- or 5-inch-** (114- or 127-mm-) diameter-core tissue rolls.

- C. Paper Towel Dispenser:

1. Basis-of-Design Product.
2. Mounting: Surface.
3. Minimum Capacity: 400 single-fold towels.
4. Material: Stainless steel, No. 4 finish (satin).
5. Lockset: Tumbler type.
6. Refill Indicators: Pierced slots at sides or front.

- D. Waste Receptacle:

1. Basis-of-Design Product.
2. Type: Freestanding.
3. Material and Finish: Stainless steel, No. 4 finish (satin).
4. Liner: Reusable vinyl liner.

- E. Liquid-Soap Dispenser:

1. Basis-of-Design Product.
2. Mounting: Surface.
3. Materials.
4. Stainless-Steel Soap Valve: Designed for dispensing soap in liquid form.
5. Lockset: Tumbler type.
6. Refill Indicator: Window type.

F. Grab Bar:

1. Basis-of-Design Product.
2. Material: Stainless steel, 0.050 inch (1.3 mm) thick.
3. Mounting: Exposed.
4. Gripping Surfaces: Slip-resistant texture.
5. Outside Diameter: 1-1/4 inches (32 mm) for medium-duty applications.

G. Sanitary Napkin Disposal Unit:

1. Basis-of-Design Product.
2. Mounting: Surface.
3. Material: Stainless steel, No. 4 finish (satin).
4. Door or Cover: Self-closing.
5. Receptacle: Removable.

H. Mirror Unit:

1. Basis-of-Design Product.
2. Frame: Stainless steel, fixed tilt; or Stainless steel, adjustable tilt (verify with Owner).

I. Underlavatory Guard:

1. Basis-of-Design Product.
2. Description: Insulating pipe coverings for supply and drain piping assemblies, which prevent direct contact with and burns from piping and allow service access without removing coverings.
3. Material and Finish: Antimicrobial, molded plastic, white.

## 2.2 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, No. 4 finish (satin), 0.031-inch (0.8-mm) minimum nominal thickness unless otherwise indicated.
- B. Brass: ASTM B 19, ASTM B 16/B 16M, or ASTM B 30.
- C. Sheet Steel: ASTM A 1008/A 1008M, 0.036-inch (0.9-mm) minimum nominal thickness.
- D. Galvanized-Steel Sheet: ASTM A 653/A 653M, G60 (Z180).
- E. Chromium Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- F. Baked-Enamel Finish: Factory-applied, gloss-white, baked-acrylic-enamel coating.

- G. Mirrors: ASTM C 1503, mirror glazing quality, clear-glass mirrors, nominal 6.0 mm thick.
- H. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- I. Fasteners: Screws, bolts, and other devices of same material as accessory unit, tamper and theft resistant when exposed, and of galvanized steel when concealed.
- J. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of 2 keys to Owner's representative.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install accessories using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
  - 1. Install grab bars to withstand a downward load of at least **250 lbf (1112 N)**, when tested according to method in ASTM F 446.
- B. Adjust accessories for unencumbered, smooth operation, and verify that mechanisms function properly. Replace damaged or defective items. Remove temporary labels and protective coatings.

END OF SECTION 102800

## SECTION 224000 - PLUMBING FIXTURES

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

## A. Submittals:

1. Product Data for each type of plumbing fixture, including trim, fittings, accessories, appliances, appurtenances, equipment, and supports.
2. Documentation indicating flow and water consumption requirements.

## PART 2 - PRODUCTS

## 2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities"; Public Law 90-480, "Architectural Barriers Act"; and Public Law 101-336, "Americans with Disabilities Act"; for plumbing fixtures for people with disabilities.
- B. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy Act," about water flow and consumption rates for plumbing fixtures.
- C. NSF Standard: Comply with NSF 61, "Drinking Water System Components - Health Effects," for fixture materials that will be in contact with potable water.

## 2.2 WATER CLOSETS

- A. Water Closets: Floor-mounted, floor-outlet, close-coupled (gravity tank), vitreous china..
  1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
    - a. **American Standard America.**
    - b. **Eljer, Inc.**
    - c. **Kohler Co.**
  2. Standards: ASME A112.19.2/CSA B45.1, ASME A112.19.5, and ASSE 1037. Elongated rim contour, siphon-jet bowl type, close-coupled gravity tank, floor-mounted, outlet.

## 2.3 TOILET SEATS

- A. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:

1. American Standard America.
2. Eljer, Inc.
3. Kohler Co.

- B. Standard: IAPMO/ANSI Z124.5. Elongated, solid plastic closed front with cover with bumpers and hardware, Commercial, Standard class.

## 2.4 FLUSHOMETER VALVES

- A. Lever-Handle, Diaphragm Flushometer Valves:

1. **Manufacturers:** Subject to compliance with requirements, provide products by the following:
  - a. Sloan Valve Company.
2. Brass body, brass or copper pipe or tubing inlet with wall flange and tailpiece with spud, screwdriver check stop, and vacuum breaker. Polished, chrome-plated, exposed metal parts. Consumption: 1.6 gal./flush (6.0 L/flush).

## 2.5 LAVATORIES

- A. Vitreous-China Lavatories, Counter Mounted:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
  - a. American Standard America.
  - b. Eljer, Inc.
  - c. Kohler Co.
2. Standard: ASME A112.19.2/CSA B45.1 for vitreous-china lavatories.
3. Shape: Rectangular.

## 2.6 LAVATORY FAUCETS

- A. General-Duty, Copper- or Brass-Underbody Faucets:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
  - a. American Standard America.
  - b. Delta Faucet Company.
  - c. Eljer, Inc.
  - d. Moen Incorporated.
2. Standard: ASME A112.18.1/CSA B125.1; solid-brass underbody and brass cover plate.

3. Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.
4. Type: Center set with inlets on **4-inch (102-mm)** centers and with pop-up waste.
5. Finish: Polished chrome plate.
6. Handle(s): Single-lever toggle.
7. Maximum Flow Rate: **0.5 gpm (1.5 L/min.)**.
8. Drain: Pop up with **NPS 1-1/4 (DN 32)** tailpiece, included with faucet.
9. Trap: Chrome plated, and plastic tubular fittings with slip-joint inlet and wall flange.
10. Supply and Drain Insulation: Soft-plastic covering; removable at stops.

## 2.7 FITTINGS

### A. Supply Fittings:

1. Standards: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water. ASME A112.18.1/CSA B125.1.
2. Supply Piping: Chrome-plated-brass pipe or chrome-plated-copper tube matching water-supply piping size. Include chrome-plated wall flange.
3. Stops: Chrome-plated brass, one-quarter-turn, ball-type or compression stop with inlet connection matching water-supply piping type and size.
4. Risers: Chrome-plated, soft-copper flexible tube riser.

### B. WASTE FITTINGS

1. Standard: ASME A112.18.2/CSA B125.2.
2. Drain: Grid type with **NPS 1-1/2 (DN 40)** straight tailpiece for standard bar sinks and kitchen sinks.
3. Trap Sizes: As per code.
4. Material: Chrome-plated,; and chrome-plated-brass or -steel wall flange. ASTM F 409 ABS or PVC, one or two-piece trap and waste to wall and wall flange.

## 2.8 GROUT

### A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

1. Characteristics: Nonshrink; recommended for interior and exterior applications.
2. Design Mix: **5000-psi (34.5-MPa)**, 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install fitting insulation kits on fixtures for people with disabilities.
- B. Install fixtures with flanges and gasket seals.

- C. Install flushometer valves for accessible water closets and urinals with handle mounted on wide side of compartment. Install other actuators in locations that are easy for people with disabilities to reach.
- D. Install tanks for accessible, tank-type water closets with lever handle mounted on wide side of compartment.
- E. Fasten wall-hanging plumbing fixtures securely to supports attached to building substrate when supports are specified and to building wall construction where no support is indicated.
- F. Fasten floor-mounted fixtures to substrate. Fasten fixtures having holes for securing fixture to wall construction to reinforcement built into walls.
- G. Fasten wall-mounted fittings to reinforcement built into walls.
- H. Fasten counter-mounting plumbing fixtures to casework.
- I. Secure supplies to supports or substrate within pipe space behind fixture.
- J. Set shower receptors and mop basins in leveling bed of cement grout.
- K. Install individual supply inlets, supply stops, supply risers, and tubular brass traps with cleanouts at fixture.
- L. Install water-supply stop valves in accessible locations.
- M. Install traps on fixture outlets. Omit traps on fixtures having integral traps. Omit traps on indirect wastes unless otherwise indicated.
- N. Install disposers in sink outlets. Install switch where indicated or in wall adjacent to sink if location is not indicated.
- O. Install hot-water dispensers in back top surface of sink or in counter with spout over sink.
- P. Install escutcheons at wall, floor, and ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons where required to conceal protruding pipe fittings.
- Q. Seal joints between fixtures and walls, floors, and counters using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color.
- R. Install piping connections between plumbing fixtures and piping systems and plumbing equipment. Install insulation on supplies and drains of fixtures for people with disabilities.
- S. Ground equipment.

END OF SECTION 224000