

HEALTHY CREATION EDIBLES TENANT REMODEL

Project Specifications



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SECTION 01100 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Project consists of a tenant finish of approximately 3,000 square feet in an existing core and shell building.
 - 2. Owner and tenant: HEALTHY CREATION EDIBLES LLC
 - 3. Owner's rep: ERIN DIFFINDER
- B. Architect Identification: Michael Koch Architect PC

1.3 CONTRACT

- A. Project will be constructed under a separate contract between the owner and the Contractor as negotiated by both parties.

1.4 WARRANTIES

- A. Contractor shall provide a minimum of a one year on products and installation. Consideration will be given to contractors who offer extended warranties. Please present those in your proposal.

PART 2 — SUBMITTAL PROCEDURES

2.1 SUMMARY

The project will be administered by the owner's representative with the assistance of the architect. All questions, submittals, RFIs shall be submitted to the architect, or person designated by the owner for administration.

Action Submittals: Information that requires the architect's responsive action.

Informational Submittals: Information that does not require architect's approval. Submittals may be rejected for not complying with requirements.

2.2 PROCEDURES

Processing Time:

Initial Review: 5 working days.

Action Submittals:

Number of Copies: Electronic copies are preferred

Action Submittals:

Shop Drawings.

Informational Submittals:

Number of Copies: one for architect, one for owner

Informational Submittals:

Product Data.

Coordination Drawings.

Samples.

Contractor's Construction Schedule.

Application for Payment.

Schedule of Values.

Contractor's Review:

Submittals: Marked with approval stamp before submitting to owner.

Owner's Action:

Action Submittals: copy given to owner for review if needed

Informational Submittals: Reviewed and not returned.

Submittals Not Required: Not reviewed and may be discarded

2.3 CLOSEOUT PROCEDURES

PROCEDURES

Substantial Completion: Before inspection by Architect:

List of incomplete items (punch list) prepared

Owner advised of insurance changeover.

Warranties submitted.

Releases, occupancy permits, and operating certificates obtained.

Project Record Documents submitted.

Spare parts and extra materials delivered.

Final changeover of locks performed.

Startup testing completed.

Test/adjust/balance records submitted.

Temporary facilities removed.

Owner advised of utility changeover.

Final cleaning performed.

Touchup performed.

Final Completion: Before final inspection by Architect:

Final Application for Payment submitted.

List of incomplete items (punch list) endorsed by Architect as completed.

Evidence of continuing insurance coverage submitted.

Final pest-control inspection report and warranty submitted.

Owner's personnel instructed in operation, adjustment, and maintenance of equipment and systems

Project Record Documents:

Record Drawings: One set of blue- or black-line white prints of the Contract Drawings and Shop Drawings marked to show actual installation.

Record Specifications: One copy of Project's Specifications, including addenda and contract modifications marked to indicate actual product installation.

Record Product Data: One copy of each Product Data submittal marked to indicate actual product installation.

Operation and Maintenance Manuals: Data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

Organized, bound, and indexed in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, with pocket inside the covers to receive folded oversized sheets. Binder front and spine identified with title, Project name, and contents.

Warranties: Submitted within 15 days for areas of partial occupancy.

Organized and bound in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, with paper dividers. Binder front and spine identified with title, Project name, and name of Contractor.

Demonstration and Training: Owner's personnel instructed how to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

Advance Notice: seven days.

Final Cleaning: Each surface or unit cleaned to condition expected in an average commercial building cleaning and maintenance program.

Clean ducts, blowers, and coils for units operated without filters during construction

END OF SECTION 01100

SECTION 01600 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Provide products of same kind from a single source.
- B. Deliver, store, and handle products according to manufacturer's written instructions, using means and methods that will prevent damage, deterioration, and loss, including theft.
 - 1. Schedule delivery to minimize long-term storage and to prevent overcrowding construction spaces.
 - 2. Deliver in manufacturer's original sealed packaging with labels and written instructions for handling, storing, protecting, and installing.
 - 3. Inspect to ensure compliance with the Contract Documents and to ensure items are undamaged and properly protected.
 - 4. Store heavy items in a manner that will not endanger supporting construction.
 - 5. Store items subject to damage aboveground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required.

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

- A. Provide items that comply with the Contract Documents, are undamaged, and are new at the time of installation.
 - 1. Provide products and equipment complete with accessories, trim, finish, and other devices and components needed for a complete installation and the intended use and effect.
- B. Do not attach manufacturer's labels or trademarks, except for required nameplates, on surfaces exposed to view in occupied spaces or on the exterior.
- C. Select products as follows:
 - 1. Where these Specifications name only a single product or manufacturer, provide the item indicated. Substitutions may be permitted per the process below.
 - 2. Where these Specifications name 2 or more products or manufacturers, provide 1 of the items indicated. Substitutions may be permitted per the process below.
 - 3. Where products or manufacturers are specified by name, accompanied by the term "or equal," comply with provisions concerning "product substitutions" to obtain approval for use of an unnamed product or manufacturer.
 - 4. Where these Specifications describe a product and list characteristics required, with or without naming a brand or trademark, provide a product that complies with the characteristics and other requirements.
 - 5. Where these Specifications require compliance with performance requirements, provide products that comply and are recommended in writing by the manufacturer for the application. Substitutions may be permitted per the process below.
 - 6. Where these Specifications require compliance with codes, regulations, or reference standards, select a product that complies with the codes, regulations, or reference standards.
- D. Unless otherwise indicated, Architect will select color, pattern, and texture of any product from manufacturer's full range of options.

E. The following products will be furnished by Owner and shall be installed by Contractor as part of the Work:

2.2 PRODUCT SUBSTITUTIONS

A. Reasonable and timely requests for substitutions will be considered.

1. Substitutions without change to the contract sum may only be considered prior to bid.
2. A submitted bid without a substitution request communicates to the owner that the specified product is in the project scope.
3. Substitutions made after bidding will be approved at the discretion of the owner and architect, along with a submitted credit if the product costs less than the specified product.

B. Submit 1 electronic copies of each request for product substitution. Identify product to be replaced, provide complete documentation showing compliance of proposed substitution with all specified requirements, and include the following:

1. A full comparison with the specified product.
2. A list of changes to other Work required to accommodate the substitution.
3. Any proposed changes in the Contract Sum or Contract Time should the substitution be accepted.

C. Architect will review the proposed substitution and notify Contractor of its acceptance or rejection prior to the bid submission deadline.

D.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01600

SECTION 01732 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of a building or structure.

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 ready for reuse.
- 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. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.
- B. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1.5 SUBMITTALS

- B. Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.

- E. Predemolition Photographs: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.

1.6 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- F. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 1 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.

1.7 PROJECT CONDITIONS

- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
 - 1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- C. Owner assumes no responsibility for condition of areas to be selectively demolished.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- F. Storage or sale of removed items or materials on-site will not be permitted.
- G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

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

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. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
 - 1. Building manager will arrange to shut off indicated utilities when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.
 - 3. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
 - 4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
- D. Utility Requirements: Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

- A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Pest Control: Employ a certified, licensed exterminator to treat building and to control rodents and vermin before and during selective demolition operations.
- C. 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. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
 - 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 - 3. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 4. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
- D. 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.
- E. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- F. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
- G. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 POLLUTION CONTROLS

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
 - 1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
 - 2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.

- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

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

3.5 SELECTIVE DEMOLITION

- 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 fire watch and 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.
 - 10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.

- B. Existing Facilities: Comply with building manager's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.

- C. Removed and Salvaged Items: Comply with the following:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items: Comply with the following:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
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.

E. 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 cleaned and reinstalled in their original locations after selective demolition operations are complete.

F. Concrete: Demolish in small sections. Cut concrete to a depth of at least (19 mm) at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.

G. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.

H. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

I. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

J. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.

1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

K. Roofing: Remove no more existing roofing than can be covered in one day by new roofing. Refer to applicable Division 7 Section for new roofing requirements.

L. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

3.6 PATCHING AND REPAIRS

A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Patching: Comply with Division 1 Section "Cutting and Patching."

C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.
- D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.
- E. Floors and Walls: Where walls or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
1. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
 2. Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.
 3. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
- F. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Burning: Burning of demolished materials will be permitted only at designated areas on Owner's property, providing required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.
- D. Disposal: Transport demolished materials and dispose of at designated spoil areas on Owner's property.
- E. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.8 SELECTIVE DEMOLITION SCHEDULE

- A. Existing Construction to Be Removed: As listed on drawings
- B. Existing Items to Be Removed and Salvaged: As directed by owner.
- C. Existing Items to Be Removed and Reinstalled: As directed by owner.
- D. Existing Items to Remain: As listed on drawings

END OF SECTION 01732

SECTION 06402 - INTERIOR WOODWORK

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 the following:
 - 1. Interior standing and running trim.
- B. Related Sections include the following:
 - 1. Division 8 Section "Flush Wood Doors."
 - 2. Division 9 Section "Painting" for field finishing of interior architectural woodwork.

1.3 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items, unless concealed within other construction before woodwork installation.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated cabinet hardware and accessories.
- B. Product Data: For high-pressure decorative laminate, thermoset decorative overlay.
- C. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show details full size.
 - 2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
 - 3. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, and other items installed in architectural woodwork.
 - 4. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.
 - 5. Apply WIC-certified compliance label to first page of Shop Drawings.
- D. Samples for Initial Selection: Manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available for each type of material indicated.
- E. Samples for Verification: For the following:
 - 1. Lumber with or for transparent finish, 50 sq. in. (300 sq. cm), for each species and cut, finished on 1 side and 1 edge.
 - 2. 3. Corner pieces as follows:
 - b. Miter joints for standing trim.
- F. Product Certificates: Signed by manufacturers of woodwork certifying that products furnished comply with requirements.
- G. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed architectural woodwork 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.
- B. Fabricator Qualifications: A firm experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork, construction, finishes, and other requirements.
 - 1. Provide AWI Quality Certification Program labels indicating that woodwork complies with requirements of grades specified.
- G. Mockups: Before fabricating and installing interior architectural woodwork, build mockups for each form of construction and finish required to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in the location and of the size indicated or, if not indicated, as directed by Architect.
 - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store

only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and will maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 25 and 55 percent during the remainder of the construction period.

C. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.

2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 WOODWORK FABRICATORS

A. Available Fabricators: Subject to compliance with requirements, fabricators offering interior architectural woodwork that may be incorporated into the Work include, but are not limited to, the following:

B. Fabricators: Subject to compliance with requirements, provide interior architectural woodwork by one of the following:

2.2 MATERIALS

A. General: Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. General: Provide materials that comply with requirements of the WIC quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

C. Wood Species and Cut for Transparent Finish: per drawings

D. Wood Products: Comply with the following:

1. Hardboard: AHA A135.4.

2. Medium-Density Fiberboard: ANSI A208.2, Grade MD.

3. Particleboard: ANSI A208.1, Grade M-2 .

4. Softwood Plywood: DOC PS 1, Medium Density Overlay.

5. Hardwood Plywood and Face Veneers: HPVA HP-1.

E. Thermoset Decorative Overlay: Particleboard complying with ANSI A208.1, Grade M-2, or medium-density fiberboard complying with ANSI A208.2, Grade MD, with surface of thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.

F. Clear Tempered Float Glass for Doors: ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality q3; manufactured by horizontal (roller hearth) process, with exposed edges seamed before tempering, 6 mm thick, unless otherwise indicated.

K. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.

1. Manufacturer: Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following:

a. Formica Corporation.

b. International Paper; Decorative Products Div.

c. Laminart.

d. Pioneer Plastics Corp.

e. Westinghouse Electric Corp.; Specialty Products Div.

f. Wilsonart International; Div. of Premark International, Inc.

M. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.

N. Adhesive for Bonding Plastic Laminate: PVA.

O. Adhesive for Bonding Plastic Laminate: Urea-formaldehyde.

P. Adhesive for Bonding Plastic Laminate: Resorcinol.

1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.3 INSTALLATION MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.
- B. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln-dried to less than 15 percent moisture content.

2.4 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Provide Premium grade interior woodwork complying with the referenced quality standard.
- B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- C. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- D. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following, or per drawings:
 - 1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4 Inch (19 mm) Thick or Less: 1/16 inch (1.5 mm).
 - 2. Edges of Rails and Similar Members More Than 3/4 Inch (19 mm) Thick: 1/8 inch (3 mm).
 - 3. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch (1.5 mm).
- E. Complete fabrication, including assembly, finishing, and hardware application, 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.
 - 1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
 - 2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.
- F. Shop cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
 - 1. Seal edges of openings in countertops with a coat of varnish.
- G. Install glass to comply with applicable requirements in Division 8 Section "Glazing" and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.

2.7 INTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH

- A. Quality Standard: Comply with AWI Section 300.
- B. Quality Standard: Comply with WIC Section 10.
- F. 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.
- G. Assemble casings in plant except where limitations of access to place of installation require field assembly.
- H. Assemble moldings in plant to maximum extent possible. Miter corners in plant and prepare for field assembly with bolted fittings designed to pull connections together.
- I. Wood Species and Cut: per drawings
 - 1. Provide split species on trim that face areas with different wood species, matching each face of woodwork to species and cut of finish wood surfaces in areas finished.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Condition woodwork to average prevailing humidity conditions in installation areas before installation.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Quality Standard: Install woodwork to comply with AWI Section 1700 for the same grade specified in Part 2 of this Section for type of woodwork involved.
- B. Quality Standard: Install woodwork to comply with WIC Section 26 for the same grade specified in Part 2 of this Section for type of woodwork involved.
- C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).
- D. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces and repair damaged finish at cuts.

E. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with recommendations of chemical treatment manufacturer, including those for adhesives used to install woodwork.

F. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.

G. 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 60 inches (1500 mm) long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.

1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base, if finished.

2. Install wall railings on indicated metal brackets securely fastened to wall framing.

3. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches (3 mm in 2400 mm).

M. Refer to Division 9 Sections for final finishing of installed architectural woodwork.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 06402

SECTION 07 2110 - FOAMED-IN-PLACE INSULATION

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. Closed-cell spray polyurethane foam.
2. Open-cell spray polyurethane foam.

B. Related Requirements:

1. Section 072100 "Thermal Insulation" for foam-plastic board insulation.
2. Section 072713 "Modified Bituminous Sheet Air Barriers" for spray polyurethane foam insulation installed as part of an air barrier system.
3. Section 079200 "Joint Sealants" for spray polyurethane foam insulation installed as part of a barrier system.
4. Section 099646 "Intumescent Painting" for ignition barrier protection of spray urethane foam insulation.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency[, **IAS International Accreditation Service**].
- C. Evaluation Reports: For spray-applied polyurethane foam-plastic insulation, from [**ICC-ES**]

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer. Any repairs by an Icynene licensed contractor.
- B. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- C. Fire Resistance Characteristics: As determined by testing identical products (based on a 4 inch (100 mm) minimum thickness) according to ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- D. Fire Resistance Characteristics: As determined by testing identical products according to NFPA 285 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect spray polyurethane foam components as follows:

1. Component A and B: store between 60 degrees F (15 degrees C) and 90 degrees F (32 degrees C).

2. Component B can be frozen but must be protected from overheating over 120 degree F (49 degree C) and prolonged storage over 100 degree F (37 degree C).
3. Component B: mix thoroughly prior to use.
4. Components should be a matched set (system) as supplied by the manufacturer.
5. Use components within their labeled shelf-life.
6. Use components as supplied with no site alterations or additions.

1.7 WARRANTY

- A. Refer to manufacturer's standard warranty terms (as applicable).

PART 2 - PRODUCTS

2.1 PERFORMANCE CHARACTERISTICS

- A. Air Material Air Leakage Rate: Maximum material air leakage rate of less than 0.004 cfm/ft² under a pressure differential of 0.3 in w.g. (1.6 psf) (0.02 L/m² at 75 Pa) per ASTM E 2178 or E 282.
- B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 1. Flame-Spread Index: 25 or less.
 2. Smoke-Development Index: 450 or less.
- C. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
- D. Compressive strength: Minimum 40 psi (276 kPa) (ASTM C1029 Type II).
- E. Sustainability Requirements: Provide spray polyurethane foam insulation as follows:
 1. Low Emitting: Insulation tested according to CA/DPH/EHLB/v1.1-2010.
 2. Resistant to fungal growth as per ASTM C1338.
 3. Containing no PBDE.

2.2 CLOSED-CELL SPRAY POLYURETHANE FOAM

- A. Closed-Cell Spray Polyurethane Foam: ASTM C 1029, Type II, minimum density of 2.2 lb/cu. ft. (35.2 kg/cu. m) and minimum aged R-value at 1-inch (25.4-mm) thickness of 4.9 deg F x h x sq. ft./Btu at 75 deg F (0.86 K x sq. m/W at 24 deg C).
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Icynene Inc.; Icynene ProSeal Eco or comparable product by one of the following:
 - a. BASF Corporation.
 - b. Dow Chemical Company (The).
- B. Closed-Cell Spray Polyurethane Foam: ASTM C 1029, Type II, minimum density of 2.5 lb/cu. ft. (38 kg/cu. m) and minimum aged R-value at 1-inch (25.4-mm) thickness of 7.0 deg F x h x sq. ft./Btu at 75 deg F (1.23 K x sq. m/W at 24 deg C).
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Icynene Inc.; Icynene ProSeal or comparable product by one of the following:
 - a. BASF Corporation.
 - b. Dow Chemical Company (The).

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify that substrates are clean, dry, and free of substances that are harmful to insulation.
- B. Priming: Prime substrates where recommended by insulation manufacturer. Apply primer to comply with insulation manufacturer's written instructions. Confine primers to areas to be insulated; do not allow spillage or migration onto adjoining surfaces.

3.2 INSTALLATION

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Spray insulation to envelop entire area to be insulated and fill voids.
- C. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer. Do not spray into rising foam.
- D. Do not apply insulation within 3-inches (76 mm) of heat emitting devices or where the temperature is in excess of 200 degrees F (93 degrees C), as per ASTM C411 or in accordance with applicable codes.
- E. Framed Construction: Install into cavities formed by framing members to achieve thickness indicated on Drawings.
- F. Cavity Walls: Install into cavities to **[fully fill void]**.
- G. Miscellaneous Voids: Apply according to manufacturer's written instructions.

3.3 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.
- B. Thermal Protection: Protect installed spray polyurethane foam insulation with qualified thermal or ignition barrier per applicable building codes.

3.4 INSTALLATION OF AIR BARRIER COMPONENTS

- A. Install air barrier components – membranes and sealants – as indicated on drawings for spray polyurethane foam as part of an air barrier system.

END OF SECTION 072119

SECTION 08110 - STEEL DOORS AND FRAMES

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 the following:

1. Steel doors.
2. Steel door frames.
3. Sidelight frames

B. Related Sections include the following:

3. Division 8 Section "Flush Wood Doors" for wood doors installed in steel frames.
4. Division 8 Section "Door Hardware (Scheduled by Naming Products)" for door hardware and weather stripping.
5. Division 8 Section "Door Hardware (Scheduled by Describing Products)" for door hardware and weather stripping.
6. Division 8 Section "Glazing" for glass in glazed openings in doors and frames.
7. Division 9 Section "Gypsum Board Assemblies" for spot-grouting frames installed in steel-framed gypsum board partitions.
8. Division 9 Section "Painting" for field painting factory-primed doors and frames.

1.3 DEFINITIONS

A. Steel Sheet Thicknesses: Thickness dimensions, including those referenced in ANSI A250.8, are minimums as defined in referenced ASTM standards for both uncoated steel sheet and the uncoated base metal of metallic-coated steel sheets.

1.4 SUBMITTALS

A. Product Data: For each type of door and frame indicated, include door designation, type, level and model, material description, core description, construction details, label compliance, sound and fire-resistance ratings, and finishes.

B. Shop Drawings: Show the following:

1. Elevations of each door design.
2. Details of doors including vertical and horizontal edge details.
3. Frame details for each frame type including dimensioned profiles.
4. Details and locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, accessories, joints, and connections.
7. Coordination of glazing frames and stops with glass and glazing requirements.

C. Door Schedule: Use same reference designations indicated on Drawings in preparing schedule for doors and frames.

1.5 QUALITY ASSURANCE

A. Steel Door and Frame Standard: Comply with ANSI A 250.8, unless more stringent requirements are indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.

B. Inspect doors and frames on delivery for damage, and notify shipper and supplier if damage is found. Minor damages may be repaired provided refinished items match new work and are acceptable to Architect. Remove and replace damaged items that cannot be repaired as directed.

C. Store doors and frames at building site under cover. Place units on minimum 4-inch- (100-mm-) high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber. If door packaging becomes wet, remove cartons immediately. Provide minimum 1/4-inch (6-mm) spaces between stacked doors to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

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

1. Steel Doors and Frames:
 - a. Amweld Building Products, Inc.
 - b. Benchmark Commercial Doors; a division of General Products Co., Inc.
 - c. Ceco Door Products; a United Dominion Company.

- d. Copco Door Co.
- e. Curries Company.
- f. Deansteel Manufacturing, Inc.
- g. Kewanee Corporation (The).
- h. Mesker Door, Inc.
- i. Pioneer Industries Inc.
- j. Republic Builders Products.
- k. Steelcraft; a division of Ingersoll-Rand.

2.2 MATERIALS

- A. Hot-Rolled Steel Sheets: ASTM A 569/A 569M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- B. Cold-Rolled Steel Sheets: ASTM A 366/A 366M, Commercial Steel (CS), or ASTM A 620/A 620M, Drawing Steel (DS), Type B; stretcher-leveled standard of flatness.

2.3 DOORS

- A. General: Provide doors of sizes, thicknesses, and designs indicated.
- B. Interior Doors: Provide doors complying with requirements indicated below by referencing ANSI 250.8 for level and model and ANSI A250.4 for physical-endurance level:
 - 1. Level 1 and Physical Performance Level C, (Standard Duty), Model 1 (Full Flush).
- C. Vision Lite Systems: Manufacturer's standard kits consisting of glass lite moldings to accommodate glass thickness and size of vision lite indicated.

2.4 FRAMES

- A. General: Provide steel frames for doors, transoms, sidelights, borrowed lights, and other openings that comply with ANSI A250.8 and with details indicated for type and profile. Conceal fastenings, unless otherwise indicated.
- B. Frames of 0.042-inch- (1.0-mm-) thick steel sheet for:
 - 1. Level 1 steel doors.
 - 2. Wood doors where indicated.
- F. Door Silencers: Except on weather-stripped frames, fabricate stops to receive three silencers on strike jambs of single-door frames and two silencers on heads of double-door frames.
- G. Plaster Guards: Provide 0.016-inch- (0.4-mm-) thick, steel sheet plaster guards or mortar boxes to close off interior of openings; place at back of hardware cutouts where mortar or other materials might obstruct hardware operation.
- H. Supports and Anchors: Fabricated from not less than 0.042-inch- (1.0-mm-) thick, electrolytic zinc-coated or metallic-coated steel sheet.
 - 1. Wall Anchors in Masonry Construction: 0.177-inch- (4.5-mm-) diameter, steel wire complying with ASTM A 510 (ASTM A 510M) may be used in place of steel sheet.
- I. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where zinc-coated items are to be built into exterior walls, comply with ASTM A 153/A 153M, Class C or D as applicable.

2.5 FABRICATION

- A. General: Fabricate steel door and frame units to comply with ANSI A250.8 and to be rigid, neat in appearance, and free from defects including warp and buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site.
- C. Interior Door Faces: Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from the following material:
 - 1. Cold-rolled steel sheet, unless otherwise indicated.
- D. Core Construction: Manufacturer's standard core construction that produces a door complying with SDI standards.
- F. Clearances for Non-Fire-Rated Doors: Not more than 1/8 inch (3.2 mm) at jambs and heads, except not more than 1/4 inch (6.4 mm) between pairs of doors. Not more than 3/4 inch (19 mm) at bottom.
- G. Clearances for Fire-Rated Doors: As required by NFPA 80.
- H. Single-Acting, Door-Edge Profile: Beveled edge .
- I. Double-Acting, Door-Edge Profile: Round vertical edges with 2-1/8-inch (54-mm) radius.
- J. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
- K. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold- or hot-rolled steel sheet.
- L. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.
- M. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with

applicable requirements in ANSI A250.6 and ANSI A115 Series specifications for door and frame preparation for hardware.

1. For concealed overhead door closers, provide space, cutouts, reinforcement, and provisions for fastening in top rail of doors or head of frames, as applicable.
- N. Frame Construction: Fabricate frames to shape shown.
1. Fabricate frames with mitered or coped and continuously welded corners and seamless face joints.
- O. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.
- P. Locate hardware as indicated on Shop Drawings or, if not indicated, according to ANSI A250.8.
- Q. Glazing Stops: Manufacturer's standard, formed from 0.032-inch- (0.8-mm-) thick steel sheet.
1. Provide nonremovable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
 2. Provide screw-applied, removable, glazing stops on inside of glass, louvers, and other panels in doors.
- T. Astragals: As required by NFPA 80 to provide fire ratings indicated.
- 2.6 FINISHES
- A. Prime Finish: Manufacturer's standard, factory-applied coat of rust-inhibiting primer complying with ANSI A250.10 for acceptance criteria.
- B. Factory-Applied Paint Finish: Manufacturer's standard, factory-applied paint finish complying with ANSI A250.3 for performance and acceptance criteria.
1. Color and Gloss: As indicated by drawings

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.
- B. Placing Frames: Comply with provisions in SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
1. Except for frames located in existing walls or partitions, place frames before construction of enclosing walls and ceilings.
 2. In metal-stud partitions, provide at least three wall anchors per jamb; install adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Attach wall anchors to studs with screws.
 3. For in-place gypsum board partitions, install knock-down, drywall slip-on frames.
 4. Install fire-rated frames according to NFPA 80.
 5. For openings 90 inches (2286 mm) or more in height, install an additional anchor at hinge and strike jambs.
- C. Door Installation: Comply with ANSI A250.8. Fit hollow-metal doors accurately in frames, within clearances specified in ANSI A250.8. Shim as necessary to comply with SDI 122 and ANSI/DHI A115.1G.

3.2 ADJUSTING AND CLEANING

- A. Prime-Coat Touchup: Immediately after installation, sand smooth any rusted or damaged areas of prime coat and apply touch up of compatible air-drying primer.
- B. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION 08110

SECTION 09260 - GYPSUM BOARD ASSEMBLIES

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 the following:

1. Interior gypsum wallboard.
2. Tile backing panels.
3. Non-load-bearing steel framing.

- B. Related Sections include the following:

1. Division 9 Section "Ceramic Tile " for cementitious backer units installed as substrates for ceramic tile.

1.3 DEFINITIONS

- A. Gypsum Board Terminology: Refer to ASTM C 11 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Shop Drawings: not required for architect / owner.

- C. Samples: not required

1.5 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: For gypsum board assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance-Rated Assemblies: Indicated by design designations from UL's "Fire Resistance Directory."

- B. Sound Transmission Characteristics: For gypsum board assemblies with STC ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.

1. STC-Rated Assemblies: Indicated by design designations from GA-600, "Fire Resistance Design Manual."

- C. Gypsum Board Finish Mockups: Before finishing gypsum board assemblies, install mockups of at least 100 sq. ft. (9 sq. m) in surface area to demonstrate aesthetic effects and qualities of materials and execution.

1. Install mockups for the following applications:

- a. Surfaces with texture finishes.
- b. Surfaces indicated to receive nontextured paint finishes.
- c. Surfaces indicated to receive textured paint finishes.

2. Simulate finished lighting conditions for review of mockups.

3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Steel Framing and Furring:
 - a. Clark Steel Framing Systems.
 - b. Consolidated Systems, Inc.
 - c. Dale Industries, Inc. - Dale/Incor.
 - d. Dietrich Industries, Inc.
 - e. MarinoWare; Division of Ware Ind.
 - f. National Gypsum Company.
 - g. Scafco Corporation.
 - h. Unimast, Inc.
 - i. Western Metal Lath & Steel Framing Systems.
 2. Gypsum Board and Related Products:
 - a. American Gypsum Co.
 - b. G-P Gypsum Corp.
 - c. National Gypsum Company.
 - d. United States Gypsum Co.

2.2 STEEL SUSPENDED CEILING AND SOFFIT FRAMING

- A. Components, General: Comply with ASTM C 754 for conditions indicated.
- B. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch- (1.59-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.
- C. Hanger Attachments to Concrete: As follows:
1. Anchors: Fabricated from corrosion-resistant materials with holes or loops for attaching hanger wires and capable of sustaining, without failure, a load equal to 5 times that imposed by construction as determined by testing according to ASTM E 488 by a qualified independent testing agency.
 - a. Type: Postinstalled, expansion anchor.
 2. Powder-Actuated Fasteners: Suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 10 times that imposed by construction as determined by testing according to ASTM E 1190 by a qualified independent testing agency.
- D. Hangers: As follows:
1. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.162-inch (4.12-mm) diameter.
 2. Rod Hangers: ASTM A 510 (ASTM A 510M), mild carbon steel.
 - a. Diameter: 7/32-inch (5.56-mm).
 - b. Protective Coating: Corrosion-resistant paint.
 3. Flat Hangers: Commercial-steel sheet, ASTM A 366/A 366M, with corrosion-resistant paint finish.
 - a. Size: 1 by 3/16 inch (25.4 by 4.76 mm) by length indicated.
 4. Angle Hangers: ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized commercial-steel sheet.
 - a. Minimum Base Metal Thickness: 0.0179 inch (0.45 mm).
 - b. Size: 7/8 by 1-3/8 inches (22.2 by 34.9 mm).
- E. Carrying Channels: Cold-rolled, commercial-steel sheet with a base metal thickness of 0.0538 inch (1.37 mm), a minimum 1/2-inch- (12.7-mm-) wide flange, with manufacturer's standard corrosion-resistant zinc coating.
1. Depth: per manufacturer's recommendation or span tables.

- F. Furring Channels (Furring Members): Commercial-steel sheet with manufacturer's standard corrosion-resistant zinc coating.
1. Cold Rolled Channels: 0.0538-inch (1.37-mm) bare steel thickness, with minimum 1/2-inch- (12.7-mm-) wide flange, 3/4 inch (19.1 mm) deep.
 2. Steel Studs: ASTM C 645.
 - a. Minimum Base Metal Thickness: As indicated.
 - b. Depth: As indicated or per manufacturer's recommendation or span tables.
 3. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch (22.2 mm) deep.
 - a. Minimum Base Metal Thickness: 0.0179 inch (0.45 mm).
 4. Resilient Furring Channels: 1/2-inch- (12.7-mm-) deep members designed to reduce sound transmission.
 - a. Configuration: Hat shaped, with face attached to two flanges by slotted or expanded metal legs.
- G. Grid Suspension System for Interior Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Armstrong World Industries, Inc.; Furring Systems/Drywall.
 - b. Chicago Metallic Corporation;
 - c. USG Interiors, Inc.; Drywall Suspension System.
- 2.3 STEEL PARTITION AND SOFFIT FRAMING
- A. Components, General: As follows:
1. Comply with ASTM C 754 for conditions indicated.
 2. Steel Sheet Components: Complying with ASTM C 645 requirements for metal and with manufacturer's standard corrosion-resistant zinc coating.
- B. Steel Studs and Runners: ASTM C 645.
1. Minimum Base Metal Thickness: As indicated or per manufacturer's recommendation or span tables
 2. Depth: As indicated or per manufacturer's recommendation or span tables
- C. Deep-Leg Deflection Track: ASTM C 645 top runner with 2-inch- (50.8-mm-) deep flanges.
- D. Proprietary Deflection Track: Steel sheet top runner manufactured to prevent cracking of gypsum board applied to interior partitions resulting from deflection of structure above; in thickness indicated for studs and in width to accommodate depth of studs.
1. Available Product: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 2. Product: Subject to compliance with requirements, provide one of the following:
 - a. Delta Star, Inc., Superior Metal Trim; Superior Flex Track System (SFT).
 - b. Metal-Lite, Inc.; Slotted Track.
- E. Proprietary Firestop Track: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
1. Available Product: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 2. Product: Subject to compliance with requirements, provide one of the following:
 - a. FireTrak Corp.; Fire Trak
 - b. Metal-Lite, Inc.; The System.
- F. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
1. Minimum Base Metal Thickness: 0.0179 inch (0.45 mm).
- G. Cold-Rolled Channel Bridging: 0.0538-inch (1.37-mm) bare steel thickness, with minimum 1/2-inch- (12.7-mm-) wide flange.
1. Depth: 1-1/2 inches (38.1 mm).

2. Clip Angle: 1-1/2 by 1-1/2 inch (38.1 by 38.1 mm), 0.068-inch- (1.73-mm-) thick, galvanized steel.
- H. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
1. Minimum Base Metal Thickness: 0.0179 inch (0.45 mm).
 2. Depth: 7/8 inch (22.2 mm).
- I. Resilient Furring Channels: 1/2-inch- (12.7-mm-) deep, steel sheet members designed to reduce sound transmission.
1. Configuration: Hat shaped, with face attached to two flanges by slotted or expanded metal legs.
- J. Cold-Rolled Furring Channels: 0.0538-inch (1.37-mm) bare steel thickness, with minimum 1/2-inch- (12.7-mm-) wide flange.
1. Depth: 3/4 inch (19.1 mm).
 2. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum bare steel thickness of 0.0312 inch (0.79 mm).
 3. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch- (1.59-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.
- K. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches (31.8 mm), wall attachment flange of 7/8 inch (22.2 mm), minimum bare metal thickness of 0.0179 inch (0.45 mm), and depth required to fit insulation thickness indicated.
- L. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- #### 2.4 INTERIOR GYPSUM WALLBOARD
- A. Panel Size: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.
- B. Gypsum Wallboard: ASTM C 36.
1. Regular Type:
 - a. Thickness: 5/8 inch
 - b. Long Edges: Tapered.
 - c. Location: Vertical surfaces, unless otherwise indicated.
 2. Type X:
 - a. Thickness: 5/8 inch (15.9 mm).
 - b. Long Edges: Tapered.
 - c. Location: As indicated Where required for fire-resistance-rated assembly .
- C. Flexible Gypsum Wallboard: ASTM C 36, manufactured to bend to fit tight radii and to be more flexible than standard regular-type panels of the same thickness.
1. Thickness: 1/4 inch (6.4 mm).
 2. Long Edges: Tapered.
 3. Location: As indicated.
- D. Sag-Resistant Gypsum Wallboard: ASTM C 36, manufactured to have more sag resistance than regular-type gypsum board.
1. Thickness: 1/2 inch (12.7 mm).
 2. Long Edges: Tapered.
 3. Location: As indicated.
- #### 2.5 TILE BACKING PANELS
- A. Panel Size: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.
- B. Water-Resistant Gypsum Backing Board: ASTM C 630/C 630M.
1. Core: 5/8 inch (15.9 mm), Type X.
- #### 2.7 TRIM ACCESSORIES
- A. Interior Trim: ASTM C 1047.
1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet .
 2. Shapes:
 - a. Cornerbead: Use at outside corners.
 - b. Bullnose Bead: Use where indicated.
 - c. LC-Bead: J-shaped; exposed long flange receives joint compound; use at exposed panel edges.

- d. L-Bead: L-shaped; exposed long leg receives joint compound; use where indicated.
 - e. U-Bead: J-shaped; exposed short flange does not receive joint compound; use where indicated.
 - f. Expansion (Control) Joint: Use where indicated.
 - g. Curved-Edge Cornerbead: With notched or flexible flanges; use at curved openings.
 - B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. FryReglet Corp.
 - b. Gordon, Inc.
 - c. MM Systems Corporation.
 - d. Pittcon Industries.
 - 3. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221 (ASTM B 221M), alloy 6063-T5.
 - 4. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.
- 2.8 JOINT TREATMENT MATERIALS
- A. General: Comply with ASTM C 475.
 - B. Joint Tape:
 - 1. Interior Gypsum Wallboard: Paper.
 - 2. Exterior Gypsum Soffit Board: Paper.
 - 3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
 - 4. Tile Backing Panels: As recommended by panel manufacturer.
 - C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 - 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 - 3. Fill Coat: For second coat, use drying-type, all-purpose compound.
 - 4. Finish Coat: For third coat, use drying-type, all-purpose compound.
 - 5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.
 - D. Joint Compound for Exterior Applications:
 - 1. Exterior Gypsum Soffit Board: Use setting-type taping and setting-type, sandable topping compounds.
 - 2. Glass-Mat Gypsum Sheathing Board: As recommended by manufacturer.
 - E. Joint Compound for Tile Backing Panels:
 - 1. Water-Resistant Gypsum Backing Board: Use setting-type taping and setting-type, sandable topping compounds.
 - 2. Glass-Mat, Water-Resistant Backing Panel: As recommended by manufacturer.
 - 3. Cementitious Backer Units: As recommended by manufacturer.
- 2.9 ACOUSTICAL SEALANT
- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - B. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Acoustical Sealant for Exposed and Concealed Joints:
 - a. Pecora Corp.; AC-20 FTR Acoustical and Insulation Sealant.
 - b. United States Gypsum Co.; SHEETROCK Acoustical Sealant.
 - 2. Acoustical Sealant for Concealed Joints:
 - a. Ohio Sealants, Inc.; Pro-Series SC-170 Rubber Base Sound Sealant.
 - b. Pecora Corp.; BA-98.
 - c. Tremco, Inc.; Tremco Acoustical Sealant.

C. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining, latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

D. Acoustical Sealant for Concealed Joints: Nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.

2.10 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.

2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

D. Isolation Strip at Exterior Walls:

1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.

2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

E. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

F. Thermal Insulation: As specified in Division 7 Section "Building Insulation."

G. Polyethylene Vapor Retarder: As specified in Division 7 Section "Building Insulation."

2.11 TEXTURE FINISHES

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

B. Products: Subject to compliance with requirements, provide one of the following:

1. Polystyrene Aggregate Ceiling Finish:

a. G-P Gypsum Corp.; GyProc Ceiling Texture/Polystyrene.

b. National Gypsum Company; Gold Bond Perfect Spray.

c. United States Gypsum Co.; SHEETROCK Ceiling Spray Texture, QT Polystyrene.

2. Aggregate Finish:

a. G-P Gypsum Corp.; GyProc Vermiculite Ceiling Texture.

b. United States Gypsum Co.; SHEETROCK Wall and Ceiling Spray Texture

(Aggregated).

C. Primer: As recommended by textured finish manufacturer.

D. Polystyrene Aggregate Ceiling Finish: Water-based, job-mixed, polystyrene aggregate finish with flame-spread and smoke-developed indices of not more than 25 when tested according to ASTM E 84.

1. Texture: Fine .

E. Aggregate Finish: Water-based, job-mixed, aggregated, drying-type texture finish for spray application.

1. Texture: Light-spatter .

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Suspended Ceilings: Coordinate installation of ceiling suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers at spacing required to support ceilings and that hangers will develop their full strength.

1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- B. Coordination with Sprayed Fire-Resistive Materials:
1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed-on fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches (600 mm) o.c.
 2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of gypsum board assemblies and without reducing the fire-resistive material thickness below that which is required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.
- 3.3 INSTALLING STEEL FRAMING, GENERAL
- A. Installation Standards: ASTM C 754, and ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking, and bracing at terminations in gypsum board assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Comply with details indicated and with gypsum board manufacturer's written recommendations or, if none available, with United States Gypsum's "Gypsum Construction Handbook."
- C. Isolate steel framing from building structure at locations indicated to prevent transfer of loading imposed by structural movement.
1. Isolate ceiling assemblies where they abut or are penetrated by building structure.
 2. Isolate partition framing and wall furring where it abuts structure, except at floor. Install slip-type joints at head of assemblies that avoid axial loading of assembly and laterally support assembly.
 - a. Use deep-leg deflection track where indicated.
 - b. Use proprietary deflection track where indicated.
 - c. Use proprietary firestop track where indicated.
- D. Do not bridge building control and expansion joints with steel framing or furring members. Frame both sides of joints independently.
- 3.4 INSTALLING STEEL SUSPENDED CEILING AND SOFFIT FRAMING
- A. Suspend ceiling hangers from building structure as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
 3. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eyescrews, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail.
 4. Secure hangers to structure, including intermediate framing members, by attaching to inserts, eyescrews, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
 5. Do not support ceilings directly from permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
 6. Do not attach hangers to steel deck tabs.
 7. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 8. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- B. Installation Tolerances: Install steel framing components for suspended ceilings so members for panel attachment are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member and transversely between parallel members.

- C. Sway-brace suspended steel framing with hangers used for support.
- D. For exterior soffits, install cross bracing and framing to resist wind uplift.
- E. Screw furring to wood framing.
- F. Wire-tie or clip furring channels to supports, as required to comply with requirements for assemblies indicated.
- G. Install suspended steel framing components in sizes and spacings indicated, but not less than that required by the referenced steel framing and installation standards.

- 1. Hangers: 48 inches (1219 mm) o.c.
- 2. Carrying Channels (Main Runners): 48 inches (1219 mm) o.c.
- 3. Furring Channels (Furring Members): 24 inches (610 mm) o.c.

H. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

3.5 INSTALLING STEEL PARTITION AND SOFFIT FRAMING

- A. Install tracks (runners) at floors, ceilings, and structural walls and columns where gypsum board assemblies abut other construction.
- B. Installation Tolerance: Install each steel framing and furring member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by the faces of adjacent framing.
- C. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.

- 1. Cut studs 1/2 inch (13 mm) short of full height to provide perimeter relief.
- 2. For fire-resistance-rated and STC-rated partitions that extend to the underside of floor/roof slabs and decks or other continuous solid-structure surfaces to obtain ratings, install framing around structural and other members extending below floor/roof slabs and decks, as needed to support gypsum board closures and to make partitions continuous from floor to underside of solid structure.

- a. Terminate partition framing at suspended ceilings where indicated.

D. Install steel studs and furring at the following spacings:

- 1. Single-Layer Construction: 24 inches (610 mm) o.c., unless otherwise indicated.
- 2. Multilayer Construction: 24 inches (610 mm) o.c., unless otherwise indicated.
- 3. Cementitious Backer Units: 16 inches (406 mm) o.c., unless otherwise indicated.

E. Install steel studs so flanges point in the same direction and leading edge or end of each panel can be attached to open (unsupported) edges of stud flanges first.

F. Curved Partitions:

- 1. Cut top and bottom track (runners) through leg and web at 2-inch (50-mm) intervals for arc length. In cutting lengths of track, allow for uncut straight lengths of not less than 12 inches (300 mm) at ends of arcs.
- 2. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
- 3. Support outside (cut) leg of track by clinching steel sheet strip, 1-inch- (25-mm-) high-by-thickness of track metal, to inside of cut legs using metal lock fasteners.
- 4. Begin and end each arc with a stud, and space intermediate studs equally along arcs at stud spacing recommended in writing by gypsum board manufacturer for radii indicated. On straight lengths of not less than 2 studs at ends of arcs, place studs 6 inches (150 mm) o.c.

G. Frame door openings to comply with GA-600 and with gypsum board manufacturer's applicable written recommendations, unless otherwise indicated. Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.

- 1. Install two studs at each jamb, unless otherwise indicated.
- 2. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (13-mm) clearance from jamb stud to allow for installation of control joint.
- 3. Extend jamb studs through suspended ceilings and attach to underside of floor or roof structure above.

- H. Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
- I. Z-Furring Members:
1. Erect insulation vertically and hold in place with Z-furring members spaced 24 inches (610 mm) o.c.
 2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (600 mm) o.c.
 3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches (300 mm) from corner and cut insulation to fit.
 4. Until gypsum board is installed, hold insulation in place with 10-inch (250-mm) staples fabricated from 0.0625-inch- (1.59-mm-) diameter, tie wire and inserted through slot in web of member.
- J. Polyethylene Vapor Retarder: Install to comply with requirements specified in Division 7 Section "Building Insulation."
- ### 3.6 APPLYING AND FINISHING PANELS, GENERAL
- A. Gypsum Board Application and Finishing Standards: ASTM C 840 and GA-216.
- B. Install sound attenuation blankets before installing gypsum panels, unless blankets are readily installed after panels have been installed on one side.
- C. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- D. Install gypsum panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
- E. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- F. Attach gypsum panels to steel studs so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- G. Attach gypsum panels to framing provided at openings and cutouts.
- H. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members using resilient channels, or provide control joints to counteract wood shrinkage.
- I. Form control and expansion joints with space between edges of adjoining gypsum panels.
- J. Cover both faces of steel stud partition framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
 2. Fit gypsum panels around ducts, pipes, and conduits.
 3. Where partitions intersect open concrete coffers, concrete joists, and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by coffers, joists, and other structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.
- K. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations, and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- L. Floating Construction: Where feasible, including where recommended in writing by manufacturer, install gypsum panels over wood framing, with floating internal corner construction.
- M. STC-Rated Assemblies: Seal construction at perimeters, behind control and expansion 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 manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.
- N. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's written recommendations.

1. Space screws a maximum of 12 inches (304.8 mm) o.c. for vertical applications.
- O. Space fasteners in panels that are tile substrates a maximum of 8 inches (203.2 mm) o.c.
- 3.7 PANEL APPLICATION METHODS
- A. Single-Layer Application:
 1. On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
 2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of board.
 - b. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
 3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
- B. Multilayer Application on Ceilings: Apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 16 inches (400 mm) minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
- C. Multilayer Application on Partitions/Walls: Apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
 1. Z-Furring Members: Apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
- D. Single-Layer Fastening Methods: Apply gypsum panels to supports with steel drill screws.
- E. Multilayer Fastening Methods: Fasten base layers and face layers separately to supports with screws.
- F. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.
- G. Curved Partitions:
 1. Install panels horizontally and unbroken, to the extent possible, across curved surface plus 12-inch- (300-mm-) long straight sections at ends of curves and tangent to them.
 2. Wet gypsum panels on surfaces that will become compressed where curve radius prevents using dry panels. Comply with gypsum board manufacturer's written recommendations for curve radii, wetting methods, stacking panels after wetting, and other preparations that precede installing wetted gypsum panels.
 3. On convex sides of partitions, begin installation at one end of curved surface and fasten gypsum panels to studs as they are wrapped around curve. On concave side, start fastening panels to stud at center of curve and work outward to panel ends. Fasten panels to framing with screws spaced 12 inches (300 mm) o.c.
 4. For double-layer construction, fasten base layer to studs with screws 16 inches (400 mm) o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches (300 mm) o.c.
 5. Allow wetted gypsum panels to dry before applying joint treatment.
- H. Exterior Soffits and Ceilings: Apply exterior gypsum soffit board panels perpendicular to supports, with end joints staggered and located over supports.
 1. Install with 1/4-inch (6.4-mm) open space where panels abut other construction or structural penetrations.
 2. Fasten with corrosion-resistant screws.
- I. Tile Backing Panels:
 1. Water-Resistant Gypsum Backing Board: Install at showers, tubs, and where indicated. Install with 1/4-inch (6.4-mm) gap where panels abut other construction or penetrations.
- 3.8 INSTALLING TRIM ACCESSORIES
- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

3.9 FINISHING GYPSUM BOARD ASSEMBLIES

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C 840, for locations indicated:

1. Level 1: Embed tape at joints in ceiling plenum areas, concealed areas, and where indicated.

2. Level 2: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges where indicated.

3. Level 3: Embed tape and apply separate first and fill coats of joint compound to tape, fasteners, and trim flanges where indicated.

4. Level 4: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges at panel surfaces that will be exposed to view, unless otherwise indicated.

5. Level 5: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply skim coat of joint compound over entire surface where indicated.

E. Glass-Mat Gypsum Sheathing Board: Finish according to manufacturer's written instructions for use as exposed soffit board.

F. Glass-Mat, Water-Resistant Backing Panels: Finish according to manufacturer's written instructions.

G. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.10 APPLYING TEXTURE FINISHES

A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.

B. 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.

C. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture finish manufacturer's written recommendations.

3.11 FIELD QUALITY CONTROL

A. Above-Ceiling Observation: Before Contractor installs gypsum board ceilings, Architect will conduct an above-ceiling observation and report deficiencies in the Work observed. Do not proceed with installation of gypsum board to ceiling support framing until deficiencies have been corrected.

1. Notify Architect seven days in advance of date and time when Project, or part of Project, will be ready for above-ceiling observation.

2. Before notifying Architect, complete the following in areas to receive gypsum board ceilings:

a. Installation of 80 percent of lighting fixtures, powered for operation.

b. Installation, insulation, and leak and pressure testing of water piping systems.

c. Installation of air-duct systems.

d. Installation of air devices.

e. Installation of mechanical system control-air tubing.

f. Installation of ceiling support framing.

END OF SECTION 09260

SECTION 09 50 00 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

1.2 SUMMARY

A. Section Includes

1. Acoustical ceiling panels
2. Exposed grid suspension system
3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings
4. Perimeter Trim

B. Related Selections

1. Section 09 51 00 - Acoustical Ceilings
2. Section 09 51 13 - Acoustical Fabric-Faced Panel Ceilings
3. Section 09 53 00 - Acoustical Ceiling Suspension Assemblies
4. Section 09 20 00 - Plaster and Gypsum Board
5. Section 02 42 00 - Removal and Salvage of Construction Materials
6. Divisions 23 - HVAC Air Distribution
7. Division 26 - Electrical

C. Alternates

1. Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted no later than TEN (10) working days prior to the date established for receipt of bids. Acceptability of a proposed substitution is contingent upon the Architect's review of the proposal for acceptability and approved products will be set forth by the Addenda. If included in a Bid are substitute products that have not been approved by Addenda, the specified products shall be provided without additional compensation.

2. Submittals that do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers (if specified in Section 1.5); Underwriters' Laboratories Classified Acoustical performance; Panel design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings

6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
7. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
8. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
9. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material
 - A. Armstrong Fire Guard Products
10. ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint
11. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems
12. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
13. ASTM E 1264 Classification for Acoustical Ceiling Products

B. International Building Code

C. ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality

D. NFPA 70 National Electrical Code

E. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures

F. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components

G. International Code Council-Evaluation Services Report - Seismic Engineer Report

1. ESR 1308 - Armstrong Suspension Systems

H. International Association of Plumbing and Mechanical Officials - Seismic Engineer Report

1. 0244 - Armstrong Single Span Suspension System

I. California Department of Public Health CDPH/EHLB Emission Standard Method Version 1.1 2010

J. LEED - Leadership in Energy and Environmental Design is a set of rating systems for the design, construction, operation, and maintenance of green buildings

1.4 SYSTEM DESCRIPTION

Continuous/Wall-to-Wall

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.

B. Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.

C. Shop Drawings: Layout and details of acoustical ceilings show locations of items that are to be coordinated with, or supported by the ceilings.

D. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.

E. If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

1.6 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

1. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

2. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 Classification.

3. Fire Resistance: As follows tested per ASTM E119 and listed in the appropriate floor or roof design in the Underwriters Laboratories Fire Resistance Directory

B. Acoustical Panels: As with other architectural features located at the ceiling, may obstruct or skew the planned fire sprinkler water distribution pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from a fire either toward or away from the device. Designers and installers are advised to consult a fire protection engineer, NFPA 13, or their local codes for guidance where automatic fire detection and suppression systems are present.

C. Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.8 PROJECT CONDITIONS

A. Space Enclosure:

HumiGuard Plus Ceilings: Building areas to receive ceilings shall be free of construction dust and debris. Products with HumiGuard Plus performance and hot dipped galvanized steel, aluminum or stainless steel suspension systems can be installed up to 120°F (49°C) and in spaces before the building is enclosed, where HVAC systems are cycled or not operating. Cannot be used in exterior applications where standing water is present or where moisture will come in direct contact with the ceiling.

1.9 ALTERNATE CONSTRUCTION WASTE DISPOSAL

A. Ceiling material being reclaimed must be kept dry and free from debris

B. Contact the Armstrong Recycle Center a consultant will verify the condition of the material and that it meets the Armstrong requirements for recycling. The Armstrong consultant will provide assistance to facilitate the recycling of the ceiling.

1.10 WARRANTY

A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:

1. Acoustical Panels: Sagging and warping
2. Grid System: Rusting and manufacturer's defects

B. Warranty Period:

1. Acoustical panels: Ten (10) years from date of substantial completion.
2. Grid: Ten (10) years from date of substantial completion.
3. Acoustical panels and grid systems with HumiGuard Plus or HumiGuard Max performance supplied by one source manufacturer is Thirty (30) years from date of substantial completion.

C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.11 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.
2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Ceiling Panels:

1. Armstrong World Industries, Inc.

B. Suspension Systems:

1. Armstrong World Industries, Inc.

C. Perimeter Systems

1. Armstrong World Industries, Inc.

2.2.1 ACOUSTICAL CEILING UNITS

A. Acoustical Panels Type AP

1. Surface Texture: Smooth
2. Composition: Mineral Fiber
3. Color: White
4. Size: 48IN x 24IN
5. Edge Profile: Square Lay-In 15/16 or 1-1/2IN for interface with Prelude Plus XL Aluminum 15/16"

Exposed Tee grid.

6. Noise Reduction Coefficient(NRC): ASTM C 423; Classified with UL label on product carton 0.55.
7. Ceiling Attenuation Class (CAC) : ASTM C 1414; Classified with UL label on product carton 35.
8. Sabin: N/A
9. Articulation Class (AC):
10. Flame Spread: ASTM E 1264; Class A (UL)
11. Light Reflectance White Panel: ASTM E 1477; 0.79
12. Dimensional Stability: HumiGuard Plus
13. Recycle Content: Post-Consumer - 2% Pre-Consumer Waste - 74%
14. Acceptable Product: Clean Room FL, 1716 or Ceramaguard , 605 as manufactured by Armstrong

World Industries,

2.3.1 METAL SUSPENSION SYSTEMS

A. Components: Main beams and cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Main beams and cross tees are double-web steel construction with exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.

- a. Structural Classification: ASTM C 635 Light Duty
- b. Color: White Aluminum and match the actual color of the selected ceiling tile, unless noted

otherwise.

c. Acceptable Product: Prelude Plus XL Aluminum 15/16" Exposed Tee as manufactured by Armstrong World Industries

B. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

C. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft annealed, with a yield stress load of at least time three design load, but not less than 12 gauge.

D. Edge Moldings and Trim:

AL7801 - 10ft Hemmed Angle Molding

E. Accessories

7904 - 15/16" Flush Act. to Drywall Transition Molding

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations. (Exception: HumiGuard Max Ceilings)

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

B. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

3.3 INSTALLATION

A. Follow manufacturer installation instructions.

B. Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.

C. Suspend main beam from overhead construction with hanger wires spaced 4'-0" on center along the length of the main runner. Install hanger wires plumb and straight.

D. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.

E. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.

F. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

3.4 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove any ceiling products that cannot be successfully cleaned and or repaired. Replace with attic stock or new product to eliminate evidence of damage.

C. Before disposing of ceilings, contact the Armstrong Recycling Center at 877-276-7876, select option #1 then #8 to review with a consultant the condition and location of building where the ceilings will be removed. The consultant will verify the condition of the material and that it meets the Armstrong requirements for recycling. The Armstrong consultant will provide assistance to facilitate the recycle of the ceiling.

SECTION 09653 - RESILIENT WALL BASE

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 the following:

1. Wall base.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of product indicated, showing full range of colors.
- C. Samples for Verification: For each type of product indicated, in manufacturer's standard-size Samples but not less than 12 inches (300 mm) long, of each resilient product color, texture, and pattern required.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide resilient stair accessories with a critical radiant flux classification of Class I, not less than 0.45 W/sq. cm, as determined by testing identical products per ASTM E 648 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products 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 (10 deg C) or more than 90 deg F (32 deg C).

1.6 PROJECT CONDITIONS

- A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive floor tile during the following time periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

- B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

- C. Install resilient products after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Furnish not less than 10 linear feet (3 linear m) for every 500 linear feet (150 linear m) or fraction thereof, of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.2 COLORS AND PATTERNS

- A. Colors and Patterns: As indicated on drawings

2.3 RESILIENT WALL BASE B-1

- A. Wall Base: ASTM F 1861.
1. AFCO-USA, American Floor Products Company, Inc..
 2. Armstrong World Industries, Inc.;
 3. Azrock Commercial Flooring, DOMCO.;
 4. Burke Mercer Flooring Products.;
 5. Endura.;
 6. Estrie, American Biltrite (Canada) Ltd.;
 7. Johnsonite.;
 8. Marley Flexco (USA), Inc.;
 9. Mondo Rubber International, Inc.;
 10. Musson, R. C. Rubber Co.;
 11. Nora Rubber Flooring, Freudenberg Building Systems, Inc.;
 12. Pirelli Rubber Flooring.;
 13. Roppe Corporation.;
 14. Stoler Industries.;
 15. VPI, LLC, Floor Products Division.;

- B. Type (Material Requirement): TV (vinyl)
 - C. Group (Manufacturing Method): I (solid, homogeneous) or II (layered).
 - D. Style: Cove (with top-set toe) or straight as indicated.
 - E. Minimum Thickness: 0.125 inch (3.2 mm).
 - F. Height: 4 inches (102 mm).
 - G. Lengths: Coils in manufacturer's standard length.
 - H. Outside Corners: Job formed .
 - I. Inside Corners: Job formed .
 - J. Surface: Smooth.
- 2.4 INSTALLATION MATERIALS
- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturers for applications indicated.
 - B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
 - C. Stair-Tread-Nose Filler: Two-part epoxy compound recommended by resilient tread manufacturer to fill nosing substrates that do not conform to tread contours.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.
 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 resilient products.
 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.
 - B. Concrete Substrates for Stair Accessories: Prepare according to ASTM F 710.
 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 2. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 3. Moisture Testing:
 - a. Perform 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. (1.36 kg of water/92.9 sq. m) in 24 hours.
 - b. Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
 - D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.
 - E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
 1. Do not install resilient products until they are the same temperature as the space where they are to be installed.
 - F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.
- #### 3.3 RESILIENT WALL BASE INSTALLATION
- A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
 - B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
 - C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
 - D. Do not stretch wall base during installation.
 - E. On masonry surfaces or other similar irregular substrates, fill voids along top edge of wall base with manufacturer's recommended adhesive filler material.
 - F. Premolded Corners: Install premolded corners before installing straight pieces.
 - G. Job-Formed Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.
2. Inside Corners: Use straight pieces of maximum lengths possible. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing resilient product installation:

1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

a. Do not wash surfaces until after time period recommended by manufacturer.

B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

1. Apply protective floor polish to stair accessory surfaces that are free from soil, visible adhesive, and surface blemishes if recommended in writing by manufacturer.

a. Use commercially available product acceptable to manufacturer.

b. Coordinate selection of floor polish with Owner's maintenance service.

2. Cover stair accessory products with undyed, untreated building paper until Substantial Completion.

3. Do not move heavy and sharp objects directly over stair accessories. Place plywood or hardboard panels over surfaces and under objects while they are being moved. Slide or roll objects over panels without moving panels.

END OF SECTION 09653

SECTION 09 7720 –FIBERGLASS REINFORCED WALL PANELS

PART 4 - GENERAL

4.1 SUMMARY

- A. Section Includes: Prefinished polyester glass reinforced plastic sheets and adhered to unfinished [gypsum] [cementitious] [untreated plywood] wallboard.
 - 1. [Aluminum] [PVC] trim.
 - 2. [PVC Wall base.]
- B. Products Not Furnished or Installed under This Section:
 - 1. Gypsum [Cementitious] substrate board.
 - 2. Resilient Base.

4.2 REFERENCES

- A. American Society for Testing and Materials: Standard Specifications (ASTM)
 - 1. ASTM D 256 - Izod Impact Strengths (ft #/in)
 - 2. ASTM D 570 - Water Absorption (%)
 - 3. ASTM D 638 - Tensile Strengths (psi) & Tensile Modulus (psi)
 - 4. ASTM D 790 - Flexural Strengths (psi) & Flexural Modulus (psi)
 - 5. ASTM D 2583- Barcol Hardness
 - 6. ASTM D 5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.
 - 7. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

4.3 SUBMITTALS

- A. Product Data: Submit sufficient manufacturer's data to indicate compliance with these specifications, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- B. Shop Drawings: Submit elevations of each wall showing location of paneling and trim members with respect to all discontinuities in the wall elevation.
- C. Selection Samples: Submit manufacturer's standard color pattern selection samples representing manufacturer's full range of available colors and patterns.
- D. Samples for Verification: Submit appropriate section of panel for each finish selected indicating the color, texture, and pattern required.
 - 1. Submit complete with specified applied finish.
 - 2. For selected patterns show complete pattern repeat.
 - 3. Exposed Molding and Trim: Provide samples of each type, finish, and color.
- E. Manufacturers Material Safety Data Sheets (MSDS) for adhesives, sealants and other pertinent materials prior to their delivery to the site (available as downloads for most Marlite's products at <http://www.marlite.com/tech-details.aspx> or by contacting Marlite at info@marlite.com).

4.4 QUALITY ASSURANCE

- A. Conform to building code requirements for interior finish for smoke and flame spread requirements as tested in accordance with:
 - 1. ASTM E 84 (Method of test for surface burning characteristics of building Materials)
 - a. Wall Required Rating – Class [A] [C].
- B. Sanitary Standards: System components and finishes to comply with:
 - 1. United States Department of Agriculture (USDA) requirements for food preparation facilities, incidental contact.
 - 2. Food and Drug Administration (FDA) 1999 Food Code 6-101.11.
 - 3. Canadian Food Inspection Agency (CFIA) requirements.

4.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials factory packaged on strong pallets.
- B. Store panels and trim lying flat, under cover and protected from the elements. Allow panels to acclimate to room temperature (70°) for 48 hours prior to installation.

4.6 PROJECT CONDITIONS

- A. Environmental Limitations: Building are to be fully enclosed prior to installation with sufficient heat (70°) and ventilation consistent with good working conditions for finish work
- B. During installation and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.
 - 1. Provide ventilation to disperse fumes during application of adhesive as recommended by the adhesive manufacturer.

4.7 WARRANTY

- A. Furnish one year guarantee against defects in material and workmanship.

PART 5 - PRODUCTS

5.1 ACCEPTABLE MANUFACTURER

- A. Marlite; 202 Harger Street, Dover, OH 44622. 800-377-1221 FAX (330) 343-4668 Email: info@marlite.com www.marlite.com.
- B. Product:
 - 1. Standard FRP
 - 2. Induro FRP
 - 3. Artizan FRP with Sani-Coat.
 - 4. Envue with Sani-Coat.
 - 5. Symmetrix with Sani-Coat.

5.2 PANELS

- A. Fiberglass reinforced thermosetting polyester resin panel sheets complying with ASTM D 5319.
 - 1. Coating: Multi-layer print, primer and finish coats or applied over-layer.
 - 2. Dimensions:
 - a. Thickness – 0.090 “ (2.29mm) nominal
 - b. Width - 4'-0” (1.22m) nominal
 - c. Length – [10'-0” (3.0m)][8'-0” (2.4m)][As indicated on the drawings] nominal
 - 3. Tolerance:
 - a. Length and Width: +/-1/8 “ (3.175mm)
 - b. Square - Not to exceed 1/8 “ for 8 foot (2.4m) panels or 5/32 “ (3.96mm) for 10 foot (2.4m) panels
- B. Properties: Resistant to rot, corrosion, staining, denting, peeling, and splintering.
 - 1. Flexural Strength - 1.0×10^4 psi per ASTM D 790. (7.0 kilogram-force/square millimeter)
 - 2. Flexural Modulus - 3.1×10^5 psi per ASTM D 790. (217.9 kilogram-force/square millimeter)
 - 3. Tensile Strength - 7.0×10^3 psi per ASTM D 638. (4.9 kilogram-force/square millimeter)
 - 4. Tensile Modulus - 1.6×10^5 psi per ASTM D 638. (112.5 kilogram-force/square millimeter)
 - 5. Water Absorption - 0.72% per ASTM D 570.
 - 6. Barcol Hardness (scratch resistance) of 35 55 as per ASTM D 2583.
 - 7. Izod Impact Strength of 72 ft. lbs./in ASTM D 256

C. Back Surface: Smooth. Imperfections which do not affect functional properties are not cause for rejection.

D. Front Finish: SMOOTH

Specifier Note: Marlite's Standard FRP, Induro FRP, Artizan FRP, Envue FRP & Symmetrix with Sani-Coat Panels are available in several configurations, including Class A (I) and Class C (III) Fire-rated, along with various surface textures for both Standard FRP & Symmetrix with Sani-Coat. All Marlite FRP products can be made available with standard surface grooving and customized groove layouts to match architectural specifications.

a. Color:

- 1) Marlite Standard FRP is available in a variety of colors, including;
 - a) 100 White

b. Surface: Smooth (indicated by "S" designation i.e., S 100 White). All other Marlite FRP products are smooth surface texture.

c. Fire Rating [Specifier to choose.] Marlite FRP is available in either Class A (I) or Class C (III) Fire Rating. Specifier should add designation to product number only for Class A (i.e., P 100 White, Class A).

d. Size: AS SPECIFIED ON DRAWINGS

- 1) Marlite FRP / Symmetrics / Artizan / Envue

- a) 48" x 96" [1.2m x 2.4m] x .090" (3mm) nom.
- b) 48" x 108" [1.2m x 2.7m] x .090" (3mm) nom.
- c) 48" x 120" [1.2m x 3m] x .090" (3mm) nom.

- 2) Ceiling panels (designed for suspended ceiling installation)

- a. 23 3/4" x 47 3/4" (0.6m x 1.2m) x .090" (3mm)
- b. 23 3/4" x 23 3/4" (0.6m x 0.6m) x .090" (3mm)

Can be specified as FRP panels only or backed with 5/8" FR Drywall.

5.3 BASE

A. Marlite Base Molding for 0.090 " (2.29mm) thick FRP Panels

1. Color: [Black]
2. Profiles:
 - a. M 612 FRP Base Molding, 10' length
 - b. M 651 Inside Corner
 - c. M 660 Outside Corner
 - d. M 620 LH End Cap
 - e. M 625 RH End Cap

5.4 MOLDINGS

Aluminum Trim: Heavy weight extruded aluminum 6063-T5 alloy prefinished at the factory.

1. Profiles :
 - a. F 550 Inside Corner, 8' length
 - b. F 561 Outside Corner, 8' length
 - c. F 565 Division, 8' length
 - d. F 570 Edge, 8' length
 - e. Color: Brite Anodized

B. Aluminum Trim: Heavy weight extruded aluminum 6063-T5 alloy prefinished at the factory.

- a. A551 Inside Corner, 8' length
- b. A560 Outside Corner, 8' length
- c. A565 Division, 8' length

- d. A570 Edge, 8' length
 - 2. Color: [Factory Oven-Baked Finish to match spec'd panel][Black Satin Anodized][Clear Satin Anodized]
- C. PVC Trim: Thin-wall semi-rigid extruded PVC.
- 1. M 350 Inside Corner, [8' length][10' length]
 - 2. M 360 Outside Corner, [8' length][10' length]
 - 3. M 365 Division, [8' length][10' length]
 - 4. M 370 Edge, [8' length][10' length]
 - 5. Color: [White][Beige][Natural Almond][Ivory][Silver][Light Grey][Black]
- D. SaniSeal Trim: Co-extruded, dual-durometer polypropylene/monprene profiles with Dual-Seal Technology and high-performance pressure sensitive adhesive.
- 1. S650 Inside Corner, 10' length
 - 2. S660 Outside Corner, 10' length
 - 3. S665 Division, 8' length
 - 4. S670 Edge, 10' length
 - 5. Color: [White][Umber][Slate][Tan][Black][Custom, per specification]
- E. Outside Corner Guard:
- 1. F 560SS Stainless Corner Guard, [8' length][10' length]
 - 2. Finish: #4 brushed satin
 - 3. M 961 PVC Outside Corner Guard
 - a. Color: [White, [8' length][10' length]][Natural Almond, [8' length][10' length]][Ivory, 10' length][Silver, 10' length][Light Grey, 10' length]
- 5.5 ACCESSORIES
- A. Fasteners: Non-staining nylon drive rivets.
- 1. Match panel colors.
 - 2. Length to suit project conditions.
- B. Adhesive: Either of the following construction adhesives complying with ASTM C 557.
- 1. Marlite C-551 FRP Adhesive - Water- resistant, non-flammable adhesive.
 - 2. Marlite C-375 Construction Adhesive - Flexible, water-resistant, solvent based adhesive, formulated for fast, easy application.
 - 3. Titebond Advanced Polymer Panel Adhesive – VOC compliant, non-flammable, environmentally safe adhesive.
- C. Sealant:
- 1. Marlite Brand MS-250 Clear Silicone Sealant.

PART 6 - EXECUTION

6.1 PREPARATION

- A. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails countersunk, joints and cracks filled flush and smooth with the adjoining surface.
- 1. Verify that stud spacing does not exceed 24" (61cm) on-center.
- B. Repair defects prior to installation.
- 1. Level wall surfaces to panel manufacturer's requirements. Remove protrusions and fill indentations.

6.2 INSTALLATION

- A. Comply with manufacturer's recommended procedures and installation sequence.
- B. Cut sheets to meet supports allowing 1/8" (3 mm) clearance for every 8 foot (2.4m) of panel.
- 1. Cut and drill with carbide tipped saw blades or drill bits, or cut with shears.
 - 2. Pre-drill fastener holes 1/8" (3mm) oversize with high speed drill bit.

- a. Space at 8" (200mm) maximum on center at perimeter, approximately 1" from panel edge.
 - b. Space at in field in rows 16' (40.64cm) on center, with fasteners spaced at 12" (30.48 cm) maximum on center.
 - C. Apply panels to board substrate, above base, vertically oriented with seams plumb and pattern aligned with adjoining panels.
 - 1. Install panels with manufacturer's recommended gap for panel field and corner joints.
 - a. Adhesive trowel and application method to conform to adhesive manufacturer's recommendations.
 - b. Drive fasteners for snug fit. Do not over-tighten.
 - D. Apply panel moldings to all panel edges using silicone sealant providing for required clearances.
 - 1. All moldings must provide for a minimum 1/8 " (3mm) of panel expansion at joints and edges, to insure proper installation.
 - 2. Apply sealant to all moldings, channels and joints between the system and different materials to assure watertight installation.
- 6.3 CLEANING
- A. Remove excess sealant from panels and moldings. Wipe panel down using a damp cloth and mild soap solution or cleaner.
 - B. Refer to manufacturer's specific cleaning recommendations Do not use abrasive cleaners.

END OF SECTION 09 7720

SECTION 09912 - PAINTING

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 surface preparation and field painting of exposed interior items and surfaces.
1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- 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 or Owner will select from standard colors and finishes available.
1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), 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. Architectural woodwork.
 - b. Unit kitchens.
 - c. Finished mechanical and electrical equipment.
 - d. Light fixtures.
2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Foundation spaces.
 - b. Furred areas.
 - c. Ceiling plenums.
 - d. Utility tunnels.
 - e. Pipe spaces.
 - f. Duct shafts.
 - g. Elevator shafts.
3. Finished metal surfaces include the following:
 - a. Anodized aluminum.
 - b. Stainless steel.
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 6 Section "Interior Architectural Woodwork" for shop priming interior architectural woodwork.
2. Division 9 Section "Gypsum Board Assemblies" for surface preparation of gypsum board.

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 paint system indicated. Include block fillers and primers.
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 Initial Selection: For each type of finish-coat material indicated from full range of colors.
- C. Samples for Verification: For each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.
- D. Qualification Data: For Applicator.

1.5 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. Source Limitations: Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.
- C. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample for each type of coating and substrate required, on one 10 foot by 10 foot area.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain storage containers in a clean condition, free of foreign materials and residue.

1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.

1.7 PROJECT CONDITIONS

- A. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F (10 and 32 deg C).
- B. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F (7 and 35 deg C).
- C. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.8 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.

1. Quantity: Furnish Owner with 1 gal. of extra paint materials for each paint color.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles. The contractor shall select low VOC paint, approved on submittal.
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.
- C. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Benjamin Moore & Co. (Benjamin Moore) Eco-Spec
2. Coronado Paint Company (Coronado).
3. ICI Paint Stores, Inc. (Dulux Paint).
4. Kelly-Moore Paint Co. (Kelly-Moore).
5. M. A. Bruder & Sons, Inc. (M. A. B. Paint).
6. PPG Industries, Inc. (Pittsburgh Paints).
7. Sherwin-Williams Co. (Sherwin-Williams).

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: As indicated on drawings

2.3 INTERIOR PRIMERS

A. Interior Concrete and Masonry Primer: Factory-formulated alkali-resistant acrylic-latex interior primer for interior application.

1. Benjamin Moore; Moorcraft Super Spec Latex Enamel Undercoater & Primer Sealer

No. 253: Applied at a dry film thickness of not less than 1.2 mils (0.030 mm).

2. Coronado; 40-11 Super Kote 5000 Latex Primer-Sealer: Applied at a dry film thickness of not less than 1.2 mils (0.030 mm).

3. Dulux Paint; 1030-1200 Ultra-Hide PVA Interior Primer-Sealer General Purpose Wall Primer: Applied at a dry film thickness of not less than 1.9 mils (0.048 mm).

4. Kelly-Moore; 971 Acry-Prime Interior Latex Primer/Sealer: Applied at a dry film thickness of not less than 1.6 mils (0.041 mm).

5. M. A. B. Paint; Fresh Kote Vinyl Primer 037-100: Applied at a dry film thickness of not less than 1.5 mils (0.038 mm).

6. Pittsburgh Paints; 6-2 SpeedHide Interior Quick-Drying Latex Sealer: Applied at a dry film thickness of not less than 1.0 mil (0.025 mm).

7. Sherwin-Williams; PrepRite Masonry Primer B28W300: Applied at a dry film thickness of not less than 3.0 mils (0.076 mm).

B. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application.

1. Benjamin Moore; Moorcraft Super Spec Latex Enamel Undercoater & Primer Sealer

No. 253: Applied at a dry film thickness of not less than 1.2 mils (0.030 mm).

2. Coronado; 40-11 Super Kote 5000 Latex Primer-Sealer: Applied at a dry film thickness of not less than 1.2 mils (0.030 mm).

3. Dulux Paint; 1000-1200 Dulux Ultra Basecoat Interior Latex Wall Primer: Applied at a dry film thickness of not less than 1.2 mils (0.031 mm).

4. Dulux Paint; 3210-1200 Ultra-Hide Aquacrylic GRIPPER Stain Killer Primer Sealer: Applied at a dry film thickness of not less than 1.8 mils (0.046 mm).

5. Kelly-Moore; 971 Acry-Prime Interior Latex Primer/Sealer: Applied at a dry film thickness of not less than 1.6 mils (0.041 mm).

6. M. A. B. Paint; Fresh Kote Vinyl Primer 037-100: Applied at a dry film thickness of not less than 1.5 mils (0.038 mm).

7. Pittsburgh Paints; 6-2 SpeedHide Interior Quick-Drying Latex Sealer: Applied at a dry film thickness of not less than 1.0 mil (0.025 mm).

8. Sherwin-Williams; PrepRite 200 Latex Wall Primer B28W200 Series: Applied at a dry film thickness of not less than 1.6 mils (0.041 mm).

F. Interior Ferrous-Metal Primer: Factory-formulated quick-drying rust-inhibitive alkyd-based metal primer.

1. Benjamin Moore; Moore's IMC Alkyd Metal Primer No. M06: Applied at a dry film thickness of not less than 2.0 mils (0.051 mm).

2. Coronado; 35-147 Rust Scat Alkyd Metal Primer: Applied at a dry film thickness of not less than 2.0 mils (0.051 mm).

3. Dulux Paint; 4130-6130 Devshield Rust Penetrating Metal Primer: Applied at a dry film thickness of not less than 2.2 mils (0.056 mm).

4. Dulux Paint; 4160-6130 Devguard Multi-Purpose Tank & Structural Primer: Applied at a dry film thickness of not less than 2.0 mils (0.051 mm).

5. Kelly-Moore; 1711 Kel-Guard Alkyd White Rust Inhibitive Primer: Applied at a dry film thickness of not less than 2.0 mils (0.051 mm).

6. M. A. B. Paint; Rust-O-Lastic Anti-Corrosive Primer 073-132: Applied at a dry film thickness of not less than 2.0 mils (0.051 mm).

7. Pittsburgh Paints; 90-709 Pitt-Tech One Pack Interior/Exterior Primer/Finish DTM Industrial Enamel: Applied at a dry film thickness of not less than 1.5 mils (0.038 mm).

8. Sherwin-Williams; KemKromik Universal Metal Primer B50NZ6/B50WZ1: Applied at a dry film thickness of not less than 3.0 mils (0.076 mm).
- 2.4 INTERIOR FINISH COATS
- A. Interior Flat Acrylic Paint: Factory-formulated flat acrylic-emulsion latex paint for interior application.
 1. Benjamin Moore; Moorecraft Super Spec Latex Flat No. 275: Applied at a dry film thickness of not less than 1.2 mils (0.031 mm).
 2. Coronado; 28 Line Super Kote 5000 Latex Flat Paint: Applied at a dry film thickness of not less than 1.2 mils (0.031 mm).
 3. Dulux Paint; 1200-XXXX Dulux Professional Velvet Matte Interior Flat Latex Wall & Trim Finish: Applied at a dry film thickness of not less than 1.4 mils (0.036 mm).
 4. Kelly-Moore; 450 Pro-Wall Interior Flat Latex Wall Paint: Applied at a dry film thickness of not less than 1.8 mils (0.046 mm).
 5. M. A. B. Paint; Fresh Kote Latex Flat 402 Line: Applied at a dry film thickness of not less than 1.5 mils (0.038 mm).
 6. Pittsburgh Paints; 6-70 Line SpeedHide Interior Wall Flat-Latex Paint: Applied at a dry film thickness of not less than 1.0 mil (0.025 mm).
 7. Sherwin-Williams; ProMar 200 Interior Latex Flat Wall Paint B30W200 Series: Applied at a dry film thickness of not less than 1.4 mils (0.036 mm).
 - B. Interior Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel.
 1. Benjamin Moore; Moorcraft Super Spec Latex Eggshell Enamel No. 274: Applied at a dry film thickness of not less than 1.3 mils (0.033 mm).
 2. Coronado; 30-Line Super Kote 5000 Latex Eggshell Enamel: Applied at a dry film thickness of not less than 1.3 mils (0.033 mm).
 3. Dulux Paint; 1402-XXXX Dulux Professional Acrylic Eggshell Interior Wall & Trim Enamel: Applied at a dry film thickness of not less than 1.4 mils (0.036 mm).
 4. Kelly-Moore; 1610 Sat-N-Sheen Interior Latex Low Sheen Wall and Trim Finish: Applied at a dry film thickness of not less than 1.6 mils (0.041 mm).
 5. Kelly-Moore; 1686 Dura-Poxy Eggshell Acrylic Enamel: Applied at a dry film thickness of not less than 1.6 mils (0.041 mm).
 6. M. A. B. Paint; Fresh Kote Latex Satin Eggshell Enamel 405 Line: Applied at a dry film thickness of not less than 1.5 mils (0.038 mm).
 7. Pittsburgh Paints; 6-400 Series SpeedHide Eggshell Acrylic Latex Enamel: Applied at a dry film thickness of not less than 1.25 mils (0.032 mm).
 8. Sherwin-Williams; ProMar 200 Interior Latex Egg-Shell Enamel B20W200 Series: Applied at a dry film thickness of not less than 1.6 mils (0.041 mm).
 - C. Interior Semigloss Acrylic Enamel: Factory-formulated semigloss acrylic-latex enamel for interior application.
 1. Benjamin Moore; Moorcraft Super Spec Latex Semi-Gloss Enamel No. 276: Applied at a dry film thickness of not less than 1.2 mils (0.031 mm).
 2. Coronado; 32-Line Super Kote 5000 Latex Semi-Gloss Enamel: Applied at a dry film thickness of not less than 1.3 mils (0.033 mm).
 3. Dulux Paint; 1406-XXXX Dulux Professional Acrylic Semi-Gloss Interior Wall & Trim Enamel: Applied at a dry film thickness of not less than 1.5 mils (0.038 mm).
 4. Kelly-Moore; 1649 Acrylic-Latex Semi-Gloss Enamel: Applied at a dry film thickness of not less than 1.7 mils (0.043 mm).
 5. Kelly-Moore; 1685 Dura-Poxy Semi-Gloss Acrylic Enamel: Applied at a dry film thickness of not less than 1.5 mils (0.038 mm).
 6. M. A. B. Paint; Fresh Kote Latex Semi-Gloss 410 Line: Applied at a dry film thickness of not less than 1.5 mils (0.038 mm).
 7. Pittsburgh Paints; 6-500 Series SpeedHide Interior Semi-Gloss Latex: Applied at a dry film thickness of not less than 1.0 mil (0.025 mm).
 8. Sherwin-Williams; ProMar 200 Interior Latex Semi-Gloss Enamel B31W200 Series: Applied at a dry film thickness of not less than 1.3 mils (0.033 mm).
- 2.8 INTERIOR WOOD STAINS AND VARNISHES
- A. Open-Grain Wood Filler: Factory-formulated paste wood filler applied at spreading rate recommended by manufacturer.
 1. Benjamin Moore; Benwood Paste Wood Filler No. 238.
 2. Coronado; none required.
 3. Dulux Paint; none required.
 4. Kelly-Moore; none required.
 5. M. A. B. Paint; Paste Wood Filler.

6. Pittsburgh Paints; none required.
 7. Sherwin-Williams; Sher-Wood Fast-Dry Filler.
 8. Sherwin-Williams; none recommended.
- B. Interior Wood Stain: Factory-formulated alkyd-based penetrating wood stain for interior application applied at spreading rate recommended by manufacturer.
1. Benjamin Moore; Benwood Penetrating Stain No. 234.
 2. Coronado; 3601-Line Quick-Seal Alkyd Stain.
 3. Dulux Paint; 1700-XXX WoodPride Interior Solventborne Wood Finishing Stain.
 4. Kelly-Moore; McCloskey Stain.
 5. M. A. B. Paint; Wood Stain 062 Line.
 6. Pittsburgh Paints; 77-560 Rez Interior Semi-Transparent Oil Stain.
 7. Sherwin-Williams; Wood Classics Interior Oil Stain A-48 Series.
- C. Clear Sanding Sealer: Factory-formulated fast-drying alkyd-based clear wood sealer applied at spreading rate recommended by manufacturer.
1. Benjamin Moore; Moore's Interior Wood Finishes Quick-Dry Sanding Sealer No. 413.
 2. Coronado; 81-10 Dual Seal.
 3. Dulux Paint; 1902-0000 WoodPride Interior Satin Polyurethane Varnish.
 4. Kelly-Moore; 2164 E Z Sand Alkyd Q. D. Sealer.
 5. M. A. B. Paint; MinitDri Sanding Sealer 037-005 Line.
 6. Pittsburgh Paints; 6-10 SpeedHide Quick-Drying Interior Sanding Wood Sealer and Finish.
 7. Sherwin-Williams; Wood Classics Fast Dry Sanding Sealer B26V43.
- D. Interior Alkyd- or Polyurethane-Based Clear Satin Varnish: Factory-formulated alkyd- or polyurethane-based clear varnish.
1. Benjamin Moore; Benwood Interior Wood Finishes Polyurethane Finishes Low Lustre No. 435.
 2. Coronado; 67-100 Polyurethane Liquid Plastic Satin Varnish.
 3. Dulux Paint; 1902-0000 WoodPride Interior Satin Polyurethane Varnish.
 4. Kelly-Moore; 2050 Kel--Aqua Stain Base.
 5. M. A. B. Paint; Rich Lux Water Based Satin Polyurethane.
 6. Pittsburgh Paints; 77-7 Rez Varnish, Interior Satin Oil Clear.
 7. Sherwin-Williams; Wood Classics Fast Dry Oil Varnish, Satin A66-300 Series.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application. Comply with procedures specified in PDCA P4.
1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.
- B. 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.

3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.
1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
1. Provide barrier coats over incompatible primers or remove and reprime.
 2. Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

- a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
 - b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces if moisture content exceeds that permitted in manufacturer's written instructions.
 - c. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.
3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
- a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 - b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.
 - c. If transparent finish is required, backprime with spar varnish.
 - d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.
 - e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
- a. Blast steel surfaces clean as recommended by paint system manufacturer and according to SSPC-SP 6/NACE No. 3.
 - b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
 - c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.
5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- D. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
- 1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 - 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 - 3. Use only thinners approved by paint manufacturer and only within recommended limits.
- E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
- 1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
 - 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 - 3. Provide finish coats that are compatible with primers used.
 - 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
 - 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.

7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 9. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
 10. Sand lightly between each succeeding enamel or varnish coat.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 2. Omit primer over metal surfaces that have been shop primed and touchup painted.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.
- E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.
- F. Mechanical items to be painted include, but are not limited to, the following:
1. Uninsulated metal piping.
 2. Uninsulated plastic piping.
 3. Pipe hangers and supports.
 4. Tanks that do not have factory-applied final finishes.
 5. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
 6. Duct, equipment, and pipe insulation having "all-service jacket" or other paintable jacket material.
 7. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
- G. Electrical items to be painted include, but are not limited to, the following:
1. Switchgear.
 2. Panelboards.
 3. Electrical equipment that is indicated to have a factory-primed finish for field painting.
- H. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- I. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- K. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
1. Provide satin finish for final coats.

- L. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.
- M. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 FIELD QUALITY CONTROL

- A. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during the period when paint is being applied:
 - 1. Owner will engage a qualified independent testing agency to sample paint material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in the presence of Contractor.
 - 2. Testing agency will perform appropriate tests for the following characteristics as required by Owner:
 - 3. Owner may direct Contractor to stop painting if test results show material being used does not comply with specified requirements. Contractor shall remove noncomplying paint from Project site, pay for testing, and repaint surfaces previously coated with the noncomplying paint. If necessary, Contractor may be required to remove noncomplying paint from previously painted surfaces if, on repainting with specified paint, the two coatings are incompatible.

3.5 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.6 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
 - 1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.7 INTERIOR PAINT SCHEDULE

- A. Concrete and Masonry Provide the following paint systems over interior concrete and brick masonry substrates:

- 1. Flat Acrylic Finish: One finish coat over a primer.
 - a. Primer: Interior concrete and masonry primer.
 - b. Finish Coats: Interior flat acrylic paint.
- 2. Low-Luster Acrylic-Enamel Finish: One finish coat over a primer.
 - a. Primer: Interior concrete and masonry primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.
- 3. Semigloss Acrylic-Enamel Finish: One finish coat over a primer.
 - a. Primer: Interior concrete and masonry primer.
 - b. Finish Coats: Interior semigloss acrylic enamel.

- B. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:

- 1. Flat Acrylic Finish: One finish coat over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior flat acrylic paint.
- 2. Low-Luster Acrylic-Enamel Finish: One finish coat over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.
- 3. Semigloss Acrylic-Enamel Finish: One finish coat over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior semigloss acrylic enamel.
- 4. Semigloss Alkyd-Enamel Finish: One finish coat over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior semigloss alkyd enamel.

- C. Ferrous Metal: Provide the following finish systems over ferrous metal:

- 1. Flat Acrylic Finish: One finish coat over a primer.
 - a. Primer: Interior ferrous-metal primer.
 - b. Finish Coats: Interior flat acrylic paint.
- 2. Low-Luster Acrylic-Enamel Finish: One finish coat over a primer.
 - a. Primer: Interior ferrous-metal primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.

3. Semigloss Acrylic-Enamel Finish: One finish coat over a primer.
 - a. Primer: Interior ferrous-metal primer.
 - b. Finish Coats: Interior semigloss acrylic enamel.
 4. Semigloss Alkyd-Enamel Finish: One finish coat over a primer.
 - a. Primer: Interior ferrous-metal primer.
 - b. Finish Coats: Interior semigloss alkyd enamel.
- 3.9 INTERIOR STAIN AND NATURAL-FINISH WOODWORK SCHEDULE
- A. Stained Woodwork: Provide the following stained finishes over new interior woodwork:
1. Alkyd-Based Stain Satin-Varnish Finish: Two finish coats of alkyd-based clear satin varnish over a sealer coat and interior wood stain. Wipe wood filler before applying stain.
 - a. Filler Coat: Open-grain wood filler.
 - b. Stain Coat: Interior wood stain.
 - c. Sealer Coat: Clear sanding sealer.
 - d. Finish Coats: Interior alkyd- or polyurethane-based clear satin varnish.
 2. Waterborne Stain Satin-Varnish Finish: Two finish coats of waterborne clear satin varnish over a sealer coat and waterborne interior wood stain. Wipe wood filler before applying stain.
 - a. Filler Coat: Open-grain wood filler.
 - b. Stain Coat: Interior wood stain.
 - c. Sealer Coat: Clear sanding sealer.
 - d. Finish Coats: Interior waterborne clear satin varnish.
 3. Waterborne Stain Full-Gloss Varnish Finish: Two finish coats of waterborne clear full-gloss varnish over a sealer coat and interior wood stain. Wipe filler before applying stain.
 - a. Filler Coat: Open-grain wood filler.
 - b. Stain Coat: Interior wood stain.
 - c. Sealer Coat: Clear sanding sealer.
 - d. Finish Coats: Interior waterborne clear gloss varnish.
 4. Alkyd-Based Stain Wax-Polished Finish: Three finish coats of paste wax over a sealer coat and alkyd-based interior wood stain.
 - a. Stain Coat: Interior wood stain.
 - b. Sealer Coat: Clear sanding sealer.
 - c. Finish Coats: Paste wax.
- B. Natural-Finish Woodwork: Provide the following natural finishes over new interior woodwork:
1. Alkyd-Based Satin-Varnish Finish: Two finish coats of alkyd-based clear satin varnish over a sanding sealer. Provide wood filler on open-grain wood before applying first varnish coat.
 - a. Filler Coat: Open-grain wood filler.
 - b. Sealer Coat: Clear sanding sealer.
 - c. Finish Coats: Interior alkyd- or polyurethane-based clear satin varnish.
 2. Waterborne Satin-Varnish Finish: Two finish coats of waterborne clear satin varnish over a sanding sealer. Wipe wood filler before applying stain.
 - a. Filler Coat: Open-grain wood filler.
 - b. Sealer Coat: Clear sanding sealer.
 - c. Finish Coats: Interior waterborne clear satin varnish.
 3. Waterborne Full-Gloss Varnish Finish: Two finish coats of waterborne clear full-gloss varnish over a sealer coat. Wipe filler before applying stain.
 - a. Filler Coat: Open-grain wood filler.
 - b. Sealer Coat: Clear sanding sealer.
 - c. Finish Coats: Interior waterborne clear gloss varnish.
 4. Wax-Polished Finish: Three finish coats of paste wax over a sanding-sealer first coat.
 - a. Sealer Coat: Clear sanding sealer.
 - b. Finish Coats: Paste wax.

END OF SECTION 09912

SECTION 10 4413 - FIRE EXTINGUISHERS AND CABINETS

GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Portable fire extinguishers.
 - 2. [Cabinets] [and] [wall brackets].
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

- A. ASTM International (ASTM) E814 - Standard Test Method for Fire Tests of Through-Penetration Firestops.
- B. National Fire Protection Association (NFPA) 10 - Portable Fire Extinguishers.
- C. Underwriters Laboratories (UL):
 - 1. 154 - Carbon Dioxide Fire Extinguishers.
 - 2. 299 - Dry Chemical Fire Extinguishers.
 - 3. 626 - 2-1/2 Gallon Stored Pressure, Water Type Fire Extinguishers.
 - 4. 711 - Rating and Fire Testing of Fire Extinguishers.
 - 5. 1093 - Halogenated Agent Fire Extinguishers.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings: Indicate [cabinet] [bracket] locations and mounting heights.
 - 2. Product Data: Include data on extinguishers and [cabinets,] [brackets,] [cabinet dimensions,] operational features, materials, finishes, and anchorage.
- B. Closeout Submittals:
 - 1. Maintenance Data: Include test, refill, or recharge schedules and re-certification requirements.

1.4 QUALITY ASSURANCE

- A. Provide fire extinguishers complying with UL 711 and [NFPA 10.]
- B. Cabinets in Fire Rated Partitions: Tested in accordance with ASTM E814 with fire resistance rating equivalent to adjacent construction.
- C. Conform to applicable accessibility code for locating extinguishers.

1.5 PROJECT CONDITIONS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Ansul Incorporated. (www.ansul.com)
 - 2. JL Industries. (www.jlindustries.com)
 - 3. Larsen's Mfg. Co. (www.larsensmfg.com)
 - 4. Potter Roemer. (www.potterroemer.com)

B. Substitutions: [Under provisions of Division 01.] [Not permitted.]

2.2 COMPONENTS

A. Extinguishers: Water type, UL 626, [stainless steel] [copper] tank, pressurized, Class 2A, [2.5] gallon capacity.

B. Extinguishers:

1. Multi-purpose dry chemical type, UL 299, [stainless steel] [cast steel] tank, Class [2A:10B:C,] [4A:60B:C,] [5] [10] pound nominal capacity.

C. Extinguishers:

1. Wet chemical type, [stainless steel] [cast steel] tank, Class [2A-1B:C:K,] [6L nominal capacity.

D. Extinguishers: Carbon dioxide type, UL 154, [stainless steel] tank, Class [5B:C,] [10B:C,]] [10] pound nominal capacity.

E. Cabinets:

1. Formed [stainless] [galvanized] steel sheet], 18 gage minimum.
2. Formed aluminum sheet.
3. Configuration: [Recessed,] sized to accommodate extinguishers.
4. Trim: [Flat trim.] [Returned to wall surface.]
5. Door:
 - a. [Break glass style, equipped with [recessed] pull handle and [latch.] [keyed lock with emergency release or pull to break glass feature.] Hinge doors for 180 degree opening with [continuous piano] hinge.
 - b. Glazing: Clear [tempered glass.] [acrylic.]
 - c. Graphics: Letter FIRE EXTINGUISHER [vertically] [horizontally] on door in [red] [black] [whitdie-cut vinyl pressure sensitive letters.

F. Brackets: Formed [galvanized] steel, sized to accommodate extinguisher.

2.3 ACCESSORIES

A. Mounting Hardware: Type best suited to application.

2.4 FINISHES

A. Cabinet:

1. Exterior and door: [No. [8 polished.]] [Primed for field painting.] [[Satin] [Polished] chrome.] [Baked enamel, [white] color [to be selected from manufacturer's full color range].]
2. Interior: [Primed for field painting.] [Baked enamel, [white] color [to be selected from manufacturer's full color range].]

B. Brackets: [Primed for field painting.] [Baked enamel, color [to be selected from manufacturer's full color range].]

C. Extinguishers: [No. [4 satin] [8 polished.]] [Polished and clear coated.] [Baked enamel, red color.]

PART 3 EXECUTION

3.1 INSTALLATION

A. Install [cabinets] [and] [brackets] in accordance with manufacturer's instructions.

B. Set plumb, level, and rigid.

C. Place an extinguisher [in each cabinet.] [on each bracket.]

END OF SECTION