DIVISION 9
FINISHES

DAMMON ENGINEERING, INC.
554 old Spanish Trail
SLIDELL, LOUISIANA 70458
Phone: 985-649-5832
Dammonengineering.com

SECTION 09220

PORTLAND CEMENT PLASTER

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. Nonstructural steel framing and furring.
2. Exterior portland cement plasterwork (stucco) on metal lath plaster bases.

B. Related Sections include the following:

1. Division 5 Section "Cold-Formed Metal Framing" for structural, load-bearing (transverse and axial) steel studs and joists that support lath and portland cement plaster.
2. Division 6 Section "Rough Carpentry" for wood framing and furring, sheathing, and water-resistant barriers included in portland cement plaster assemblies.
3. Division 7 Section "Building Insulation" for thermal insulations and vapor retarders included in portland cement plaster assemblies.
4. Division 7 Section "Joint Sealants" for sealants installed with exterior portland cement plaster (stucco).

1.3 SUBMITTALS

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

B. Shop Drawings: Show locations and installation of control and expansion joints including plans, elevations, sections, details of components, and attachments to other work.

C. Samples for Initial Selection: For each type of factory-prepared finish coat indicated.

D. Samples for Verification: For each type of colored and textured finish coat indicated; 12 by 12 inches , and prepared on rigid backing.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: For portland cement plaster 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.

B. Mockups: Before plastering, install mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Install mockups for each type of finish indicated.
2. For interior plasterwork, 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.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE, AND HANDLING

A. 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.

1.6 PROJECT CONDITIONS

A. Comply with ASTM C 926 requirements.

B. Exterior Plasterwork:

1. Apply and cure plaster to prevent plaster drying out during curing period. Use procedures required by climatic conditions, including moist curing, providing coverings, and providing barriers to deflect sunlight and wind.
2. Apply plaster when ambient temperature is greater than 40 deg F.
3. Protect plaster coats from freezing for not less than 48 hours after set of plaster coat has occurred.

C. Factory-Prepared Finishes: Comply with manufacturer's written recommendations for environmental conditions for applying finishes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 NONSTRUCTURAL STEEL FRAMING MEMBERS, GENERAL

A. Available Manufacturers:

1. California Expanded Metal Products Company (CEMCO).
2. Clark Steel Framing Systems.
3. Consolidated Systems, Inc.
4. Dale/Incor.
5. Dietrich Industries, Inc.
6. Marino/Ware; Division of Ware Industries, Inc.
7. Phillips Manufacturing Co.
8. SCAFCO Corporation.
9. Unimast, Inc.
10. Western Metal Lath & Steel Framing Systems.
11. Amico Corp.

B. Components, General: Comply with ASTM C 1063. For steel sheet components not included in ASTM C 1063, comply with ASTM C 645 requirements for metal, unless otherwise indicated.

C. Cold-Rolled Channels: Base metal thickness of 0.0538 inch with ASTM A 653/A 653M, G60, hot-dip galvanized zinc coating.

2.3 STEEL FRAMING FOR PARTITIONS

A. Steel Studs and Runners: ASTM C 645.

1. Protective Coating: ASTM A 653/A 653M, G60 , hot-dip galvanized zinc coating.
2. Minimum Base Metal Thickness: As indicated.
3. Depth: As indicated.

B. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Protective Coating: ASTM A 653/A 653M, G60, hot-dip galvanized zinc coating.
2. Minimum Base Metal Thickness: As indicated.

C. Channel Bridging: Cold-rolled channels in depth indicated.

1. Clip Angle: As shown on plans.

D. Vertical Furring:

1. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

a. Protective Coating: ASTM A 653/A 653M, G60, hot-dip galvanized zinc coating.
b. Minimum Base Metal Thickness: As indicated.
c. Depth: As indicated.

2. Furring Channels: Cold-rolled channels, in depth indicated.

a. Furring Brackets: Adjustable, corrugated-edge type fabricated from steel sheet with minimum bare steel thickness of 0.0312 inch.

2.4 METAL LATH

A. Expanded-Metal Lath: ASTM C 847 with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.

1. Available Manufacturers:

a. Alabama Metal Industries Corporation (AMICO).
b. California Expanded Metal Products Company (CEMCO).
c. Dale/Incor.
d. Marino/Ware; Division of Ware Industries, Inc.
e. Phillips Manufacturing Co.
f. Unimast, Inc.
g. Western Metal Lath & Steel Framing Systems.

2. Diamond-Mesh Lath: Self-furring.

a. Weight: 3.4 lb/sq. yd.

2.5 ACCESSORIES

A. General: Comply with ASTM C 1063 and coordinate depth of trim and accessories with thicknesses and number of plaster coats required. See notes on plans.

B. Zinc Accessories:

1. Available Manufacturers:

a. Alabama Metal Industries Corporation (AMICO).
b. California Expanded Metal Products Company (CEMCO).
c. Dale/Incor.
d. Dietrich Industries, Inc.
e. Phillips Manufacturing Co.

f. Unimast, Inc.
g. Western Metal Lath & Steel Framing Systems.

2. Foundation Weep Screed: Fabricated from zinc.
3. Cornerite: Fabricated from zinc.
4. External-Corner Reinforcement: Fabricated from zinc.
5. Cornerbeads: Fabricated from zinc.
6. Casing Beads: Fabricated from zinc; square-edged style; with expanded flanges.
7. Control Joints: Fabricated from zinc; one-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.
8. Expansion Joints: Fabricated from zinc; folded pair of unperforated screeds in M-shaped configuration; with expanded flanges.
9. Two-Piece Expansion Joints: Fabricated from zinc; formed to produce slip-joint and square-edged reveal that is adjustable from 1/4-to-5/8-inch wide; with perforated flanges.

2.6 MISCELLANEOUS MATERIALS

A. Water for Mixing: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

B. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch long, free of contaminants, manufactured for use in portland cement plaster.

C. Bonding Compound: ASTM C 932.

D. Steel Drill Screws: For metal-to-metal fastening, ASTM C 1002 or ASTM C 954, as required by thickness of metal being fastened; with pan head that is suitable for application; in lengths required to achieve penetration through joined materials of not fewer than three exposed threads.

E. Fasteners for Attaching Metal Lath to Substrates: Complying with ASTM C 1063.

F. 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.

G. Isolation Strip at Exterior Walls:

1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), unperforated.
2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

H. 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.

1. Available Products:

a. OSI Sealants, Inc.; Pro-Series, SC 175 Acoustical Sound Sealant Non-Flammable - Latex.
b. Pecora Corporation; AC-20 + Silicone.
c. Tremco Incorporated; Tremflex 834.
d. United States Gypsum Co.; SHEETROCK Acoustical Sealant.

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

1. Available Products:

a. OSI Sealants, Inc.; Pro-Series SC 170 Acoustical Sound Sealant - Solvent.
b. Pecora Corporation; BA-98.
c. Tremco, Inc.; Tremco Acoustical Sealant.

2.7 PLASTER MATERIALS

A. Portland Cement: ASTM C 150, Type I or II.

B. Masonry Cement: ASTM C 91, Type N.

C. Plastic Cement: ASTM C 1328.

D. Colorants for Job-Mixed Finish-Coats: Colorfast mineral pigments that produce finish plaster color to match existing building.

E. Lime: ASTM C 206, Type S; or ASTM C 207, Type S.

F. Sand Aggregate: ASTM C 897.

1. Color for Job-Mixed Finish Coats: In color matching existing building.

G. Ready-Mixed Finish-Coat Plaster: Mill-mixed portland cement, aggregates, coloring agents, and proprietary ingredients.

1. Available Products:

a. California Stucco Products Corp.; Conventional Portland Cement Stucco.
b. ChemRex; Thoro Stucco.
c. Florida Stucco Corp.
d. Highland Stucco & Lime Products, Inc.
e. United States Gypsum Co.; Oriental Exterior Finish Stucco.

2. Color: In color matching existing building.

2.8 PLASTER MIXES

A. General: Comply with ASTM C 926 for applications indicated.

1. Fiber Content: Add fiber to base-coat mixes after ingredients have mixed at least two minutes. Comply with fiber manufacturer's written instructions for fiber quantities in mixes, but do not exceed 1 lb of fiber/cu. yd. of cementitious materials. Reduce aggregate quantities accordingly to maintain workability.

B. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork as follows:

1. Portland Cement Mixes:

a. Scratch Coat: For cementitious material, mix 1 part portland cement and 0 to ¾ or 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material (sum of separate volumes of each component material).
b. Brown Coat: For cementitious material, mix 1 part portland cement and 0 to ¾ or 3/4 to 1-1/2 parts lime. Use 3 to 5 parts aggregate per part of cementitious material (sum of separate volumes of each component material).

2. Masonry Cement Mixes:

a. Scratch Coat: 1 part masonry cement and 2-1/2 to 4 parts aggregate.
b. Brown Coat: 1 part masonry cement and 3 to 5 parts aggregate.

3. Portland and Masonry Cement Mixes:

a. Scratch Coat: For cementitious material, mix 1 part portland cement and 1 part masonry cement. Use 2-1/2 to 4 parts aggregate per part of cementitious material (sum of separate volumes of each component material).
b. Brown Coat: For cementitious material, mix 1 part portland cement and 1 part masonry cement. Use 3 to 5 parts aggregate per part of cementitious material (sum of separate volumes of each component material).

4. Plastic Cement Mixes:

a. Scratch Coat: 1 part plastic cement and 2-1/2 to 4 parts aggregate.
b. Brown Coat: 1 part plastic cement and 3 to 5 parts aggregate.

5. Portland and Plastic Cement Mixes:

a. Scratch Coat: For cementitious material, mix 1 part plastic cement and 1 part portland cement. Use 2-1/2 to 4 parts aggregate per part of

cementitious material (sum of separate volumes of each component material).

b. Brown Coat: For cementitious material, mix 1 part plastic cement and 1 part portland cement. Use 3 to 5 parts aggregate per part of cementitious material (sum of separate volumes of each component material).

C. Job-Mixed Finish-Coat Mixes:

1. Portland Cement Mix: For cementitious materials, mix 1 part portland cement and 3/4 to 1-1/2 or 1-1/2 to 2 parts lime. Use 1-1/2 to 3 parts aggregate per part of cementitious material (sum of separate volumes of each component material).
2. Masonry Cement Mix: 1 part masonry cement and 1-1/2 to 3 parts aggregate.
3. Portland and Masonry Cement Mix: For cementitious materials, mix 1 part portland cement and 1 part masonry cement. Use 1-1/2 to 3 parts aggregate per part of cementitious material (sum of separate volumes of each component material).
4. Plastic Cement Mix: 1 part plastic cement and 1-1/2 to 3 parts aggregate.

D. Factory-Prepared Finish-Coat Mixes: For ready-mixed finish-coat plasters, comply with manufacturer's written instructions.

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.

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

3.2 PREPARATION

A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.

B. Prepare solid-plaster bases that are smooth or that do not have the suction capability required to bond with plaster according to ASTM C 926.

3.3 INSTALLATION, GENERAL

A. Fire-Resistance-Rated Assemblies: Install components according to requirements for design designations from listing organization and publication indicated on Drawings.

B. Acoustical Sealant: Where required, seal joints between edges of plasterwork and abutting construction with acoustical sealant.

3.4 INSTALLING NONSTRUCTURAL STEEL FRAMING, GENERAL

A. General: Comply with requirements in ASTM C 1063 for applications indicated.

1. Comply with ASTM C 754 for installation of items not addressed in ASTM C 1063.

B. Install supplementary framing, blocking, and bracing at terminations in plaster assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

C. Isolate steel framing from building structure 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. At head of assemblies, install slip-type joints that avoid axial loading and that support assembly laterally.

D. Do not bridge building control and expansion joints with steel framing or furring members. Frame both sides of joints independently.

E. Soffits: Unless otherwise detailed on Drawings, install furred or suspended soffits to comply with requirements for ceiling installation; install framed soffits to comply with requirements for partition installation.

3.5 INSTALLING ACCESSORIES

A. Install according to ASTM C 1063 and at locations indicated on Drawings.

B. Reinforcement for External Corners:

1. Install lath-type external-corner reinforcement at exterior locations.
2. Install cornerbead at interior and exterior locations.

C. Control Joints: Install control joints at locations indicated on Drawings.

1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:

a. Vertical Surfaces: 144 sq. ft.
b. Horizontal and other Nonvertical Surfaces: 100 sq. ft.

2. At distances between control joints of not greater than 18 feet o.c.
3. As required to delineate plasterwork into areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
4. Where control joints occur in surface of construction directly behind plaster.

5. Where plasterwork areas change dimensions, to delineate rectangular-shaped areas (panels) and to relieve the stress that occurs at the corner formed by the dimension change.

3.6 PLASTER APPLICATION

A. General: Comply with ASTM C 926.

1. Do not deviate more than plus or minus 1/4 inch in 10 feet from a true plane in finished plaster surfaces, as measured by a 10-foot straightedge placed on surface.
2. Grout hollow-metal frames, bases, and similar work occurring in plastered areas, with base-coat plaster material, before lathing where necessary. Except where full grouting is indicated or required for fire-resistance rating, grout at least 6 inches at each jamb anchor.
3. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground, unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
4. Provide plaster surfaces that are ready to receive field-applied finishes indicated.

B. Plaster Finish Coats: Apply to provide float finish to match existing building.

3.7 CUTTING AND PATCHING

A. Cut, patch, replace, and repair plaster as necessary to accommodate other work and to restore cracks, dents, and imperfections. Repair or replace work to eliminate blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

3.8 CLEANING AND PROTECTION

A. Remove temporary protection and enclosure of other work. Promptly remove plaster from doorframes, windows, and other surfaces not indicated to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.

END OF DOCUMENT

SECTION 09250

GYPSUM BOARD

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 board.
2. Tile backing panels.

B. Related Sections include the following:

1. Division 5 Section "Cold-Formed Metal Framing" for load-bearing steel framing that supports gypsum board.
2. Division 6 Section "Rough Carpentry" for wood framing and furring that supports gypsum board.
3. Division 7 Section "Building Insulation" for insulation and vapor retarders installed in assemblies that incorporate gypsum board.
4. Division 9 Section "Resilient Floor Tile" for cementitious backer units installed as substrates for ceramic tile.
5. Division 9 painting Sections for primers applied to gypsum board surfaces.

1.3 SUBMITTALS

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

B. Samples: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch long length for each trim accessory indicated.
2. Textured Finishes: Manufacturer's standard size for each textured finish indicated and on same backing indicated for Work.

1.4 QUALITY ASSURANCE

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

C. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Install mockups for the following:

   a. Each level of gypsum board finish indicated for use in exposed locations.
   b. Each texture finish indicated.

2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
3. Simulate finished lighting conditions for review of mockups.
4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.6 PROJECT CONDITIONS

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

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.

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. American Gypsum Co.
b. BPB America Inc.
c. G-P Gypsum.
d. Lafarge North America Inc.
e. National Gypsum Company.
f. PABCO Gypsum.
g. Temple.
h. USG Corporation.

B. Type X:

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

C. Flexible Type: Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.

1. Thickness: 1/4 inch .
2. Long Edges: Tapered.

D. Moisture- and Mold-Resistant Type: With moisture- and mold-resistant core and surfaces.

1. Core: 5/8 inch, Type X.
2. Long Edges: Tapered.

2.3 EXTERIOR GYPSUM BOARD FOR WALLS, CEILINGS AND SOFFITS

A. Glass-Mat Gypsum Sheathing Board: ASTM C 1177/C 1177M.

1. Product: Subject to compliance with requirements, provide "Dens-Glass Gold" by G-P Gypsum.
2. Core: 1/2 inch , regular type.

2.4 TILE BACKING PANELS

A. Water-Resistant Gypsum Backing Board: ASTM C 630/C 630M or ASTM C 1396/C 1396M.

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. American Gypsum Co.
    b. BPB America Inc.
    c. G-P Gypsum.
    d. Lafarge North America Inc.
    e. National Gypsum Company.
    f. PABCO Gypsum.
    g. Temple.
    h. USG Corporation.

3. Core: 5/8 inch, Type X.

B. Glass-Mat, Water-Resistant Backing Board:

1. Complying with ASTM C 1178/C 1178M.

    a. Product: Subject to compliance with requirements, provide "DensShield Tile Guard" by G-P Gypsum.

2. Complying with ASTM C1177/C 1177M.

    a. Product: Subject to compliance with requirements, provide "DensArmor Plus Interior Guard" by G-P Gypsum.

3. Core: 1/2 inch, regular type or 5/8 inch, Type X.

C. Cementitious Backer Units: ANSI A118.9.

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. Custom Building Products; Wonderboard.
    b. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
    c. USG Corporation; DUROCK Cement Board.

3. Thickness: 1/2 inch.

2.5 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.
b. Bullnose bead.
c. LC-Bead: J-shaped; exposed long flange receives joint compound.
d. L-Bead: L-shaped; exposed long flange receives joint compound.
e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
f. Expansion (control) joint.
g. Curved-Edge Cornerbead: With notched or flexible flanges.

B. Exterior Trim: ASTM C 1047.

1. Material: Hot-dip galvanized steel sheet, plastic, or rolled zinc.
2. Shapes:

a. Cornerbead.
b. LC-Bead: J-shaped; exposed long flange receives joint compound.
c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.

C. 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. Fry Reglet Corp.
b. Gordon, Inc.
c. Pittcon Industries.

3. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221, Alloy 6063-T5.
4. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

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, rounded or beveled panel edges, 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 or drying-type, all-purpose compound.

    a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use setting-type, sandable topping or drying-type, all-purpose compound.
4. Finish Coat: For third coat, use setting-type, sandable topping or drying-type, all-purpose compound.
5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound or drying-type, all-purpose compound.

D. Joint Compound for Exterior Applications:

1. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.

E. Joint Compound for Tile Backing Panels:

1. Water-Resistant Gypsum Backing Board: Use setting-type taping compound and setting-type, sandable topping compound.
2. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
3. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.7 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.

1. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

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

D. 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.

E. Acoustical Sealant: As specified in Division 7 Section "Joint Sealants."

1. Provide sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

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

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

2.8 TEXTURE FINISHES

A. Primer: As recommended by textured finish manufacturer.

B. Aggregate or Unaggregated Finish: Water-based, job-mixed, drying-type texture finish for spray application.

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. G-P Gypsum; Georgia-Pacific Ceiling Textures/Vermiculite.
b. USG Corporation; SHEETROCK Wall and Ceiling Spray Texture.

3. Texture: Light orange peel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

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

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.

J. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for

locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) or horizontally (perpendicular to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    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.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

B. Multilayer Application:

1. 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 minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. 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.
3. On 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.
4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

C. 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.

D. Curved Surfaces:

1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12-inch long straight sections at ends of curves and tangent to them.
2. For double-layer construction, fasten base layer to studs with screws 16 inches o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches o.c.

3.4 APPLYING TILE BACKING PANELS

A. Water-Resistant Gypsum Backing Board: Install at showers, tubs, and where indicated. Install with 1/4-inch gap where panels abut other construction or penetrations.

B. Glass-Mat, Water-Resistant Backing Panel: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile. Install with 1/4-inch gap where panels abut other construction or penetrations.

C. Cementitious Backer Units: ANSI A108.11, at where indicated or locations indicated to receive tile.

D. Areas Not Subject to Wetting: Install regular-type gypsum wallboard panels to produce a flat surface except at showers, tubs, and other locations indicated to receive water-resistant panels.

E. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 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.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners.
2. Bullnose Bead: Use at outside corners.
3. LC-Bead: Use at exposed panel edges.
4. L-Bead: Use where indicated.
5. U-Bead: Use at exposed panel edges.
6. Curved-Edge Cornerbead: Use at curved openings.

D. Exterior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners.
2. LC-Bead: Use at exposed panel edges.

E. Aluminum Trim: Install in locations indicated on Drawings.

3.6 FINISHING GYPSUM BOARD

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 and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for tile.
3. Level 3: Where indicated on Drawings.
4. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.

    a. Primer and its application to surfaces are specified in other Division 9 Sections.

5. Level 5: Where indicated on Drawings.

    a. Primer and its application to surfaces are specified in other Division 9 Sections.

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.

3.7 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 matching approved mockup and 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.

3.8 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

SECTION 09305

TILE SETTING MATERIALS AND ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Tile Setting Mortar and Adhesive.

B. Grout.

C. Electric Radiant Floor Warming.

D. Flooring Underlayment.

E. Waterproofing.

F. Thresholds, Trim and Accessories.

1.2 REFERENCES

A. ANSI A108 Series/A118 Series - American National Standards for Installation of Ceramic Tile; 1999.

B. ANSI A136.1 - American National Standard for Organic Adhesives for Installation of Ceramic Tile; 1999.

C. ASTM C 109/C 109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 1999.

D. ASTM C 241 - Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic; 1990 (Reapproved 1997).

E. ASTM C 503 - Standard Specification for Marble Dimension Stone (Exterior); 1999.

F. ASTM C 627 - Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester; 1993.

G. ASTM C 905 - Standard Test Methods for Apparent Density of Chemical-Resistant Mortars, Grouts and Monolithic Surfacings; 1996.

H. ASTM C 1353 - Standard Test Method Using the Taber Abrader for Abrasion Resistance of Dimension Stone Subjected to Foot Traffic; 1998.

I. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 1997.

J. ASTM D 751 - Standard Test Methods for Coated Fabrics; 1998.

K. ASTM D 2240 - Standard Test Method for Rubber Property--Durometer

Hardness; 1997.

L. ASTM D 4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications; 2000.

M. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 1999.

N. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials; 1995.

O. ASTM E 413 - Classification for Rating Sound Insulation; 1987 (Reapproved 1999).

P. ASTM E 492 - Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine; 1990 (Reapproved 1996).

Q. FS TT-C-555 - Coating, Textured (For Interior and Exterior Masonry Surfaces); cancelled 2001.

R. TCA (HB) - Handbook for Ceramic Tile Installation; Tile Council of America; 2001.

1.3 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's technical information for each product specified.

C. Sound Control Underlayment Test Reports: Demonstrate compliance with specified acoustical performance criteria; furnish reports of tests conducted by independent testing agency.

D. Selection Samples: Color charts for selection of grout.

E. Verification Samples: Actual samples of mortars, grouts and adhesives, tested for compatibility in relationships to be found in project installation.

F. Installation Instructions: Manufacturer's printed instructions for each product.

G. Maintenance Instructions: Include cleaning and stain removal methods and cleaning solutions recommended.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm specializing in manufacture of tile installation materials, including mortars, grouts, and adhesives, with minimum 10 years experience and ISO 9001 certification.

B. Laboratory Testing: For each mortar, grout, and adhesive specified, submit laboratory confirmation using positive analytical methods of:
   1. Compatibility of materials to be used together.
   2. Proper usage of specified materials.
   3. Color matching.

C. Installer Qualifications: Firm specializing in installation of ceramic and/or stone tile, with minimum 5 years documented experience with projects of similar scope, design, and materials.

D.

E. Pre-Installation Meeting: At least three weeks prior to commencing tile work conduct a meeting at the project site to discuss contract requirements and job conditions; require the attendance of tile installers, representative of installation materials manufacturer, and installers of related materials; notify Architect in advance of meeting.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Prevent damage or contamination to materials by water, freezing, foreign matter or other causes.

B. Store materials subject to damage by freezing or overheating, including latex, organic, and epoxy materials, at room temperature if possible.

C. Deliver and store materials on site at least 24 hours before work begins.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide build-up.

C. Maintain temperatures at not less than 50 degrees F (10 degrees C) and not more than 100 degrees F (38 degrees C) in tiled areas during installation and for 7 days after completion, unless other temperatures are required by referenced installation standards or manufacturer's written instructions.

D. Protect Portland cement based materials from direct sunlight, radiant heat, forced hot and cold ventilation and drafts until cured, to prevent premature evaporation of moisture. When installed at low temperatures allow for longer curing time and protect from damage until cured.

E. Do not install epoxy based materials when surface temperature is less than 60 degrees F (16 degrees C) or over 90 degrees F (32 degrees C).

1.7 WARRANTY

A. Provide manufacturer's standard written 10-year warranty, covering materials and labor for replacement of defective materials.

B. Provide Contractor's warranty that work will be free of defects in materials and workmanship for 10 years.

1.8 MAINTENANCE MATERIALS

A. Deliver to Owner minimum of 1 gallon (4 L) of each type of mortar, grout, and adhesive, for use in repair and maintenance; provide color matched materials from same production run or batch as installed materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: LATICRETE International, Inc.,

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

C. Obtain products from a single manufacturer.

2.2 UNDERLAYMENT

A. Laticrete 816 LatiPatch: Rapid Cementitious patching compound for application over concrete or exterior grade plywood, cutback adhesive, vinyl tile, dry concrete or unglazed tile.
   1. Curing Time: Tile - Approximately 1 1/2 to 2 hours.
   2. Compressive Strength - 28 day cure, ANSI A118.4 F.6: 5000 psi (34.5 MPa).

2.3 LATEX MORTAR BED

A. Slurry Bond Coat:
   1. Laticrete 254 Platinum: High strength slurry bond coat that is frost, weather and shock resistant.
      a. Compressive Strength: 5,000 psi (34.5 MPa), min., in accordance with ANSI A118.4.
      b. Hardness: 50 to 60, min., in accordance with ÅSTM D 2240, D-scale for 72 hours.
      c. Bond Strength: 500 psi (3.5 MPa), min., in accordance with ANSI A118.4.
      d. Wet Density: 102 pcf (1637 kg/cu m) nominal, in accordance with ÅSTM C 905.
      e. Water Absorption: 4 percent, max., in accordance with ANSI A118.6.
      f. Surface Burning Characteristics: Flame spread and smoke developed indices of 0, in accordance with ÅSTM E 84,

modified.

g. Service Rating: Passing ÅSTM C 627 cycles 1-14 (TCA "Extra Heavy").

B. Mortar Bed:

1. Laticrete 226 Thick-Bed Mortar with Laticrete 3701 Mortar Admix: Latex portland cement mortar made of factory-blended cement and aggregates requiring only the addition of latex mortar additive; weather, frost, and shock resistant.
   a. Compressive Strength: 5,000 psi (34.5 MPa) min., in accordance with ANSI A118.4.
   b. Hardness: 70 to 80, in accordance with ASTM D 2240 D-scale for 72 hours.
   c. Wet Density: 135 pcf (2166 kg/cu m), nominal, in accordance with ÅSTM C 905.
   d. Water Absorption: 5 percent, maximum, in accordance with ANSI A118.6.
   e. Surface Burning Characteristics: Flame spread and smoke developed indices of 0 in accordance with ÅSTM E 84, modified.
2. Laticrete 209 Floor Mud: Pre-mixed, alternative to 226 Thick Bed Mortar. Mixes with 3701 Mortar Admix to provide a conventional floor mortar bed. For interior applications such as small shower pan fills in bathrooms. Covers 6 square feet (0.56 sm) at 1 inch (25mm) thickness per 60 lb (27.3kg) bag.

2.4 MULTIPURPOSE THIN-SET MORTAR

A. LATICRETE 254 R Platinum Rapid: One-step, polymer fortified, thin-set mortar for interior and exterior installation of ceramic tile, stone, quarry tile, pavers and brick.
   1. Shear Bond, Porcelain Tile, 28 day cure - ANSI A118.4-1999; F-5.2.4: 450-500 psi (3.1 - 3.8 MPa).
   2. Water Immersion, 7 Day Cure - ANSI A118.4-1999; F-5.2.3 225 - 275 psi (1.6 - 1.9 MPa).
   3. Color: Gray.
   4. Color: White.

2.5 EPOXY GROUT

A. Laticrete SpectraLOCK PRO Grout: High performance grout for use with ceramic, glass and stone tile for residential or commercial applications.
   1. Water cleanability: Up to 80 minutes.
   2. Initial set: 2 hours.
   3. Service strength: 24 hours.
   4. Shrinkage: 0.25 percent.
   5. Quarry/quarry bond strength: 1,000 psi (6.9 MPa) - Failure at tile.
   6. Compressive strength 3,500 psi (24 MPa) - 7 days.
   7. Tensile strength 1,100 psi (7.6 MPa) - 7 days.
   8. Thermal shock 510 psi (3.5 MPa).

9. Water absorption: Less than 0.50 percent.

2.6 EDGE PROTECTION AND TRANSITION PROFILES FOR FLOORS

A. Description: L-shaped extruded aluminum profile
   1. Manufacturer: Schluter Systems or approved equal.
   2. Profile and color to be selected by Architect from manufacturer's standard collection.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive tile work and conditions under which tile will be installed.

B. Do not proceed with tile work until surfaces and conditions comply with requirements indicated in reference tile installation standard and manufacturer's printed instructions.

3.2 PREPARATION OF EXISTING FLOOR SURFACES

A. Remove existing floor coverings that are not sound, solid, well bonded, clean and free of dust, wax, grease, sealers, and other contaminants that may reduce or prevent adhesion.

B. Do not install tile over cushioned vinyl flooring.

3.3 GROUTING

A. Grout joints in accordance with manufacturer's instructions and ANSI A108.10.

B. Clean sanding water, dust, and foreign substances from joints to be grouted.

C. Clean and dry tile surfaces.

D. After grouting, remove all grout residue promptly.

3.4 CLEANING

A. Clean excess mortar from surfaces with water as work progresses while mortar is fresh and before it hardens.

B. Remove grout haze promptly; do not use acids.

3.5 PROTECTION

A. Floors: Protect from all traffic for at least 72 hours after installation.
   1. Do not step on floor for at least 24 hours; if traffic is unavoidable

after that, use plywood stepping boards.

2. Protect from heavy traffic for at least 7 days after installation.
3. When fast-setting materials are used to allow faster occupancy, comply with the manufacturer's recommendations.

B. Walls: Protect from impact, vibration and heavy hammering on adjacent and opposite walls for at least 14 days after installation, unless manufacturer's instructions allow a shorter period.

C. Protect from food products and chemicals which can cause staining for at least 14 days.

D. Protect from freezing and total water immersion for at least 21 days after installation.

END OF SECTION

SECTION 09512

ACOUSTICAL TILE CEILINGS

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 acoustical tiles for ceilings and the following:

1. Concealed suspension systems.

B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete at ceilings.

1.3 DEFINITIONS

A. AC: Articulation Class.

B. CAC: Ceiling Attenuation Class.

C. LR: Light-Reflectance coefficient.

D. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

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

B. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Ceiling suspension system members.
2. Method of attaching hangers to building structure.

a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.

3. Size and location of initial access modules for acoustical tile.

4. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
5. Minimum Drawing Scale: 1/4 inch = 1 foot or 1/8 inch = 1 foot.

C. Samples for Initial Selection: For components with factory-applied color finishes.

D. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.

1. Acoustical Tile: Set of full-size Samples of each type, color, pattern, and texture.
2. Concealed Suspension System Members: 12-inch long Sample of each type.
3. Exposed Moldings and Trim: Set of 12-inch long Samples of each type and color.

E. Qualification Data: For testing agency.

F. Field quality-control test reports.

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

H. Research/Evaluation Reports: For acoustical tile ceiling and components and anchor and fastener type.

I. Maintenance Data: For finishes to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Acoustical Testing Agency Qualifications: An independent testing laboratory, or an NVLAP-accredited laboratory, with the experience and capability to conduct the testing indicated. NVLAP-accredited laboratories must document accreditation, based on a "Certificate of Accreditation" and a "Scope of Accreditation" listing the test methods specified.

B. Source Limitations:

1. Acoustical Ceiling Tile: Obtain each type through one source from a single manufacturer.
2. Suspension System: Obtain each type through one source from a single manufacturer.

C. Source Limitations: Obtain each type of acoustical ceiling tile and supporting suspension system through one source from a single manufacturer.

D. Fire-Test-Response Characteristics: Provide acoustical tile ceilings that comply with the following requirements:

1. Fire-Resistance Characteristics: Where indicated, provide acoustical tile ceilings identical to those of assemblies tested for fire resistance per ASTM E 119 by UL

or another testing and inspecting agency acceptable to authorities having jurisdiction.

a. Identify materials with appropriate markings of applicable testing and inspecting agency.

2. Surface-Burning Characteristics: Provide acoustical tiles with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:

a. Smoke-Developed Index: 450 or less.

E. Seismic Standard: Provide acoustical tile ceilings designed and installed to withstand the effects of earthquake motions according to the following:

1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.
2. ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."

F. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

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

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical tiles, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

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

C. Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical tile ceiling installation.

1.8 COORDINATION

A. Coordinate layout and installation of acoustical tiles and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.9 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. Acoustical Ceiling Units: Full-size tiles equal to 2.0 percent of quantity installed.
2. Suspension System Components: Quantity of each concealed grid and exposed component equal to 2.0 percent of quantity installed.

PART 2 - PRODUCTS

2.1 ACOUSTICAL TILES, GENERAL

A. Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.

1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E 795.

B. Acoustical Tile Colors and Patterns: Match appearance characteristics indicated for each product type.

1. Where appearance characteristics of acoustical tiles are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical tiles treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

D. Antimicrobial Fungicide Treatment: Provide acoustical tiles with face and back surfaces coated with antimicrobial treatment consisting of manufacturer's standard

formulation with fungicide added to inhibit growth of mold and mildew and showing no mold or mildew growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.2 ACOUSTICAL TILES FOR ACOUSTICAL TILE CEILING

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. Armstrong World Industries, Inc..
2. BPB USA.
3. USG Interiors, Inc.

C. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product.

D. Color: As selected from manufacturer's full range.

E. Edge/Joint Detail: Tegular.

F. Thickness: 5/8 inch.

G. Modular Size: As indicated on Drawings.

H. Antimicrobial Treatment: Broad spectrum fungicide and bactericide based.

2.3 METAL SUSPENSION SYSTEMS, GENERAL

A. Metal Suspension System Standard: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.

B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.

C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.

2. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch diameter wire.

E. Hanger Rods or Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

F. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch thick, galvanized steel sheet complying with ASTM A 653/A 653M, G90 coating designation; with bolted connections and 5/16-inch diameter bolts.

G. Seismic Struts: Manufacturer's standard compression struts designed to accommodate lateral forces.

H. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical tiles in-place.

2.4 METAL SUSPENSION SYSTEM FOR ACOUSTICAL TILE CEILING

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. Armstrong World Industries, Inc.
2. USG Interiors, Inc.

C. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product.

D. Direct-Hung, Double-Web Suspension System: Main and cross runners roll formed from and capped with cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, G30 coating designation.

1. Structural Classification: Intermediate duty system.
2. Access: Upward with initial access openings of size indicated below and located throughout ceiling within each module formed by main and cross runners, with additional access available by progressively removing remaining acoustical tiles.

a. Initial Access Opening: In each module.

E. Indirect-Hung Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, G30 coating designation.

1. Structural Classification: Intermediate duty system.
2. Carrying Channels: Cold-rolled steel, 0.059850-inch minimum base (uncoated) metal thickness, not less than 3/16-inch wide flanges by 1-1/2-inch deep steel channels, 475 lb/1000 feet, with rust-inhibitive paint finish or hot-dip galvanized according to ASTM A 653/A 653M, G60 coating designation.

3. Access: Where access is indicated, provide special cross runners or split splines to allow for removal of acoustical units in indicated access areas. Identify access tile with manufacturer's standard unobtrusive markers for each access unit.

2.5 METAL EDGE MOLDINGS AND TRIM

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. Armstrong World Industries, Inc.
2. BPB USA.
3. Chicago Metallic Corporation.
4. Fry Reglet Corporation.
5. Gordon, Inc.
6. USG Interiors, Inc.

C. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product.

D. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.

1. Provide manufacturer's standard edge moldings that fit acoustical tile edge details and suspension systems indicated and that match width and configuration of exposed runners, unless otherwise indicated.
2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

E. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements and the following:

1. Aluminum Alloy: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of aluminum extrusions complying with ASTM B 221 for Alloy and Temper 6063-T5.
2. Finish designations prefixed by AA comply with system established by the Aluminum Association for designating aluminum finishes.
3. Conversion-Coated Finish: AA-M12C42 (Chemical Finish: cleaned with inhibited chemicals; acid-chromate-fluoride-phosphate conversion coating).
4. Conversion-Coated and Factory-Primed Finish: AA-M12C42R1x (Chemical Finish: cleaned with inhibited chemicals; acid-chromate-fluoride-phosphate conversion coating; organic coating as follows):

a. Manufacturer's standard factory-applied prime-coat finish ready for field painting.

5. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.
6. Baked-Enamel Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; organic coating: as specified below). Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating, and painting.

2.6 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 Corporation; AC-20 FTR Acoustical and Insulation Sealant.
b. USG Corporation; SHEETROCK Acoustical Sealant.

2. Acoustical Sealant for Concealed Joints:

a. OSI Sealants, Inc.; Pro-Series SC-175 Rubber Base Sound Sealant.
b. Pecora Corporation; BA-98.
c. Tremco, Inc.; Tremco Acoustical Sealant.

2.7 MISCELLANEOUS MATERIALS

A. Tile Adhesive: Type recommended by tile manufacturer, bearing UL label for Class 0-25 flame spread.

1. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Staples: 5/16-inch long, divergent-point staples.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing and substrates to which acoustical tile ceilings attach or abut, with Installer present, for compliance

with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical tile ceilings.

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

3.2 PREPARATION

A. Testing Substrates: Before installing adhesively applied tiles on wet-placed substrates such as cast-in-place concrete or plaster, test and verify that moisture level is below tile manufacturer's recommended limits.

B. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION, SUSPENDED ACOUSTICAL TILE CEILINGS

A. General: Install acoustical tile ceilings to comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
4. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
5. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
6. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type

of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.

7. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
8. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
9. Do not attach hangers to steel deck tabs.
10. Do not attach hangers to steel roof deck. Attach hangers to structural members.
11. Space hangers not more than 48 inches o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
12. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. Install edge moldings and trim of type indicated at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical tiles.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Arrange directionally patterned acoustical tiles as follows:

1. Install tiles in a basket-weave pattern.

G. Install acoustical tiles in coordination with suspension system and exposed moldings and trim. Place splines or suspension system flanges into kerfed edges so tile-to-tile joints are closed by double lap of material.

1. Fit adjoining tile to form flush, tight joints. Scribe and cut tile for accurate fit at borders and around penetrations through tile.
2. Hold tile field in compression by inserting leaf-type, spring-steel spacers between tile and moldings, spaced 12 inches o.c.
3. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.4 CLEANING

A. Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09651

RESILIENT FLOOR TILE

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. Section Includes:

1. Ceramic floor tile.

1.3 SUBMITTALS

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

B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.

1. Show details of special patterns.

C. Samples for Initial Selection: For each type of floor tile indicated.

D. Samples for Verification: Full-size units of each color and pattern of floor tile required.

E. Product Schedule: For floor tile.

F. Qualification Data: For qualified Installer.

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

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation indicated.

1. Engage an installer who employs workers for this Project who are trained or certified by manufacturer for installation techniques required.

B. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

C. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups for floor tile including resilient base and accessories.

a. Size: Minimum 100 sq. ft. for each type, color, and pattern.

1.5 DELIVERY, STORAGE, AND HANDLING

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

1.6 PROJECT CONDITIONS

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

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

B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

PART 2 - PRODUCTS

2.1 CERAMIC FLOOR TILE

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

1. AB ColorPlus, American Biltrite (Canada) Ltd.
2. Armstrong World Industries, Inc.
3. Congoleum Corporation.
4. Mannington Mills, Inc.
5. Tarkett, Inc.
6. Vinylasa Tile, Distributed by American Tile Inc.

B. Tile Standard: ASTM F 1066, Class 1, solid-color tile or Class 2, through-pattern tile.

C. Wearing Surface: Smooth or Embossed.

D. Thickness: 0.125 inch.

E. Size: 12 by 12 inches.

F. Colors and Patterns: As selected by Architect from full range of industry colors.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

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

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
4. Moisture Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

C. Access Flooring Panels: Remove protective film of oil or other coating using method recommended by access flooring manufacturer.

D. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

E. Do not install floor tiles until they are same temperature as space where they are to be installed.

1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

1. Lay tiles square with room axis.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles with grain direction alternating in adjacent tiles (basket-weave pattern).

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.

G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

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

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.

B. Perform the following operations immediately after completing floor tile 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.

C. Protect floor tile products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from floor tile surfaces before applying liquid floor polish.

1. Apply two coat(s).

E. Cover floor tile until Substantial Completion.

END OF SECTION

SECTION 09912

INTERIOR 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 the application of paint systems on the following interior substrates:

1. Steel.
2. Galvanized metal.
3. Aluminum (not anodized or otherwise coated).
4. Wood.
5. Gypsum board.
6. Plaster.
7. Spray-textured ceilings.
8. Concrete.

B. Related Sections include the following:

1. Division 5 Sections for shop priming of metal substrates with primers specified in this Section.
2. Division 6 Sections for shop priming carpentry with primers specified in this Section.
3. Division 8 Sections for factory priming windows and doors with primers specified in this Section.
4. Division 9 painting Sections for special-use coatings.

1.3 SUBMITTALS

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

B. Samples for Initial Selection: For each type of topcoat product indicated.

C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples to show each coat required for system.

3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

1.4 QUALITY ASSURANCE

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.

a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
b. Other Items: Architect will designate items or areas required.

2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
3. Final approval of color selections will be based on benchmark samples.

a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

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

1.6 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional **5** percent, but not less than **1 gal.** of each material and color applied.

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. Benjamin Moore & Co.
2. Bennette Paint Mfg. Co., Inc.
3. BLP Mobile Paint Manufacturing.
4. California Paints.
5. ChemRex.
6. Cloverdale Paint.
7. Color Wheel Paints & Coatings.
8. Columbia Paint & Coatings.
9. Coronado Paint.
10. Davis Paint Company.
11. Diamond Vogel Paints.
12. Dunn-Edwards Corporation.
13. Durant Paints Inc.
14. Duron, Inc.
15. Envirocoat Technologies Inc.
16. Farrell-Calhoun.
17. Flex Bon Paints.
18. Frazee Paint.
19. General Paint.
20. Griggs Paint.

21. Hallman Lindsay Quality Paints.
22. Hirshfield's, Inc.
23. ICI Devoe (Canada).
24. ICI Paints.
25. Insl-x.
26. Iowa Paint Manufacturing Company, Inc.
27. Kelly-Moore Paints.
28. Kryton Canada Corporation.
29. Kwal-Howells Paint.
30. M.A.B. Paints.
31. McCormick Paints.
32. Miller Paint.
33. Mills Paint.
34. Northern Paint.
35. PARA Paints.
36. Parker Paint Mfg. Co. Inc.
37. Porter Paints.
38. PPG Architectural Finishes, Inc.
39. Rodda Paint Co.
40. Sherwin-Williams Company (The).
41. Sico, Inc.
42. Sigma Coatings.
43. Smiland Paint Company.
44. Spectra-Tone.
45. Sterling Paint.
46. Tamms Industries, Inc.
47. Tower Paint.
48. Vista Paint.

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:

1. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
2. Nonflat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.

4. Floor Coatings: VOC not more than 100 g/L.
5. Shellacs, Clear: VOC not more than 730 g/L.
6. Shellacs, Pigmented: VOC not more than 550 g/L.
7. Flat Topcoat Paints: VOC content of not more than 50 g/L.
8. Nonflat Topcoat Paints: VOC content of not more than 150 g/L.
9. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
10. Floor Coatings: VOC not more than 100 g/L.
11. Shellacs, Clear: VOC not more than 730 g/L.
12. Shellacs, Pigmented: VOC not more than 550 g/L.
13. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.
14. Dry-Fog Coatings: VOC content of not more than 400 g/L.
15. Zinc-Rich Industrial Maintenance Primers: VOC content of not more than 340 g/L.
16. Pre-Treatment Wash Primers: VOC content of not more than 420 g/L.

C. Chemical Components of Field-Applied Interior Paints and Coatings: Provide topcoat paints and anti-corrosive and anti-rust paints applied to ferrous metals that comply with the following chemical restrictions; these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:

1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
2. Restricted Components: Paints and coatings shall not contain any of the following:

    a. Acrolein.
    b. Acrylonitrile.
    c. Antimony.
    d. Benzene.
    e. Butyl benzyl phthalate.
    f. Cadmium.
    g. Di (2-ethylhexyl) phthalate.
    h. Di-n-butyl phthalate.
    i. Di-n-octyl phthalate.
    j. 1,2-dichlorobenzene.
    k. Diethyl phthalate.
    l. Dimethyl phthalate.
    m. Ethylbenzene.
    n. Formaldehyde.
    o. Hexavalent chromium.
    p. Isophorone.
    q. Lead.
    r. Mercury.
    s. Methyl ethyl ketone.
    t. Methyl isobutyl ketone.
    u. Methylene chloride.
    v. Naphthalene.
    w. Toluene (methylbenzene).

x. 1,1,1-trichloroethane.
y. Vinyl chloride.

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

2.3 PRIMERS/SEALERS

A. Interior Latex Primer/Sealer: MPI #50.

B. Interior Alkyd Primer/Sealer: MPI #45.

C. Wood-Knot Sealer: Sealer recommended in writing by topcoat manufacturer for use in paint systems indicated.

2.4 METAL PRIMERS

A. Alkyd Anticorrosive Metal Primer: MPI #79.

B. Quick-Drying Alkyd Metal Primer: MPI #76.

C. Rust-Inhibitive Primer (Water Based): MPI #107.

D. Cementitious Galvanized-Metal Primer: MPI #26.

E. Waterborne Galvanized-Metal Primer: MPI #134.

F. Vinyl Wash Primer: MPI #80.

G. Quick-Drying Primer for Aluminum: MPI #95.

2.5 WOOD PRIMERS

A. Interior Latex-Based Wood Primer: MPI #39.

2.6 LATEX PAINTS

A. Interior Latex (Flat): MPI #53 (Gloss Level 1).

B. Interior Latex (Low Sheen): MPI #44 (Gloss Level 2).

C. Interior Latex (Eggshell): MPI #52 (Gloss Level 3).

D. Interior Latex (Satin): MPI #43 (Gloss Level 4).

E. Interior Latex (Semigloss): MPI #54 (Gloss Level 5).

F. Interior Latex (Gloss): MPI #114 (Gloss Level 6, except minimum gloss of 65 units at 60 deg).

G. Institutional Low-Odor/VOC Latex (Flat): MPI #143 (Gloss Level 1).

H. Institutional Low-Odor/VOC Latex (Low Sheen): MPI #144 (Gloss Level 2).

I. Institutional Low-Odor/VOC Latex (Eggshell): MPI #145 (Gloss Level 3).

J. Institutional Low-Odor/VOC Latex (Semigloss): MPI #147 (Gloss Level 5).

K. High-Performance Architectural Latex (Low Sheen): MPI #138 (Gloss Level 2).

L. High-Performance Architectural Latex (Eggshell): MPI #139 (Gloss Level 3).

M. High-Performance Architectural Latex (Satin): MPI #140 (Gloss Level 4).

N. High-Performance Architectural Latex (Semigloss): MPI #141 (Gloss Level 5).

O. Exterior Latex (Flat): MPI #10 (Gloss Level 1).

P. Exterior Latex (Semigloss): MPI #11 (Gloss Level 5).

Q. Exterior Latex (Gloss): MPI #119 (Gloss Level 6, except minimum gloss of 65 units at 60 deg).

2.7 ALKYD PAINTS

A. Interior Alkyd (Flat): MPI #49 (Gloss Level 1).

B. Interior Alkyd (Eggshell): MPI #51 (Gloss Level 3).

C. Interior Alkyd (Semigloss): MPI #47 (Gloss Level 5).

D. Interior Alkyd (Gloss): MPI #48 (Gloss Level 6).

2.8 QUICK-DRYING ENAMELS

A. Quick-Drying Enamel (Semigloss): MPI #81 (Gloss Level 5).

B. Quick-Drying Enamel (High Gloss): MPI #96 (Gloss Level 7).

2.9 TEXTURED COATING

A. Latex Stucco and Masonry Textured Coating: MPI #42.

2.10 DRY FOG/FALL COATINGS

A. Latex Dry Fog/Fall: MPI #118.

B. Waterborne Dry Fall: MPI #133.

C. Interior Alkyd Dry Fog/Fall: MPI #55.

2.11 ALUMINUM PAINT

A. Aluminum Paint: MPI #1.

2.12 FLOOR COATINGS

A. Interior Concrete Floor Stain: MPI #58.

B. Interior/Exterior Clear Concrete Floor Sealer (Water Based): MPI #99.

C. Interior/Exterior Clear Concrete Floor Sealer (Solvent Based): MPI #104.

D. Interior/Exterior Latex Floor and Porch Paint (Low Gloss): MPI #60 (maximum Gloss Level 3).

E. Exterior/Interior Alkyd Floor Enamel (Gloss): MPI #27 (Gloss Level 6).

1. Additives: Manufacturer's standard additive to increase skid resistance of painted surface.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Masonry (Clay and CMU): 12 percent.
3. Wood: 15 percent.
4. Gypsum Board: 12 percent.
5. Plaster: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Clay Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content of surfaces or alkalinity of mortar joints to be painted exceed that permitted in manufacturer's written instructions.

F. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

G. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

I. Aluminum Substrates: Remove surface oxidation.

J. Wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

K. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

L. Plaster Substrates: Do not begin paint application until plaster is fully cured and dry.

M. Spray-Textured Ceiling Substrates: Do not begin paint application until surfaces are dry.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:

1. Mechanical Work:

a. Uninsulated metal piping.
b. Uninsulated plastic piping.
c. Pipe hangers and supports.
d. Tanks that do not have factory-applied final finishes.

e. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
g. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

2. Electrical Work:

a. Switchgear.
b. Panelboards.
c. Electrical equipment that is indicated to have a factory-primed finish for field painting.

3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Nontraffic Surfaces:

1. Latex System: MPI INT 3.1E.

   a. Prime Coat: Interior latex matching topcoat.
   b. Intermediate Coat: Interior latex matching topcoat.
   c. Topcoat: Interior latex.

2. Latex Over Sealer System: MPI INT 3.1A.

   a. Prime Coat: Interior latex primer/sealer.
   b. Intermediate Coat: Interior latex matching topcoat.
   c. Topcoat: Interior latex.

3. Alkyd System: MPI INT 3.1D.

   a. Prime Coat: Interior latex primer/sealer.
   b. Intermediate Coat: Interior alkyd matching topcoat.
   c. Topcoat: Interior alkyd.

4. Institutional Low-Odor/VOC Latex System: MPI INT 3.1M.

   a. Prime Coat: Institutional low-odor/VOC interior latex matching topcoat.
   b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
   c. Topcoat: Institutional low-odor/VOC interior latex.

5. High-Performance Architectural Latex System: MPI INT 3.1C.

   a. Prime Coat: Interior latex primer/sealer.
   b. Intermediate Coat: High-performance architectural latex matching topcoat.
   c. Topcoat: High-performance architectural latex.

B. Concrete Substrates, Traffic Surfaces:

1. Latex Floor Enamel System: MPI INT 3.2A.

   a. Prime Coat: Interior/exterior latex floor and porch paint (low gloss).
   b. Intermediate Coat: Interior/exterior latex floor and porch paint (low gloss).
   c. Topcoat: Interior/exterior latex floor and porch paint (low gloss).

2. Alkyd Floor Enamel System: MPI INT 3.2B.

   a. Prime Coat: Exterior/interior alkyd floor enamel (gloss).
   b. Intermediate Coat: Exterior/interior alkyd floor enamel (gloss).
   c. Topcoat: Exterior/interior alkyd floor enamel (gloss).

3. Concrete Stain System: MPI INT 3.2E.

a. First Coat: Interior concrete floor stain.
b. Topcoat: Interior concrete floor stain.

4. Clear Sealer System: MPI INT 3.2F.

a. First Coat: Interior/exterior clear concrete floor sealer (solvent based).
b. Topcoat: Interior/exterior clear concrete floor sealer (solvent based).

5. Water-Based Clear Sealer System: MPI INT 3.2G.

a. First Coat: Interior/exterior clear concrete floor sealer (water based).
b. Topcoat: Interior/exterior clear concrete floor sealer (water based).

C. Clay-Masonry Substrates:

1. Latex System: MPI INT 4.1A.

a. Prime Coat: Interior latex matching topcoat.
b. Intermediate Coat: Interior latex matching topcoat.
c. Topcoat: Interior latex.

2. Alkyd System: MPI INT 4.1D.

a. Prime Coat: Interior latex primer/sealer.
b. Intermediate Coat: Interior alkyd matching topcoat.
c. Topcoat: Interior alkyd.

3. Latex Aggregate System: MPI INT 4.1B.

a. Prime Coat: As recommended in writing by topcoat manufacturer.
b. Intermediate Coat: As recommended in writing by topcoat manufacturer.
c. Topcoat: Latex stucco and masonry textured coating.

4. Institutional Low-Odor/VOC Latex System: MPI INT 4.1M.

a. Prime Coat: Institutional low-odor/VOC interior latex matching topcoat.
b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
c. Topcoat: Institutional low-odor/VOC interior latex.

5. High-Performance Architectural Latex System: MPI INT 4.1L.

a. Prime Coat: High-performance architectural latex matching topcoat.
b. Intermediate Coat: High-performance architectural latex matching topcoat.
c. Topcoat: High-performance architectural latex.

D. CMU Substrates:

1. Latex System: MPI INT 4.2A.

a. Prime Coat: Interior/exterior latex block filler.

b. Intermediate Coat: Interior latex matching topcoat.
c. Topcoat: Interior latex.

2. Alkyd System: MPI INT 4.2C.

a. Prime Coat: Interior/exterior latex block filler.
b. Intermediate Coat: Interior alkyd matching topcoat.
c. Topcoat: Interior alkyd.

3. Alkyd Over Latex Sealer System: MPI INT 4.2N.

a. Prime Coat: Interior/exterior latex block filler.
b. Sealer Coat: Interior latex primer/sealer.
c. Intermediate Coat: Interior alkyd matching topcoat.
d. Topcoat: Interior alkyd .

4. Institutional Low-Odor/VOC Latex System: MPI INT 4.2E.

a. Prime Coat: Interior/exterior latex block filler.
b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
c. Topcoat: Institutional low-odor/VOC interior latex.

5. High-Performance Architectural Latex System: MPI INT 4.2D.

a. Prime Coat: Interior/exterior latex block filler.
b. Intermediate Coat: High-performance architectural latex matching topcoat.
c. Topcoat: High-performance architectural latex.

E. Steel Substrates:

1. Quick-Drying Enamel System: MPI INT 5.1A.

a. Prime Coat: Quick-drying alkyd metal primer.
b. Intermediate Coat: Quick-drying enamel matching topcoat.
c. Topcoat: Quick-drying enamel.

2. Water-Based Dry-Fall System: MPI INT 5.1C.

a. Prime Coat: **Alkyd anticorrosive orQuick-drying alkyd** metal primer.
b. Topcoat: **Latex dry fog/fall orWaterborne dry fall**.

3. Alkyd Dry-Fall System: MPI INT 5.1D.

a. Prime Coat: **Alkyd anticorrosive or Quick-drying alkyd** metal primer.
b. Topcoat: Interior alkyd dry fog/fall.

4. Latex Over Alkyd Primer System: MPI INT 5.1Q.

a. Prime Coat: **Alkyd anticorrosive or Quick-drying alkyd** metal primer.
b. Intermediate Coat: Interior latex matching topcoat.

c. Topcoat: Interior latex.

5. Alkyd System: MPI INT 5.1E.

a. Prime Coat: **Alkyd anticorrosive or Quick-drying alkyd** metal primer.
b. Intermediate Coat: Interior alkyd matching topcoat.
c. Topcoat: Interior alkyd.

6. Aluminum Paint System: MPI INT 5.1M.

a. Prime Coat: **Alkyd anticorrosive or Quick-drying alkyd** metal primer.
b. Intermediate Coat: Aluminum paint.
c. Topcoat: Aluminum paint.

7. Institutional Low-Odor/VOC Latex System: MPI INT 5.1S.

a. Prime Coat: Rust-inhibitive primer (water based).
b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
c. Topcoat: Institutional low-odor/VOC interior latex.

8. High-Performance Architectural Latex System: MPI INT 5.1R.

a. Prime Coat: **Alkyd anticorrosive or Quick-drying alkyd** metal primer.
b. Intermediate Coat: High-performance architectural latex matching topcoat.
c. Topcoat: High-performance architectural latex.

F. Galvanized-Metal Substrates:

1. Water-Based Dry-Fall System: MPI INT 5.3H.

a. Prime Coat: Waterborne dry fall.
b. Topcoat: Waterborne dry fall.

2. Alkyd Dry-Fall System: MPI INT 5.3F.

a. Prime Coat: Cementitious galvanized-metal primer.
b. Topcoat: Interior alkyd dry fog/fall.

3. Latex System: MPI INT 5.3A.

a. Prime Coat: Cementitious galvanized-metal primer.
b. Intermediate Coat: Interior latex matching topcoat.
c. Topcoat: Interior latex.

4. Latex Over Waterborne Primer System: MPI INT 5.3J.

a. Prime Coat: Waterborne galvanized-metal primer.
b. Intermediate Coat: Interior latex matching topcoat.
c. Topcoat: Interior latex.

5. Alkyd System: MPI INT 5.3C.

    a. Prime Coat: Cementitious galvanized-metal primer.
    b. Intermediate Coat: Interior alkyd matching topcoat.
    c. Topcoat: Interior alkyd.

6. Aluminum Paint System: MPI INT 5.3G.

    a. Prime Coat: Cementitious galvanized-metal primer.
    b. Intermediate Coat: Aluminum paint.
    c. Topcoat: Aluminum paint.

7. Institutional Low-Odor/VOC Latex System: MPI INT 5.3N.

    a. Prime Coat: Waterborne galvanized-metal primer.
    b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
    c. Topcoat: Institutional low-odor/VOC interior latex.

8. High-Performance Architectural Latex System: MPI INT 5.3M.

    a. Prime Coat: Waterborne galvanized-metal primer.
    b. Intermediate Coat: High-performance architectural latex matching topcoat.
    c. Topcoat: High-performance architectural latex.

G. Aluminum (Not Anodized or Otherwise Coated) Substrates:

1. Latex System: MPI INT 5.4H.

    a. Prime Coat: Quick-drying primer for aluminum.
    b. Intermediate Coat: Interior latex matching topcoat.
    c. Topcoat: Interior latex.

2. Alkyd Over Vinyl Wash Primer System: MPI INT 5.4A.

    a. Prime Coat: Vinyl wash primer.
    b. Intermediate Coat: Interior alkyd matching topcoat.
    c. Topcoat: Interior alkyd.

3. Alkyd Over Quick-Drying Primer System: MPI INT 5.4J.

    a. Prime Coat: Quick-drying primer for aluminum.
    b. Intermediate Coat: Interior alkyd matching topcoat.
    c. Topcoat: Interior alkyd.

4. Aluminum Paint System: MPI INT 5.4D.

    a. Prime Coat: Vinyl wash primer.
    b. Intermediate Coat: Aluminum paint.
    c. Topcoat: Aluminum paint.

5. Institutional Low-Odor/VOC Latex System: MPI INT 5.4G.

    a. Prime Coat: Quick-drying primer for aluminum.
    b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
    c. Topcoat: Institutional low-odor/VOC interior latex.

6. High-Performance Architectural Latex System: MPI INT 5.4F.

    a. Prime Coat: Quick-drying primer for aluminum.
    b. Intermediate Coat: High-performance architectural latex matching topcoat.
    c. Topcoat: High-performance architectural latex.

H. Dressed Lumber Substrates: Including **architectural woodwork**.

1. Latex System: MPI INT 6.3T.

    a. Prime Coat: Interior latex-based wood primer.
    b. Intermediate Coat: Interior latex matching topcoat.
    c. Topcoat: Interior latex.

2. Latex Over Alkyd Primer System: MPI INT 6.3U.

    a. Prime Coat: Interior alkyd primer/sealer.
    b. Intermediate Coat: Interior latex matching topcoat.
    c. Topcoat: Interior latex.

3. Alkyd System: MPI INT 6.3B.

    a. Prime Coat: Interior alkyd primer/sealer.
    b. Intermediate Coat: Interior alkyd matching topcoat.
    c. Topcoat: Interior alkyd.

4. Institutional Low-Odor/VOC Latex System: MPI INT 6.3V.

    a. Prime Coat: Interior latex-based wood primer.
    b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
    c. Topcoat: Institutional low-odor/VOC interior latex.

5. High-Performance Architectural Latex System: MPI INT 6.3A.

    a. Prime Coat: Interior latex-based wood primer.
    b. Intermediate Coat: High-performance architectural latex matching topcoat.
    c. Topcoat: High-performance architectural latex.

I. Dimension Lumber Substrates, Nontraffic Surfaces.

1. Latex System: MPI INT 6.2D.

    a. Prime Coat: Interior latex-based wood primer.

b. Intermediate Coat: Interior latex matching topcoat.
c. Topcoat: Interior latex.

2. Latex Over Alkyd Primer System: MPI INT 6.2A.

a. Prime Coat: Interior alkyd primer/sealer.
b. Intermediate Coat: Interior latex matching topcoat.
c. Topcoat: Interior latex.

3. Alkyd System: MPI INT 6.2C.

a. Prime Coat: Interior alkyd primer/sealer.
b. Intermediate Coat: Interior alkyd matching topcoat.
c. Topcoat: Interior alkyd.

4. Institutional Low-Odor/VOC Latex System: MPI INT 6.2L.

a. Prime Coat: Interior latex-based wood primer.
b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
c. Topcoat: Institutional low-odor/VOC interior latex.

5. High-Performance Architectural Latex System: MPI INT 6.2B.

a. Prime Coat: Interior alkyd primer/sealer.
b. Intermediate Coat: High-performance architectural latex matching topcoat.
c. Topcoat: High-performance architectural latex.

J. Gypsum Board Substrates:

1. Latex System: MPI INT 9.2A.

a. Prime Coat: Interior latex **primer/sealer or matching topcoat**.
b. Intermediate Coat: Interior latex matching topcoat.
c. Topcoat: Interior latex.

2. Alkyd Over Latex Primer System: MPI INT 9.2C.

a. Prime Coat: Interior latex primer/sealer.
b. Intermediate Coat: Interior alkyd matching topcoat.
c. Topcoat: Interior alkyd.

3. Institutional Low-Odor/VOC Latex System: MPI INT 9.2M.

a. Prime Coat: Interior latex primer/sealer.
b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
c. Topcoat: Institutional low-odor/VOC interior latex.

4. High-Performance Architectural Latex System: MPI INT 9.2B.

a. Prime Coat: Interior latex primer/sealer.
b. Intermediate Coat: High-performance architectural latex matching topcoat.
c. Topcoat: High-performance architectural latex.

K. Plaster Substrates:

1. Latex System: MPI INT 9.2A.

a. Prime Coat: Interior latex.
b. Intermediate Coat: Interior latex matching topcoat.
c. Topcoat: Interior latex.

2. Latex Over Alkyd Primer System: MPI INT 9.2K.

a. Prime Coat: Interior alkyd primer/sealer.
b. Intermediate Coat: Interior latex matching topcoat.
c. Topcoat: Interior latex.

3. Alkyd Over Latex Primer System: MPI INT 9.2C.

a. Prime Coat: Interior latex primer/sealer.
b. Intermediate Coat: Interior alkyd matching topcoat.
c. Topcoat: Interior alkyd.

4. Institutional Low-Odor/VOC Latex System: MPI INT 9.2M.

a. Prime Coat: Interior latex primer/sealer.
b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
c. Topcoat: Institutional low-odor/VOC interior latex.

5. High-Performance Architectural Latex System: MPI INT 9.2B.

a. Prime Coat: Interior latex primer/sealer.
b. Intermediate Coat: High-performance architectural latex matching topcoat.
c. Topcoat: High-performance architectural latex.

L. Spray-Textured Ceiling Substrates:

1. Latex (Flat) System: MPI INT 9.1A, spray applied.

a. Prime Coat: Interior latex.
b. Topcoat: Interior latex (flat).

2. Latex System: MPI INT 9.1E, spray applied.

a. Prime Coat: Interior latex matching topcoat.
b. Intermediate Coat: Interior latex matching topcoat.
c. Topcoat: Interior latex.

3. Latex Over Alkyd Primer System: MPI INT 9.1B.

a. Prime Coat: Interior alkyd primer/sealer.
b. Topcoat: Interior latex.

4. Alkyd (Flat) System: MPI INT 9.1C.

a. Prime Coat: Interior alkyd (flat).
b. Topcoat: Interior alkyd (flat).

5. Alkyd System: MPI INT 9.1D.

a. Prime Coat: Interior alkyd primer/sealer.
b. Intermediate Coat: Interior alkyd matching topcoat.
c. Topcoat: Interior alkyd

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