

DIVISION 9

FINISHES

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SECTION 09111

NON-LOAD-BEARING STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes non-load-bearing steel framing members for the following applications:
 - 1. Interior framing systems (e.g., supports for partition walls, framed soffits, furring, etc.).
 - 2. Interior suspension systems (e.g., supports for ceilings, suspended soffits, etc.).
- B. Related Sections include the following:
 - 1. Division 9 Section "Gypsum Board" for gypsum assembly installed on metal stud system.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Deflection Clip System: Submit deflection clip, track and system indented to be used for approval prior to installation.

1.3 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, 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.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Manufacturers: Subject to compliance with requirements, manufacturers offering acceptable products include, but are not limited to the following:
 - 1. Steel Framing and Furring:
 - a. Aegis Metal Framing.
 - b. Clark Western building systems.
 - c. Dietrich Metal Framing.
 - d. Telling Industries
 - 2. Grid Suspension Assemblies:
 - a. United States Gypsum Company.
 - b. Chicago Metallic Corporation.
 - c. Armstrong World Industries

2.2 NON-LOAD-BEARING STEEL FRAMING, GENERAL

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.
 - 2. Protective Coating: ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized, unless otherwise indicated.

2.3 SUSPENSION SYSTEM COMPONENTS

- A. General: Provide components of sizes indicated but not less than that required to comply with ASTM C 754.
- B. Tie Wire: ASTM A 641, Class 1 zinc coating, soft temper, 0.0625-inch- (1.59-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.
- C. Wire Hangers: ASTM A 641, Class 1 zinc coating, soft temper, 0.162-inch (4.12-mm) diameter.
- D. Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.0598 inch (1.5 mm) and minimum 7/16-inch- (11.1-mm-) wide flanges, with ASTM A 653, G60 hot-dip galvanized coating:
 - 1. Carrying Channels: 1-1/2 inches (38 mm) deep, unless otherwise indicated.
 - 2. Furring Channels: 3/4-inch deep, unless otherwise indicated.
- E. Furring:
 - 1. Steel Studs for Furring: ASTM C 645, with flange edges bent back 90 deg ad double over to form 3/16-inch minimum lip (return). Use for primary suspension members where indicated.
 - a. Minimum Base-Metal Thickness:
 - 1) 0.0359-inch (20 gage) for studs less than 4 inches in depth.
 - 2) 0.0299-inch (22 gage) for studs 4-inches or greater in depth.
 - b. Depth: As indicated.
 - c. Protective coating: ASTM A 653, G 40 (ASTM A 653M, Z90) hot-dip galvanized.
 - 2. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch (22.2 mm) deep. Use for secondary suspension members where indicated.
 - a. Minimum Base Metal Thickness: 0.0179 inch (0.45 mm).
 - b. Depth: 7/8-inch.
 - c. Protective coating: ASTM A 653, G 40 (ASTM A 653M, Z90) hot-dip galvanized.
 - 3. Resilient Furring Channels: Manufacturer's standard product designated to reduce sound transmission, fabricated from steel sheet complying with ASTM A 653 or ASTM A 568 to form 1/2-inch- (12.7-mm-) deep members.
 - a. Single or Double-Leg Configuration: Asymmetric-shaped channel with face connected to a single flange by a single-slotted leg (web) or hat-shaped channel, with 1-1/2-inch wide face connected to flanges by double-slotted or expanded-metal legs.
- F. Grid Suspension System for Ceilings: Manufacturer's standard direct-hung grid suspension system complying with ASTM C 645 and composed of main beams and cross furring members that interlock to form a modular supporting network.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Armstrong World Industries, Inc.; Drywall Grid Systems.
 - b. Chicago Metallic Corporation; 630 or 630 Fire Front Drywall Furring System.
 - c. USG Corporation; Drywall Suspension System.

2.4 STEEL FRAMING FOR FRAMED ASSEMBLIES

- A. General: Provide steel framing members complying with the following requirements:
 - 1. Component sizes and spacing: As indicated but not less than that required to comply with ASTM C 754 for maximum deflection of L/360 at 5 pounds per square feet lateral loading.
 - 2. Protective Coating: ASTM A 653, G60, hot-dip galvanized.
- B. Steel Studs and Runners: ASTM C 645, with flange edges of studs bent back 90 degrees and doubled over to form 3/16-inch wide minimum lip (return) and complying with the following requirements for minimum thickness of base (uncoated) metal and for depth:
 - 1. Nominal 20 gage minimum unless otherwise indicated on Drawings.
 - 2. Nominal 20 gage minimum at walls receiving ceramic tile finish.
 - 3. Nominal 16 gage minimum at door jambs (two studs at each jamb)
 - 4. Depth: As indicated on drawings.
- C. Vertical Deflection: All interior non load-bearing steel framing shall be constructed for deflection. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Cut stud 1/2-inch short of full height to avoid deflection transfer to studs. Install studs and top deflection track and/or firestop tracks in accordance with manufacturer's instructions. Provide extended leg ceiling runners.
 - 1. Install deflection clips at all deflection tracks.
 - 2. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
- D. Deflection and Firestop Tracks (for fire-rated partitions): Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-rated assembly. Comply with requirements of ASTM C 645 except configuration, of thickness indicated for studs and in width to accommodate depth of studs indicated with flanges offset at midpoint to accommodate gypsum board thickness.
 - 1. Provide for minimum vertical deflection specified above.
- E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated complying with ASTM A 653 or ASTM 568, length and width as indicated, and with a minimum base metal (uncoated) thickness as follows:
 - 1. Thickness: 0.027-inch unless otherwise indicated or otherwise required by manufacturer of items being installed.
- F. Cold-Rolled Channel Bridging: 0.0538-inch (1.37-mm) bare-steel thickness, with minimum 1/2-inch- (12.7-mm-) wide flanges.
 - 1. Depth: 1-1/2 inches (38.1 mm).
 - 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches (38.1 by 38.1 mm), 0.068-inch- (1.73-mm-) thick, galvanized steel.
- G. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
 - 1. Minimum Base Metal Thickness: 0.0179 inch (0.45 mm).
 - 2. Depth: 7/8 inch (22.2 mm).

2.5 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power and other properties required to fasten steel members to substrates.

2. Cast-In-Place and Post-Installed Anchors in Concrete: Anchors of type indicated below, fabricated from corrosion-resistant materials, with holes or loops for attaching hanger wires, and with capability to sustain, without failure, a load equal to 5 times the imposed by ceiling construction, as determined from testing per ASTM E 488 conducted by a qualified independent testing agency.
 3. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.
- B. Isolation Strip at Exterior Walls: Provide the following:
1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

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. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- B. Coordination with Sprayed Fire-Resistive Materials:
1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches (600 mm) o.c.
 2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

3.3 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.
1. Gypsum Board: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING SUSPENSION SYSTEMS

- A. Install suspension system components in sizes and spacing indicated on Drawings, but not less than those required by referenced installation standards for assembly types and other assembly components indicated.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
 - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
 - a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
 - 3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
 - 4. Do not attach hangers to steel roof deck.
 - 5. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
 - 6. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
 - 7. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- E. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
- F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3.5 INSTALLING FRAMED ASSEMBLIES

- A. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- B. Install studs so flanges within framing system point in same direction. Space studs as indicated on the drawings.

- C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
1. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb, unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (12.7-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
 2. Other Framed Openings: Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 3. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
 4. Curved Partitions:
 - a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
 - b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of not less than 2 studs at ends of arcs, place studs 6 inches (150 mm) o.c.
- D. Direct Furring:
1. Screw to wood framing.
 2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.
- E. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

END OF SECTION

SECTION 09250

GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Interior gypsum board assemblies.
 - 2. Interior paperless gypsum board
 - 3. Partition identification (stenciling fire-rated walls).
- B. Related Sections include the following:
 - 1. Division 6 Section "Rough Carpentry" for wood framing and furring that supports gypsum board.
 - 2. Division 7 Section "Building Insulation" for sound attenuation insulation.
 - 3. Division 7 Section "Joint Sealant" for acoustical sealant.
 - 4. Division 9 Section "Non-Load-Bearing Steel Framing" for non-structural framing and suspension systems that support gypsum board.
 - 5. Division 9 Section "Ceramic Tile" for cementitious backer units installed as substrates for ceramic tile and at overhead locations as indicated on the drawings.
 - 6. Division 9 painting Sections for primers applied to gypsum board surfaces.

1.2 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- (300-mm-) long length for each trim accessory indicated.

1.3 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.

1.4 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.

1.5 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 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. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. USG Corporation.
 - b. G-P Gypsum.
 - c. National Gypsum Co.
- B. Type X:
 - 1. Thickness: 5/8 inch (15.9 mm).
 - 2. Long Edges: Tapered.
 - 3. Provide sag-resistant for ceiling application.
- C. Mold Resistant Gypsum: Coated glass mat-faced, moisture-resistant, treated core gypsum wallboard. Physical properties conforming to the applicable sections of ASTM C 1177 and ASTM C 630.
 - 1. Core: 5/8 inch (15.9 mm), Type X.
 - 2. Long Edges: Tapered.
 - 3. Products:
 - a. Georgia-Pacific Company; USG - Mold tough gypsum panels (Basis of Design)
 - b. National Gypsum Co.
 - 4. Location: Provide at all locations except where impact resistant is specified.
- D. Abuse-Resistant/High Impact Type: Manufactured to produce greater resistance to surface indentation, through-penetration (impact resistance), and abrasion than standard, regular-type and Type X gypsum board.
 - 1. Core: 5/8 inch (15.9 mm), Type X.
 - 2. Long Edges: Tapered.
 - 3. Products:
 - a. USG Corporation; Fiberock Brand Panel VHI Abuse-Resistant Gypsum Panels.
 - b. National Gypsum Co.; Hi Impact Brand Wallboard.
 - c. G-P Gypsum; ToughRock.
 - d. Prior approved equal.
 - 4. Location: Provide at all corridors, kitchen, interview rooms and roll call room.

2.2 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 - 1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
 - 2. Shapes:
 - a. Cornerbead: Use at Outside corners, unless noted otherwise.
 - b. Bullnose bead.

- c. LC-Bead: J-shaped; exposed long flange receives joint compound. Use LC-beads for edge trim unless otherwise indicated.
- 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: Provide one-piece control joint formed with V-shaped slot, with removable strip covering slot opening.

2.3 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 1. Interior Gypsum Wallboard: Paper reinforcing tape. Setting-type factory-packaged, job-mixed, chemical-hardening powder products formulated for prefilling gypsum board joints.
 2. Paperless Gypsum Wallboard: Provide fiberglass tape as recommended per 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.

2.4 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: Comply with ASTM C 1002 for the following applications:
 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
 - a. Fastening gypsum board to wood members.
 - b. Fastening gypsum board to gypsum board.
 2. Gypsum board nails: ASTM C 514.

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. Damaged Gypsum Board: Gypsum board products that have become exposed to rain or water ponding at the floor line shall be replaced at the discretion of the Architect to an appropriate level, but not less than 4 feet above the finish floor.
- C. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 CEILING AND OVERHEAD PREPARATION

- A. Ceiling Anchorages: Coordinate ceiling suspension systems with overhead structural assemblies to ensure that provisions to receive ceiling hangers will develop their full strength and are at spacing required to support ceilings.
 - 1. Furnish concrete inserts and similar devices to other trades well in advance of time needed for installation.

3.3 APPLYING AND FINISHING PANELS, GENERAL

- A. 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.
- B. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
- C. 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.
- D. Form control and expansion joints with space between edges of adjoining gypsum panels.
- E. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.
- F. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- G. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- H. 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.

3.4 APPLYING INTERIOR GYPSUM BOARD

- A. General: Comply with ASTM 840 and manufacturer's recommendation.
- B. Install interior gypsum board in the following locations:
 - 1. Type X: Where required for fire-resistance-rated assembly and at all gypsum board locations unless otherwise indicated on the drawings.
 - 2. Paperless Type: Provide at all plumbing wall applications, unless noted otherwise.

- C. 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 horizontally (perpendicular to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - 3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.
- D. Multilayer Application:
 - 1. On partitions/walls, apply gypsum board 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. Stagger joints on opposite sides of partitions.
 - 2. Fastening Methods: Fasten base layers with screws; fasten face layers with adhesive and supplementary fasteners.

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, unless otherwise indicated.
 - 2. Bullnose Bead: Use at outside corners and where indicated.
 - 3. LC-Bead: Use at exposed panel edges.
 - 4. L-Bead: Use where indicated.
 - 5. U-Bead: Use at exposed panel edges.

3.6 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, (both directions) 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: Not used.
 - 4. Level 4: Use for surfaces receiving flat or eggshell/low luster paints over smooth finish.
 - a. Primer and its application to surfaces are specified in other Division 9 Sections.
 - 5. Level 5: Use on walls/ceilings and on gypsum board surfaces indicated to receive semi-gloss or gloss finish and as directed for skim coat and smooth finish.
 - a. Primer and its application to surfaces are specified in other Division 9 Sections.

- E. Level 1 Finish: Where level 1 gypsum board finish is indicated, embed in joint compound.
- F. Level 2 Finish: Where level 2 gypsum board finish indicated, embed tape in joint compound and apply first coat of joint compound.
- G. Level 3 Finish: Where level 3 gypsum board finish indicated, embed tape in joint compound and apply first and second coat of joint compound.
- H. Level 4 Finish: Where level 4 gypsum board finish is indicated, embed tape in joint compound and apply first, fill (second) and finish (third) coat of joint compound over joints, angles, fastener heads, and accessories using the following joint compounds (not including prefill), and sand between coats and after last coat:
 - 1. Embedding and First Coat: Ready mixed, drying-type, all-purpose or taping compound.
 - 2. Fill (Second) Coat: Ready-mixed, drying-type, all-purpose or taping compound.
 - 3. Finish (Third) Coat: Ready-mixed, drying-type, all-purpose or taping compound.
- I. Level 5 Finish: Where level 5 gypsum board finish is required, provide finish specified for level 4 plus a thin, uniform skim coat of joint compound over entire surface. Use joint compound specified for the finish (third coat). Produce surface free of tool marks and ridges ready for decoration of type indicated.
- J. Control Joint Finishing: At all control joints and at all joints between high impact wall panels use manufacturer's recommended setting compound manufacturers recommended tape.

3.7 PARTITION IDENTIFICATION

- A. Stenciling: Stencil the wall rating on each side of wall above the ceiling. Letters shall be minimum 2-inch high and labeled at 20 foot centers.
 - 1. Label as "FIRE", "SMOKE" and "Number of hours"
 - 2. Non-rated walls, which extend to deck shall be labeled "NO WALL RATING REQUIRED."

3.8 CLEANING AND PROTECTION

- A. Cleaning: Promptly remove any residual joint compound from adjacent surfaces.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

SECTION 09255
EXTERIOR SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Wall sheathing.
 - 2. Roof sheathing.
 - 3. Sheathing joint-and-penetration treatment.
- B. Related work specified elsewhere:
 - 1. Section 04200 - Unit Masonry
 - 2. Section 05400 - Cold-Formed Metal Framing.
 - 3. Section 07270 - Fluid Applied Membrane Air Barriers.
 - 4. Section 07410 - Metal Roof Panels
 - 5. Section 07413 - Metal Wall Panels
 - 6. Section 07525 - Modified Bitumen Roofing

1.2 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1.3 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Stack plywood and other panels flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

1.5 WARRANTY

- A. Materials Warranty: Provide sheathing manufacturer's standard warranty covering sheathing materials for five (5) years commencing from date of Substantial Completion.
- B. Weathering Warranty: Provide sheathing manufacturer's standard warranty covering for in-place exposure damage to sheathing for six months commencing on date of purchase by Contractor.

PART 2 - PRODUCTS

2.1 WALL SHEATHING

- A. Glass-Mat Gypsum Wall Sheathing: ASTM C 1177/C 1177M.
 - 1. Product: Subject to compliance with requirements, provide one of the following:
 - a. Georgia Pacific; Dens-Glass Gold.
 - b. USG; Securock.
 - c. CertainTeed; GlasRoc.
 - 2. Type and Thickness: Type X, 5/8-inch (15.9-mm) thick.

2.2 ROOF SHEATHING

- A. Composite glass-mat gypsum Sheathing: Nonstructural glass mat faced gypsum panel manufacture in accordance with ASTM C 1177 with water-resistant treated core.
 - 1. Products: Subject to compliance with requirements provide the following:
 - a. Georgia Pacific; Dens-Deck (5/8 inch thick)
 - b. Prior approved equal.
 - 2. Characteristics:
 - a. Size: Minimum 1/4 inch thick by 4 feet by longest length possible with square ends.
 - b. Fire-Resistance: 5/8 inch thick Type X Roof Board - Flame spread 0; Smoke developed 0; when tested in accordance with ASTM E 84.
 - 3. Provide roof board at roofing manufacturer's request to create an assembly to withstand wind and fire load requirements.

2.3 FASTENERS

- A. General: Provide stainless steel fasteners of size and type recommended by sheathing manufacturer.

2.4 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

- A. Sheathing Tape: Minimum 2-inch wide self-adhering 10x10 glass-mesh tape, of type recommended by sheathing and tape manufacturers.
- B. Joint Compound: Setting-type joint compound adhesive that permanently bonds to glass mat sheathing.
- C. Sealant: Provide sealant as recommended per manufacturer.

2.5 MISCELLANEOUS MATERIALS

- A. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 or ASTM D 3498 that is approved for use indicated by manufacturers of both adhesives and panels.
- B. Flexible Flashing: Self-adhesive, rubberized-asphalt compound, bonded to a high-density, polyethylene film to produce an overall thickness of not less than 0.025 inch (0.6 mm).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Securely attach to substrate by fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."
- B. Coordinate sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that exclude exterior moisture.
- C. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

3.2 SHEATHING INSTALLATION

- A. Provide sheathing where indicated on drawings. Install sheathing in accordance with manufacturer's instructions and applicable instructions in GA-253 and ASTM C 1280.
 - 1. Fasten gypsum sheathing to cold-formed metal framing with screws.
 - 2. Install boards with a 3/8-inch (9.5-mm) gap where non-load-bearing construction abuts structural elements.
 - 3. Install boards with a 1/4-inch (6.4-mm) gap where they abut masonry or similar materials.
- B. Use maximum lengths possible to minimize number of joints.
- C. Cut boards at penetrations, edges and other obstruction of work; fit tightly against abutting construction, unless noted otherwise.
- D. Coordinate sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed exterior wall assembly.
- E. Drive fasteners to bear tight against and flush with surface of sheathing. Do not countersink. Apply fasteners so screw heads bear tightly against face of sheathing boards but do not cut into facing.
- F. Horizontal installation: Abut ends of boards over center of studs or framing and stagger end joints of adjacent boards not less than one stud spacing. Attach boards at perimeter and within field of board to each stud as recommended per manufacturer.
- G. Vertical installation: Install board vertical edges centered over flanges of steel studs. Abut ends and edges of each board with those of adjacent boards. Screw-attach boards at perimeter and within field of board to each steel stud.
- H. Seal Sheathing Joints: Seal joints according to sheathing manufacturer's written recommendation, including APA for plywood sheathing.
 - 1. If required apply glass mesh tape to sheathing board joints, and apply and trowel silicone emulsion sealant to embed sealant in entire face of tape.
 - 2. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.
- I. Cover sheathing as soon as practical after installation to prevent deterioration from wetting.

3.3 PROTECTION

- A. Sheathing: Protect sheathing by covering exposed exterior surface of sheathing within manufacturer's warranty time recommended.

END OF SECTION

SECTION 09310

CERAMIC TILE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Ceramic tile for floors and walls; latex-portland cement mortar; polymer modified cement grout with sealer; thin-set and mortar bed applications.
 2. Mortar, grout, and accessories.
 3. Provide waterproof membranes at wet areas and as required per TCA standards.
 4. Cementitious backer units for application of tile and overhead areas as indicated on the drawings.
 5. Shower drains as indicated on the drawings.
- B. Related Sections:
1. Section 03300 - Cast-In-Place-Concrete: Monolithic slab finishes for tile substrates.
 2. Section 07920 - Joint Sealants: Sealing of tile expansion joints and where tile abuts plumbing fixtures, countertops, and items penetrating tile walls, wainscots, etc.
 3. Section 09250 - Gypsum Board: Gypsum board substrate for tile finishes.
 4. Division 15: Plumbing fixtures and floor drains.

1.2 PERFORMANCE REQUIREMENTS

- A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:
1. Level Surfaces: 0.6.
 2. Step Treads: 0.6.
 3. Ramp Surfaces: 0.8.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications and installation recommendations for each type of product proposed.
- B. Shop Drawings: Indicate tile patterns and locations and widths of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
1. Locate precisely each joint and crack in tile substrates by measuring, record measurements on shop drawings, and coordinate them with tile joint locations, in consultation with Architect.
- C. Samples: Sets showing full range of color and texture variations, in sets showing full range of variations expected.
1. Each type and composition of tile and for each color and texture required, at least 12 inches square, mounted on plywood or hardboard backing and grouted.
 2. Full-size units of each type of trim and accessory for each color required.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility for Tile: For tiles to be used for bathrooms throughout the project select a single source, which matches color, grade, finish, type, composition and variety of tile such as American Olean as called out on the Finish Schedule. For tiles to be used for fountains throughout the project, a single source will not be required. Select a source which matches color, grade, finish, type, composition, and variety of tile such as American Olean and Crossville as called out on the Finish Schedule and Ceramic Tile Schedule.
- B. Single-Source Responsibility for Setting and Grouting Materials: Obtain ingredients of a uniform quality from one manufacturer for each cementitious and admixture component and from one source or producer for each aggregate. Grouting materials shall include coloring agents to match grout to tiles for all fountains included in the project.
- C. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.
- D. Regulatory Requirements: All specifications for ceramic tile installations must conform to local building codes, ordinances, trade practices and climatic conditions.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Storage: Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.
- B. Protection: Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

1.6 PROJECT CONDITIONS

- A. Environmental Conditions: Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- B. Ventilation: Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.
- C. Temperature: Maintain temperatures at 50 deg F (10 deg C) or more in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

1.7 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials that match products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Approved Products/Manufacturers: Ceramic and porcelain tile products and manufacturers are listed in the "Finish Legend" on the drawings.
- B. Approved Manufacturers for Tile Accessories: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Acrylic Emulsion for Latex Portland Cement Mortars and Grouts:
 - a. BOSTIK CONSTRUCTION PRODUCTS DIV.
 - b. C-CURE CHEMICAL CO.
 - c. LATICRETE INTERNATIONAL, INC.
 - d. MAPEI, INC.

2.2 PRODUCTS, GENERAL

- A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.
- B. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grouting.
- C. Colors, Textures, and Patterns: Provide selections as indicated in the "Ceramic Tile Schedule" at the end of this Section.
 - 1. Provide tile trim and accessories that match color and finish of adjoining flat tile unless otherwise indicated.
- D. Factory Blending: For tile exhibiting color variations within the ranges selected during sample submittals, blend tile in factory and package accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples.
- E. Mounting: Where factory-mounted tile is required, provide back or edge-mounted tile assemblies as standard with manufacturer unless another mounting method is indicated.

2.3 TILE PRODUCTS

- A. Tile Products: Refer to the "Finish Legend" on the Drawings.
- B. Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with following requirements:
 - 1. Size: As indicated, coordinated with sizes and coursing of adjoining flat tile where applicable.
 - 2. Shapes: As follows, selected from manufacturer's standard shapes:
 - a. Shapes: As follows, selected from manufacturer's standard shapes:
 - b. Wainscot Cap: Surface Bullnose.
 - c. External Corners: Bullnose shape with a radius of at least ½ inch unless otherwise indicated.
 - d. Internal Corners: Coved (round-in) styled; use coved base and cap angle pieces designed to member with stretcher shapes.

2.4 WATERPROOFING MEMBRANE

- A. Floor and Wall Waterproof Membrane: Manufacturer's standard sheet membrane material complying with ASTM C 627 embedding in a latex portland cement mortar bond coat; use as the substrate for latex portland cement mortar setting bed.
 - 1. Approved Products/Manufacturers:
 - a. "Nobleseal TS"; THE NOBLE COMPANY.
 - b. "Strataflex Thin-Bed Waterproof Membrane"; NATIONAL APPLIED CONSTRUCTION PRODUCTS.

2.5 MORTAR

- A. Portland Cement Mortar Bed Method: Mortar consisting of ASTM C150 Portland Cement with latex additive, ASTM C144 sand and potable water complying with quality established by ANSI A108.1.
- B. Thin-Set Method: ANSI A118.4, Latex Portland Cement Mortar.

2.6 GROUT

- A. Polymer modified cement grout (for walls, floors, interior and exterior): ANSI A118.7, , as certified by mortar manufacturer for intended use. Grout color as selected by Architect form manufacturer's full range of colors.
 - 1. Manufacturer: Custom Building Products.
 - a. Product: Prism SureColor Grout

2.7 GROUT AND TILE SEALERS

- A. Silicone Grout Sealers: Colorless, penetrating, highly polymerized resin for use on grout joints and unglazed tile.
 - 1. Approved Products/Manufacturers:
 - a. "Magic Seal"; BOSTIK HYDROMET.
 - b. "Silicone Grout Sealer"; L & M MANUFACTURING CO.

2.8 CEMENTITIOUS BACKER UNITS

- A. Approved Products/Manufacturers: Subject to compliance with requirements provide one of the following:
 - 1. "DUROCK Interior Cement Board"; UNITED STATES GYPSUM CO.
 - 2. "DomCrete Cementitious Tile-Backer Board"; DOMTAR GYPSUM.
 - 3. "Util-A-Crete Concrete Backer Board"; FINPAN, INC.
 - 4. "Glas-crete Cementitious Backer Board"; GLASCRETE, INC.
 - 5. "Wonder-Board"; GLASCRETE, INC.
- B. Description: Provide cementitious backer units complying with ANSI A118.9, in maximum lengths available to minimize end-to-end butt joints, and as follows:
 - 1. Manufacturer's standard thickness but not less than 7/16 inch, unless otherwise indicated.
 - 2. Manufacturer's standard width, but not less than 32 inches.
- C. Joint Treatment Material: Provide materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.

1. For filling joints and treating fasteners of cementitious backer units for application of ceramic tile, use materials recommended by the board manufacturer.
- D. Joint Tape for Cementitious Backer Units: Polymer-coated, open glass-fiber mesh.
- E. Joint Compound for Cementitious Backer Unit: Material recommended by cementitious backer unit manufacturer.

2.9 MIXING MORTARS AND GROUT

- A. Mixing: Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

2.10 SHOWER DRAINS

- A. Provide trench drain Model No. Ultimate 100 by ACO or prior approved equal. Drainage system shall be constructed of ploycrete polymer concrete channel with galvanized steel grating. Install per manufacturer's recommendations and as located on the drawings in the showers.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examination: Examine substrates and areas where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 1. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.
 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in, or behind, tile has been completed before installing tile.
- B. Acceptance: Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Blending: For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.

- B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated.
- C. Workmanship: Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
 - 1. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile.
- D. Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths unless otherwise shown.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work.
- E. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.
 - 1. Locate joints in tile surfaces directly above joints in concrete substrates.
 - 2. Prepare joints and apply sealants to comply with requirements of "Section 07920 - Joint Sealants."
- F. Grouting: Grout tile to comply with the requirements of ANSI A108.10 for latex portland cement grout.
- G. Mildew-Resistant Sealant: Use where tile abuts plumbing fixtures, countertops, and items penetrating tile walls, wainscots and bases, such as pipes and outlets. Refer to "Section 07920 - Joint Sealants".
- H. Tile Backer Board: At wall tile applications, install backer board over metal studs in accordance with manufacturer's instructions. Tape joints and corners; cover with skim coat of dry-set mortar to a featheredge.

3.4 CERAMIC TILE INSTALLATION METHODS

- A. General: Install mortar bed, tile, and grout in accordance with manufacturer's instructions and TCA Handbook for Ceramic Tile Installation.
 - 1. Floors at Showers - Mortar Bed over w.p. membrane: TCA #B414 Sim
 - 2. Floors - Thin-Set: TCA # F115
 - 3. Walls (Cement Backer Board) - Thin-Set: TCA # W244

3.5 CLEANING AND PROTECTION

- A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove latex portland cement grout residue from tile as soon as possible.
- B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

1. Joints shall be uniform in width; straight, level, plumb and aligned in both directions; neatly grouted without irregularities, holes and gaps.
 2. Tile, trim, and stone thresholds shall be the colors, patterns and textures indicated for each location, and shall match the approved samples.
 3. Exposed surfaces of tile and trim units shall be uniform and even in plane, without offsets over 1/32-inch in adjacent units.
 4. Cut edges of tile and trim units shall be concealed by joint grout, sealant, or overlapping escutcheons of penetrating items.
- C. Grout and Tile Sealer: After grout has fully cured, apply sealer to grout joints and unglazed tile surfaces in accordance with manufacturer's instructions.
- D. Protection: Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration.
1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
 2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.
- E. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION

SECTION 09402

EPOXY TERRAZZO FLOORING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Thin-set epoxy-resin terrazzo flooring and base.
- B. Related Sections:
 - 1. Division 07 Section "Joint Sealants" for sealants installed with terrazzo.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include terrazzo installation requirements. Include plans, elevations, sections, component details, and attachments to other work.
- C. Samples: For each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected.
- D. Installer certificates.
- E. Qualification data.
- F. Material certificates.
- G. Maintenance data.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who is acceptable to terrazzo manufacturer to install manufacturer's products.
 - 1. Engage an installer who is certified in writing by terrazzo manufacturer as qualified to install manufacturer's products.
 - 2. Engage an installer who is a contractor member of NTMA.
- B. NTMA Standards: Comply with NTMA's "Terrazzo Specifications and Design Guide" and with written recommendations for terrazzo type indicated unless more stringent requirements are specified.
- C. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
- D. Preinstallation Conference: Conduct conference at Project site.

1.4 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting terrazzo installation.
- B. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during terrazzo installation.
- C. Close spaces to traffic during terrazzo application and for not less than 24 hours after application unless manufacturer recommends a longer period.

- D. Control and collect dust produced by grinding operations. Protect adjacent construction from detrimental effects of grinding operations.
 - 1. Provide dustproof partitions and temporary enclosures to limit dust migration and to isolate areas from noise.

PART 2 - PRODUCTS

2.1 EPOXY-RESIN TERRAZZO

- A. Products: Subject to compliance with requirements, provide one of the following:
 - 1. American Tile & Terrazzo Co., Inc. (Basis-of-design)
 - 2. General Polymers Corporation
 - 3. Key Resin Company; Key Epoxy Terrazzo.
 - 4. Terrazzo & Marble Supply Companies; Terroxy Resin Systems.
- B. Materials:
 - 1. Flexible Reinforcing Membrane: Manufacturer's resinous membrane for substrate crack preparation and reflective crack reduction.
 - a. Reinforcement: Fiberglass scrim.
 - 2. Primer: Manufacturer's product recommended for substrate and use indicated.
 - 3. Epoxy-Resin Matrix: Manufacturer's standard recommended for use indicated and in color required for mix indicated.
 - a. Physical Properties without Marble Chips and Aggregates:
 - 1) Hardness: 60 to 85 per ASTM D 2240, Shore D.
 - 2) Minimum Tensile Strength: 3000 psi (20.7 MPa) per ASTM D 638 for a 2-inch (51-mm) specimen made using a "C" die per ASTM D 412.
 - 3) Minimum Compressive Strength: 10,000 psi (6.9 MPa) per ASTM D 695, Specimen B cylinder.
 - 4) Chemical Resistance: No deleterious effects by contaminants listed below after seven-day immersion at room temperature per ASTM D 1308.
 - a) Distilled water.
 - b) Mineral water.
 - c) Isopropanol.
 - d) Ethanol.
 - e) 0.025 percent detergent solution.
 - f) 1.0 percent soap solution.
 - g) 10 percent sodium hydroxide.
 - h) 10 percent hydrochloric acid.
 - i) 30 percent sulfuric acid.
 - j) 5 percent acetic acid.
 - b. Physical Properties with Marble Chips and Aggregates: For resin blended with Georgia white marble, ground, grouted, and cured per requirements in NTMA's "Terrazzo Specifications and Design Guide," comply with the following:
 - 1) Flammability: Self-extinguishing, maximum extent of burning 0.25 inch (6.35 mm) per ASTM D 635.
 - 2) Thermal Coefficient of Linear Expansion: 0.0025 inch/inch per deg F (0.0025 mm/mm per 0.5556 deg C) for temperature range of minus 12 to plus 140 deg F (minus 24 to plus 60 deg C) per ASTM D 696.

4. Marble Chips and Aggregates: Complying with NTMA gradation standards for mix indicated and containing no deleterious or foreign matter.
 - a. Abrasion and Impact Resistance: Less than 40 percent loss per ASTM C 131.
 - b. 24-Hour Absorption Rate: Less than 0.75 percent.
 - c. Dust Content: Less than 1.0 percent by weight.
5. Finishing Grout: Resin based.
- C. Terrazzo: Comply with NTMA's "Terrazzo Specifications and Design Guide" and manufacturer's written instructions for matrix and marble-chip proportions and mixing.
 1. Formulated Mix Color and Pattern; Provide the following matrix to match Architects sample:
 - a. Gold Matrix: AT&T Canary Yellow 3469
 - 1) Canary Yellow Marble #1 & #2 chip - 30%
 - 2) Chewela Yellow Marble #1 & #2 chip - 40%
 - 3) Onyn #1 chip - 30%
 - b. Blue Matrix: AT&T Boone Blue 6176
 - 1) Sky Blue Glass #1 chip - 50%
 - 2) Arctic White Glass #1 chip - 30%
 - 3) Ash Gray Glass #1 - 20%
 - c. White Matrix: AT&T Standard White 2001
 - 1) China White Marble #1 chip - 60%
 - 2) Crystal White Glass #1 chip - 40%
 - d. Gray Matrix: AT&T Dauphin Gray 2005
 - 1) Blue Coal Marble #1 & #2 - 70%
 - 2) Crystal Glass #2 - 30%

2.2 STRIP MATERIALS

- A. Divider Strips: L-type angle or T-type, 1/4 inch (6.4 mm) deep.
 1. Material: Provide mill finish aluminum.
 2. Top Width: 1/4 inch (6.4 mm).
- B. Control-Joint Strips: Separate, double L-type angles, positioned back to back, that match material, thickness, and color of divider strips and in depth required for topping thickness indicated.
- C. Accessory Strips: Match divider strip width, material, and color unless otherwise indicated. Use the following types of accessory strips as required to provide a complete installation:
 1. Base-strips for exposed top edge of terrazzo base as indicated on the drawings.
 2. Edge-bead strips for exposed edges of terrazzo as indicated on the drawings.

2.3 MISCELLANEOUS ACCESSORIES

- A. Strip Adhesive: Epoxy-resin adhesive recommended by adhesive manufacturer for this use and acceptable to terrazzo manufacturer.
 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. Anchoring Devices:
 1. Provide mechanical anchoring devices for strip materials as required for secure attachment to substrate.

- C. Patching and Fill Material: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.
- D. Joint Compound: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.
- E. Cleaner: Chemically neutral cleaner with pH factor between 7 and 10 that is biodegradable, phosphate free, and recommended by sealer manufacturer for use on terrazzo type indicated.
- F. Sealer: Slip- and stain-resistant penetrating-type sealer that is chemically neutral with pH factor between 7 and 10; does not affect color or physical properties of terrazzo; is recommended by sealer manufacturer; and complies with NTMA's "Terrazzo Specifications and Design Guide" for terrazzo type indicated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of substances, including oil, grease, and curing compounds, that might impair terrazzo bond. Provide clean, dry, and neutral substrate for terrazzo application.
- B. Concrete Slabs:
 - 1. Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with terrazzo.
 - a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
 - b. Repair damaged and deteriorated concrete according to terrazzo manufacturer's written recommendations.
 - c. Use patching and fill material to fill holes and depressions in substrates according to terrazzo manufacturer's written instructions.
 - 2. Verify that concrete substrates are visibly dry and free of moisture.
 - 3. Moisture Testing:
 - a. Test for moisture by anhydrous calcium chloride method according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
 - b. Test for moisture by relative humidity probe and digital meter method according to ASTM F 2170. Proceed with installation only after substrates have a maximum relative-humidity-measurement reading of 70 to 75 percent in 24 hours.
 - c. Test for moisture content by method recommended in writing by terrazzo manufacturer. Proceed with installation only after substrates pass testing.
- C. Protect other work from dust generated by grinding operations. Control dust to prevent air pollution and comply with environmental protection regulations.
 - 1. Erect and maintain temporary enclosures and other suitable methods to limit dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.
- D. Installation of terrazzo indicates acceptance of surfaces and conditions.

3.2 EPOXY-RESIN TERRAZZO INSTALLATION

- A. General:
 - 1. Comply with NTMA's written recommendations for terrazzo and accessory installation.
 - 2. Place, rough grind, grout, cure grout, fine grind, and finish terrazzo according to manufacturer's written instructions and NTMA's "Terrazzo Specifications and Design Guide."
 - 3. Installation Tolerance: Limit variation in terrazzo surface from level to 1/4 inch in 10 feet (6 mm in 3 m); noncumulative.
 - 4. Ensure that matrix components and fluids from grinding operations do not stain terrazzo by reacting with divider and control-joint strips.
 - 5. Delay fine grinding until heavy trade work is complete and construction traffic through area is restricted.
- B. Thickness: As indicated on the drawings.
- C. Flexible Reinforcing Membrane:
 - 1. Prepare and prefill substrate cracks with membrane material.
 - 2. Install membrane to produce full substrate coverage in areas to receive terrazzo.
 - 3. Reinforce membrane with fiberglass scrim.
 - 4. Prepare membrane according to manufacturer's written instructions before applying substrate primer.
- D. Primer: Apply to terrazzo substrates according to manufacturer's written instructions.
- E. Strip Materials:
 - 1. Divider and Control-Joint Strips:
 - a. Locate divider strips in locations indicated on the drawings.
 - b. Install control-joint strips in locations indicated on the drawings.
 - c. Install strips in adhesive setting bed without voids below strips, or mechanically anchor strips as required to attach strips to substrate, as recommended by strip manufacturer.
 - 2. Accessory Strips: Install accessory strips as required to provide a complete installation.
- F. Fine Grinding: Grind with stones 120 grit or finer until all grout is removed from surface. Repeat rough grinding, grout coat, and fine grinding if large voids exist after initial fine grinding. Produce surface with a minimum of 70 percent aggregate exposure.
- G. Repair: Remove and replace terrazzo areas that evidence lack of bond with substrate. Cut out terrazzo areas in panels defined by strips and replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by Architect.

3.3 CLEANING AND PROTECTION

- A. Cleaning:
 - 1. Remove grinding dust from installation and adjacent areas.
 - 2. Wash surfaces with cleaner according to NTMA's written recommendations and manufacturer's written instructions; rinse surfaces with water and allow to dry thoroughly.

- B. Sealing:
 - 1. Seal surfaces according to NTMA's written recommendations.
 - 2. Apply sealer according to sealer manufacturer's written instructions.
- C. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure that terrazzo is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 09510

ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes acoustical panels and exposed suspension systems for ceilings.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Coordination Drawings: Drawn to scale and coordinating acoustical panel ceiling installation with hanger attachment to building structure and ceiling mounted items:
 - 1. Ceiling suspension assembly members.
 - 2. Method of attaching hangers to building structure.
 - 3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels and special moldings.
 - 4. Minimum Drawing Scale: 1/8 inch = 1 foot (1:96).
- C. Samples: For each acoustical panel, for each exposed suspension system member, for each exposed molding and trim and for each color and texture required.
 - 1. Acoustical Panel: Set of 6-inch square samples of each type, color, pattern and texture.
 - 2. Exposed Suspension System Members, Moldings, and Trim: Set of 12-inch-long sample of each type, finish and color.
- D. Product test reports.
- E. Research/evaluation reports.
- F. Maintenance data.

1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain each system/type of acoustical ceiling panel and supporting suspension system through one source from a single manufacturer.
- B. Fire-Test-Response Characteristics:
 - 1. Fire-Resistance Characteristics: Where indicated, provide acoustical panel 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: Acoustical panels complying with ASTM E 1264 for Class A materials, when tested per ASTM E 84.
 - a. Smoke-Developed Index: 450 or less.
- 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. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- D. Preinstallation Conference: Conduct conference at Project site.

1.4 PROJECT CONDITIONS

- A. Environmental Limitation: Do not install acoustical panel 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 levels indicated for Project when occupied for its intended use.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.5 COORDINATION

- A. Coordinate layout and installation of acoustical panels 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.

1.6 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.

1.7 WARRANTY

- A. Manufacturer shall warrant all components of the acoustical ceiling system against failure associated with humidity including sagging, warping and rusting for a period of thirty (30) years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Approved Products/Manufacturers:
 - 1. USG Corporation (Basis-of-Design)
 - 2. Armstrong Ceilings.
 - 3. Prior approved equal.

2.2 ACOUSTICAL PANEL CEILINGS, GENERAL

- A. Acoustical Panel Standard: Comply with ASTM E 1264.
- B. Metal Suspension System Standard: Comply with ASTM C 635.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated.
- D. Wire Hangers, Braces, and Ties: Zinc-coated carbon-steel wire; ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 - 1. 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 (2.69-mm-) diameter wire.

- E. Antimicrobial Fungicide Treatment: Provide acoustical panels 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.
- F. Provide Hanger Rods or Flat Hangers from mild steel, zinc coated or protected with rust-inhibitive paint as required
- G. Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with 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 panel edge details and suspension system indicated and that match width and configuration of exposed runners, unless otherwise indicated.
 - 2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
 - a. Provide the following products along walls when reveal edge panels require being cut. Perimeter Panel edges shall be field cut with the same reveal as the remainder of the panel to prevent "mouse hole" effect at the wall molding.
- H. Hold-Down Clips: Provide manufacturer's standard #414 or USG #20428 hold-down retention clips spaced 24-inches (610-mm) on center on all cross tees at secure areas as directed by Architect.

2.3 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING: ACT-1

- A. Basis-of-Design Product: Subject to compliance with requirements, provide one of the following:
 - 1. Armstrong Ceiling Systems; Product: Techzone; Ultima No. 1905
 - 2. USG Ceilings; Product: Logix
 - 3. Prior approved equal.
- B. Color: White.
- C. LR: Not less than 0.90.
- D. NRC: Not less than 0.70.
- E. CAC: Not less than 35.
- F. Fire Rating: Class A.
- G. Ceiling Module: 5 feet
- H. On-Center Spacing: 5'-6"
- I. Modular Size: 30 by 30 inches.
- J. Tech strips: Ultima
- K. Light and Diffusers: 6-inches wide. Refer to Division 15 and 16.
- L. Edge/Joint Detail: Beveled Tegular.
- M. Thickness: 3/4 inch (19 mm).
- N. Antimicrobial Treatment: Manufacturer's standard fungicide and bactericide product to retard the growth of mold/mildew.

2.4 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING: ACT-2

- A. Basis-of-Design Product: Subject to compliance with requirements, provide one of the following:
 - 1. Armstrong Ceiling Systems; Product: Dune No. 1775
 - 2. USG Ceilings; Product: Olympia Micro Climaplus 4231
 - 3. Prior approved equal.
- B. Color: White.
- C. LR: Not less than 0.83.
- D. NRC: Not less than 0.50.
- E. CAC: Not less than 35.
- F. Fire Rating: Class A.
- G. Edge/Joint Detail: Beveled Tegular.
- H. Thickness: 5/8 inch.
- I. Size: 24 by 24 inches.
- J. Antimicrobial Treatment: Manufacturer's standard fungicide and bactericide product to retard the growth of mold/mildew.

2.5 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING

- A. Basis-of-Design Product: Subject to compliance with requirements, provide one of the following:
 - 1. Armstrong Ceiling Systems; Product: 9/16-inch Interlude grid.
 - 2. USG Ceilings; Product: 9/16" DXT Centricitee grid
 - 3. Prior approved equal.
- B. Narrow-Face, Capped, Double-Web, Steel 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, not less than G30 (Z90) coating designation, with prefinished 9/16-inch-(15-mm-) wide metal caps on flanges.
 - 1. Structural Classification: Intermediate-duty system.
 - 2. End Condition of Cross Runners: Butt-edge type.
 - 3. Cap Material: Steel cold-rolled sheet.
 - 4. Cap Finish: Painted white.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with ASTM C 636 per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders and comply with layout shown on reflected ceiling plans.

- C. Suspend ceiling hangers from building's structural members, plumb and free from contact with insulation or other objects within ceiling plenum. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers, use trapezes or equivalent devices. 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.
 - 1. Do not support ceilings directly from permanent metal forms or floor deck; anchor into concrete slabs.
 - 2. Do not attach hangers to steel deck tabs or to steel roof deck.
 - 3. Space hangers not more than 48-inches (1200 mm) o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8-inches (200 mm) from ends of each member
 - 4. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- D. 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.
- E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

END OF SECTION

SECTION 09653

RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Resilient base.

1.2 PERFORMANCE REQUIREMENTS

- A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:
 - 1. Level Surfaces: Minimum 0.6.
 - 2. Step Treads: Minimum 0.6.
 - 3. Ramp Surfaces: Minimum 0.8.

1.3 SUBMITTALS

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

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: 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.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

1.6 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer in spaces to receive resilient products.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 RESILIENT BASE

- A. Resilient Base:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Burke Mercer Flooring Products; Division of Burke Industries, Inc.
 - b. Johnsonite; TightLock Wall Bases (Basis-of-Design)
 - c. VPI, LLC; Floor Products Division.
- B. Resilient Base Standard: ASTM F 1861.
 - 1. Material Requirement: Type TP (rubber, thermoplastic).
 - 2. Manufacturing Method: Group I (solid, homogeneous).
 - 3. Style: Cove (base with toe) at resilient flooring applications and Straight (flat or toeless) at carpet applications, unless otherwise indicated.
- C. Minimum Thickness: 0.125 inch (3.2 mm).
- D. Height: 4 inches (102 mm).
- E. Lengths: Provide coils and roll goods only in manufacturer's standard length.
- F. Outside Corners: Pre-molded corners, installed in a neat and professional manner as approved by the Architect.
- G. Inside Corners: Pre-molded corners, installed in a neat and professional manner as approved by the Architect.
- H. Colors and Patterns: As selected by Architect from full range of industry colors.

2.2 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. 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.
- C. Do not install resilient products until they are same temperature as the 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.
- D. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.2 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

- C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.

3.3 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surface thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
 - a. Do not wash surfaces until after time period recommended by manufacturer.
 - b. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
- B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
- C. Cover resilient products until Substantial Completion.

END OF SECTION

SECTION 09680

CARPET

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes Carpet tiles and all accessories as indicated in the "Finish Legend" in the Drawings.
1. The Work shall include, but is not limited to the following:
 - a. Preparation of new concrete subfloor to receive carpet.
 - b. Slab preparation and leveling including necessary priming, sealing, patching and repairs.
 - c. Coordination with expansion joints, and electrical, audiovisual, telephone outlets, and other floor-mounted devices.
 - d. Extent of Work as indicated in the Drawings.
- B. Definitions:
1. Shading: A localized change in appearance of the carpet brought about by the tufts leaning in different directions. Shading may be temporary or permanent.
 2. Temporary Shading: Localized surface effects where the pile is disturbed by normal conditions of use such as footmarks, scuffmarks and vacuum marks, which can be removed or changed in appearance by brushing or vacuuming.
 3. Permanent Shading: A type of pile reversal that exhibits itself visually and is permanent.
 - a. Tracking: A form of permanent shading resulting from traffic patterns within an installation. The main lines of traffic and turning points of traffic are susceptible to this type of shading and are predictable.
 - b. Random Permanent Shading: Other terms commonly used to describe this type of change in appearance include watermarking and pooling. Random permanent shading effects are not related to known traffic patterns within an installation. Areas of random permanent shading may vary in shape size and orientation through the installation resulting in a random patterning, which can cross seams. Areas appear light from one direction and dark from another. Carpet may look as though water has been spilled (in pools) on areas of the carpet in random, irregular patterns.
- C. Related Sections include:
1. Division 9 Section "Resilient Base and Accessories" for resilient wall base.

1.2 PERFORMANCE REQUIREMENTS

- A. Test Reports: Test reports for the following performance assurance tests shall be submitted upon request. Submitted results shall represent average results for production goods of the referenced style. All carpet products shall meet the following:
1. Carpets:
 - a. Flooring Radiant Panel: ASTM E-648 Class 1
 - b. Smoke Density: ASTM E-662: 450 Flaming Mode - Maximum

- c. Electrostatic Propensity: AATCC 134: 3.5 kV or less
- d. Warranties: Lifetime Ultra Performance System Warranty
Lifetime Everset® Stain Warranty, Lifetime

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product literature and delivery, storage, handling, and installation instructions for each type of carpet, accessory item, and installation material required. Include methods of installation for each type of substrate.
 - 1. Submit written data on physical characteristics and flame resistance characteristics.
 - 2. Submit written recommendations from carpet manufacturers on carpet adhesive.
- B. Installer Qualification: Qualification data for firms specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include list of completed projects of type, quantity, and installation methods similar to the Work of this Section.
- C. Samples for Verification Purposes: Submit manufacturer's physical examples, showing full range of color, texture, and pattern variations expected. Prepare Samples from same material to be used for the Work. Submit the following:
 - 1. 18-inch-square Samples of carpet material.
 - 2. 18-inch-long Samples of carpet edge guard.
- D. Shop Drawings: Show the following:
 - 1. Seaming Diagrams: Dimensioned Drawings showing carpet layout. Verify field conditions and include field measurements. Comply with manufacturer's instructions for seam location and for lay of carpet. Clearly indicate the following:
 - a. Seam locations, types, and methods.
 - b. Carpet type, color, and dye lot.
 - c. Pattern type, repeat size, location, direction and center point.
 - d. Type, color and location of carpet insets and borders.
 - e. Critical pattern match relationships between carpet types.
 - f. Direction and lay of pile.
 - g. Installation starting point and sequencing.
 - h. Installation method for each space, location, or carpet type.
 - i. Pattern match relationship at stair installations.
 - j. Type and location of edge, transition, and other accessory strips.
 - k. Transition details to other flooring materials.
 - l. Location of building expansion joints and joint/carpet details.
 - m. Indicate columns, doorways, enclosing walls/ partitions, built-in cabinets, and locations where cutouts are required in carpet.
 - n. Installation details at any special conditions.
- E. Standard Product Samples: Submit the following for Architect's approval:
 - 1. 12-inch-long Samples of each type of exposed edge stripping and accessory item.

- F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention in submittal.
- G. Certification: Submit manufacturer's certificate stating that materials furnished comply with specified requirements for fire performance characteristics and physical properties and warranty requirements.
 - 1. Test Reports: Submit certified laboratory test data and reports evidencing material compliance with requirements for the following:
 - a. Fire performance characteristics.
- H. Acceptance of Substrate: Provide letter of substrate acceptance, signed by Contractor, manufacturer, and Installer as defined in Part 3.
 - 1. Manufacturer, Contractor, and Installer shall review substrate testing including results of ASTM E 1907 and bond and adhesion test reports and any other tests required by manufacturer prior to accepting substrate.
- I. Bond and Adhesion Test Reports: Submit certified test data and reports on bond and moisture tests for concrete subfloors. Distribute copies to Installer, carpet manufacturer, Contractor, adhesive manufacturer, and Architect for review prior to installation.
- J. Floor Flatness Documentation:
 - 1. Submit certification that floor flatness criteria established in Part 3 Articles has been maintained in areas to receive carpet.
- K. Maintenance Manual: Submit 2 copies of manufacturers' instructions for daily and periodic maintenance of all installed carpet types. Include methods and frequency recommended for maintaining carpet in optimum conditions under anticipated traffic and use conditions. Include cleaning and stain removal products and procedures recommended. Include precautions against products and methods, which may be detrimental to appearance and performance. Include instructions for repairing materials.
- L. Maintenance Training: Prior to Substantial Completion, review maintenance manual with Owner's maintenance staff and demonstrate recommended methods for cleaning and maintaining carpet.
- M. Warranty: Submit manufacturer's and Installer's sample warranties.

1.4 QUALITY ASSURANCE

- A. Source of Materials:
 - 1. Carpet Materials: To ensure matching of quality, color, pattern, and texture, install materials produced from same dye lot and production run. Where materials cannot be obtained from a single lot or production run, notify the Architect so that the extent and use of each lot or run can be controlled.
 - 2. Carpet Material, Installation Materials and Accessories: Provide material obtained from one source for each type of material used in the Work. Do not change source or brands of materials during progress of Work.

- B. Qualifications:
 - 1. Carpet Manufacturer Qualifications: Firm (material producer) with not less than 5 years of production experience in materials of types and quantities similar to the work of this Section, whose published literature clearly indicates compliance of products with requirements of this section.
 - 2. Installer Qualifications: Firm specializing in commercial carpet installation with not less than 5 years experience in installation of carpet of type, quantity, and installation methods similar to the work of this Section.
 - 3. Installer must be approved and certified by the Floor Covering Installation Board.
 - 4. Installer must be approved and certified by the manufacturer.
- C. Manufacturer Qualifications: Company specializing in manufacturing specified carpet with minimum 10 years documented experience.
 - 1. Upon request by Architect, manufacturer shall provide representative to assist in project start-up and to inspect installation while in process and upon completion.
- D. Fire-Test-Response Characteristics: Provide products with the critical radiant flux classification indicated in Part 2, as determined by testing identical products per ASTM E 648 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
- E. Test concrete subfloors for compliance with ASTM F 710 and for determining adhesion and dryness characteristics.
- F. ADA Compliance: Carpet, as installed, shall be securely attached to the subfloor in compliance with ADAAG Section 4.5.3.
- G. Preinstallation Conference: One week prior to commencing Work of this Section, conduct conference at Project site to comply with requirements in Division 1.
 - 1. Required Attendees: Manufacturer's representative, Installer, Contractor, and Architect.
 - 2. Inspect condition of substrate and other preparatory work performed by other trades. Discuss any corrections required to substrates or other work required for installation of carpet.
 - 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review special carpet designs and patterns.
 - 5. Review dust-control procedures.
 - 6. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with CRI 104, Section 5, "Storage and Handling."
- B. Delivery: Deliver materials to Project site in original factory wrappings and containers, labeled with identification of manufacturer, brand name, and lot number.

- C. Storage: Store materials in protective packaging to prevent damage prior to installation. Comply with manufacturer's instructions and recommendations.
 - 1. Lay flat, on continuous blocking off ground.
 - 2. Keep materials dry at all times. Protect against exposure to weather and contact with damp or wet surface.
 - 3. Protect adhesives from freezing. Follow manufacturer's recommendations for minimum temperatures to which adhesives are exposed.

1.6 PROJECT CONDITIONS

- A. General: Comply with CRI 104, Section 6.1, "Site Conditions; Temperature and Humidity."
- B. Space Enclosure and Environmental Limitations: Do not install carpet until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will continuously be maintained at values anticipated for final occupancy.
- C. Subfloor Moisture Conditions: Do not install carpet over concrete slabs until slabs have cured and are sufficiently dry. The moisture emission rate shall be acceptable to carpet and carpet adhesive manufacturers, but in any case not more than 3 lb/1000 sq.ft./24 hours when tested by calcium chloride moisture test in compliance with CRI 104, 6.2.1, with subfloor temperatures not less than 55 deg F.
 - 1. Application substrates shall show no condensation within 48 hours on underside of 4 foot by 4 foot polyethylene sheet, fully taped at perimeter to substrate.
- D. Subfloor Alkalinity Conditions: A pH range acceptable to carpet and carpet adhesive manufacturers, but in any case not outside the range of 5 to 9, when subfloor is wetted with distilled water and pHydriion paper is applied.

1.7 CARPET WARRANTIES

- A. Manufacturer's Warranty: Carpet warranty shall be the sole responsibility of the manufacturer. Second-source warranties and warranties that involve parties other than the carpet manufacturer are unacceptable.
 - 1. Warranty Period: Warranty shall be for lifetime (20 years minimum) and shall cover against:
 - a. Excessive Surface Wear: More than 15 percent loss of pile fiber weight.
 - b. Excessive Static Electricity: More than 3.0 kV per AATCC 134.
 - c. Resiliency Loss of the Backing: More than 10 percent loss of backing resiliency.
 - d. Delamination.
 - e. Edge Ravel.
 - f. Zippering.
 - 2. If the product fails to perform as warranted when properly installed and maintained, the affected area shall be repaired or replaced at the discretion of the manufacturer.
 - 3. Warranty shall not exclude carpet product installed on stairs provided it is properly installed and maintained.
 - 4. Tuft bind warranty in lieu of edge ravel and zippering is not acceptable.

5. Provide certification and warranty that product is 100 percent recyclable through manufacturer's recycling program into infinitely recyclable products. Warranty and certification shall include that no part of the product will be landfilled or incinerated.
 - a. Warranty is not intended to include manufacturer's responsibility for recycling in any way.
- B. Installer's Warranty: Flooring contractor shall provide Owner a written installation warranty that guarantees the completed installation to be free from defects in materials and workmanship.
 1. Warranty Period: One year from date of Substantial Completion.

1.8 EXTRA MATERIALS

- A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Carpet: Full-width rolls equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.
 - a. Provide percent overage of calculated yardage for each type of carpet (include carpet needed for complete installation plus waste and usable scraps in calculated yardage) as specified by Architect and/or Owner.
- B. Usable Scraps: Upon completion of the carpet installation, deliver usable scraps to the Owner. Usable scraps are defined to include roll ends of less than 4 feet in length and pieces of more than 3 square feet in area and more than 8 inches wide. Package usable scraps per manufacturer's instructions and clearly label and identify packages. "Usable scraps" will not be accepted as inventory requirement for replacement/maintenance materials.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Approved Carpet Manufacturer/Product: Refer to the Drawings for product.
 1. Shaw Contract Group.
- B. Acceptable Manufacturers provided products are equal to those specified (pre-bid approval by Architect required; colors and patterns must match those selected):
 1. INTERFACE FLOORING SYSTEMS, INC.,
 2. LEES Carpets

2.2 PRODUCTS:

A. Carpet CP-1

PHYSICAL PROPERTIES

- | | |
|------------------------------|---------------------------------------|
| 1. Construction - | multi-level pattern cut/loop |
| 2. Gauge - | 1/10" |
| 3. Stitches Per Inch - | 12 per inch |
| 4. Finished Pile Thickness - | 0.138" avg |
| 5. Dye Method - | eco solution q nylon |
| 6. Backing Material - | Synthetic with secondary ecoworx tile |
| 7. Face Yarn - | eco solution q nylon |
| 8. Face Weight - | 24 oz/yd ² |
| 9. Size/Width - | 24" x 24" (60.9 cm x 60.9 cm) |
| 10. Protective treatments: | ssp shaw soil protection |
| 11. Installation Method - | ashlar |

B. Carpet CP-2

PHYSICAL PROPERTIES

- | | |
|------------------------------|---------------------------------------|
| 1. Construction - | multi-level pattern cut/loop |
| 2. Gauge - | 1/12" (47.2/10 cm) |
| 3. Stitches Per Inch - | 9 per inch |
| 4. Finished Pile Thickness - | 0.146" avg |
| 5. Dye Method - | 100% yarn dyed |
| 6. Backing Material - | Synthetic with secondary ecoworx tile |
| 7. Face Yarn - | Antron® Legacy nylon |
| 8. Face Weight - | 40 oz/yd ² |
| 9. Size/Width - | 24" x 24" (60.9 cm x 60.9 cm) |
| 10. Protective treatments: | Duratech soil resistant treatment |
| 11. Installation Method - | ashlar |

C. Carpet CP-3

PHYSICAL PROPERTIES

- | | |
|--------------------------|---|
| 1. Construction - | hair tile (needle punch) |
| 2. Dye Method - | 100 percent solution dye |
| 3. Backing Material - | graphlar tile |
| 4. Face Yarn - | 82.5 percent nylon and 17.5 percent polyester |
| 5. Tufted Yarn Weight - | 41 oz/sq yd |
| 6. Size/Width - | 19.69 inch by 19.69 inch |
| 7. Installation Method - | as indicated on the drawings. |

2.3 ACCESSORIES

- A. Carpet Edge Guard: Extruded or molded heavy duty vinyl or rubber of size and profile indicated; minimum 2-inch-wide anchorage flange; manufacturer's standard colors selected by Architect.
- B. Leveling and Patching Compound: Latex type recommended by carpet manufacturer and acceptable to adhesive manufacturer.
- C. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet and that is recommended by carpet manufacturer.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Substrate Conditions: Inspect application surfaces to determine that they are free from defects impairing performance or appearance of the installed materials. Application surfaces shall be:
 - 1. Straight and true to plane within 1/8 inch in 8 feet, without local irregularities and abrupt changes in plane which could telegraph through new materials.
 - 2. Smooth and free from cracks, holes, ridges and similar defects.
 - 3. Clean and free from foreign materials including incompatible curing compounds, paint, oils, waxes, sealers, grease and similar substances which would prevent adhesive bond.
- B. Testing: Perform tests on concrete subfloors to determine if surfaces are sufficiently cured and dry as well as to ascertain presence of curing compounds and other coatings, which would prevent adhesive bond. Floor testing shall include but may not be limited to:
 - 1. pH level analysis.
 - 2. Moisture content analysis as required by manufacturer's instructions to ensure pH readings of no more than 9. Moisture transmission of 5.0-lbs/sq. ft per 24 hours is acceptable. If values exceed this level, follow manufacturer's recommendations for moisture transmission mitigation. Do not proceed until unsatisfactory conditions have been corrected.
- C. Acceptance: Start of carpet installation will be considered acceptance by Installer, Contractor, and manufacturer of conditions as satisfactory for proper installation. Do not proceed with carpet installation until application surfaces are free from defects that would impair the in-use performance and appearance of carpet.

3.2 PREPARATION

- A. General: Prepare unsatisfactory application surfaces as follows:
 - 1. Allow new concrete to cure for 90 days before carpet installation starts.
 - 2. Fill, level and make smooth cracks 1/16 inch or more, holes, unevenness, and roughness with compatible latex floor patching compounds recommended by carpet manufacturer. Feather floor filling or leveling compound a minimum of 4 feet. Sweep floor of loose granular debris prior to filling. After filling, allow filler to dry. Damp mop floor with warm water and allow to dry. Vacuum after mopping to ensure that loose granular debris is removed and to provide a proper substrate to install Broadloom carpet. Prohibit traffic until filler is cured.
 - 3. Remove ridges and surface irregularities by grinding or sanding.

4. Remove foreign materials and coatings by grinding, scraping, sanding and then washing as necessary.
- B. Cleaning: Vacuum floor again immediately before installation of carpeting, re-inspect substrates, and perform additional preparation work if necessary.
- C. Sealing: Apply sealer, if recommended by carpet/adhesive manufacturers, prior to application of adhesive. Apply in compliance with manufacturer's directions.
- D. Adhesive: Confirm compatibility of adhesive (as recommended by manufacturer) with curing compounds on concrete floors.
- E. Preheat areas to receive carpet to a minimum temperature of 68 deg F for 72 hours prior to installation, with a relative humidity of not more than 65 percent. Maintain minimum temperature of 50 deg F thereafter. Carpet and adhesive must be stored at a minimum temperature of 68 deg F, for 72 hours prior to installation.
- F. Store adhesive and other liquid materials in same atmospheric conditions as carpet, 68 deg F for at least 72 hours.

3.3 INSTALLATION, GENERAL

- A. General: Follow manufacturer's instructions for installation. Butt edges tight to form seams without gaps. Roll entire area lightly to eliminate air pockets and ensure uniform bond.
- B. Layout: Comply with manufacturer's recommendations for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. Comply with approved layout diagram.
- C. Extent of Flooring: Extend flooring materials into toe spaces, door reveals, alcoves, closets, and similar openings.
 1. Extend carpet under furniture and furnishings, movable equipment, operable partitions, removable flanges and similar non-fixed items.
- D. Cutouts: Provide cutouts where required, and bind cut edges where not concealed by protective edge guards or overlapping flanges.
- E. Edge Guard: Install carpet edge guard where edge of carpet is exposed; anchor guards to substrate.
- F. Pattern: Install with pattern parallel to walls and borders, unless otherwise indicated. Orient matching carpet pattern in adjacent spaces in same direction.

3.4 INSTALLATION METHOD

- A. Manufacturer's Instructions: Comply with manufacturer's recommendations and instructions.
- B. Installation Method: Install self-adhesive sheet carpet in accordance with manufacturer's instructions.
 1. Butt edges to form tight seams without gaps. Roll entire area lightly to eliminate air pockets and ensure uniform bond.

3.5 CLEANING AND PROTECTION

- A. Cleaning: Remove and dispose of debris and scraps. Vacuum with commercial machine with face-beater element. Remove soil. Replace carpet where soil cannot be removed. Remove protruding face yarn.
 - 1. Vacuum carpet.
- B. Protection: Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, to ensure carpet is not damaged or deteriorated at time of Substantial Completion.
- C. Workmanship: Completed carpet Work shall be clean and free from damage and defective materials and workmanship. Seams shall be snug, and carpeting shall be smooth and uniform, without humps and wrinkles. Edge strips shall be securely fastened and neatly fitted. There shall be no excess adhesive on carpeting and other surfaces.
 - 1. Removal and replacement of such defects will be required throughout the period specified for correction of defective work for this Project.

END OF SECTION

SECTION 09910

PAINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Work in This Section: Painting work indicated on the Drawings, schedules, and specified herein.
 - 1. Include painting and finishing of exterior and interior items and surfaces throughout the project, except as otherwise noted.
 - 2. Follow all manufacturer's written instructions in printed literature and pay particular attention to pot life of colors. Colors of contiguous surfaces must be consistent and shall be rejected if Architect discerns any color variation.
 - 3. Surface preparation, touch-up and coats of paint specified herein are in addition to shop-priming and surface treatment specified under other Sections of work.
 - 4. Include field painting of items installed under work included in the Mechanical and Electrical Divisions, except as otherwise indicated.

- B. Extent of Painting: Paint all exposed surfaces, except where the material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas.
 - 1. Paint surfaces in unoccupied areas.

- C. Related Sections:
 - 1. Section 04200 - Unit Masonry
 - 2. Section 05500 - Metal Fabrications: Shop-priming ferrous metal.
 - 3. Section 08110 - Hollow Metal Doors and Frames: Shop-priming steel doors and frames.
 - 4. Section 08311 - Access Doors: Shop-priming steel doors and frames.
 - 5. Section 09250 - Gypsum Board: Painting for gypsum board.
 - 6. Section 09960 - High Performance Coatings: For exterior ferrous and galvanized metals.
 - 7. DIVISIONS 15 and 16: Painting mechanical and electrical work
 - a. Piping color coding shall be coordinated with Architect.

1.2 PAINTING NOT INCLUDED

- A. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural and miscellaneous metal, hollow metal work, and similar items.

- B. Pre-Finished Items: Do not include painting when factory finishing or installer finishing is specified for such items as (but not limited to) exterior and interior prefinished metal panels, acoustic wall and ceiling panels, prefinished roofing and siding, and finished mechanical and electrical equipment including light fixtures, switchgear and distribution cabinets.

1.3 SURFACES NOT PAINTED

- A. Concealed Surfaces: Painting is not required on surfaces such as walls or ceilings in concealed and generally inaccessible spaces such as furred areas, pipe spaces, duct shafts, elevator shafts, and above suspended ceilings,
- B. Finished Metal Surfaces: Anodized aluminum, factory finished aluminum, stainless steel, chromium plate, bronze and similar finished materials will not require finish painting.
- C. Operating Parts and Labels: Moving parts of operating units, such as valve and damper operators, linkages, sensing devices, or motor and fan shafts, will not require finish painting. Do not paint over any code required labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.
- D. Concrete Masonry Units: Unpainted, except where paint or fresh epoxy finishes are designated in the Finish Schedules and/or plan.
- E. Colored Concrete Masonry: Integrally colored concrete masonry (smooth and textured) will not require finish painting.
- F. Finished Materials: Brick, glass, stone, plastic laminate, ceramic tile, and similar finished materials will not be painted.
- G. Cast-in-Place Concrete: Cast-in-Place Concrete walls will not require finish painting. Water repellent system for Cast-in-Place Concrete walls is specified in Section 07192.

1.4 REFERENCES

- A. Industry Standards: The Industry Standards listed below refer to the latest date of issue or edition, unless otherwise indicated.
 - 1. ASTM D 16 - Standard Terminology Relating to Paint, Varnish, Lacquer, and Related Products.
 - 2. ASTM A 780 - Practice for Repair of Damaged Hot-Dip Galvanized Coatings.
 - 3. PDCA Architectural Specification Manual.
 - 4. SSPC - Steel Structures Painting Council.

1.5 DEFINITIONS:

- A. "Paint" as used herein means all coating systems materials, including primers, emulsions, epoxies, enamels, sealers and fillers.
- B. "Exposed surfaces" include portions of the completed construction which are visible when permanent and built-in fixtures and equipment are in place.
- C. "Exterior" includes portions of the completed construction which are subject to outdoor ambient temperature and humidity conditions, including truck docks and entries.

1.6 SYSTEM DESCRIPTION

- A. Exposed Surfaces: Paint exposed surfaces whether or not colors are designated in schedules, except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item/surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, Architect will select from standard colors/finishes available.
 - 1. Painting includes field-painting exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, access panels, and primed metal surfaces of mechanical and electrical equipment.

- B. Prefinished Items: Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.
1. Prefinished items not to be painted include, but are not limited to, the following:
 - a. Acoustic materials.
 - b. Finished mechanical and electrical equipment.
 - c. Light fixtures.
 - d. Switchgear.
 - e. Distribution cabinets.
 - f. Metal ceiling panels.
 2. Concealed surfaces not to be painted include wall or ceiling surfaces in the following generally inaccessible areas:
 - a. Foundation spaces.
 - b. Furred areas.
 - c. Pipe spaces.
 - d. Duct shafts.
 3. Finished metal surfaces not to be painted include:
 - a. Anodized aluminum.
 - b. Stainless steel.
 - c. Chromium plate.
 - d. Copper.
 - e. Bronze.
 - f. Brass.
 4. Operating parts not to be painted include moving parts of operating equipment, such as the following:
 - a. Valve and damper operators.
 - b. Linkages.
 - c. Sensing devices.
 - d. Motor and fan shafts.
 5. Labels: Do not paint over Underwriters Laboratories, Factory Mutual or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1.7 SUBMITTALS

- A. Product Data: Submit product data for each paint system specified, including block fillers and primers.
1. Provide the manufacturer's technical information including label analysis and instructions for handling, storage, and application of each material proposed for use.
 2. List each material and cross-reference the specific coating, finish system, and application. Identify each material by the manufacturer's catalog number and general classification.
 3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs) and/or lead content.

- B. Samples: For each finish and for each color and texture required.
 - 1. Submit samples on rigid backing, 8 inch square.
 - 2. Step coats on samples to show each color required for system.
 - 3. Label each coat of each sample.
 - 4. Label each sample for location and application.

1.8 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to those indicated for the Project that have resulted in a construction record of successful in-service performance.
- B. Protection of finished surfaces: Contractor shall provide adequate protection of finished surfaces, draping walls and other finished surfaces to prevent overspray. Protection shall be erected prior to painting commencement.
- C. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.
- D. Coordination of Work: Review other Sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information on finish materials to be used, to enable use of compatible prime coats. Notify the Architect of anticipated problems using the specified materials.
- E. Industry Standards:
 - 1. Comply with the recommendations of the Painting and Decorating Contractors of America, as contained in "PDCA Architectural Specification Manual", except where conflicting and more stringent requirements are specified in this Section.
 - 2. Conform to definitions of terms in ASTM D 16 in interpreting requirements of this specification Section.
 - 3. Comply with ASTM D 16 - Standard Terminology Relating to Paint, Varnish, Lacquer, and Related Products.
- F. Mockups and Field Samples: On wall surfaces and other exterior and interior components, duplicate finishes of prepared samples. Provide full-coat finish samples on at least 100 sq. ft. of surface of wall and ceiling surfaces until required sheen, color, and texture are obtained; simulate finished lighting conditions for review of in-place work.
 - 1. Items other than wall and ceiling surfaces: Architect will designate items or areas required.
 - 2. Final acceptance of colors will be from job-applied samples.
 - 3. The Architect will select one room or one 10'-0" x 10'-0" or equivalent area surface to represent surfaces and conditions for each type of coating and substrate to be painted. Apply coatings in this room or surface according to the schedule or as specified, for approval by Architect.
 - a. After finishes are accepted, this room or surface will be used to evaluate coating systems of a similar nature.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to the job site in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
 - 1. Product name or title of material.
 - 2. Product description (generic classification or binder type).

3. Manufacturer's stock number and date of manufacture.
 4. Contents by volume, for pigment and vehicle constituents.
 5. Thinning instructions.
 6. Application instructions.
 7. Color name and number.
- B. Storage: Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.
1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.10 JOB CONDITIONS

- A. Water-based Paints: Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 deg F and 90 deg F.
- B. Solvent-thinned Paints: Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 deg F and 95 deg F.
- C. Environmental Conditions: Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by the manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Approved Paint Manufacturers:
 1. The Sherwin Williams Company (S W) (Basis-of-Design)
 2. Benjamin Moore and Co. (MOORE).
 3. PPG Industries, Pittsburgh Paints (PPG).

2.2 GENERAL

- A. Paint Coordination: Provide topcoats, which are compatible with primers. Review other specifications Sections to ensure compatibility of total coatings system for various substrates. Notify the Architect of anticipated problems using specified coating systems with substrates primed by others.
- B. Material Quality: Provide the best-quality trade sale grade of the various types of coatings, as regularly manufactured by acceptable paint materials manufacturers. Provide undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer, and use only within recommended limits.

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

2.3 MATERIALS

- A. **Primer Coatings:** Provide the manufacturer's recommended factory-formulated primers that are compatible with the substrate and finish coats indicated.
- B. **Undercoat Materials:** Provide the manufacturer's recommended factory-formulated undercoat materials that are compatible with the substrate and finish coats indicated.
- C. **Finish Coat Materials:** Provide the manufacturer's recommended factory-formulated finish-coat materials that are compatible with the substrate and undercoats indicated.
- D. **Galvanizing Repair Compound:** Zinc-rich paint complying with ASTM A780.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. **Examination:** Examine substrates and conditions under which painting will be performed for compliance with paint application requirements. Surfaces receiving paint must be thoroughly dry before paint is applied.
 - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected.
 - 2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
- B. **Coordination of Work:** Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 - 1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.
- C. Follow all manufacturer's written instructions in printed literature and pay particular attention to pot life of colors. Colors of contiguous surfaces must be consistent and shall be rejected if Architect discerns any color variation.

3.2 PREPARATION

- A. **General:** Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Remove these items, if necessary, to completely paint the items and adjacent surfaces. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.
- B. **Cleaning:** Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease prior to cleaning. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. **Surface Preparation:** Clean and prepare surfaces to be painted according to the manufacturer's instructions for each particular substrate condition and as specified.
 - 1. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing about anticipated problems using the specified finish-coat material with substrates primed by others.

2. Cementitious Materials: Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen, as required, to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
 - a. Use abrasive blast-cleaning methods if recommended by the paint manufacturer.
 - b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's printed directions.
 - c. Acid-etch concrete floor surfaces to receive special coatings (if required by manufacturer) with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, then vacuum.
3. Miscellaneous Ferrous Metals (Not covered in Section 09960 High Performance Coatings): Clean ungalvanized ferrous metal surfaces that have not been shop-coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with recommendations of the Steel Structures Painting Council (SSPC).
 - a. Blast steel surfaces clean as recommended by the paint system manufacturer and according to requirements of SSPC specification SSPC-SP 5.
 - b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
 - c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by the paint manufacturer, and touch up with the same primer as the shop coat.
- D. Materials Preparation: Carefully mix and prepare paint materials according to manufacturer's directions.
 1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and if necessary, strain material before using.
 3. Use only thinners approved by the paint manufacturer and only within recommended limits.
- E. Tinting: Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.
- B. Application: Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 1. Paint colors, surface treatments, and finishes are indicated in the schedules.
 2. Provide finish coats that are compatible with primers used.

3. The number of coats and the film thickness required are the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce a smooth even surface according to the manufacturer's directions.
 4. Apply additional coats if undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.
 5. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convactor covers, covers for finned tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
 6. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, nonspecular black paint.
 7. Paint the backsides of the access panels and removable or hinged covers to match exposed surfaces.
 8. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
 9. Finish exterior doors on tops, bottoms, and side edges same as exterior faces.
 10. Sand lightly between each succeeding enamel or varnish coat.
 11. Omit primer on metal surfaces that have been shop-primed and touch-up painted.
- C. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- D. Application Methods: Apply paints and coatings by brush, roller, spray, or other applicators according to the manufacturer's directions.
1. Brushes: Use brushes best suited for the material applied.
 2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.
- E. Minimum Coating Thickness: Apply materials no thinner than the manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
- F. Mechanical and Electrical Work: Painting mechanical and electrical work is limited to items exposed in mechanical equipment rooms and in occupied spaces.
- G. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime-coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- H. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling such as laps, irregularity in texture, skid marks, or other surface imperfections.
- I. Pigmented (Opaque) Finishes: Completely cover to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

- J. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.

3.4 FIELD QUALITY CONTROL

- A. Testing: The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied:
 - 1. The Owner will engage the services of an independent testing agency to sample the paint material being used. Samples of material delivered to the Project will be taken, identified, sealed, and certified in the presence of the Contractor.
 - 2. The testing agency will perform appropriate tests for the following characteristics as required by the Owner:
 - a. Quantitative materials analysis.
 - b. Abrasion resistance.
 - c. Apparent reflectivity.
 - d. Flexibility.
 - e. Washability.
 - f. Absorption.
 - g. Accelerated weathering.
 - h. Dry opacity.
 - i. Accelerated yellowness.
 - j. Recoating.
 - k. Skinning.
 - l. Color retention.
 - m. Alkali and mildew resistance.
 - n. Dry film thickness.
 - o. Lead content.
 - 3. If test results show material being used does not comply with specified requirements, the Contractor may be directed to stop painting, remove noncomplying paint, pay for testing, repaint surfaces coated with rejected paint, and remove rejected paint from previously painted surfaces if, upon repainting with specified paint, the two coatings are incompatible.

3.5 CLEANING

- A. Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.
 - 2. Remove masking and protective covering, including adhesive residue.
 - 3. Leave factory finish surfaces clean and free of paint.
 - 4. Remove tools, rubbish, equipment and surplus and waste materials.

- B. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish, or repaint work not in compliance with specified requirements.
 - 1. Edges of paint shall be sharp, clean and straight, without overlapping.
 - 2. Provide finishes free of holidays, sags, laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, and other surface imperfections.
 - 3. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

3.6 PROTECTION

- A. Protection: Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect, and leave in an undamaged condition.
- B. Fresh Paint: Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
- C. Touch-Up: At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.7 INTERIOR PAINT SCHEDULE

- A. Gypsum Drywall: Finish as selected by Architect; 2 finish coats over a primer.
 - 1. Primer: White, interior, latex-based primer (4 - 20 wet mils, 0.8 - 4.4 dry mils minimum).
 - S-W: ProMar 200 Interior Latex Primer, B28W8200.
 - 2. 2 Coats Lusterless (flat) emulsion finish, intermediate and top coats for gypsum board ceilings (4 wet mils, 1.3 dry mils per coat minimum).
 - S-W: ProGreen 200 Low VOC Interior Latex Flat Wall Paints, B30-600 Series.
 - 3. 2 Coats Egg Shell emulsion finish, intermediate and top coats, (4 wet mils, 1.6 dry mils per coat minimum)
 - S-W: Pro-Mar 200 Interior Latex Eggshell Wall Paint, B20W2200 Series.
 - 4. 2 Coats Semigloss emulsion finish, intermediate and top coats (4 wet mils, 1.5 dry mils per coat minimum)
 - S-W: Pro-Mar 200 Latex Semi-Gloss Enamel, B31W200 Series.
- B. Ferrous Metal (except structural steel): Include doors, frames, handrails, guardrails, miscellaneous metal fabrications, and other steel items. Two finish coats over primer with total dry film thickness not less than 9 mils.
 - 1. Non-Galvanized Metal Primer: Quick-drying, rust-inhibitive alkyd primer (2.0 - 5.0 dry mils minimum).
 - S-W: Pro-Cryl Universal Water Based Primer, B66-310 Series.
 - 2. First and Second Coat: Waterborne acrylic epoxy, semi-gloss (4.0 - 6.0 dry mils per coat minimum).
 - S-W: SherCryl HPA High Performance Acrylic, B66-300 Series, Semi-Gloss Finish (2.5 - 4.0 dry mils minimum).

- C. Concrete Masonry Units: Waterborne Semi-Glos Enamel (4 wet mils, 1.5 dry mils per coat minimum).
1. Waterborne acrylic interior block filler (8 dry mils minimum).
S-W: PrepRite Block Filler, B25W25
 2. First and Second Coat: Semi-gloss emulsion finish, intermediate and top coats (1.5 dry mils per coat minimum).
S-W: ProMar 200 Latex Semi-Gloss Enamel, B31W200 Series.
- D. Sealer for Concrete Slab: Provide a water based, acrylic co-polymer emulsion type, clear sealer for interior and exterior horizontal concrete floors, decks and exposed walkways. Oil, gasoline, alkali and water resistant. Generally applied by low pressure spray, but rolling and brushing can be used for small areas.
1. Prepare surface as per manufacturer's recommendations.
PPG: Porter Paints; Plex-Seal W.B. Sealer, #3215.
S-W: H & C; Concrete & masonry Waterproofing Sealer #50.043054
- E. Schedule: Refer to the drawings for interior paint colors gloss level shall be as selected by Architect.

3.8 HYDRONIC PIPING SCHEDULE

- A. General: All piping, insulated or uninsulated, exposed in mechanical room, central equipment room, stairwells, etc. shall receive two coats of paint in color specified in following schedule:
1. Fire Protection:
 - a. Color: Red Safety Red
 - b. Stencil: Fire line SW4081
 - c. Letter Designation: F
 2. Sprinkler:
 - a. Color: Red Safety Red
 - b. Stencil: Sprinkler SW4081
 - c. Letter Designation: S
 3. Chilled Water Supply:
 - a. Color: Light Blue Spillway
 - b. Stencil: Chilled Water Supply SW4062
 - c. Letter Designation: CHS
 4. Chilled Water Return:
 - a. Color: Darker Blue Robotic Blue
 - b. Stencil: Chilled Water Return SW4063
 - c. Letter Designation: CHR
 5. Gas:
 - a. Color: Yellow Safety Yellow
 - b. Stencil: Gas SW4084
 - c. Letter Designation: G

6. Heating Water Supply:
 - a. Color: Orange International Orange
 - b. Stencil: Heat Water Supply SW4082
 - c. Letter Designation: HS
7. Heating Water Return:
 - a. Color: Lighter Orange Power Orange
 - b. Stencil: Heat Water Return SW4074
 - c. Letter Designation: HR
8. Condenser Water Supply From Cooling Tower:
 - a. Color: Light Green Emerald Green
 - b. Stencil: Condenser Water Supply SW4069
 - c. Letter Designation: CS
9. Condenser Water Return To Cooling Tower:
 - a. Color: Darker Green Generator Green
 - b. Stencil: Condenser Water Return SW4070
 - c. Letter Designation: CR

END OF SECTION

SECTION 09935

VISUAL DISPLAY COATING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. 2-part dry-erase paintable coating
- B. Related Sections:
 - 1. Section 09910 - Painting for primer and sealer application on gypsum board substrate.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated, providing installation instructions.
- B. Samples: Provide 4 by 4 inch sample of dry-erase coating on substrate.

1.3 QUALITY ASSURANCE

- A. Fire Performance Characteristics: Comply with ASTM E-84 - Class A, Flame spread 5, Smoke developed 0.
- B. Pre-installation Conference: Conduct conference at Project site.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original factory wrappings and containers, clearly labeled with manufacturer, brand name, and fire hazard classification.
- B. Store materials in original undamaged packages and containers inside a well-ventilated area protected from weather, moisture, soiling, extreme temperature and humidity.
 - 1. Maintain room temperature within the storage area at not less than 70 deg F during the period materials are stored.

1.5 PROJECT CONDITIONS

- A. Maintain ambient temperature within building at not less than 68 deg F minimum 72 hours prior to beginning of installation.
 - 1. Do not install dry-erase coatings until the space is enclosed and weatherproof.
 - 2. Do not install dry-erase coatings until temperature is stabilized and permanent lighting is in place.

1.6 MAINTENANCE

- A. Provide Maintenance Instructions including precautions against cleaning materials and methods that may be detrimental to finish and performance.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace dry erase coating that fail(s) in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide product by the following:
 - 1. MDC Wallcoverings
 - 2. Prior approved equal.

2.2 PRODUCTS

- A. IdeaPaint IP0050W - 2 part, solvent based coating providing a surface suitable for use of dry-eraser.
- B. Primer: Poly Vinyl Acetate (PVA) type Latex primer as specified in Section 09910 - Painting.

2.3 ACCESSORIES

- A. Roller covers: ROLLERFoam brand only, other roller covers not acceptable.
- B. Marker Tray: Provide manufacturer's standard, continuous, extruded aluminum, solid type with ribbed section and smoothly curved exposed ends. Install at height indicated on drawing and as approved by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions in which dry-erase coatings will be installed.
 - 1. Complete finishing operations, including painting, before beginning installation of dry-erase coatings.
 - 2. Wall surfaces to receive dry-erase coatings shall be dry and free from dirt, grease, loose paint, and scale.
 - 3. Do not proceed with installations until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Preparation: Remove hardware, accessories, plates and similar items to allow dry-erase coating to be installed.
 - 1. Gypsum board surface: Remove surface chalk. In new work use moisture meter to determine moisture content. Do not begin installation when moisture content is greater than five percent.
 - 2. Ensure gypsum wallboard surfaces scheduled to receive dry-erase coatings are properly primed with recommended primer under the painting section.
- B. Prime substrate as recommended by manufacturer.
- C. Ventilate area thoroughly to prevent the odor from permeating to other areas in the building.
- D. Mix components in strict accordance with manufacturer's instructions.

3.3 APPLICATION

- A. Comply with manufacturers printed installation instructions.
- B. Apply dry-erase coating with specified foam roller as recommended per manufacturer.
- C. Paint surface by working from one end to the other.
- D. Begin by cutting in the edges of an approximately 2-foot wide section.
- E. Paint 2-foot wide section, maintaining a wet edge.
- F. Roll new section into wet edge.
- G. Continuously check for skips, holes and holidays as application progresses.
- H. Do not recoat applied coating.
- I. Remove masking tape within 1 hour of painting.
- J. Final coating must cure for a minimum of 1 week after application.

3.4 CLEANING

- A. Clean dry-erase coatings with damp cloth.

3.5 PROTECTION

- A. Protect installed product and finish surfaces from damage during construction.
- B. Do not allow dry-erase coating to be used for a minimum of 1 week after application.

END OF SECTION

SECTION 09960

HIGH PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Application of high-performance coating systems, including surface preparation, prime coats, and topcoats on the following substrates:
 - 1. Exterior:
 - a. Ferrous and Galvanized steel.
 - b. CMU Block
 - 2. Interior:
 - a. Ferrous and Galvanized steel.
 - b. CMU Block

- B. Related Sections:
 - 1. Section 05510 - Metal Stairs
 - 2. Section 05500 - Metal Fabrications

1.2 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM D 1308, Stain Resistance.
 - 2. ASTM E 84, Surface Burning Characteristics of Building Materials.
 - 3. ASTM E 308, Light Reflectance.
 - 4. ASTM B 117, Salt Spray.
 - 5. ASTM D 4060, Abrasion.
 - 6. ASTM D 4541, Adhesion.

- B. Federal Test Methods:
 - 1. Standard No. 141, Method 6271, Fungal Resistance.
 - 2. Standard No. 141, Method 6142, Scrubbability.
 - 3. Standard No. TT-C-550C, Paragraphs 4.4.5.2 and 4.4.5.3, Stain Removal.
 - 4. Standard No. TT-C-550C, Paragraph 4.4.6, Chemical Resistance.
 - 5. Standard No. TT-C-555B, Paragraph 4.4.7.3, Wind Driven Rain.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's descriptive data fully describing each product. Include solids by volume and manufacturer's recommendations for mixing, thinning, and curing.

- B. Shop Drawings:
 - 1. Drawings showing lettering and logo in color to be approved by Architect.

- C. Certificates: Provide manufacturer's certified test reports confirming compliance with specified performance requirements.
- D. Samples: Submit two 5" x 7" samples of each selected color.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has successfully completed coating system applications similar those indicated for this Project.
- B. Single-Source Responsibility: Provide primers and undercoat material produced by the same manufacturer as the finish coats for each type of coating. Use only thinners recommended by the manufacturer and only within recommended limits.
- C. Manufacturer's representative shall be available to advise applicator on proper application techniques and procedures.
- D. Job Mock-Up: Minimum 50 sq. ft. application of each specified coating system on each type of substrate.
 - 1. Mock-ups shall serve as the standard for acceptance of the work.
 - 2. Leave approved mock-ups in place as part of the completed work.
- E. Field Testing:
 - 1. Perform appropriate fielding testing to verify the exterior coating system is pinhole-free.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to the job site in the manufacturer's original, new, unopened containers bearing manufacturer's name and label, and the following information:
 - 1. Name or title of material.
 - 2. Product description (generic classification or binder type).
 - 3. Manufacturer's name, stock number and date of manufacture.
 - 4. Contents by volume, for major pigment and vehicle constituents.
 - 5. Thinning instructions.
 - 6. Application instructions.
 - 7. Color name and number.
 - 8. Handling instructions and precautions.
- B. Storage: Store materials in a well-ventilated and protected area at a temperature between 35 deg F and 110 deg F.

1.6 PROJECT CONDITIONS

- A. Air and Surface Temperatures: Apply coatings only when the air and surface temperatures are not below 50 deg F or above 120 deg F.
- B. Relative Humidity: Apply coatings only when relative humidity is not above 85 percent and the surface temperature is at least 5 deg F above the dew point.
 - 1. Allow wet surfaces to dry thoroughly and attain the temperature and conditions specified before proceeding with or continuing the coating operation.

- C. Protection: Protect all surface not to be coated.

1.7 SURFACES NOT TO BE COATED

- A. Surfaces not to be coated include but is not limited to the following:
 1. Face brick masonry.
 2. Pre-finished wall panels, partitions, and ceiling tile.
 3. Items with factory-applied final finish.
 4. Concealed ducts, pipes, and conduit.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: For the purpose of establishing the minimum functional, aesthetic, and quality standards, special coating systems are based on products as manufactured by the TNEMEC COMPANY, INC.; Dupont or prior approved equal.

2.2 SPECIAL COATING MATERIALS, GENERAL

- A. Special Coating Materials: Refer to the Coating Schedules at the end of this Section for Specific coating materials.
- B. Material Compatibility: Provide block fillers, primers, finish coat material, and related materials that are compatible with one another and the substrates indicated under conditions of service and application as demonstrated by the manufacturer based on testing and field experience.
 1. Verify shop primer is compatible with specified field-applied coating system.
- C. Material Quality: Provide the highest grade of the various coatings as regularly manufactured by acceptable coating manufacturers. Materials not displaying manufacturer's identification as a best-grade product will not be acceptable.
 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials are not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish the manufacturer's material data and certificates of performance for proposed substitutions.
- D. Colors: Provide color selections made by the Architect from the manufacturer's full range of standard colors.

2.3 MATERIAL PREPARATION

- A. Mixing: Mix and thin materials according to manufacturer's latest printed instructions.
- B. Shelf Life: Do not use materials beyond manufacturer's recommended shelf life.
- C. Pot Life: Do not use mixed materials beyond manufacturer's recommended pot life.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examination: Examine surfaces to be coated and report conditions that would adversely affect appearance or performance of coating systems and which cannot be put into an acceptable condition by preparatory work specified in Paragraph 3.2 of this Section.

- B. Acceptance: Do not proceed with surface preparation and application until surface is acceptable or authorization to proceed is given by Architect.

3.2 SURFACE PREPARATION

- A. General: Dislodge dirt, rust, plaster nibs, mortar spatter and other dry material by scraping or brushing. Remove dust and loose material by brushing, sweeping, vacuuming or blowing with high-pressure air.
 - 1. Remove oil, wax and grease by scraping off heavy deposits and cleaning with mineral spirits or a hot tri-sodium phosphate solution followed by a water rinse.
 - 2. Verify that surfaces to be coated are dry, clean and free of dust, dirt, oil, wax, grease or other contaminants.
- B. GALVANIZED STEEL (EXTERIOR EXPOSED):
 - 1. Clean, dry and free of soluble surface contaminants.
 - 2. Provide abrasive sweep blasting or brush-off blast cleaning metal prep to remove all insoluble surface contaminants and to achieve a uniformly profiled surface.
- C. GALVANIZED STEEL and METAL STAIRS (INTERIOR EXPOSED):
 - 1. Clean, dry and free of soluble surface contaminants.
 - 2. Clean as required to remove all insoluble surface contaminants including but not limited to red and white rust.
- D. CMU Block
 - 1. Allow new mortar to cure a minimum of 14 days.
 - 2. Level protrusions and mortar

3.3 APPLICATION

- A. Film Thickness: Apply materials at specified film thickness by method recommended by manufacturer.
- B. Recoating: Allow each coat to dry thoroughly before recoating. Follow manufacturer's recommended recoat time.
- C. Adjoining Work: Cut edges clean and sharp where work joins other materials or colors.
- D. Finish Coats: Make finish coats smooth, uniform in color, and free of brush marks, laps, runs, dry spray, overspray and skipped or missed areas.

3.4 FIELD QUALITY CONTROL

- A. Testing: The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during coating operations:
 - 1. The Owner will engage the services of an independent testing agency to sample the coating being used. Samples of material delivered to the Project site will be taken, identified, sealed, and certified in the presence of the Contractor.
 - 2. The testing agency will perform appropriate tests for the following characteristics as required by the Owner:
 - a. Quantitative materials analysis.
 - b. Absorption.
 - c. Accelerated weathering.
 - d. Accelerated yellowness.

- e. Color retention.
 - f. Alkali and mildew resistance.
 - g. Abrasion resistance.
 - h. Apparent reflectivity.
 - i. Washability.
 - j. Dry Opacity.
 - k. Recoating.
 - l. Skinning.
3. If results show materials being used do not comply with requirements, the Contractor may be directed to stop work and remove noncomplying materials, pay for testing, recoat surfaces coated with rejected materials, or remove rejected materials from previously coated surfaces if, upon recoating with specified materials, the two coatings are not compatible.
- B. Acceptance: Request acceptance of each coat before applying succeeding coats.
 1. Repair and touch-up all work that is not acceptable to Architect and request final acceptance.

3.5 CLEANING

- A. Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded materials from the site.
 1. After completing work, clean glass and spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces. Remove masking and protective covering, including adhesive residue.
 2. Leave factory finish surfaces clean and free of paint.

3.6 PROTECTION

- A. Protection: Protect work of other trades, whether being coated or not, against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as acceptable to Architect.
- B. Fresh Coatings: Provide "Wet Paint" signs to protect newly coated finishes. Remove temporary protective wrappings provided by others to protect their work after completing coating operations.
- C. Touch-Up: At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.7 EXTERIOR COATING SCHEDULE

- A. FERROUS STEEL
 1. Approved Coating Systems:
 - 1st Coat: TNEMEC "Series 90-97 Urethane, zinc-rich primer" (2.5-3.5 mdft)
 - 2nd Coat: TNEMEC "Series 66 Polyamide Epoxy Primer" (2.0-3.0 mdft)
 - 3rd Coat: TNEMEC "Series 1074U Aliphatic Polyurethane, two-component, gloss finish" (2.5-3.0 mdft)

B. GALVANIZED STEEL

1. Approved Coating Systems:

- 1st Coat: TNEMEC "Series 66 Polyamide Epoxy Primer" (2.0-3.0 mdft)
- 2nd Coat: TNEMEC "Series 1074U Aliphatic Polyurethane, two-component, gloss" (2.5-3.0 mdft)

C. CMU

1. Approved Coating Systems:

- 1st Coat: TNEMEC "Series 130 Envirofill" (60-80 Sq. Ft./Gal)
- 2nd Coat: TNEMEC "Series 66 HB Epoxoline" (4.0-6.0 mdft)
- 3rd Coat: TNEMEC "Series 66 HB Epoxoline" (4.0-6.0 mdft)
- 4th Coat: TNEMEC "Series 290 CRU" (2.0-3.0 mdft)

Note: Final system shall be void and pinhole free.

3.8 INTERIOR COATING SCHEDULE

A. MISCELLANEOUS METAL (Metal Stairs, etc.)

1. Approved Coating Systems:

- Spot Coat: TNEMEC "Series 135 Chembuild" (4.0-6.0 mdft)
- 1st Coat: TNEMEC "Series 135 Chembuild" (4.0-6.0 mdft)
- 2nd Coat: TNEMEC "Series 1074 Aliphatic Polyurethane, two-component, gloss finish" (2.5-3.0 mdft)

B. GALVANIZED STEEL (Not including Deck)

1. Approved Coating Systems:

- 1st Coat: TNEMEC "Series 66 Polyamide Epoxy Primer" (2.0-3.0 mdft)
- 2nd Coat: TNEMEC "Series 1074 Aliphatic Polyurethane, two-component, gloss" (2.5-3.0 mdft)

C. CMU

1. Approved Coating Systems:

- 1st Coat: TNEMEC "Series 130 Envirofill" (60-80 Sq. Ft./Gal)
- 2nd Coat: TNEMEC "Series 66 HB Epoxoline" (4.0-6.0 mdft)
- 3rd Coat: TNEMEC "Series 66 HB Epoxoline" (4.0-6.0 mdft)
- 4th Coat: TNEMEC "Series 290 CRU" (2.0-3.0 mdft)

Note: Final system shall be void and pinhole free.

END OF SECTION