SECTION 09 2900

GYPSUM DRYWALL

## PART 1 GENERAL

### 1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the Contract Documents.

### 1.2 SECTION INCLUDES

A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the gypsum drywall as shown on the drawings and/or specified herein, including, but not limited to, the following:

1. Gypsum board work for partitions, ceilings, column enclosures, furring, and elsewhere where gypsum drywall work is shown on drawings.
2. Metal supports for gypsum drywall construction.
3. Acoustical insulation for gypsum drywall work.
4. Sealant for gypsum drywall work.
5. Concealed metal reinforcing for attachment of railings, toilet partitions and other items supported on drywall partitions and walls.
6. Taping and finishing of drywall joints.
7. Installing rings and frames in drywall surfaces for grilles, registers and lighting fixtures.
8. Bracing and connections.

### 1.3 RELATED SECTIONS

A. Thermal Insulation - Section 072100.

B. Hollow metal door frames - Section 081113.

C. Access Doors - Section 083113.

D. Painting and Finishing - Section 099000.

E. Elevators - Division 14.

F. Rings for grilles, registers and light fixtures - Division 23 and 26.

### 1.4 QUALITY ASSURANCE

A. The following standards, as well as other standards which may be referred to in this Section, shall apply to the work of this Section:

1. The Gypsum Construction Handbook, latest edition, USG.

2. Construction Guide, latest edition, National Gypsum.

3. ASTM A 568 "Standard Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements For"

4. ASTM C 475 "Standard Specification for Joint Treatment Materials for Gypsum Wallboard Construction"

5. ASTM C 645 "Standard Specification for Non-Structural Steel Framing Members"

6. ASTM C 754 "Standard Specification for Installation of Steel Framing Members to Receive Screw Attached Gypsum Panel Products"

7. ASTM C 840 "Standard Specification for Application and Finishing of Gypsum Board"

8. ASTM C 919 "Standard Specification for Use of Sealants in Acoustical Applications"

9. ASTM C 954 "Standard Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases to Steel Studs From 0.033 in. to 0.112 in. in Thickness"

10. ASTM C 1002 "Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Board"

11. ASTM C 1177 "Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing"

12. ASTM C 1178 "Standard Specification for Glass Mat Water Resistant Gypsum Backing Board"

13. ASTM C 1278 "Standard Specification for Fiber-Reinforced Gypsum Panel"

14. ASTM C 1396 "Standard Specification for Gypsum Board"

15. ASTM D 3273 "Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber"

B. Allowable Tolerances: 1/32" offsets between planes of board faces, and 1/16" in 8'-0" for plumb, level, warp and bow.

C. Installer: Firm with not less than five (5) years of successful experience in the installation of specified materials.

## 1.5 PRODUCT HANDLING AND PROTECTION

A. Deliver, store and handle drywall work materials to prevent damage. Deliver materials in their original, unopened containers or bundles, and store where protected from moisture, damage and from exposure to the elements. Store wallboard in flat stacks.

B. Protect wallboard from becoming wet.

## 1.6 ENVIRONMENTAL CONDITIONS

A. Provide and maintain minimum temperature of fifty-five (55) degrees F. and adequate ventilation to eliminate excessive moisture within the building in the area of the drywall work for at least twenty-four

(24) hours, prior to, during and after installation of drywall work. Installation shall not start until windows are glazed and doors are installed, unless openings are temporarily closed. Space above suspended ceilings shall be vented sufficiently to prevent temperature and pressure build up.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

A. Acceptable Manufacturers for Gypsum Drywall Panels and Accessories: U.S. Gypsum Co., Georgia Pacific, CertainTeed Corporation, Lafarge North America, or National Gypsum Co. meeting specification requirements.

1. All drywall products must be manufactured in North America.

B. Cement Board (for tile backer wherever else scheduled): 5/8" "Durock Tile Backer Board" by USG, "Wonder Board Lite" by Custom Building Products, or approved equal.

### 2.2 METAL SUPPORTS

A. Metal Floor and Ceiling Runners

1. Channel Type: Formed from 20 U.S. Std. gauge (unless otherwise noted) galvanized steel, width to suit channel type metal studs. Use 20 ga. top runners with 1-1/4" minimum flanges.

2. Ceiling runners and head of wall connections at rated partitions shall conform to UL #2079 for cycle movement. Provide positive mechanical connection of framing to structure, allowing for vertical movement within connections. Minimum of 20 ga. galvanized steel for clips, 25 ga. galvanized steel for ceiling runners. Providing a friction free – anti-seizure movement capacity.

   a. As manufactured by the Steel Network, VertiClip or VertiTrack or equal made by Metal-Lite Inc.

   b. FireTrak (including stud clips) by FireTrak Corp. or equal made by Metal-Lite Inc.

3. "J" Type: Formed from 20 U.S. Std. gauge galvanized steel, 1" x 2-1/2" or 4" wide (to suit detail) x 2-1/4" (for shaft wall).

B. Metal Studs, Framing and Furring

1. Channel Type Studs: Channel type with holes for passage of conduit formed from minimum 20 U.S. Std. gauge (unless heavier gauge is required to meet deflection limits) galvanized steel, width as shown on drawings.

2. Furring Channels: Hat shaped, formed from galvanized steel, 25 U.S. Std. gauge.

3. Where metal studs and/or framing are to be installed directly against exterior walls, install isolations strips first.

4. "C-H," "CT," or "I" Type Stud: 1-1/2" x 2-1/2", 4" or 6" wide (to suit detail) galvanized steel. Use for shaft wall construction; gauge and size as required to meet deflection limits given herein.

5. Double "E" Type Stud or "J" Track with Holding Tabs: 1" x 2-1/2", 4" or 6" wide (to suit detail) galvanized steel. Use for shaft wall construction; gauge and size as required to meet deflection limits given herein.

6. Continuous 16-gauge x 8" wide steel wall plate screwed to studs as required for support of railings, toilet partitions and other items supported on drywall partitions and walls.

2.3 GYPSUM WALLBOARD

A. Gypsum Wall Board: 5/8" thick, fire rated by Georgia Pacific, Tough Rock Mold-Guard Fireguard X, 48" wide in maximum lengths available to minimize end-to-end butt joints. ASTM C 1396C 1396M.

B. Cement Board: 5/8" thick wherever tile finish is noted. Durock Tile Backer Board by USG, Wonder Board by Custom Building Products. Cover joints with pressure-sensitive, woven glass fiber tape equal to Imperial Type P tape.

2.4 ACCESSORIES

A. Acoustical Insulation: Paper-less, non-combustible, semi-rigid mineral fiber mat, 2" thick, in walls (unless otherwise indicated), 3 lb./cu. ft. maximum density; Thermafiber LLC "Thermafiber," or approved equal.

B. Fasteners for Wall Board: USG Brand Screws; Type S Bugle Head for fastening wallboard to lighter gauge interior metal framing (up to 20 ga.). Type S-12 Bugle Head for fastening wallboard to heavier gauge interior metal framing (20 ga. to 12 ga.); Type S and Type S-12 Pan Head for attaching metal studs to door frames and runners; and Type G Bugle Head for fastening wallboard to wall board. Lengths specified below under "Part 3 - Execution" Articles and as recommended by drywall manufacturer.

C. Laminating Adhesive: "Sheetrock Brand Joint Compound."

D. Metal Trim - Corner Beads: For 90-degree External Corners - "Dur-A-Bead" No. 103, 27 U.S. Std. ga. galvanized steel, 1-1/4" x 1-1/4", for 90-degree external corners.

E. Metal Trim - Edge Beads: "Sheetrock Brand Paper Faced Metal Bead and Trim."

F. Metal Trim - Special Profiles: As selected by Architect.

G. Metal Trim Treatment Materials and Joint Treatment Materials for Gypsum Drywall Boards: Paper tape for joint reinforcing; Setting Type (Durabond 90) or Lightweight Setting Type Joint Compound for taping and topping; and Ready Mix Compound for finishing.

1. For mold-resistant drywall, water resistant drywall, and tile backer board, use glass mesh tape with setting joint compound that is rated 10 when tested in accordance with ASTM D 3273 and evaluated in accordance with ASTM D 3274. Acceptable joint compound is "Rapid Set One Pass" made by CTS Cement Manufacturing Corp. or "Rapid Joint" manufactured by Lafarge North America or approved equal meeting standards noted herein.

H. Control Joints: No. 0.093, USG.

I. Acoustical Sealant: USG "Acoustical Sealant" or "Tremco Acoustical Caulking" of Tremco Mfg. Co. or approved equal.

J. Neoprene Gaskets: Conform to ASTM D 1056.

K. Aluminum Reveal Trim: Extruded accessories of profiles indicated, as manufactured by Fry Reglet Corp., or equal by Pittcon Industries, Gordon, Inc., or approved equal, fabricated of 0.062" thick aluminum sheet, mill finish, of alloy and temper with not less than the strength and durability properties of ASTM B 221, Alloy 6063-T5.

## PART 3 EXECUTION

### 3.1 INSPECTION

A. Examine the areas and conditions where gypsum drywall is to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

### 3.2 GENERAL INSTALLATION REQUIREMENTS

A. General

1. Install drywall work in accordance with drywall manufacturer's printed instructions and as indicated on drawings and specified herein.

2. All metal framing for drywall partitions shall extend from floor to underside of structural deck above. Provide for vertical deflection with positive mechanical connections of framing members to structure.

3. Provide concealed reinforcement, 16 ga. thick by eight (8) inches wide or as detailed or as recommended by manufacturer, for attachment of railings, toilet partitions, and other items to be supported on the partitions which cannot be attached to the metal framing members. Concealed reinforcement shall span between metal studs and be attached thereto using two (2) self-tapping pan head screws at each stud.

    a. Back of drywall shall be scored or notched to prevent bulging out where reinforcement plate occurs.

B. Fire-Rated Assemblies: Install fire-rated assemblies in accordance with requirements of authorities having jurisdiction, Underwriters' Laboratories and test results obtained and published by the drywall manufacturer, for the fire-rated drywall assembly types indicated on the drawings.

C. Acoustical Assemblies: Install acoustically-rated assemblies to achieve a minimum STC as noted on drawings, in accordance with test results obtained and published by the drywall manufacturer, for the drywall assembly type indicated on the drawings.

D. Sealant

1. Install continuous acoustical sealant bead at top and bottom edges of wallboard where indicated or required for sound rating as wallboard is installed, and between metal trim edge beads and abutting construction.

2. Install acoustical sealant in 1/8" wide vertical control joints within the length of the wall or partitions, and in all other joints, specified below under "Control Joints." Install bead of acoustical sealant around electric switch and outlet boxes, piping, ducts, and around any other penetration in the wallboard; place sealant bead between penetrations and edge of wallboard.

3. Where sealant is exposed to view, protect adjacent surfaces from damage and from sealant material, and tool sealant flush with and in same plane as wallboard surface. Sealant beads shall be 1/4" to 3/8" diameter.

E. Wall Board Application

1. Do not install wallboard panels until steel door frames are in place; coordinate work with Section 081113, "Steel Doors and Frames."

2. See drawings for all board types. Use fire-rated wallboard for fire-rated assemblies. Use sag-resistant ceiling board for ceilings. Use water-resistant wallboard where indicated on drawings and where wallboard would be subject to moisture. Install water-resistant wallboard in full, large sheets (no scraps) to limit number of butt joints.

3. Apply wallboard with long dimension parallel to stud framing members, and with abutting edges occurring over stud flanges.

4. Install wallboard for partitions from floor to underside of structure above and secure rigidly in place by screw attachment, unless otherwise indicated.

5. Neatly cut wallboard to fit around outlets, switch boxes, framed openings, piping, ducts, and other items which penetrate wallboard; fill gaps with acoustic sealant.

6. Where wallboard is to be applied to curved surfaces, dampen wallboard on back side as required to obtain required curve. Finish surface shall present smooth, even curve without fluting or other imperfections.

7. Screw fasten wallboard with power-driven electric screw driver, screw heads to slightly depress surface of wallboard without cutting paper, screws not closer than 3/8" from ends and edges of wallboard.

8. Where studs are doubled-up, screw fasten wallboard to both studs in a staggered pattern.

F. Cementitious Backer Board

1. General: Furnish cementitious backer board in maximum available lengths. Install horizontally, with end joints over framing members.

2. Fastening: Secure cementitious backer board to each framing member with screws spaced not more than 12 inches on center and not closer than 1/2" from the edge. Install screws with a conventional screw gun so that the screw heads are flush with the surface of the board.

3. Joint Treatment: Fill space between edge of backer and receptor with dry-set Portland cement or latex-Portland cement mortar. Fill all horizontal and vertical joints and corners with dry-set Portland cement or latex-Portland cement mortar. Apply fiberglass tape over joints and corners and embed with same mortar.

G. Metal Trim: Install and mechanically secure in accordance with manufacturer's instructions; and finish with three (3) coats of joint compound, feathered and finish sanded smooth with adjacent wallboard surface, in accordance with manufacturer's instructions.

1. Corner Beads: Install specified corner beads in single lengths at all external corners, unless corner lengths exceed standard stock lengths.

2. Edge Beads: Install specified edge beads in single lengths at all terminating edges of wallboard exposed to view, where edges abut dissimilar materials, where edges would be exposed to view, and elsewhere where shown on drawings. Where indicated on drawings, seal joint between metal edge bead and adjoining surface with specified gasket, 1/8" wide minimum and set back 1/8" from face of wallboard, unless other size and profile indicated on drawings.

3. Casing beads shall be set in long lengths, neatly butted at joints. Provide casing beads at juncture of board and vertical surfaces and at exposed perimeters.

H. Joint Treatment and Spackling

1. Joints between face wallboards in the same plane, joints at internal corners of intersecting partitions and joints at internal corners of intersections between ceilings and walls or partitions shall be filled with joint compound.

2. Screw heads and other depressions shall be filled with joint compound. Joint compound shall be applied in three (3) coats, feathered and finish surface sanded smooth with adjacent wallboard surface, in accordance with manufacturer's instructions. Treatment of joints and screw heads with joint compound is also required where wallboard will be covered by finish materials which require a smooth surface, such as vinyl wall coverings.

## 3.3 FURRED WALLS AND PARTITIONS

A. Use specified metal furring channels. Run metal furring channel framing members vertically, space sixteen (16) inches o.c. maximum. Install isolation strips before fastening furring channels to concrete or masonry surfaces with power-driven fasteners or concrete stub nails spaced sixteen (16) inches o.c. maximum through alternate wing flanges (staggered) of furring channel. Furring channels shall be shimmed as necessary to provide a plumb and level backing for wallboard. At inside of exterior walls, an asphalt felt protection strip shall be installed between each furring channel and the wall. Furring channel and splices shall be provided by nesting channels at least eight (8) inches and securely anchoring to concrete or masonry with two (2) fasteners in each wing.

B. Wallboard Installation: Same as specified under Article 3.4 - "Metal Stud Partitions."

## 3.4 METAL STUD PARTITIONS

A. Unless otherwise noted, steel framing members shall be installed in accordance with ASTM C 754.

B. Runner Installation: Use channel type. Align accurately at floor according to partition layout. Anchor runners securely sixteen (16) inches o.c. maximum with power-driven anchors to floor slab, with power-driven anchors to structural slab above. See "Stud Installation" below for runners over heads of metal door frames. Where required, carefully remove sprayed-on fireproofing to allow partition to be properly installed.

C. Stud Installation

1. Use channel type, positioned vertically in runners, spaced as noted on drawings, but not more than sixteen (16) inches o.c.

2. Anchor studs to floor runners with screw fasteners. Provide snap-in or slotted hole slip joint bolt connections of studs to ceiling runners leaving space for movement. Anchor studs at partition

intersections, partition corners and where partition abuts other construction to floor and ceiling runners with sheet metal screws through each stud flange and runner flange.

3. Connection at ceiling runner for non-rated partitions shall be snap-in or slotted hole slip joint bolt connection that shall allow for movement. Seal studs abutting other construction with 1/8" thick neoprene gasket continuously between stud and abutting construction.

4. Connections for fire rated partitions at ceiling runners shall conform to UL Design #2079.

5. Install metal stud horizontal bracing wherever vertical studs are cut or wallboard is cut for passage of pipes, ducts or other penetrations, and anchor horizontal bracing to vertical studs with sheet metal screws.

6. At jambs of door frames and borrowed light frames, install doubled-up studs (not back to back) from floor to underside of structural deck, and securely anchor studs to jamb anchors of frames and to runners with screws. Provide cross braces from hollow metal frames to underside of slab.

7. Over heads of door frames, install cut-to-length section of runner with flanges slit and web bent to allow flanges to overlap adjacent vertical studs, and securely anchor runner to adjacent vertical studs with sheet metal screws. Install cut-to length vertical studs from runner (over heads of door frame) to ceiling runner sixteen (16) inches maximum o.c. and at vertical joints of wallboard, and securely anchor studs to runners with sheet metal screws.

8. At control joints, in field of partition, install double-up studs (back to back) from floor to ceiling runner, with 1/4" thick continuous compressible gasket between studs. When necessary, splice studs with eight (8) inches minimum nested laps and attach flanges together with two (2) sheet metal screws in each flange. All screws shall be self-tapping sheet metal screws.

D. Wallboard Installation - Single Layer Application (Screw Attached)

1. Install wallboard with long dimension parallel to framing member and with abutting edge joints over web of framing member. Install wallboard with long dimension perpendicular to framing members above and below openings in drywall extending to second stud at each side of opening. Joints on opposite sides of wall shall be arranged so as to occur on different studs.

2. Boards shall be fastened securely to metal studs with screws as specified. Where a free end occurs between studs, back blocking shall be required. Center abutting ends over studs. Correct work as necessary so that faces of boards are flush, smooth, true.

3. Wallboard screws shall be applied with an electric screw gun. Screws shall be driven not less than 3/8" from ends or edges of board to provide uniform dimple not over 1/32" deep. Screws shall be spaced twelve (12) inches o.c. in the field of the board and 8" o.c. staggered along the abutting edges.

4. All ends and edges of wallboard shall occur over screwing members (studs or furring channels). Boards shall be brought into contact but shall not be forced into place. Where ends or edges abut, they shall be staggered. Joints on opposite sides of a partition shall be so arranged as to occur on different studs.

5. At locations where piping receptacles, conduit, switches, etc., penetrate drywall partitions, provide non-drying sealant and an approved sealant stop at cut board locations inside partition.

E. Insulation Installation: Install where indicated on drawings. Place blanket tightly between studs.

F. Deflection of Structure Above: To allow for possible deflection of structure above partitions, provide top runners for non-rated partitions with 1-1/4" minimum flanges and do not screw studs or drywall to top runner. Where positive anchorage of studs to top runner is required, anchorage device shall be by means of slotted hole (in clip connection with screw attachment to web of steel through bushings located in slots of clips), or other anchorage device approved by Architect.

G. Control Joints

1. Leave a 1/2" continuous opening between gypsum boards for insertion of surface mounted joint.

2. Back by double framing members.

3. Attach control joint to face layer with 9/16" galvanized staples six (6) inches o.c. at both flanges along entire length of joint.

4. Provide two (2) inch wide gypsum panel strip or other adequate seal behind control joint in fire rated partitions and partitions with safing insulation.

## 3.5 FINISHING

A. Taping: A thin, uniform layer of compound shall be applied to all joints and angles to be reinforced. Reinforcing tape shall be applied immediately, centered over the joint, seated into the compound. A skim coat shall follow immediately but shall not function as a fill or second coat. Tape shall be properly folded and embedded in all angles to provide a true angle.

B. Filling: After initial coat of compound has hardened, additional compound shall be applied, filling the board taper flush with the surface. The fill coat shall cover the tape and feather out slightly beyond the tape. On joints with no taper, the fill coat shall cover the tape and feather out at least four (4) inches on either side of the tape. No fill coat is necessary on interior angles.

C. After compound has hardened, a finishing coat of compound shall be spread evenly over and extending slightly beyond the fill coat on all joints and feathered to a smooth, uniform finish. Over tapered edges, the finished joint shall not protrude beyond the plane of the surface. All taped angles shall receive a finish coat to cover the tape and taping compound and provide a true angle. Where necessary, sanding shall be done between coats and following the final application of compound to provide a smooth surface, ready for painting.

D. Fastener Depressions: Compound shall be applied to all fastener depressions followed, when hardened by at least two (2) coats of compound, leaving all depressions level with the plane of the surface.

E. Finishing Beads and Trim: Compound shall be applied to all bead and trim and shall be feathered out from the ground to the plane of the surface. When hardened, this shall be followed by two (2) coats of compound each extending slightly beyond the previous coat. The finish coat shall be feathered from the ground to the plane of the surface and sanded as necessary to provide a flat, smooth surface ready for decoration.

F. Except as otherwise noted, level of finish for surface exposed to view shall conform to Level 4 of ASTM C 840 and GA-214 of the Gypsum Association.

G. Drywall construction with defects of such character which will mar appearance of finished work, or which is otherwise defective, will be rejected and shall be removed and replaced at no expense to the Owner.

## 3.6 CLEANING AND ADJUSTMENT

A. At the completion of installation of the work, all rubbish shall be removed from the building leaving floors broom clean. Excess material, scaffolding, tools and other equipment shall be removed from the building.

B. Work shall be left in clean condition ready for painting or wall covering. All work shall be as approved by Architect.

C. Cutting and Repairing: Include all cutting, fitting and repairing of the work included herein in connection with all mechanical trades and all other trades which come in conjunction with any part of the work, and leave all work complete and perfect after all trades have completed their work.

## 3.7 PROTECTION OF WORK

A. Installer shall advise Contractor of required procedures for protecting drywall work from damage and deterioration during remainder of construction period.

END OF SECTION

SECTION 09 3013

CERAMIC TILING

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the ceramic tiling work as shown on the drawings and/or specified herein, including, but not limited to, the following:

1. Ceramic floor tile.

2. Ceramic wall base.

3. Setting beds, grout, sealant and waterproofing membrane.

4. Stainless steel edging.

1.3 RELATED SECTIONS

A. Submittals - Section 01-3330.

B. Gypsum Drywall - Section 09-2900.

1.4 REFERENCES

A. ANSI A108.1 Series/A118 Series - American National Standards for Installation of Ceramic Tile.

B. ANSI A136.1 - American National Standards for Organic Adhesives for Installation of Ceramic Tile.

C. ASTM C 150 - Standard Specification for Portland Cement.

D. TCNA - Handbook for Ceramic, Glass and Stone Tile Installation; Tile Council of North America.

E. ISO 13007 - International Standards Organization; Classification for Grout and Adhesives.

F. Large Format Tile (LFT): Tile 15" or larger in any direction and/or 144 sq. in. in size.

1.5 QUALITY ASSURANCE

A. Qualifications of Installers: For cutting, installing and grouting of ceramic tile, use only thoroughly trained and experienced journeyman tile setters who are completely familiar with the requirements of this work, and the recommendations contained in the referenced standards, and the installers are Certified Ceramic Tile Installer (CTI) through the Ceramic Tile Education Foundation (CTEF) or Tile Installer Thin Set Standards (ITS) verification through the University of Ceramic Tile and Stone.

B. Codes and Standards: In addition to complying with all pertinent codes and regulations, comply with the following:

1. Manufacture all ceramic tile in accordance with Standard Grade Requirements of ANSI A-137.1.

2. Install all ceramic tile in accordance with the recommendations contained in "Tile Council of North America Handbook for Ceramic, Glass, and Stone Tile Installation (TCNA)," latest edition.

C. All surfaces shall have a minimum wet DCOF AcuTest value of 0.42.

1.6 SUBMITTALS

A. Samples

1. Before any ceramic tile is delivered to the job site, submit to the Architect sample panels, approx. 12" x 12", mounted on hardboard back-up with selected grout color for each color and pattern of ceramic tile and grout specified.

2. Submit samples of each accessory – 1 piece.

3. Submit samples of adhesives – 1 container.

1.7 PRODUCT HANDLING

A. Delivery and Storage

1. Deliver all materials of this Section to the job site in their original unopened containers with all labels intact and legible at time of use.

2. Store all materials under cover in a manner to prevent damage and contamination; store only the specified materials at the job site.

B. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation, and to protect the installed work and materials of all other trades.

C. Replacements: In the event of damage, immediately make all repairs and replacements necessary.

1.8 PROJECT CONDITIONS

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

B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.

C. Maintain temperatures at not less than 50 deg. F. in tiled areas during installation and for 7 days after completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS OF TILE

A. Provide tile as scheduled on the drawings or approved equal meeting these specifications.

B. Ceramic tile products shall be as manufactured by (or as otherwise indicated on drawings):

1. American Olean Tile Company

2. United States Ceramic Tile Company

3. Monarch Tile Company

4. Daltile

5. Crossville Inc. Tile

2.2 TRIM AND SPECIAL SHAPES

A. Provide external and internal corners, trim shapes at openings, and all other trim and special shapes to match the tile specified herein, as required by field conditions and drawing details.

B. Stainless Steel Edging: Schluter "Quadec," profiles as shown.

2.3 SETTING BEDS AND GROUT

A. Portland Cement: ASTM C 150, Type 1.

B. Hydrated Lime: ASTM C 207, Type S.

C. Sand: ASTM C 144, clean and graded natural sand.

D. Latex Admixture for Mortar Bed

1. MAPEI, Planicrete AC, blended with a 3:1 site mix.

2. Laticrete 333.

3. Pro Spec; Acrylic Additive.

4. Custom Building Products; Custom Crete Thin Set Additive.

E. Latex-Portland Cement Bond Coat, complying with ANSI A118.4 and ISO 13007, C2ES2P2 with minimum compressive strength of 400 psi.

1. MAPEI, Keralastic System thin set mortar, consisting of Kerabond dry-set mortar and Keralastic latex admixture.

2. Laticrete; 211 dry-set mortar and 4237 latex admixture.

3. Pro Spec; Permalastic System consisting of Permalastic Dryset Mortar and Permalastic Admixture

4. Custom Building Products; Pro-Lite.

F. Improved Modified Cement Mortars, for use with LFT, complying with ANSI 118.15 and ISO 13007, CSES2PS.

1. Custom Building Products; Mega-Lite Crack Prevention Mortar (650-725 psi).

2. Laticrete; 220 Marble Granite Mortar (500-540 psi).

3. Mapei; Kerabond T Keralastic (400-600 psi).

4. Pro Spec; StayFlex 590 (460 psi).

G. Wall Base Tile

1. Over drywall, use ANSI A136.1-1967 Organic Adhesive for installation of Ceramic Tile, Type I and ISO 13007 D2TE. Shear strength shall be 50 psi minimum. Adhesive primer as recommended by adhesive manufacturer. Manufacturer shall certify, in writing, that adhesive and

primer used are proper types for the intended tile types and application. Conform to TCA Detail W-242.

a. MAPEI Type 1 Mastic.

b. Laticrete Type 1 Adhesive.

c. ProSpec B-1000 Tile Adhesive.

d. Custom Building Products' Reliabond Adhesive Type 1.

2. Over masonry and concrete, use a mortar bed leveling coat conforming to ANSI A108.1A followed by a Latex Portland Cement Bond Coat, MAPEI, Kerabond/Keralastic System, Custom Mega Flex or equal by Laticrete or Pro Spec, conforming to ANSI A118.4, ISO 13007-C2ES2P2, and TCA Detail W-211.

3. Over cement board, use a Latex Portland cement mortar bond coat, MAPEI, Kerabond/Keralastic System, Custom Mega Flex or equal by Laticrete or Pro Spec, conforming to ANSI A118.4, ISO 13007-C2ES2P2, and TCA Detail W-244; coat back of board with waterproof membrane as specified below.

4. Over glass mat water resistant gypsum backer board, use a Latex Portland cement mortar bond coat, MAPEI, Kerabond/Keralastic System, conforming to ANSI A118.4, ISO 13007-C2ES2P2, and TCA Detail W-245.

H. Water: Clean, fresh and suitable for drinking.

I. Grout: Complying with A118.7; and ISO 13007, CG2WAF; for grouting ceramic tile, provide a commercial Portland cement grout "Ultracolor Plus" (additive not required) made by Mapei, Laticrete "Permacolor," or approved equal; color as selected by the Architect. Add latex additive to grout made by same manufacturer as grout.

J. Physical Properties: The setting beds and grouts must meet the following physical requirements:

1. Compressive Strength: 3000 psi min.

2. Shear Bond Strength: 500 psi min.

3. Water Absorption: 4.0% max.

4. Service Rating (ASTM C 627): Extra Heavy Duty.

K. Sealer: Seal all grout joints and all unglazed tile using "Sealer’s Choice 15 Gold" as manufactured by Aqua Mix Inc. or approved equal.

L. Temporary Protective Coating: Either product indicated below that is applied in the tile manufacturer's factory and formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.

1. Petroleum paraffin wax, applied hot, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg. F. per ASTM D 87.

2. Grout release in form of manufacturer’s standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.

M. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.4 SEALANT

A. Joint Backing: Preformed, compressible, resilient, non-extruding, non-staining strips of foam neoprene, foam polyethylene, or other material recommended by sealant manufacturer.

B. Bond Breaker: Polyethylene tape, 3 mils thick, or other material recommended by sealant manufacturer.

C. Sealant Primer: Colorless, non-staining, or type to suit substrate surface, as recommended by sealant manufacturer.

D. Sealant: One-part silicone based sanitary sealant, conforming to ASTM C 920, Type S, Grade NS, Class 25. Sealant hardness upon full cure shall be between 20-30 Shore "A" Durometer. Color of sealant to blend with or match adjacent materials, and as selected by the Architect. Sealant shall be equivalent to 1700 Sanitary Sealant made by General Electric or approved equal.

PART 3 EXECUTION

3.1 INSPECTION

A. Examine the areas and conditions where ceramic tile is to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 CONDITION OF SURFACES

A. Allowable Variations in Substrate Levels in Floors: + 1/8" in 10'-0" distance and 1/4" total max. variation from levels shown.

B. Grind or fill concrete and masonry substrates as required to comply with allowable variations.

C. Concrete substrates must meet ANSI A108.01 tolerances and surface textures in preparation for tile work. Coordinate with concrete trades.

3.3 PREPARATION

A. Coordinate the following with Section 033000:

1. Steel trowel and fine broom finish concrete slabs that are to receive ceramic tile. Cure concrete slabs that are to receive tile before tile application. Do not use liquid curing compounds or other coatings that may prevent bonding of tile setting materials to slabs. Slab shall be dry at time of tile installation.

2. Tile floors with floor drains must have a slope to direction of ¼" per foot; coordinate this with concrete trades.

B. Etch concrete substrate as may be required to remove curing compounds or other substances that would interfere with proper bond of setting bed. Rinse with water to remove all traces of treatment.

C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at project site before installing.

D. Field Applied Temporary Protective Coating: Pre-coat tile with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.4 JOINTS IN TILE WORK

A. Joint Widths: 1/16" wide in ceramic tile.

B. Alignment: Wall, base and floor joints shall align through the field and trim. Direction and location of all joints as directed by Architect.

C. Movement Joints: Conform to TCA Detail EJ171. Locate where movement joints are in back-up material. Provide movement joint at joints between mop receptors and ceramic tile. Provide movement joint at all vertical internal joints of wall tile. Movement joints 1/8" wide in ceramic tile. Fill all movement joints with specified backing and sealant. Use bond breaker where sufficient space for joint backing does not exist.

1. Provide sealant between ceramic tile and plumbing fixtures, mirrors, pipes, countertops and other dissimilar materials penetrating or adjacent to ceramic tile.

3.5 INSTALLATION

A. Comply with the following installation standards:

1. Wall tile over drywall using organic adhesive - ANSI A136.1 and ISO 13007, D2TE.

2. Wall tile over cement board or glass mat backer board using dry set mortar with latex additive - ANSI A118.4 and ISO 13007, C2ES2P2.

3. Wall tile over masonry or concrete using dry set mortar with latex additive – ANSI A118.4 and ISO 13007, C2ES2P2.

4. Floor tile over waterproofing membrane - ANSI A118.4, 118.5, and ISO 13007, C2ES2P2.

B. Backs of tile must be cleaned before installation.

C. All setting beds and/or adhesives shall provide for an average contact area of not less than 95% coverage.

D. Allowable Variations in Finished Work: Do not exceed the following deviations from level and plumb, and from elevations, locations, slopes and alignment shown.

1. Floors: 1/8" in 10'-0" run, any direction; +/- 1/8" at any location; 1/32" offset at any location.

2. Walls: 1/8" in 8'-0" run, any direction; 1/8" at any location; offset at any location, 1/32".

3. Joints: +/- 1/32" joint width variation of any location; 1/16" in 3'-0" run deviation from plumb and true.

E. Handle, store, mix and apply setting and grouting materials in compliance with the manufacturer's instructions.

F. Extend tile work into recesses and under equipment and fixtures, to form a complete covering without interruptions. Terminate work neatly at obstructions, edges and corners without disruption of pattern or joint alignment.

G. 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 and fixtures so that plates, collars, or covers overlap tile.

H. Lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls and trim are the same size. Lay out tile work and center tile fields both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths.

3.6 CLEANING AND PROTECTION OF CERAMIC TILE

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove grout residue from tile as soon as possible.

2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use cleaners only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning to ensure removal of all cleaning material.

3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.

B. Protect installed tile work with Kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. Apply coat of sealer to all grout joints and all unglazed tile.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. Before final inspection, remove protective coverings from tile surfaces.

E. Leave finished installation clean and free of cracked, chipped, broken, unbonded or otherwise defective tile work.

END OF SECTION

SECTION 095113

ACOUSTICAL PANEL CEILINGS

FINE FISSURED

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this section shall be governed by the Contract Documents. Provide materials, labor, equipment, and services necessary to furnish, deliver, and install the work of this section as shown on the drawings, as specified herein, and/or as required by job conditions.

1.2 DESCRIPTION OF WORK

A. The Work of this Section shall include, but is not necessarily limited to the following:

1. Acoustical ceiling panels.

2. Exposed grid suspension system.

3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings.

4. Perimeter trim.

B. The following Sections contain requirements that relate to this Section:

1. Section 095000 – Ceilings

2. Section 095114 - Acoustical Fabric Faced Panel Ceilings

3. Section 095123 – Acoustical Tile Ceilings

4. Section 095300 – Acoustical Ceiling Suspension Assemblies

5. Section 092000 – Plaster and Gypsum Board

6. Section 018131 – Sustainable Design Requirements

7. Section 018191 – Indoor Air Quality Requirements

8. Section 024200 – Removal and Salvage pf Construction Materials

9. Division 23 – HVAC Air Distribution

10. Division 26 – Electrical

C. Alternates

1. Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted no later than ten (10) working days prior to the date established for receipt of bids. Acceptability of proposed substitution is contingent upon the Architect's review of the proposal for acceptability and approved products will be set forth by the Addenda.

If included in a Bid are substitute products that have not been pre-approved by the Architect and included in the Addenda, the originally specified products shall be provided without additional compensation.

2. Submittals that do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section including, but not necessarily limited to. the following: single source materials suppliers, Underwriters' Laboratories Classified Acoustical performance; panel design, size, composition, color, and finish; suspension system component profiles and sizes; compliance with the referenced standards.

1.3 REFERENCES

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

1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.

4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

6. ASTM C 635 Standard Specifications for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

7. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

8. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.

9. ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint.

10. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems.

11. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.

12. ASTM E 1264 Classification for Acoustical Ceiling Products..

B. International Building Code

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

D. NFPA 70 National Electrical Code

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

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

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

1. ESR 1308 Armstrong Suspension Systems

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

1. 0244 – Armstrong Single Span Suspension System

I. California Department of Public Health CDPH/EHLB/Standard Method v1.2 2017

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

K. International Well Building Standard

L. Mindful Materials

M. Living Building Challenge

N. U.S. Department of Agriculture BioPreferred program (USDA BioPreferred)

O. Clean Rooms up to ISO Class 5 (Class 100)

## 1.4 SYSTEM DESCRIPTON

A. Continuous/Wall-to-Wall

## 1.5 SUBMITTALS

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

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

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

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

1. If the material supplied by the acoustical subcontractor does not have an independent laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the Architect's or Owner's discretion. All products not conforming to

manufacturer's current published values must be removed, disposed of, and replaced with complying product at the expense of the Contractor performing the work.

## 1.6 SUSTAINABLE MATERIALS

A. Manufacturers will be given preference when they provide documentation to support sustainable requirements for the following: Material ingredient transparency, Removal of Red List Ingredients per LBCV3, Life Cycle impact information, Low-Emitting Materials, and Clean Air performance.

1. Health Product Declaration (HPD). The end use product has a published, complete Health Product Declaration with disclosure at a minimum of 1000ppm of known hazards in compliance with the Health Product Declaration Open Standard.

2. Declare Label. The end use product has a published Declare label by the International Living Future Institute with disclosure of 100 ppm with a designation of Red List Free or Compliant (less than 1% proprietary ingredients).

3. Low Emitting products with VOC emissions data. Preference will be given to manufacturers that can provide emissions data showing their products meet any of the following: CDPH/EHLB/Standard Method v1.2-2017; Indoor Air Quality Certified to SCS-105 v4.202023.

4. Life cycle analysis. Products that have communicated life cycle data through Environmental Product Declarations (EPDs) will be preferred.

5. End Of Life Programs/Recycling: Where applicable, manufacturers that provide the option for recycling of their products into new products at end-of-life through take-back programs will be preferred.

6. Products meeting LEED V4 requirements including:

    a. Storage and Collection of Recyclables

    b. Construction and Demolition Waste Management Planning

    c. Building Life-Cycle Impact Reduction

    d. Building Product Disclosure and Optimization Environmental Product Declarations.

    e. Building Product Disclosure and Optimization Sourcing of Raw Materials

    f. Building Product Disclosure and Optimization Material Ingredients

    g. Construction and Demolition Waste Management

## 1.7 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide acoustical panel units ad grid components by a single manufacturer to ensure fit and function.

B. Installer Qualifications: Company specializing in performing specified work type, a minimum of five (5) years of documented experience, and approved by the manufacturer.

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

D. Surface Burning Characteristics: Tested per ASTM E 84 and complying with ATSM E 1264 Classification.

## 1.8 DELIVERY, STORAGE AND HANDLING

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

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

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

## 1.9 PROJECT CONDITIONS

A. Space Enclosure:

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

## 1.10 ALTERNATE CONSTRUCTION WASTE DISPOSAL

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

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

C. Recycling may qualify for LEED Credits:

1. LEED 2009 – Category 4: Material and Resources (MR)

    a. Credit MRc2: Construction Waste Management

2. LEEDv4 – MRp2

## 1.11 WARRANTY

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

1. Acoustical Panels with HumiGuard Max and HumiGuard Plus performance: sagging and warping.

2. Acoustical Panels with BioBlock performance: growth of mold and mildew

3. Grid System: rusting and manufacturer’s defects

B. Warranty Period:

1. Ceiling System: Thirty (30) years from date of substantial completion

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

1.12 MAINTENANCE

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

1. Acoustical Ceiling Units: Furnish quantity of full-size units equal to 5.0 percent (5%) of amount installed.

2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent (2%) of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Ceiling Panels:

1. Armstrong World Industries, Inc.

B. Suspension Systems:

1. Armstrong World Industries, Inc.

2.2 ACCOUSTICAL CEILING UNITS

A. Acoustical Panel Ceilings:

1. Surface Texture: Medium Texture

2. Composition: Mineral Fiber

3. Color: White

4. Size: 24" x 24" x 5/8"

5. Edge Profile: Angled Tegular

6. Noise Reduction Coefficient (NRC) ASTM C 423 Classified w/UL label on product carton: 0.55

7. Ceiling Attenuation Class (CAC): ASTM E 1414/E1414M; Classified with UL label on product carton: 33, 35

8. Flame Spread: ASTM E 1264; Class A

9. Light Reflectance (LR) White Panel: ASTM E 1477; 0.85

10. Dimensional Stability: Standard, HumiGuard Plus

11. Recycle Content: up to 73% total recycled content. (Total recycled content: pre-consumer, post-consumer, and post-industrial)

12. Material Ingredient Transparency: Health Product Declaration (HPD); Declare Label

13. Life Cycle Assessment: Third Party Certified Environmental Product Declaration (EPD)

14. Indoor Air Quality Certified to SCS-105 v4.2-2023

15. Basis of Design: FINE FISSURED, item # 1833 Fire Guard, as manufactured by Armstrong World Industries, Inc.

16. Substitutions: Refer to Alternates in Part 1.

## 2.3 METAL SUSPENSION SYSTEM

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

1. Structural Classification: ASTM C635 Intermediate or Heavy Duty

2. Color: White or match the actual color of the selected ceiling tile, unless noted otherwise.

3. Sustainability: Environmental Product Declaration (EPD), Health Product Declaration (HPD)

4. Basis of Design:

    a. Prelude XL 15/16" Fire Guard Exposed Tee as manufactured by Armstrong World Industries, Inc.

5. Substitutions: Refer to Alternates in Part 1

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

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

D. Edge Moldings and Trim as manufactured by Armstrong World Industries, Inc.

E. Accessories as manufactured by Armstrong World Industries, Inc.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

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

## 3.2 PREPARATION

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

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

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

## 3.3 INSTALLATION

A. Follow manufacturer installation instructions.

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

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

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

E. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces. All the cuts shall be angled tegular,

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

## 3.4 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

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

END OF SECTION 095113

SECTION 096723

RESINOUS FLOORING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this section shall be governed by the Contract Documents. Provide materials, labor, equipment, and services necessary to furnish, deliver, and install the work of this section as shown on the drawings, as specified herein, and/or as required by job conditions.

1.2 DESCRIPTION OF WORK

A. The Work of this Section shall include, but is not necessarily limited to, the following:

1. It is the intention to install resinous flooring over the existing tile, existing concrete, and concrete patches – all prepped per manufacturer's instructions.

2. Resinous flooring includes penetrating, moisture tolerant, two-component epoxy primer, a high performance, three-component, chemical resistant mortar consisting of bisphenol F epoxy resin, curing agent and selected, graded aggregates blended with inorganic pigments, a two-component, chemical-resistant bisphenol F epoxy coating and a selected, graded, large grit silica aggregate.

B. The following Sections contain requirements that relate to this Section:

1. Section 033000 – Concrete Cast in Place

2. Section 079200 – Joint Sealers

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, installation instructions, and general recommendations for each resinous flooring material required. Include certification indicating compliance of materials with requirements.

B. Samples: Submit, for verification purposes, 4-inch square samples of each type of resinous flooring required, applied to rigid backing, in color and finish indicated.

1. For initial selection of colors and finishes, submit manufacturer's color charts showing full range of colors and finishes available.

1.4 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain primary resinous flooring materials including primers, resins, hardening agents, finish or sealing coats from a single manufacturer with not less than ten (10) years of successful experience in manufacturing and installing principal material described in this section. Contractor shall have completed at least five (5) projects of similar size and complexity: Stonhard or approved equal. Provide secondary materials only of type and from source recommended by manufacturer of primary materials.

B. Pre-Installation Conference

1. General contractor shall arrange a meeting not less than thirty (30) days prior to starting work.

2. Attendance:

    a. General Contractor

    b. Architect

    c. Manufacturer and Installer's Representatives

C. ISO 9001: All materials including primers, resins, curing agents, finish coats, aggregates, and sealants are manufactured and tested under an ISO 9001 registered quality system.

## 1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Material shall be delivered to job site and checked by flooring contractor for completeness and shipping damage prior to job start.

B. All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on-site mixing errors. No on-site weighing or volumetric measurements allowed.

C. Material shall be stored in a dry, enclosed area protected from exposure to moisture. Temperature of storage area shall be maintained between 60° and 85°F/16° and 30°C.

## 1.6 PROJECT CONDITIONS

A. Concrete substrate shall be properly cured for a minimum of 30 days. A vapor barrier must be present for concrete subfloors on or below grade. Otherwise, an osmotic pressure-resistant grout must be installed prior to the resinous flooring.

B. Utilities including electric, water, heat (air temperature between 60° and 85°F/16° and 30°C) and finished lighting to be supplied by General Contractor.

C. Job area to be free of other trades during and for a period of 24 hours after floor installation.

D. Protection of finished floor from damage by subsequent trades shall be the responsibility of the General Contractor.

## 1.7 WARRANTY

A. Manufacturer shall furnish a single written warranty covering both material and workmanship for a period of one (1) full year from date of installation.

# PART 2 - PRODUCTS

## 2.1 COLORS

A. As selected by Architect from manufacturer's standard colors (or as indicated on drawing).

## 2.2 EPOXY FLOORING

A. Stonclad HT coated with Stonkote HT4 with Texture #3 as manufactured by Stonhard, Inc., Maple Shade, NJ (800) 257-7953, is a nominal ¼" / 6mm thick system comprised of penetrating, moisture-tolerant, two-component epoxy primer, a high-performance, three-component, chemical-resistant mortar consisting of bisphenol F epoxy resin, curing agent, and selected, graded aggregates blended with inorganic pigments, a two-component, 100% solids, chemical-resistant, bisphenol F epoxy coating and a selected, graded, large grit silica aggregate.

1. Physical Properties: provide flooring system in which physical properties of topping including aggregate, when tested in accordance with standards or procedures referenced below, are as follows:

| | | |
|---|---|---|
| a. | Compressive Strength (ASTM C 579) | 11,500 psi |
| b. | Tensile Strength (ASTM C 307) | 2,200 psi |
| c. | Flexural Strength (ASTM C 580) | 5,000 psi |
| d. | Hardness (ASTM D 2240/Shore D Durometer) | 87-90 |
| e. | Impact Resistance (ASTM D 4226) | >160 in. lbs |
| f. | Abrasion Resistance (ASTM D 4060, Tabor Abrader CS-17 wheel) | 0.08 gm max. weight loss |
| g. | Coefficient of Friction (ASTM D 2047/Neoprene Dry) | 0.8. |
| h. | Flexural Modulus of Elasticity (ASTM C 580) | 1.7 x $10^6$ psi |
| i. | Flammability (ASTM) D 635 | Self Extinguishing<br>Extent of burning 0.25 inches max. |
| j. | Thermal Coefficient of Linear Expansion | 2.0 x $10^5$ in/in°C |
| k. | Water Absorption (ASTM C 413) | 0.2% |
| l. | Heat Resistance Limitation (for continuous exposure | 200°F/93°C<br>250°F/122°C(for intermittent spills) |
| m. | Cure Rate allow (At 77°F/255°C) | 8 hours for foot traffic<br>24 hours for normal operations |

## 2.3 JOINT SEALANT MATERIALS

A. Type produced by manufacturer of resinous flooring system for type of service and joint condition indicated.

## PART 3 - EXECUTION

### 3.1 PREPARATION

A. Substrate: Floor preparation shall be by initial power washing and mechanical means and include use of a scarifier or shot blast machine for removal of bond inhibiting materials such as curing compounds or laitance.

### 3.2 APPLICATION

A. General: Apply each component of resinous flooring system in compliance with manufacturer's directions to produce a uniform monolithic wearing surface of thickness indicated, uninterrupted except at divider strips, sawn joints or other types of joints (if any), indicated or required.

B. Primer: Mix and apply primer over properly prepared substrate with strict adherence to manufacturer's installation procedures and coverage rates. Coordinate timing of primer application with application of troweled mortar to ensure optimum adhesion between resinous flooring materials and substrate.

C. Troweled Mortar: Mix mortar material according to manufacturer's recommended procedures. Uniformly spread mortar over substrate using manufacturer's specially designed screed box adjusted to manufacturer's recommended height. Apply hand-trowel mixed mortar over freshly primed substrate using stainless steel finishing trowels.

D. Coating/Texture: Remove any surface imperfections by lightly abrading and vacuuming the floor surface. Mix coating according to manufacturer's recommended procedures. Squeegee apply and backroll coating with strict adherence to manufacturer's installation procedures and coverage rates. Broadcast silica aggregate into freshly rolled coating. Allow coating to cure and apply a second layer of coating according to manufacturer's recommended procedures.

### 3.3 FIELD QUALITY CONTROL

A. The right is reserved to invoke the following material testing procedure at any time, and any number of times during period of flooring application.

B. The Owner will engage service of an independent testing laboratory to sample materials being used on the job site. Samples of material will be taken, identified and sealed, and certified in presence of Contractor.

C. Testing laboratory will perform tests for any of characteristics specified, using applicable testing procedures referenced herein, or if none referenced, in manufacturer's product date.

D. If test results show materials being used do not comply with specified requirements, Contractor may be directed by Owner to stop work, remove non-conforming materials, pay for testing, reply flooring materials to properly prepared surfaces which had previously been coated with unacceptable materials.

### 3.4 CURING, PROTECTION AND CLEANING

A. Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages pf application and prior to completion of curing process. Close area of application for a minimum of 24 hours.

B. Protect resinous flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application. General Contractor is responsible for protection and cleaning of surface after final coats.

C. Cleaning: Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer.

END OF SECTION

SECTION 09 9000

PAINTING AND FINISHING

## PART 1 GENERAL

### 1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

### 1.2 SECTION INCLUDES

A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the painting and finishing as shown on the drawings and/or specified herein, including, but not limited to, the following:

1. Prime painting unprimed surfaces to be painted under this Section.

2. Painting all items furnished with a prime coat of paint, including touching up of or repairing of abraded, damaged or rusted prime coats applied by others.

3. Painting all ferrous metal (except stainless steel) exposed to view.

4. Painting all galvanized ferrous metals exposed to view.

5. Painting interior concrete block exposed to view.

6. Painting gypsum drywall exposed to view.

7. Painting concrete floors.

8. Painting of wood exposed to view, except items which are specified to be painted or finished under other Sections of these specifications. Back painting of all wood in contact with concrete, masonry or other moisture areas.

9. Painting pipes, pipe coverings, conduit, ducts, insulation, hangers, supports and other mechanical and electrical items and equipment exposed to view.

10. Painting surfaces above, behind or below grilles, gratings, diffusers, louvers, lighting fixtures, and the like, which are exposed to view through these items.

11. Incidental painting and touching up as required to produce proper finish for painted surfaces, including touching up of factory finished items.

12. Painting of any surface not specifically mentioned to be painted herein or on drawings, but for which painting is obviously necessary to complete the job, or work which comes within the intent of these specifications, shall be included as though specified.

### 1.3 RELATED SECTIONS

A. Shop priming is required on some, but not all of the items scheduled to be field painted. Refer to other Sections of work for complete description.

B. Shop Coat on Machinery and Equipment: Refer to the Sections under which various items of manufactured equipment with factory applied shop prime coats are furnished, including, but not necessarily limited to, the following Sections. All items of equipment furnished with prime coat finish shall be finish painted under this Section.

1. Plumbing - Division 22.

2. Heating, Ventilation and Air Conditioning – Division 23.

C. Color Coding of Mechanical Piping and Electrical Conduits – Divisions 22 and 26.

1. This Color Coding consists of an adhesive tape system and is in addition to painting of piping and conduits under this Section, as specified above.

## 1.4 MATERIALS AND EQUIPMENT NOT TO BE PAINTED

A. Items of equipment furnished with complete factory finish, except for items specified to be given a finish coat under this Section.

B. Non-ferrous metals, except for items specified and/or indicated to be painted.

C. Finished hardware, excepting hardware that is factory primed.

D. Surfaces not to be painted shall be left completely free of droppings and accidentally applied materials resulting from the work of this Section.

## 1.5 QUALITY ASSURANCE

A. Job Mock-Up

1. In addition to the samples specified herein to be submitted for approval, apply in the field, at their final location, each type and color of approved paint materials, applied 10 feet wide, floor to ceiling of wall surfaces, before proceeding with the remainder of the work, for approval by the Architect. Paint mock-ups to include door and frame assembly.

2. These applications when approved will establish the quality and workmanship for the work of this Section.

3. Repaint individual areas which are not approved, as determined by the Architect, until approval is received. Assume at least two paint mock-ups of each color and gloss for approval.

B. Qualification of Painters: Use only qualified journeyman painters for the mixing and application of paint on exposed surfaces.

C. Paint Coordination: Provide finish coats which are compatible with the prime paints used. Review other Sections of these specifications in which prime paints are to be provided to ensure compatibility of the total coatings system for the various substrates. Upon request from other subcontractors, furnish information on the characteristics of the finish materials proposed to be used, to ensure that compatible prime coats are used. Provide barrier coats over incompatible primers or remove and re-prime as required. Notify the Architect in writing of any anticipated problems using the coating systems as specified with substrates primed by others.

D. All paints must conform to the Volatile Organic Compounds (VOC) standards of prevailing codes and ordinances.

## 1.6 SUBMITTALS

A. Materials List

1. Before any paint materials are delivered to the job site, submit to the Architect a complete list of all materials proposed to be furnished and installed under this portion of the work.

2. This shall in no way be construed as permitting substitution of materials for those specified or accepted for this work by the Architect.

B. Samples

1. Accompanying the materials list, submit to the Architect copies of the full range of colors available in each of the proposed products.

2. Upon direction of the Architect, prepare and deliver to the Architect two (2) identical sets of Samples of each of the selected colors and glosses painted onto 8-1/2" x 11" x 1/4" thick material; whenever possible, the material for Samples shall be the same material as that on which the coating will be applied in the work.

C. Manufacturer's Recommendations: In each case where material proposed is not the material specified or specifically described as an acceptable alternate in this Section of these specifications, submit for the Architect's review the current recommended method of application published by the manufacturer of the proposed material.

D. Closeout Submittal

1. Coating Maintenance Manual: Upon conclusion of the project, the Contractor shall furnish a coating maintenance manual such as Sherwin Williams "Custodian Project Color and Product Information" report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, MSDS, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

## 1.7 PRODUCT HANDLING

A. Deliver all paint materials to the job site in their original unopened containers with all labels intact and legible at time of use.

B. Protection

1. Store only the approved materials at the job site, and store only in a suitable and designated area restricted to the storage of paint materials and related equipment.

2. Use all means necessary to ensure the safe storage and use of paint materials and the prompt and safe disposal of waste.

3. Use all means necessary to protect paint materials before, during and after application and to protect the installed work and materials of all other trades.

C. Replacements: In the event of damage, immediately make all repairs and replacements necessary.

## 1.8 EXTRA STOCK

A. Upon completion of this portion of the Work, deliver to the Owner an extra stock of paint equaling approximately ten (10) percent of each color and gloss used and each coating material used, with all such extra stock tightly sealed in clearly labeled containers.

## 1.9 JOB CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 50 degrees F. and 90 degrees F., unless otherwise permitted by the paint manufacturer's printed instructions.

B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 45 degrees F. and 95 degrees F. unless otherwise permitted by the paint manufacturer's printed instructions.

C. Do not apply paint in snow, rain, fog or mist; or when the relative humidity exceeds eighty-five (85) percent; or to damp or wet surfaces; unless otherwise permitted by the paint manufacturer's printed instructions.

D. Painting may be continued during inclement weather only if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during application and drying periods.

# PART 2 PRODUCTS

## 2.1 PAINT MANUFACTURERS

A. Except as otherwise noted, provide the painting products listed for all required painting made by one of the manufacturers listed in the paint schedule (Section 2.4). These companies are Benjamin Moore, PPG (PPG Paints), and Sherwin Williams (S-W). Comply with number of coats and required minimum mil thicknesses as specified herein.

## 2.2 MATERIALS

A. Provide undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer and use only to recommended limits.

B. Colors and Glosses: All colors and glosses shall be as selected by the Architect. Certain colors will require paint manufacturer to prepare special factory mixes to match colors selected by the Architect. Color schedule (with gloss) shall be furnished by the Architect.

C. Coloring Pigment: Products of or furnished by the manufacturer of the paint or enamel approved for the work.

D. Linseed Oil: Raw or boiled, as required, of approved manufacture, per ASTM D 234 and D 260, respectively.

E. Turpentine: Pure distilled gum spirits of turpentine, per ASTM D 13.

F. Shellac: Pure gum shellac (white or orange) cut in pure denatured alcohol using not less than four (4) lbs. of gum per gallon of alcohol.

G. Driers, Putty, Spackling Compound, Patching Plaster, etc.: Best quality, of approved manufacture.

H. Heat Resistant Paint: Where required, use heat resistant paint when applying paint to heating lines and equipment.

## 2.3 GENERAL STANDARDS

A. The various surfaces shall be painted or finished as specified below in Article 2.4. However, the Architect reserves the right to change the finishes within the range of flat, semi-gloss or gloss, without additional cost to the Owner.

B. All paints, varnishes, enamels, lacquers, stains and similar materials must be delivered in the original containers with the seals unbroken and label intact and with the manufacturer's instructions printed thereon.

C. All painting materials shall bear identifying labels on the containers with the manufacturer's instructions printed thereon.

D. Paint shall not be badly settled, caked or thickened in the container, shall be readily dispersed with a paddle to a smooth consistency and shall have excellent application properties.

E. Paint shall arrive on the job color-mixed except for tinting of under-coats and possible thinning.

F. All thinning and tinting materials shall be as recommended by the manufacturer for the particular material thinned or tinted.

G. It shall be the responsibility of the Contractor to see that all mixed colors match the color selection made by the Architect prior to application of the coating.

## 2.4 SCHEDULE OF FINISHES

A. High Performance Coating on Exterior Galvanized Ferrous Metals

| | |
|---|---|
| First Coat: | "27 Typoxy" or "N69 Epoxoline II" by Tnemec; "Intergard 345" by International Protective Coatings; "Carboguard 893 SG" or "Carboguard 888" by Carboline; "Devran 203 WB Epoxy Primer" by PPG; Epoxy Mastic Coating V 160 Series by Cortech/Moore or "Recoatable Epoxy Primer 867-45" by Sherwin Williams. |
| Second Coat: | "V73 Endura Shield" or "1074/1075" by Tnemec; "Interthane 870UHS" or "990 UHS" by International Protective Coatings; "Carbothane 133 LH" by Carboline; "Devthane 379UH Aliphatic Vizethne" by PPG; Acrylic Aliphatic Urethane V 500 (Gloss) or V 510 (Semi-Gloss) by Corotech/Moore or "Hi-Solids Urethane B65- 300/350" by Sherwin Williams. |

B. High Performance Coating on Exterior Non-Galvanized Ferrous Metals

Prime Coat: "Tneme-Zinc 90/97" by Tnemec; "Interzinc 52" or "315" by International Protective Coatings; "Carbozinc 859, Class B" by Carboline; "Cathacoat 302V Reinforced Inorganic Zinc Primer" by PPG; Organic Zinc Rich Primer V 170 by Corotech/Moore or "Zinc Clad II Plus Inorganic Zinc Rich Coating B69V212" by Sherwin Williams.

Second Coat: "27 Typoxy" or "N69 Epoxoline II" by Tnemec; "Intergard 345" by International Protective Coatings; "Carboguard 893 SG" or "Carboguard 888" by Carboline; "Bar-Rust 231V Multi-Purpose Epoxy Mastic" by PPG; Epoxy Mastic Coating V 160 Series by Corotech/Moore or "Macropoxy 646 I.C. Epoxy B58-600" by Sherwin Williams.

Third Coat: "V73 Endura Shield" or "1074/1075" by Tnemec; "Interthane 870UHS" or "990 UHS" by International Protective Coatings; "Carbothane 133 LH" by Carboline; "Devthane 379 UH Aliphatic Urethane" by PPG; Acrylic Aliphatic Urethane V 500 (Gloss) or V 510 (Semi-Gloss) by Corotech/Moore or "Hi-Solids Polyurethane B65-300/350" by Sherwin Williams.

C. Interior Ferrous Metal

Satin Finish/Latex

Primer: Benj. Moore Super Spec-HP Acrylic Metal Primer (P04)
S-W Pro Industrial Pro-Cryl Universal Primer B66-310
PPG 90-912 Series Pitt-Tech Plus Int/Ext DTM Industrial Primer

First Coat: Benj. Moore Ultra Spec-HP DTM Acrylic Low Luster P25
S-W Pro-Classic Waterborne Acrylic Satin, B20
PG 16-551/16-599 Series Pitt-Glaze WB Water Borne Acrylic Epoxy

Second Coat: Benj. Moore Ultra Spec-HP DTM Acrylic Low Luster P25
S-W Pro-Classic Waterborne Acrylic Satin, B20
PPG 16-551/16-599 Series Pitt-Glaze WB Water Borne Acrylic Epoxy

a. Total DFT not less than: 3.9 mils

Semi-Gloss Finish/Latex

Primer: Benj. Moore Super Spec-HP Acrylic Metal Primer (P04)
S-W Pro Industrial Pro-Cryl Universal Primer B66-310
PPG 90-912 Series Pitt-Tech Plus Int/Ext DTM Industrial Primer

First Coat: Benj. Moore Ultra Spec HP DTM Acrylic Semi-Gloss (P29)
S-W Pro-Classic Waterborne Acrylic Semi-Gloss, B31
PPG 6-4510XI Series Speedhide Zero Interior Zero VOC Latex Semi-Gloss

Second Coat: Benj. Moore Ultra Spec HP DTM Acrylic Semi-Gloss (P29)
S-W Pro-Classic Waterborne Acrylic Semi-Gloss, B31
PPG 6-4510XI Series Speedhide Zero Interior Zero VOC Latex Semi-Gloss

a. Total DFT not less than: 4.0 mils

D. Interior Concrete Block

Flat Finish/Vinyl Acrylic Latex over Filler

Block Filler: Benj. Moore Super Spec Masonry Int./Ext. High Build Block Filler (206)
S-W Preprite Block Filler, B25W25
PPG 6-7 SpeedHide® Int/Ext Masonry Block Filler Latex

First Coat: Benj. Moore Ultra Spec 500 Interior Flat Latex (N536)
S-W Promar 200 Zero VOC Interior Latex Flat, B30-2600
PPG 6-4110XI Series Speedhide Zero Interior Zero VOC Latex Flat
Second Coat: Benj. Moore Ultra Spec 500 Interior Flat Latex (N536)
S-W Promar 200 Zero VOC Interior Latex Flat, B30-2600
PPG 6-4110XI Series Speedhide Zero Interior Zero VOC Latex Flat
a. Total DFT not less than: 10.7 mils

Eggshell Finish/Vinyl Acrylic Latex Over Filler
Block Filler: Benj. Moore Super Spec Masonry Int./Ext. High Build Block Filler (206)
S-W Preprite Block Filler, B25W25
PPG 6-7 SpeedHide® Int/Ext Masonry Block Filler Latex
First Coat: Benj. Moore Ultra Spec 500 Interior Latex Eggshell (N538)
S-W Promar 200 Zero VOC Interior Latex Eggshell, B20-2600
PPG 6-4310XI Series Speedhide Zero Interior Zero VOC Latex Eggshell
Second Coat: Benj. Moore Ultra Spec 500 Interior Latex Eggshell (N538)
S-W Promar 200 Zero VOC Interior Latex Eggshell, B30-2600
PPG 6-4310XI Series Speedhide Zero Interior Zero VOC Latex Eggshell
a. Total DFT not less than: 10.9 mils

Semi-Gloss Finish/Vinyl Acrylic Latex over Filler
Block Filler: Benj. Moore Super Spec Masonry Int./Ext. High Build Block Filler (206)
S-W Preprite Block Filler, B25W25
PPG 6-7 SpeedHide® Int/Ext Masonry Block Filler Latex
First Coat: Benj. Moore Ultra Spec 500 Interior Latex Gloss (N540)
S-W Promar 200 Zero VOC Interior Latex S. Gloss, B31-2600
PPG 6-4510XI Series Speedhide Zero Interior Zero VOC Latex Semi-Gloss
Second Coat: Benj. Moore Ultra Spec 500 Interior Latex Gloss (N540)
S-W Promar 200 Zero VOC Interior Latex S. Gloss, B31-2600
PPG 6-4510XI Series Speedhide Zero Interior Zero VOC Latex Semi-Gloss
a. Total DFT not less than: 10.7 mils

E. Interior Drywall

Semi-Gloss/Vinyl Acrylic Latex - in Bathrooms
Primer: Benj. Moore Ultra Spec 500 Interior Latex Primer (N534)
S-W Promar 200 Interior Latex Primer
PPG 6-4900XI Series Speedhide Zero Interior Zero VOC Latex Sealer
First Coat: Benj. Moore Ultra Spec 500 Latex Semi-Gloss
S-W Promar 200 Zero VOC Interior Latex Semi-Gloss
PPG 6-4110XI Series Speedhide Zero Interior Zero VOC Latex Semi-Gloss
Second Coat: Benj. Moore Ultra Spec 500 Latex Semi-Gloss (N536)
S-W Promar 200 Zero VOC Interior Latex Semi-Gloss
PPG 6-4110XI Series Speedhide Zero Interior Zero VOC Latex Semi-Gloss
a. Total DFT not less than: 3.6 mils

Eggshell Finish/Vinyl Acrylic Latex – all Other Spaces
Primer: Benj. Moore Ultra Spec 500 Interior Latex Primer (N534)
S-W Promar 200 Interior Latex Primer,
PPG 6-4900XI Speedhide Zero Interior Zero VOC Latex Sealer

First Coat: Benj. Moore Ultra Spec 500 Interior Latex Eggshell (N538)
S-W Promar 200 Zero VOC Interior Latex Egg-Shell, B20-2600
PPG 6-4310XI Series Speedhide Zero Interior Zero VOC Latex Eggshell
Second Coat: Benj. Moore Ultra Spec 500 Interior Latex Eggshell (N538)
S-W Promar 200 Zero VOC Interior Latex Egg-Shell B20-2600
PPG 6-4310XI Series Speedhide Zero Interior Zero VOC Latex Eggshell
a. Total DFT not less than: 3.8 mils

F. Interior Painted Wood

Satin Finish/Latex
Primer: Benj. Moore Advance Waterborne Int. Alkyd Primer (790)
S-W Premium Wall and Wood Primer B28W111
PPG 6-4900XI Speedhide Zero Interior Zero VOC Latex Sealer
First Coat: Benj. Moore Advance Waterborne Int. Alkyd Satin (792)
S-W Pro Classic Interior WB, Acrylic/Alkyd Classic B20.
PPG 6-4410XI Series Speedhide Zero Interior Zero VOC Latex Satin
Second Coat: Benj. Moore Advance Waterborne Int. Alkyd Satin (792)
S-W Pro Classic Interior WB, Acrylic/Alkyd Classic B20.
PPG 6-4410XI Series Speedhide Zero Interior Zero VOC Latex Satin
a. Total DFT not less than: 4.0 mils

Semi-Gloss Finish/Latex
Primer: Benj. Moore Advance Waterborne Int. Alkyd Primer (790)
S-W Premium Wall and Wood Primer B28W111
PPG 6-4900XI Speedhide Zero Interior Zero VOC Latex Sealer
First Coat: Benj. Moore Advance Waterborne Int. Alkyd (793)
S-W Pro Classic Interior WB, Acrylic/Alkyd Classic Semi-Gloss B31
PPG 6-4510XI Series Speedhide Zero Interior Zero VOC Latex Semi-Gloss
Second Coat: Benj. Moore Advance Waterborne Int. Alkyd (793)
S-W Pro Classic Interior WB, Acrylic/Alkyd Classic Semi-Gloss B31
PPG 6-4510XI Series Speedhide Zero Interior Zero VOC Latex Semi-Gloss
a. Total DFT not less than: 3.8 mils

G. Exterior Wood: Siding, Trim, Shutters, Sashes, Hardboard-Bare/Primed

Semi-Gloss Finish: Wood Trim
First Coat: Benj. Moore Fresh Start High-Hiding All Purpose Primer 046.
Second Coat: Benj. Moore Ultra Spec HP D.T.M. Acrylic Semi-Gloss Enamel, HP29
Third Coat: Benj. Moore Ultra Spec HP D.T.M. Acrylic Semi-Gloss Enamel, HP29.

Satin Finish – Early Moisture Resistant Finish: Wood Siding
First Coat: Benj. Moore Fresh Start High-Hiding All Purpose Primer 046.
Second Coat: Benj. Moore Regal Select Exterior High-Build Low Lustre N401
Third Coat: Benj. Moore Regal Select Exterior High-Build Low Lustre N401.

H. Concrete Floor Paint – Entire Basement Floor

Primer: Corotech V155 Solid Epoxy Pre-Primer.
First Coat: Corotech V440 Waterborne Amine Epoxy.

Second Coat: Corotech V440 Waterborne Amine Epoxy.
Non-Slip Aggregate: Broadcast Corotech V630 Anti-Slip Aggregate.

I. Concrete Sealer – Pan Stair Horizontal Surfaces

1. Ghostshield Lithi-Tek 9500 or approved equal installed in accordance with manufacturer's specifications.

## 2.5 EXISTING SURFACES TO BE PAINTED

A. Existing surfaces shall be painted in accordance with schedule given in Article 2.4 herein except that first or prime coat may be eliminated where existing paint is sound. Where existing paint must be removed down to base material, provide first or prime coat as specified.

## 2.6 PIPING AND MECHANICAL EQUIPMENT EXPOSED TO VIEW

A. Paint all exposed piping, conduits, ductwork and mechanical and electrical equipment. Use heat resisting paint when applied to heating lines and equipment. The Contractor is cautioned not to paint or otherwise disturb moving parts in the mechanical systems. Mask or otherwise protect all parts as required to prevent damage.

B. Exposed Uncovered Ductwork, Piping, Hangers and Equipment: Latex Enamel Undercoater and one (1) coat Acrylic Latex Flat.

C. Exposed Covered Piping, Duct Work and Equipment: Primer/Sealer and one (1) coat Acrylic Latex Flat.

D. Panel Boards, Grilles and Exposed Surfaces of Electrical Equipment: Latex Enamel Undercoater and two (2) coats Latex Semi-Gloss.

E. Equipment or Apparatus with Factory-Applied Paint: Refinish any damaged surfaces to match original finish. Do not paint over name plates and labels.

F. All surfaces of insulation and all other work to be painted shall be wiped or washed clean before any painting is started.

G. All conduit, boxes, distribution boxes, light and power panels, hangers, clamps, etc., are included where painting is required.

H. All items of Mechanical and Electrical trades which are furnished painted under their respective Contracts shall be carefully coordinated with the work of this Section so as to leave no doubt as to what items are scheduled to be painted under this Section.

PART 3 EXECUTION

3.1 INSPECTION

A. Examine the areas and conditions where painting and finishing are to be applied and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 GENERAL WORKMANSHIP REQUIREMENTS

A. Only skilled mechanics shall be employed. Application may be by brush or roller. Spray application only upon acceptance from the Architect in writing.

B. The Contractor shall furnish the Architect a schedule showing when he expects to have completed the respective coats of paint for the various areas and surfaces. This schedule shall be kept current as the job progresses.

C. The Contractor shall protect his work at all times and shall protect all adjacent work and materials by suitable covering or other method during progress of his work. Upon completion of the work, he shall remove all paint and varnish spots from floors, glass and other surfaces. He shall remove from the premises all rubbish and accumulated materials of whatever nature not caused by others and shall leave his part of the work in clean, orderly and acceptable condition.

D. Remove and protect hardware, accessories, device plates, lighting fixtures, and factory finished work, and similar items, or provide ample in place protection. Upon completion of each space, carefully replace all removed items by workmen skilled in the trades involved.

E. Remove electrical panel box covers and doors before painting walls. Paint separately and re-install after all paint is dry.

F. All materials shall be applied under adequate illumination, evenly spread and flowed on smoothly to avoid runs, sags, holidays, brush marks, air bubbles and excessive roller stipple.

G. Coverage and hide shall be complete. When color, stain, dirt or undercoats show through final coat of paint, the surface shall be covered by additional coats until the paint film is of uniform finish, color, appearance and coverage, at no additional cost to the Owner.

H. All coats shall be dry to manufacturer’s recommendations before applying succeeding coats.

I. Do not apply paint behind frameless mirrors that use mastic for adhering to wall surface.

3.3 PREPARATION OF SURFACES

A. Existing Surfaces: Clean existing surfaces requiring paint or finishing, remove all loose and flaking paint or finish and sand surface smooth as required to receive new paint or finish. No “telegraphing” of lines, ridges, flakes, etc., through new surfacing is permitted. Where this occurs, Contractor shall be required to sand smooth and re-finish until surface meets with Architect’s approval.

B. General

1. The Contractor shall be held wholly responsible for the finished appearance and satisfactory completion of painting work. Properly prepare all surfaces to receive paint, which includes cleaning, sanding, and touching-up of all prime coats applied under other Sections of the work. Broom clean all spaces before painting is started. All surfaces to be painted or finished shall be perfectly dry, clean and smooth.

2. Perform all preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified, for each particular substrate condition.

3. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease with clean cloths and cleaning solvents prior to mechanical cleaning. Program the cleaning and painting so that dust and other contaminants from the cleaning process will not fall in wet, newly painted surfaces.

C. Metal Surfaces

1. Weld Fluxes: Remove weld fluxes, splatters, and alkali contaminants from metal surfaces in an approved manner and leave surface ready to receive painting.

2. Bare Metal: Thoroughly clean off all foreign matter such as grease, rust, scale and dirt before priming coat is applied. Clean surfaces, where solder flux has been used, with benzene. Clean surfaces by flushing with mineral spirits. For aluminum surfaces, wipe down with an oil free solvent prior to application of any pre-treatment.

a. Bare metal to receive high performance coating specified herein must be blast cleaned SSPC SP-6 prior to application if field applied primer; coordinate with steel trades furnishing ferrous metals to receive this coating to ensure that this cleaning method is followed.

3. Shop Primed Metal: Clean off foreign matter as specified for "Bare Metal." Prime bare, rusted, abraded and marred surfaces with approved primer after proper cleaning of surfaces. Sandpaper all rough surfaces smooth.

4. Galvanized Metal: Prepare surface as per the requirements of ASTM D 6386.

5. Metal Filler: Fill dents, cracks, hollow places, open joints and other irregularities in metal work to be painted with an approved metal filler suitable for the purpose and meeting the requirements of the related Section of work; after setting, sand to a smooth, hard finish, flush with adjoining surface.

D. Gypsum Drywall Surfaces: Scrape off all projections and splatters, spackles all holes or depressions, including taped and spackled joints, sand smooth. Conform to standards established in Section 092900, "Gypsum Drywall."

E. New Wood Surfaces: Sand to remove all roughness, loose edges, slivers, or splinters and then brush to remove dust. Wash off grease or dirt with an approved cleaner. Fill all cracks, splits, nail holes, screw holes, and surface defects with putty after the priming coat has been applied. Putty shall be brought up flush with the surface and sanded smooth and touched-up with primer when dry.

F. Testing for Moisture Content: Contractor shall test all masonry and drywall surfaces for moisture content using a reliable electronic moisture meter. Contractor shall also test latex type fillers for moisture content before application of top coats of paint. Do not apply any paint or sealer to any surface or to latex type filler where the moisture content exceeds seven (7) percent as measured by the electronic moisture meter.

Exterior wood shall not exceed fifteen percent (15%) moisture content, measured in accordance with ASTM D4442.

G. Touch-Up: Prime paint all patched portions in addition to all other specified coats.

## 3.4 MATERIALS PREPARATION

A. Mix and prepare painting materials in strict accordance with the manufacturer's directions.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing, and application of paint in a clean condition, free of foreign materials and residue.

C. Stir all materials before application to produce a mixture of uniform density, and as required during the application of the materials. Do not stir any film which may form on the surface into the material. Remove the film and, if necessary, strain the material before using.

D. Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are to be applied. Tint undercoats to match the color of the finish coat but provide sufficient difference in shade of undercoats to distinguish each separate coat.

## 3.5 APPLICATION

A. General

1. Apply paint by brush or roller in accordance with the manufacturer's directions. Use brushes best suited for the type of material being applied. Use rollers of carpet, velvet back, or high pile sheep's wool as recommended by the paint manufacturer for material and texture required.

2. The number of coats and paint film thickness required is the same regardless of the application method. Do not apply succeeding coats until the previous coat has completely dried. Sand between each enamel or varnish coat application with fine sandpaper or rub surfaces with pumice stone where required to produce an even, smooth surface in accordance with the coating manufacturer's directions.

3. Apply additional coats when undercoats, stains, or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance. Give special attention to ensure that all surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a film thickness equivalent to that of flat surfaces.

4. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only.

    a. "Exposed surfaces" is defined as those areas visible when permanent or built-in fixtures, convector covers, covers for finned tube radiation, grilles, etc., are in place in areas scheduled to be painted.

5. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint, before final installation of equipment.

6. Paint the back sides of access panels, removable or hinged covers to match the exposed surfaces.

7. Finish doors on tops, bottoms, and side edges the same as the faces, unless otherwise indicated.

8. Enamel finish applied to wood or metal shall be sanded with fine sandpaper and then cleaned between coats to produce an even surface.

9. Paste wood filler applied on open grained wood after beginning to flatten, shall be wiped across the grain of the wood, then with a circular motion, to secure a smooth, filled, clean surface with filler remaining in open grain only. After overnight dry, sand surface with the grain until smooth before applying specified coat.

B. Scheduling Painting

1. Apply the first coat material to surfaces that have been cleaned, pre-treated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

2. Allow sufficient time between successive coatings to permit proper drying. Do not re-coat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

C. Prime Coats: Re-coat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

D. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage.

E. Touching-Up of Factory Finishes: Unless otherwise specified or shown, materials with a factory finish shall not be painted at the project site. To touch up, the Contractor shall use the factory finished material manufacturer’s recommended paint materials to repair abraded, chipped, or otherwise defective surfaces.

## 3.6 PROTECTION

A. Protect work of other trades, whether to be painted or not, against damage by the painting and finishing work. Leave all such work undamaged. Correct any damages by cleaning, repairing or replacing, and repainting, as acceptable to the Architect.

B. Provide "Wet Paint" signs as required to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.

## 3.7 CLEAN UP

A. During the progress of the work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each work day.

B. Upon completion of painting work, clean window glass and other paint spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

C. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION