

SECTION 09250
GYPSUM BOARD

PART 1 GENERAL

1.1 SUMMARY

- A. Contract Conditions: Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.
- B. Provide gypsum drywall work for:
 - 1. Interior walls, partitions, and ceilings.
- C. Related Sections:
 - 1. Rough Carpentry: Section 06100.
 - 2. Joint Sealer: Section 07910.
 - 3. Access Panels: Section 08305.
 - 4. Painting: Section 09900.

1.2 SUBMITTALS

- A. Product Data: Manufacturer's specifications and installation instructions for each product specified.
- B. Samples:
 - 1. Spray texture, 12" X 12" sample of each texture required.
 - 2. Submit and obtain approval prior to any work on site.
 - 3. Approved panel will be standard for remainder of project.
- C. Mock-up:
 - 1. Spray texture minimum 100 sq. ft. of prepared surface for approval.
 - 2. Locate where directed on site.
 - 3. Approved panel will be standard for remainder of project.

1.3 QUALITY ASSURANCE

- A. Use experienced installers. Deliver, handle and store materials in accordance with manufacturer's instructions.
- B. Installers Qualifications:
 - 1. Use only skilled and experienced gypsum board installers for application gypsum board, fastening, taping and finishing.
 - 2. Helpers and apprentices used for such work shall be under full and constant supervision at all times by thoroughly skilled gypsum board installers.
 - 3. In the acceptance or rejection of installed gypsum board, no allowance will be made for lack of skill on the part of installers.

- C. Tolerances:
 - 1. Not more than 1/16" difference in true plane at joints between adjacent boards before finishing.
 - 2. After finishing, joints shall be invisible.
 - 3. No gaps or voids between gypsum board units or between drywall and adjacent work, unless detailed otherwise.
 - 4. Not more than 1/8" in 10 feet deviation from true plane, plumb and level in finished work.

- D. Where fire resistance rated assemblies are indicated, provide gypsum board, other components, etc. which have been tested and shown in the applicable UL design of the "Fire Resistance Index".

- E. Environmental Requirements:
 - 1. Maintain between 55 deg. F. and 75 deg. F. for 24 hours before and during work and for 24 hours after materials have dried.
 - 2. Maintain at least 30 ft. candles of illumination measured 3 feet above floor in work spaces during joint treatment and finishing.
 - 3. Maintain sufficient ventilation for proper joint treatment and finish drying.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Gypsum board:
 - 1. Acceptable manufacturers, Domtar Gypsum Company; Georgia Pacific Corp.; Gold Bond Building Products Div.; U.S. Gypsum; or approved.
 - 2. Regular Gypsum Board; Fire resistant, ASTM C 36
 - 3. Fire Rated Gypsum Board: ANSI/ASTM C36 Type X; fire resistive type, UL rated 5/8" thick unless indicated otherwise, ends square cut, tapered and beveled edges.
 - 4. Moisture Resistant Gypsum Board: ANSI/ASTM C630 Type X; fire and moisture resistive type UL rated, 5/8" thick, end square cut, tapered and beveled edges.

- B. Screws: ASTM C646, minimum 1 1/4" long.

- C. Joint Materials: ANSI/ASTM C475; GA 201 and GA 216; reinforcing tape, joint compound, adhesive, water, and fasteners.

- D. Texture Compound: Manufacturers specifically formulated mix to provide texture specified.

- E. Accessories: Galvanized steel corner beads, casing beads, control joints, edge trim etc.

- F. Mastic: ASTM D2822, asphalt emulsion.

- G. Acoustical insulation and sealant:
 - 1. Fiberglass batt cut to full center to center stud dimension; U.S. Gypsum Acoustical Sealant or approved.

PART 3 EXECUTION

3.1 EXAMINATION

A. General:

1. Verify that structures and surfaces to receive work of this Section are straight, true, plumb, square, rigid, and otherwise properly prepared.
2. Prior to work of this Section notify Contractor of any defects requiring correction.
3. Do not start work until conditions are satisfactory.

B. Location:

1. Fire rated on all fire rated assemblies and at other locations indicated on the drawings.
2. Regular for general use wall and ceiling applications where fire or moisture resistant requirements are not a factor.
3. Moisture resistant board in all locations subject to moisture such as toilet rooms, janitor room, or locations indicated on the drawings.

3.2 GYPSUM BOARD

A. General:

1. Install gypsum board by method specified below, in accordance with applicable referenced standards, and manufacturer's recommendations.
2. Accommodate deflection by avoiding axial loading.
 - a. Extend gypsum board to maximum 3/4" below overhead structure.
 - b. General Location: All non-load bearing partitions scheduled to extend full height to structure above.
 - c. At fire rated partitions: Extend gypsum board to overhead structure.
3. At Wall Base Locations: Install gypsum board not greater than 1/4" off the floor.
4. Install gypsum board with sheets vertically, no horizontal joints.
5. Treat cut edges and holes in water resistant gypsum board with sealant as specified in Section 07900.

B. To Wood Studs and Furring:

1. Single Layer: Secure gypsum board to supports with power driven drywall screws.
2. Double Layer: Secure base layer to supports with power driven drywall screws, face layer to base layer with adhesive and power driven drywall screws. Stagger joints between layers.

3.3 FINISHES

A. General:

1. After trim has been applied, and prior to painting, correct surface damage and defects.
2. Leave work clean, smooth, and without defects which will be apparent after application of finish as scheduled.
3. Level of Finish:
Level 5

- a. All joints and interior angles shall have tape embedded in joint compound.
- b. Three separate coat of joint compound applied over all joints, angles, fastener heads, and accessories.
- c. All joint compound shall be smooth and free of tool marks and ridges.
- d. A thin skim coat of joint compound, or a material manufactured especially for this purpose, shall be applied to the entire surface
- e. The surface shall be smooth and free of tool marks and ridges.
- f. Prepared surface shall be coated with a primer/sealer prior to the application of final finishes.
- g. Location: Where gloss, semigloss, enamel or nontextured flat paints are specified or where severe lighting conditions occur.

END OF SECTION 09250

SECTION 09310
CERAMIC TILE

PART 1 GENERAL

1.1 SUMMARY

- A. Contract Conditions: Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.
- B. Provide ceramic tile work.
 - 1. Ceramic tile walls and base using the thin set applications method.
- C. Install access panels in tile work.

1.2 SUBMITTALS

- A. Submit for approval samples of tile and grout; product data indicating material specifications, characteristics, and instructions for using adhesives and grouts; manufacturer's installation instructions; maintenance data, include recommended cleaning and stain removal methods, cleaning materials, and polishes and waxes.
- B. Submit shop drawings indicating tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, thresholds, and setting details.
- C. Submit product data indicating material specifications, characteristics, and instructions for using adhesives and grouts.
- D. Mock-up, mount tile and apply grout on one 48" x 48" plywood panel to indicate patten, color variations, and grout joint size variations. Tile sample will serve as sample of workmanship and quality.
- E. Submit manufacturer's certificate that products meet or exceed, TCA A137.1.

1.3 QUALITY ASSURANCE

- A. Comply with all governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Conform to TCA A137.1.
- C. Conform to TCA Handbook for Ceramic Tile Institution.

- D. Master Grade Certificate:
 1. Prior to opening tile containers, submit to Architect/Engineer, a Master Grade Certificate in accordance with ANSI 137.1-1980.
 2. Certificate issued and signed by manufacturer when tile is shipped, state grade, kind of tile identification marks for tile package, and name and location of Project.
 3. Upon completion and as condition of acceptance, ceramic installer shall complete affidavit on reverse side, certifying that tiles designated on face of the certificate have been installed for the tile work.

- E. Manufacturer Company specializing in The manufacture of products specified in this Section with minimum three years experience.

- F. Installer Company specializing in applying the work of this Section with minimum three years experience. Approved by product manufacturer.

- G. Environmental Requirements:
 1. Do not install adhesives in a closet, unventilated environment.
 2. Maintain 50 deg F during installation of mortar materials.

- 1.4 REFERENCE STANDARDS
 - A. TCA A108.1 - Ceramic Tile Installed with Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar.
 - B. TCA A108.5 - Ceramic Tile Installed with Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar.
 - C. ANSI/TCA A118.3 - Chemical Resistant, Water Cleanable Tile-Setting and Grouting Epoxy.
 - D. TCA A118.4 - Latex-Portland Cement Mortar.
 - E. ANSI/TCA A137.1 - Specifications for Ceramic Tile.
 - F. TCA (Tile Council of America) - Handbook for Ceramic Tile Installation (latest edition).

PART 2 PRODUCTS

- 2.1 CERAMIC TILE
 - A. Acceptable Manufacturer: Dal-Tile Corporation.
 - B. Ceramic Wall Tile: TCA A137.1, "Semi Gloss" by Dal Tile conforming to the following:
 1. Size: 4 1/4" x 4 1/4" x 1/4" (for wall tile).
 2. Joint Width: 1/16"
 3. Edge: Cushioned.
 4. Surface Finish: Glazed.
 5. Colors: Field Tile – White 0100, Accent Tile – Suede Gray 0182
 - D. Wainscot:

1. Same as wall tile.
2. Provide coved shaped base floor to wall.
3. Provide bullnose cap shape, 4-1/4" x 4-1/4" nominal, wainscot to wall.
4. Provide shaped corner for inside and outside corner standard floor and cap at all corners.

2.2 MORTAR MATERIALS

- A. Mortar Materials: TCA A118.1; 1 part Portland Cement, 6 parts damp sand, up to 1/10 - part hydrated lime by volume and water.
- B. Mortar Materials: TCA A 118.4; Portland cement, sand, latex additive, and water.
- C. Mortar Bed Mix: 1 - part Portland cement and 4-parts damp sand by volume. Add latex additive in strict accordance with manufacturer's instructions.
- D. Bond Coat: Portland cement paste.

2.3 GROUT MATERIALS

- A. Grout: Mildew-resistant, colored aggregate, water-based urethane conforming to ANSI A-118.3
- B. Color: Color as selected by Architect.

2.4 MORTAR MIX AND GROUT MIX

- A. Mix and proportion pre-mix setting bed and grout materials in accordance with TCA Handbook for Ceramic Tile installation.

2.5 MISCELLANEOUS MATERIALS

- A. Backing Board: Glass mesh mortar units, aggregated Portland cement board with vinyl-coated, woven glass-fiber mesh on both front and back surfaces. Thickness to be either 7/16" or 1/2". Edges to be square cut and finished smooth.
- B. Provide mildew-resistant silicone sealant specified in Section 07910 for non-grouted joints such as for expansion, isolation, and contraction of either the tile or the substrate.
- C. Expansion Joint backer Rod: Flexible and compressible type of closed-cell foam polyethylene or butyl rubber.
- D. Polyurethane Sealant FS-S-00230, Type II- non sag, Class A; color as selected; non-staining Type; manufactured by Sika Chemical Corp. or approved.
- E. Crack Bridging Membrane
 1. Manufacturer and brand of contractor's choice
 2. Material: Elastomeric membrane satisfying conditions of use, and capable of bridging open cracks and joints without inducing stress onto tile.
 3. Extent of work: Provide over open cracks and joints in substrates to receive thin-set tile.
- F. Edge Strip

1. Manufacturer: Schluter Systems of approved
2. Brand: Shiene
3. Material: Verify match adjacent door hardware as specified in Section 08710
4. Extent of work: Provide at any exposed tile floor edges, and wherever tile floors abut other floor coverings.

2.6 ADHESIVE MATERIALS

- A. Epoxy Adhesive: ANSI/TCA A118.3; thinset bond type.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Comply with Tile Council of America and ANSI Standard Specifications for Installation. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
- B. Lay tile in grid pattern with alignment of floor, base, walls and trim grids. Layout to provide uniform joint widths and to minimize cutting; do not use less than 1/2 tile units. Center tile layout on area. Lay tile to pattern indicated on Drawings. Do not interrupt tile pattern around openings. Construct all inside and outside corners with special shapes required for continuous ceramic tile at all locations.
- C. Install mortar bed, bond coat tile, waterproof membrane, and grout to TCA Handbook for Ceramic Tile Installation, method F121 for shower rooms and method F113 for all other floors scheduled for ceramic tile.
- D. Where indicated, apply mortar bed over concrete surfaces and waterproof membrane to a thickness of 1-1/4" – 2". Slope evenly to drains.
- E. Provide sealant joints where recommended by TCA and approved by Architect. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.
- F. Place edge strips at exposed tile edges.
- G. Cut and fit tile tight to penetrations through tile. Form corners and bases neatly. Align floor and base joints.
- H. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight without voids, cracks, excess mortar, or excess grout.
- I. Sound tile after setting. Replace hollow sounding units.
- J. Allow tile to set for a minimum of 48 hours prior to grouting. Grout tile joints and cure, restore damaged finishes. Clean and protect work from damage.

- K. Install mortar bond coat, tile, and grout to TCA Handbook for Ceramic Tile Installation, Handbook Number W244C (over cement backer board), B412 (at shower receptor) and W202 (over concrete or concrete block).
- L. Form internal angles square and external angles bullnosed.
- M. Place edge strips at exposed tile edges.
- N. Keep expansion joints free of mortar or grout. Apply sealant to joints.

END OF SECTION 09310

SECTION 09510
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Contract Conditions: Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.
- B. Provide acoustical ceilings and metal suspension system.

1.2 SUBMITTALS

- A. Acoustical Tile Manufacturer's Product Data
 - 1. Standard spec sheet showing material composition, finish, acoustical properties, and light reflectance.

1.3 QUALITY ASSURANCE

- A. Use experienced installers. Deliver, handle and store materials in accordance with manufacture's instructions.
- B. Manufacturer: Company specializing in manufacture of ceiling tile with three years minimum experience.
- C. Installer: Company with three years minimum experience and approved by manufacturer.
- D. Environmental Requirements:
 - 1. Delay installation of Acoustic Units until Work spaces are dry.
 - 2. Maintain uniform temperature 55 to 70 deg F, in Work space 24 hours before, during, and after installation.
 - 3. Maintain uniform humidity 65% to 75% in Work space 24 hours before, during and 24 hours after installation.
- E. Regulatory Agency Requirements:
 - 1. Fire Resistance Rating: ASTM E-119.
 - 2. Flame Spread Rating: ASTM E-1264.

1.4 REFERENCE SPECIFICATIONS

- A. General:
 - 1. Specifications can be obtained from Associations listed below.
- B. Acoustical Systems:
 - 1. Type of Acoustic materials, type of mounting, noise reduction coefficients, and methods of installation, hereinafter specified, refer to "Acoustic Ceilings: Use & Practice", published by Association of Wall & Ceiling Contractors; 25 K Street NE; Washington, D.C. 20002
- C. Suspension Systems:

1. Suspension systems, hereinafter specified, refer to "Metal Suspension Systems for Acoustical, Tile and Lay-in Panel Ceilings", ASTM C635 and to "Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels", ASTM C-636.

1.5 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 of amount installed.

PART 2 PRODUCTS

2.1 SUSPENSION SYSTEM

- A. Products:
 1. Prelude XL manufactured by Armstrong: www.armstrong.com.
 2. Seismic Secure 15/16 inch Classic Stab: www.certainteed.com.
 2. DX manufactured by USG: www.usg.com.
- B. Suspension system for Acoustical Lay-In Panels
 1. Exposed tee grid (steel).
 2. ASTM C635/C635M.
 3. Fire rating to match the ceiling rating indicated.
 4. Structural Classification: Intermediate duty, (Heavy Duty).
 5. Deflection: 1/360.
 6. All components of system from one manufacturer.
 7. Hot dipped galvanized steel for all exterior locations, white finish.
- C. Components, Exposed Tee Grid
 1. Main and Cross Members:
 - a. Web design: Double.
 - b. Cold-rolled steel, minimum thickness of 0.020 in., electro-zinc coated and factory-painted low sheen satin white.
 3. Edge Molding at Wall: Match support framing material and finish.
 4. Rough Suspension:
 - a. Hanger wire: Minimum 12-gage, galvanized, soft-annealed, mild steel wire.
 - b. Wire ties: 18-gage, galvanized annealed steel wire.
 - c. Carrying channels: 16-gage, 1 1/2", cold rolled steel.
 5. Hold Down Clips:
 - a. Type as supplied by suspension system manufacturer.
 6. All components part of rated system matching rating indicated for ceiling.
- D. Accessories:
 1. Trim:
 - a. ASTM A-446, Grade C. 24 gauge steel, galvanized ASTM A525, to G90

- b. Prefinished baked enamel, color to match acoustic panels.
 - c. Break metal to trim shapes indicated on Drawings.
 - 2. Fasteners:
 - a. Prefinished, self tapping sheet metal screws.
 - b. Finish to match acoustic panels where exposed
 - 3. Touch-up Paint: As recommended by manufacturer.
- E. Suspension System for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.
 - 1. Products:
 - a. Armstrong World Industries, Inc.; Drywall Grid Systems.
 - b. USG Corporation; Drywall Suspension System

2.2 ACOUSTIC UNITS

- A. Manufacturers:
 - 1. National Gypsum, Armstrong, CertainTeed, USG Interiors
- B. Acoustical Panels, Non-Rated (Scheduled as ACT-I):
 - 1. Size: 24" x 48".
 - 2. Thickness: 1/2".
 - 3. Composition: Gypsum with vinyl face.
 - 4. Light Reflectance: 0.75 min.
 - 5. CAC: 46 min.
 - 6. Edge: Square Edges.
 - 7. Surface Color: White.
 - 8. Pattern: National Gypsum Gold Bond Gridstone Gypsum or approved.

2.1 12"x12" CEILING TILES

- A. Manufacturers:
 - 1. Armstrong, USG, CertainTeed; or approved.
- B. Acoustical Ceiling Tiles:
 - 9. Size: 12" x 12"
 - 10. Thickness: 1/2" or 5/8" (Match existing)
 - 11. Composition: Mineral Fiber.
 - 12. Light Reflectance: 0.75 min.
 - 13. NRC Range: 0.40 to .70.
 - 14. STC Range: 35 to 39.
 - 15. Flame Spread: ASTM E 1264; Class A (UL)
 - 16. Edge: Tongue and Groove.
 - 17. Surface Color: White.
 - 18. Pattern: Fine Fissured (verify on site).
- C. Accessories:
 - 1. Adhesive: Acoustical tile cement.
 - 2. Edge molding: Slip-on molding with 15/16" flange, Armstrong #7842 (for 5/8" tiles) or approved.
 - 3. Touch-Up Paint: White latex paint approved by the ceiling tile manufacturer for the purpose. Touch-Up paint specified in 09590 and 09900.

PART 3 EXECUTION

3.1 INSPECTION

A. Examination

1. Prior to work of this section, carefully inspect the substrates to which the ceiling tiles are to be attached to verify that they are structurally sound, smooth, level, and otherwise acceptable per tile manufacturer's recommendations.
2. Verify that suspended ceiling systems may be installed in strict accordance with all pertinent codes and regulations, the reviewed shop drawings, and the manufacturer's recommendations.
3. 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.

B. Discrepancies

1. In the event of discrepancy, immediately notify Contractor.
2. Do not proceed in areas of discrepancy until all such discrepancies have been corrected.

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.

3.2 INSTALLATION

A. Suspension System

1. Install suspension system in strict accordance with requirements of ASTM C636-86, manufacturer's recommendations and reviewed shop drawings.
2. Attach hangers to structure with suitable mechanical devices as required to insure development of the full hanger strength.
3. Wall Moldings:
 - a. Install wall molding at intersection of suspended ceiling and vertical surfaces.
 - b. Miter corners where wall moldings intersect, or install corner caps.
 - c. Securely attach to vertical surface with mechanical fasteners.
4. Hang system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

B. Lay-In Acoustical Units

1. Install to line and level, symmetrical with rooms and spaces, and with due regard to appearance and structural stability.
2. Install all acoustical units so that linearity of pattern is in one direction only.
3. Minimum width of border units: One-half unit dimension.

C. Recessed Troffer Lighting Fixtures

1. Install acoustical units surrounding recessed troffer lighting fixtures with hold-down clips to prevent movement or displacement of units.
2. Unless another system is approved, protect lighting fixtures (in 1-hour ceiling system) with 1-hour UL fire rated enclosure as follows:
 - a. Protect lighting fixtures with mineral fiber board, 1-1/4" thick, cut into pieces and job formed into four sided enclosures, triangular in cross section, approximately 1/2" longer and wider than the fixture with sufficient depth to provide at least 1/2" clearance between the fixture and the enclosure.
 - b. Hold the pieces together with 18 SWG galvanized steel wire at corners.
 - c. Provide gap at top of enclosure and overlap on adjacent lay-in panels as required by conditions of the installation.

D. Lateral Force Bracing

1. Where substantiating design calculations are not provided.
2. Horizontal restraints shall be effected by four No 12 gauge wires secured to the main runner within 2 inches of the cross runner intersection and splayed 90 degrees from each other at an angle not exceeding 45 degrees from the plane of the ceiling.
3. A strut fastened to the main runner shall be extended to and fastened to the structural members supporting the roof or floor above.
4. The strut shall be adequate to resist the vertical component induced by the bracing wires.
5. These horizontal restraint points shall be placed 12 feet on center in both directions with the first point within 6 feet from each wall.
6. Attachment of the restraint wires to the structure above shall be adequate for the load imposed.
7. Lateral force bracing members shall be spaced a minimum of 6 inches from all horizontal piping duct work that is not provided with bracing restraints for horizontal forces.
8. Bracing wires shall be attached to the grid and to the structure in such a manner that they can support a design load of not less than 200 pounds or the actual design load, whichever is greater, with a safety factor of 2.

E. Light Fixtures

1. Lighting fixtures weighing less than 56 pounds shall have, in addition to the requirements outlined above, two No. 12 gauge hangers connected from the fixture housing to the structure above. These wires may be slack.
2. Lighting fixtures weighing 56 pounds or more shall be supported directly from the structure above by approved hangers.
3. Pendant-hung lighting fixtures shall be supported directly from structure above using No. 9 gauge wire or approved alternate support without using the ceiling suspension system for direct support.

3.3 INSTALLATION, 12"x12" ACOUSTICAL TILE

- A. Install 12"x12" ceiling tile by glue-up method to gypsum board or other suitable substrate, using acoustical tile cement and (2) black trim head screws.
- B. Install with wall moldings at ceiling perimeter.

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.
- C. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.5 EXTRA STOCK

- A. Provide 2 unopened boxes of each type of tile to the School District.

END OF SECTION 09510

SECTION 09670
EPOXY FLOORING
Revised 6/10/2019

PART 1 GENERAL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section includes the following:
1. Resinous flooring system as shown on the drawings and in schedules.
- B. Related sections include the following:
1. Cast-in-Place Concrete, section 03 31 00

1.3 SYSTEM DESCRIPTION

- A. The work shall consist of preparation of the substrate, the furnishing and application of a cementitious urethane based self-leveling seamless flooring system with quartz aggregate broadcast and Epoxy broadcast and topcoats.
- B. The system shall have the color and texture as specified by the Owner with a nominal thickness of 1/4 inch. It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.
- C. Cove base (if required) to be applied where noted on plans and per manufacturers standard details unless otherwise noted

1.4 SUBMITTALS

- A. Product Data: Latest edition of Manufacturer's literature including performance data and installation procedures.
- B. Manufacturer's Material Safety Data Sheet (MSDS) for each product being used.
- C. Samples: A 3 x 3 inch square sample of the proposed system. Color, texture, and thickness shall be representative of overall appearance of finished system subject to normal tolerances.

1.5 QUALITY ASSURANCE

- A. The Manufacturer shall have a minimum of 10 years experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.
- B. The Applicator shall have experience in installation of the flooring system as confirmed by the manufacturer in all phases of surface preparation and application of the product specified.
- C. No requests for substitutions shall be considered that would change the generic type of the specified System.
- D. System shall be in compliance with requirements of United States Department of Agriculture (USDA), Food, Drug Administration (FDA), and local Health Department.
- E. System shall be in compliance with the Indoor Air Quality requirements of California section 01350 as verified by a qualified independent testing laboratory.
- F. A pre-installation conference shall be held between Applicator, General Contractor and the Owner to review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping
 - 1. All components of the system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the product type and batch number.
- B. Storage and Protection
 - 1. The Applicator shall be provided with a dry storage area for all components. The area shall be between 60 F and 85 F, dry, out of direct sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.
 - 2. Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.
- C. Waste Disposal
 - 1. The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the system.

1.7 PROJECT CONDITIONS

- A. Site Requirements
 - 1. Application may proceed while air, material and substrate temperatures are between 60 F and 85 F providing the substrate temperature is above the dew point. Outside of this range, the Manufacturer shall be consulted.
 - 2. The relative humidity in the specific location of the application shall be less than 85 % and the surface temperature shall be at least 5 F above the dew point.

3. The Applicator shall ensure that adequate ventilation is available for the work area. This shall include the use of manufacturer's approved fans, smooth bore tubing and closure of the work area.
 4. The Applicator shall be supplied with adequate lighting equal to the final lighting level during the preparation and installation of the system.
- B. Conditions of new concrete to be coated with cementitious urethane material.
1. Concrete shall be moisture cured for a minimum of 7 days and have fully cured for 14 days in accordance with ACI-308 prior to the application of the coating system pending moisture tests. Outside of these parameters manufacturer shall be consulted.
 2. Concrete shall have a flat rubbed finish, float or light steel trowel finish (a hard steel trowel finish is neither necessary nor desirable).
 3. Sealers and curing agents should not to be used.
 4. Concrete shall have a minimum design strength of 3,500 psi and a maximum water/cement ratio of 0.45.
 5. Concrete surfaces on grade shall have been constructed with a vapor barrier to protect against the effects of vapor transmission and possible delamination of the system.
- C. Safety Requirements
1. All open flames and spark-producing equipment shall be removed from the work area prior to commencement of application.
 2. "No Smoking" signs shall be posted at the entrances to the work area.
 3. All foodstuffs shall be removed from the work area.
 4. Non-related personnel in the work area shall be kept to a minimum.

1.8 WARRANTY

- A. Dur-A-Flex, Inc. warrants that material shipped to buyers at the time of shipment substantially free from material defects and will perform substantially to Dur-A-Flex, Inc. published literature if used in accordance with the latest prescribed procedures and prior to the expiration date.
- B. Dur-A-Flex, Inc. liability with respect to this warranty is strictly limited to the value of the material purchase.

PART 2 – PRODUCTS

2.1 FLOORING

- A. Dur-A-Flex, Inc, Hybri-Flex EB (self-leveling broadcast quartz), epoxy/aliphatic urethane topcoat seamless flooring system. Custom Color Case #00012928
1. System Materials:
 - a. Topping: Dur-A-Flex, Inc, Poly-Crete SL resin, hardener and SL aggregate.
 - b. The broadcast aggregate shall be Dur-A-Flex, Inc. Flintshot or Q-Rok quartz aggregate.
 - c. Broadcast: Dur-A-Flex, Inc. Shop Floor, epoxy based two-component resin.

- d. Grout Coat: Dur-A-Flex, Inc. Shop Floor, epoxy-based, two-component resin. Custom Grout Coat X-258-9-3SF
- d. Topcoat: Dur-A-Flex, Inc. Armor Top aliphatic urethane multi-component resin. Gloss Custom Topcoat X-258-9-1B
- 2. Patch Materials
 - a. Shallow Fill and Patching: Use Dur-A-Flex, Inc. Poly-Crete MD (up to ¼ inch).
 - b. Deep Fill and Sloping Material (over ¼ inch): Use Dur-A-Flex, Inc. Poly-Crete WR.

2.2 MANUFACTURER

- A. Dur-A-Flex, Inc., 95 Goodwin Street, East Hartford, CT 06108, Phone: (860) 528-9838, Fax: (860) 528-2802
- B. Manufacturer of Approved System shall be single source and made in the USA.

2.3 PRODUCT REQUIREMENTS

- | | | |
|----|--|--|
| A. | Topping | Poly-Crete SL |
| | 1. Percent Reactive | 100 % |
| | 2. VOC | 0 g/L |
| | 3. Bond Strength to Concrete ASTM D 4541 | 400 psi, substrate fails |
| | 4. Compressive Strength, ASTM C 579 | 9,000 psi |
| | 5. Tensile Strength, ASTM D 638 | 2,175 psi |
| | 6. Impact Resistance @ 125 mils, MIL D-3134,
No visible damage or deterioration | 160 inch lbs |
| B. | Broadcast and Grout Coat | Shop-Floor Resin |
| | 1. Percent Reactive | 100 % |
| | 2. VOC | <8 g/L |
| | 3. Water Absorption, ASTM D 570 | 0.04% |
| | 5. Tensile Strength, ASTM D 638 | 4,000 psi |
| | 6. Coefficient of thermal expansion
ASTM D 696, | 2 x 10 ⁻⁵ in/in/F |
| | 7. Flammability | Self-Extinguishing |
| | 7. Flame Spread/ NFPA 101 ASTM E-84 | Class A |
| C. | Topcoat | Armor Top |
| | 1. VOC | 0 g/L |
| | 2. Gloss, ASTM D 523, 60° | 75 +/- 5 |
| | 3. Mixed Viscosity, (Brookfield 25°C) | 500 cps |
| | 4. Tensile Strength, ASTM D 638 | 7,000 psi |
| | 5. Abrasion Resistance, ASTM D 4060
CS-17 wheel, 1,000g load, 1,000 cycles | 4 mg loss with grit
10 mg loss without grit |
| | 6. Pot life @ 70° F 50% RH | 2 hrs. |
| | 7. Dry Properties, 70°F, 50% RH | 8 hrs. tack free, 12 hrs. Dry |
| | 60°F, 30% RH | 12 hrs. tack free, 18 hrs. Dry |
| | 80°F, 70% RH | 4 hrs. tack free, 6 hrs. Dry |
| | 8. Full Chemical Resistance | 7 days |

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas and conditions, with Applicator present, for compliance with requirements for maximum moisture content, installation tolerances and other conditions affecting flooring performance.
 - 1. Verify that substrates and conditions are satisfactory for flooring installation and comply with requirements specified.

3.2 PREPARATION

- A. General
 - 1. New and existing concrete surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, and bituminous products.
 - 2. Moisture Testing: Perform tests recommended by manufacturer and as follows.
 - a. Perform anhydrous calcium chloride test ASTM F 1869-98. Application will proceed only when the vapor/moisture emission rates from the slab is less than and not higher than 20 lbs/1,000 sf/24 hrs.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 99% relative humidity level measurement.
 - c. If the vapor drive exceeds 99% relative humidity or 20 lbs/1,000 sf/24 hrs then the Owner and/or Engineer shall be notified and advised of additional cost for the possible installation of a vapor mitigation system that has been approved by the manufacturer or other means to lower the value to the acceptable limit.
 - 3. Mechanical surface preparation
 - a. Shot blast all surfaces to receive flooring system with a mobile steel shot, dust recycling machine (Blastrac or equal). All surface and embedded accumulations of paint, toppings hardened concrete layers, laitance, power trowel finishes and other similar surface characteristics shall be completely removed leaving a bare concrete surface having a minimum profile of CSP 4-5 as described by the International Concrete Repair Institute.
 - b. Floor areas inaccessible to the mobile blast machines shall be mechanically abraded to the same degree of cleanliness, soundness and profile using diamond grinders, needle guns, bush hammers, or other suitable equipment.
 - c. Wherever a free edge will occur, including doorways, wall perimeters, expansion joints, columns, doorways, drains and equipment pads, a ¼ inch deep by 3/16 inch wide keyway shall be cut in.
 - d. Cracks and joints (non-moving) greater than 1/8 inch wide are to be chiseled or chipped-out and repaired per manufacturer's recommendations.
 - 4. At spalled or worn areas, mechanically remove loose or delaminated concrete to a sound concrete and patch per manufacturer's recommendations.

3.3 APPLICATION

A. General

1. The system shall be applied in three distinct steps as listed below:
 - a. Substrate preparation
 - b. Topping/overlay application with quartz aggregate broadcast.
 - c. Resin application with quartz aggregate broadcast.
 - d. Grout coat application
 - e. Topcoat application.
2. Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.
3. The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.
4. The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.
5. A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.

B. Topping

1. The topping shall be applied as a self-leveling system as specified. The topping shall be applied in one lift with a nominal thickness of 1/8 inch.
2. The topping shall be comprised of three components, a resin, hardener and filler as supplied by the Manufacturer.
3. The hardener shall be added to the resin and thoroughly dispersed by suitably approved mechanical means. Aggregate shall then be added to the catalyzed mixture and mixed in a manner to achieve a homogenous blend.
4. The topping shall be applied over horizontal surfaces using a ½ inch 'v' notched squeegee, trowels or other systems approved by the Manufacturer.
5. Immediately upon placing, the topping shall be degassed with a looped roller.
6. Quartz aggregate shall be broadcast to excess into the wet material at the rate of 0.8 lbs/sf.
7. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.

C. Broadcast

1. The broadcast coat resin shall be applied at the rate of 90 sf/gal (flintshot) or 50 sf/gal (Q-Rok).
2. The broadcast coat shall be comprised of liquid components, combined at a ratio of 2 parts resin to 1 part hardener by volume and shall be thoroughly blended by mechanical means such as a high speed paddle mixer.
3. Quartz aggregate shall be broadcast into the wet resin at the rate of 0.5 lbs/sf.
4. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.

D. Grout Coat

1. The grout coat shall be squeegee applied with a coverage rate of 90 sf/gal (flintshot) or 50 sf/gal (Q-Rok).

2. The grout coat shall be comprised of liquid components, combined at a ratio of 2 parts resin to 1 part hardener by volume and shall be thoroughly blended by mechanical means such as a high speed paddle mixer.
3. The grout coat will be back rolled and cross rolled to provide a uniform texture and finish

E. Top Coat

1. The pigmented topcoat (Armor-Top) shall be roller applied with a coverage rate of 500 sf/gal.
2. The finished floor will have a nominal thickness of 1/4 inch.

3.4 FIELD QUALITY CONTROL

A. Tests, Inspection

1. The following tests shall be conducted by the Applicator:
 - a. Temperature
 1. Air, substrate temperatures, relative humidity, and, if applicable, dew point.
 - b. Coverage Rates
 1. Rates for all layers shall be monitored by checking quantity of material used against the area covered.

3.5 CLEANING AND PROTECTION

- A. Cure flooring material in compliance with manufacturer's directions, taking care to prevent their contamination during stages of application and prior to completion of the curing process.
- B. Remove masking. Perform detail cleaning at floor termination, to leave cleanable surface for subsequent work of other sections.

END OF SECTION 09670

SECTION 09900
PAINTING

PART 1 GENERAL

1.1 SUMMARY

- A. Contract Conditions: Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.
- B. Provide painting and surfacing preparation for all interior and exterior surfaces, including electrical and mechanical equipment.
- C. Related Sections:
 - 1. Finished Carpentry: Section 06200.
 - 2. Architectural Woodwork: Section 06400.
 - 3. Sealant and Caulking: Section 07910
 - 4. Steel Frames: Section 08110.
 - 5. Wood Doors: Section 08210.
 - 6. Gypsum Board: Section 09250.

1.2 SUBMITTALS

- A. Manufacturer's Literature:
 - 1. Product Data: Provide manufacturers product data on specified products, describing physical and performance characteristics, method of application.
 - 2. Maintenance Data: Provide maintenance procedures, recommended maintenance materials.
- B. Color Samples:
 - 1. Submit two "draw downs" for each Color, Finish and Sheen.
 - 2. Size: 8" x 8".
 - 3. Sample Substrate:
 - a. For Paint: Stiff Paper.
 - b. For Stain and Varnishes: Specified wood.
 - 4. Obtain Architects approval before proceeding with Contract.
- C. Field Samples:
 - 1. Before proceeding on actual Contract Work, apply where directed each specified Coating on actual Work Surfaces.
 - a. Include at minimum the following:
 - 1) Walls: 100 square feet.
 - 2) Ceiling: 100 square feet.
 - 3) Doors & Frames: 1 each.
 - 4) Cabinets: 1 unit.
 - 3. Simulate Contract Lighting during Architect's review.
 - 4. Approved Sample represents Minimum Acceptable Standard for Subsequent Work.
 - 5. Approved Samples, in like new condition, may be used in Contract Work.

1.3 QUALITY ASSURANCE & PRODUCT HANDLING

- A. Provide products of acceptable manufacturers.
 - 1. Container labeling shall include:
 - a. Manufacturer's name
 - b. Type of Material
 - c. Brand name and code
 - d. Manufacturer's batch number
 - e. Manufacturer's Product number
 - f. Drying time
 - g. Color designation
 - h. Instructions for mixing and reducing.

- B. Applicator:
 - 1. Company specializing in commercial painting special coatings and finishing with five years experience.
 - 2. Use only qualified journeyman painters for the mixing and application of paint on exposed surfaces.
 - 3. In the acceptance or rejection of installed painting, no allowance will be made for lack of skill on the part of painters.
 - 4. Conform to recommendations of the PDCA (Painting and Decorating Contractors of America) and SSPC (Steel Structures Painting Council) manuals.

- C. Delivery, Storage, Handling:
 - 1. Deliver products to site in original sealed and labeled containers; inspect to verify acceptance.
 - 2. Store in suitable location where directed by General Contractor.
 - 3. Protect against damage and contamination.
 - 4. Remove unacceptable Materials from the Project Site.

- D. Environmental Requirements
 - 1. Provide continuous ventilation and heating facilities to maintain surface and ambient temperature above 45 deg F (70 deg F for Epoxy) for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
 - 2. Do not work:
 - a. Where Dust or insects are present.
 - b. Where inclement weather may damage coating surface.
 - c. When relative humidity is above 85 percent.
 - d. On damaged or wet surfaces.
 - e. With less than 30 foot candles of lighting measured mid-height of working surface.

1.4 COLORS

- A. Colors of paints and shades of stain shall match approved control samples.
- B. Deep tone colors will be limited to approximately 10 percent of total interior paint surface.
- C. Colors within any room or space will not exceed 3 different colors, unless otherwise shown on Drawings.

1.5 EXTRA STOCK

- A. Provide five gallons in unopened, original container of each color of each top coat to Owner.
- B. Label each container with color, color mix formula, texture and room locations, in addition to the manufacturer's label.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Products for each general purpose shall be of same Manufacturer. Do not use products of different manufacturers over one another, except for Shop Prime Coat specified in other sections.
- B. Galvanized Steel Pretreatment Materials:
 - 1. Solvent: Toluene, or approved.
 - 2. Metal Conditioner: ZRC Metal Conditioner, Oakite 33, Porterprep 99, Keeler & Long 6235, or approved.
- C. Paint Materials:
 - 1. Approved manufacturer and line:
 - a. Sherwin Williams "Duration".
- D. Color Schedule: A Color Schedule will be prepared by the Architect upon all color submittals from the Contractor. The schedule will be furnished to the Contractor after approval by the Owner.
- E. Mixing and Tinting:
 - 1. Follow Manufacturer's instructions.
 - 2. Unless otherwise instructed by Manufacturer, deliver Coatings factory mixed to Job site.
 - 3. Job mix and Job tint only when required by Manufacturer.
 - 4. Mix only in clean, rust resistant containers.
 - 5. Use Tinting Colors recommended by Coating Manufacturer.
 - 6. Factory add Fungicidal Agent to all Exterior Coatings and to any Interior Coatings located in high humidity Spaces.
- F. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

PART 3 EXECUTION

3.1 INSPECTION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examination

1. Inspect surfaces, report unsatisfactory conditions in writing that will adversely effect Work execution, permanence, or quality. Give particular attention to Primer Coatings applied by other Trades, and to existing surfaces scheduled to receive new coatings; beginning work means acceptance of substrates.
 2. Verify that Door Hardware has been removed, as specified in Section 08710.
 3. Prior to starting work, notify General Contractor in writing about defects requiring correction.
 4. Do not apply additional coats until completed coat has been inspected and approved by Architect. Only inspected and approved coats will be considered in determining number of coats applied.
- C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Gypsum Wallboard: 12 percent.
 2. Veneer Plaster: 12 percent.
 3. Interior Located Wood 15 percent, measure in accordance with ASTM D2016.
 4. Exterior Located Wood: 15 percent, measured in accordance with ASTM D2016.
- D. Beginning of application means acceptance of surfaces.

3.2 PROTECTION

- A. General:
1. Protect adjacent work with drop cloths; clean paint spatters and stains from finished surfaces.
 2. Before applying paint or other finish, remove or provide ample protection for hardware, accessories, plates, light fixtures, and similar items; replace upon completion, using only workers skilled in the particular trade.
 3. Remove doors to finish bottom edge.
 4. Do not dump waste materials, including thinners, on the site.
 5. Cover or otherwise protect Paint Storage and Mixing Room.
- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. Remove empty paint containers from site.
- E. Fire Protection
1. Take extraordinary care to prevent fire.
 2. Open coating containers only when needed.
 3. Keep rubbing cloths and oily rags submersed in water.

3.3 PREPARATION

- A. Remove any loose material, dust, or foreign matter.
- B. Correct minor defects and clean surfaces which affect work of this Section.

- C. Shellac and seal marks which may bleed through surface finishes.
- D. Gypsum Board Surfaces:
 - 1. Latex fill minor defects.
 - 2. Spot prime defects after repair.
- E. Zinc Alloy and Galvanized Steel:
 - 1. Thoroughly clean with solvent, or pressure wash with detergent and hot water.
 - 2. Etch metal with metal conditioner or in accordance with Steel Structures Painting Council Specifications.
- F. Impervious Surfaces:
 - 1. Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach.
 - 2. Rinse with clean water and allow surface to thoroughly dry.
- G. Uncoated Steel and Iron Surfaces:
 - 1. Remove any rust, grease, oil, or loose scale.
 - 2. Prepare in accordance with SSPC-SP3 Power tool cleaning.
- H. Shop Primed Steel Surfaces:
 - 1. Prepare in accordance with SSPC-SP3 Hand tool cleaning.
 - 2. Feather edges to make touch-up patches inconspicuous.
 - 3. Clean surfaces with solvent.
 - 4. Prime bare steel surfaces.
- I. Surfaces to receive Epoxy Enamel:
 - 1. Follow Coating Manufacturer's instructions.
- J. Wood Doors:
 - 1. Hand block sand faces and edges to remove any handling marks or raised grain.
 - 2. Do not use steel wool on Oak doors.
 - 3. Fill voids. At any natural finished door, filler shall match wood.
- K. Other Wood:
 - 1. Clean soiled surfaces with alcohol, or approved.
 - 2. Remove any mildew by scrubbing with Trisodium Phosphate Solution, treat with bleach solution, rinse with clean water, and allow surface to completely dry before proceeding with remaining work.
 - 3. Except at rough-sawn or re-sawn surfaces, hand block sand surfaces to remove any handling marks or raised grain.
 - 4. Do not use steel wool on Oak doors.
 - 5. At opaque coatings seal any knots, pitch, and resinous sapwood before primer coat application.
 - 6. Fill any voids, including set nail and other fastener holes. At any natural finished wood, filler shall match wood.
 - 7. Apply clear sealer primer to any smooth surfaced Fir before applying any scheduled penetrating stain.
- L. Asphalt Surfaces Scheduled for Paint Finish:
 - 1. Remove foreign particles to permit adhesion of finishing materials.

- M. Concrete Block:
1. Remove any efflorescence and other bond reducing substances.
 2. Level protrusions and mortar splatter.
 3. Allow to cure for 28 days minimum.
- N. Concrete:
1. Remove excess form oil and curing compound.
 2. If necessary for coating adhesion, etch with muriatic acid solution, rinse and dry thoroughly.
 3. Allow concrete to cure minimum 60 days prior to painting.
- 3.4 APPLICATION
- A. General:
1. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
 2. Do not apply initial coating until surface moisture content is within limitations recommended by coating manufacturer. Where in doubt test with moisture meter.
 3. Except as otherwise specified hereunder, apply coatings with suitable brush, roller, or spray equipment recommended by coating manufacture.
 4. Maintain brushes, rollers, and spray equipment clean, free from contaminates, and suitably prepared for conditions of use.
 5. Do not exceed coating manufacturer's specified coating application rate.
 6. Follow coating manufacturer's recommended drying time between succeeding coats.
 7. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
 8. Apply finish coats smooth, free of brush marks, streaks, laps, coating pile-up, and skips.
 9. Leave any moldings and ornaments clean, true to detail, and without excessive coating build-up in corners and depressions.
 10. Where coating abuts other materials or colors, cut coating edge clean, sharp, and with no overlap.
 11. In addition to faces, finish door tops, bottoms, and edges as specified below. If necessary remove door from frames.
 12. Wall Louvers: Finish all surfaces, both exterior and interior. Paint black visible interior of duct work.
 13. Finish registers, grills, exposed conduit, raceways, electrical cabinets and the like to match adjacent surface.
- B. Painted Work:
1. Woodwork: Immediately upon jobsite delivery, prime all surfaces including concealed surfaces.
 2. Flat Metalwork, including Doors: Apply paint with roller or airless spray equipment only; do not apply by brush.
 3. If and when painting door hinges, such as on electrical panels, open and close doors several times after painting to prevent paint bridging across hinge knuckles.

- C. Transparent Finish Work:
 1. Adjust finish color where necessary to match appearance of adjacent materials.
 2. At rough textured wood, back brush any spray applied or dip applied stain.
- D. Field Quality Control:
 1. Before proceeding with remaining Work, request Architect to inspect each first finished Room, Space, and Item for acceptability.
 2. Dry Film Thickness
 - a. General, minimum dry mil thickness shall be 1 mil per coat of material applied for all surfaces, or as specifically referenced.
 - b. Measurement:
 - 1) Provide and use a "Tooke Dry Film Thickness Gage," or other gage approved by the Architect, to provide the dry mil thickness of the coating applied.
 - 2) Recoat entire wall where work measures less than specified thickness.

3.5 MECHANICAL & ELECTRICAL

- A. Refer to appropriate Sections in Division 15 and 16 for schedule of color coding and identification banding of equipment, ductwork, piping, and conduit.
- B. Paint shop primed equipment.
- C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- D. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.
- E. Replace identification markings on mechanical or electrical equipment when painted accidentally.
- F. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.
- G. Paint exposed conduit and electrical equipment occurring in finished areas, including panel doors and covers.
- H. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.
- I. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.6 CLEANING AND REPAIR

- A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

- B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Collect waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.
- D. Unless otherwise approved, refinish entire surface where portion of coating is unacceptable.
- E. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.

3.7 PAINT SCHEDULE

A. General

1. Prime coats specified below may be omitted where Factory applied Shop Coatings have been applied by other Trades.
2. Note primer sealer required to be applied prior to final finish for level 3, 4, or 5 gypsum board under work of this section.
3. Existing painted or varnished surfaces to be painted:
 - a. Scuff sand painted or varnished wood or metal surfaces.
 - b. Prime with bonding primer recommended by paint manufacturer prior to applying finish coats.
 - c. Bonding primer shall replace any primer listed in schedule below.
4. Quantities of coats specified below are minimum. Finished Work shall be even, uniform, and free from cloudy and mottled appearance. Apply additional coats where necessary to hide substrate.
5. Minimum Dry Film Thickness specified below include Prime Coat and Finish Coats combined.

B. Exterior Paint Schedule

1. Concrete, and stucco:
 - a. 2 coats Exterior Flat Latex Masonry Paint.
 - b. Minimum Dry Film Thickness: 2.0 mils.
2. Gypsum Board Soffits:
 - a. 1 coat alkali resistant primer sealer.
 - b. 2 coats polymer latex paint.
3. Stained Wood for semi-transparent finish:
 - a. 2 coats, Semi-transparent stain.
4. Wood
 - a. 1 coat alkyd enamel base primer.
 - b. 2 coats latex base house paint.
5. Ferrous metal: (Shop Primed)
 - a. Touch-up damage with same material.
 - b. 2 coat fortified alkyd enamel.
 - c. Minimum Dry Film Thickness: 3.0 mils.
6. Ferrous metal:
 - a. 1 coat Rust Inhibiting primer.
 - b. 2 coats Alkyd Enamel, Semi-gloss.
 - c. Minimum Dry Film Thickness: 3.0 mils.
6. Galvanized metal:
 - a. 1 coat galvanized iron primer.

- b. 2 coats alkyd enamel semi-gloss.
 - c. Minimum Dry Film Thickness: 3.0 mils.
 - 7. Steel Handrails:
 - a. 1 coat primer recommended by Enamel Manufacturer.
 - b. 2 coats Epoxy Enamel, High gloss.
 - c. Minimum Dry Film Thickness: 3.0 mills.
- C. Interior Paint Schedule
1. Gypsum Board/Veneer Plaster/Gypsum Plaster
 - a. 1 coat acrylic latex primer/sealer applied prior to texture.
 - b. 1 coat acrylic latex primer/sealer applied after texture (not required at smooth finish walls).
 - c. 2 coats interior latex enamel, semi-gloss, apply final coat with roller.
 - d. Minimum dry thickness: 3.3 mils.
 2. Concrete Block:
 - a. 1 coat smooth sprayable block filler.
 - b. 2 coats interior latex enamel, semi gloss.
 3. Wood; transparent (wood doors, standing and running trim)
 - a. 1 coat filler (for open grain wood only).
 - b. 1 coat penetrating oil stain.
 - c. 1 coat sealer.
 - d. 1 coat urethane gloss varnish.
 - e. 1 coat urethane semi-gloss varnish.
 4. Wood, painted finish
 - a. 1 coat acrylic latex primer.
 - b. 2 coats latex enamel, semi-gloss.
 5. Concrete
 - a. 1 coat filler sealer.
 - b. 2 coats interior latex enamel, semi-gloss.
 6. Steel (Unprimed):
 - a. 1 coat rust inhibitive alkaline primer.
 - b. 2 coats latex enamel, semi-gloss.
 - c. Minimum dry thickness: 3.1 mils.
 7. Steel (Primed):
 - a. Touch-up with original primer.
 - b. 2 coats latex enamel, semi-gloss.
 - c. Minimum dry thickness: 3.1 mils.
 8. Steel (Galvanized)
 - a. 1 coat galvanized iron primer.
 - b. 2 coats latex enamel semi-gloss.
 - c. Minimum dry thickness: 3.1 mils.
 9. Steel, Primed (for exposed joist, girders, duct work piping, ductwork etc):
 - a. 1 coat latex enamel.

END OF SECTION 09900