
SECTION 09 65 13
RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section includes applied (non-integral) resilient base, including work designated on the Finish Legend as "RB", Rubber Base.

1.2 RELATED WORK

- A. Color, texture, and finish: Section 09 06 00, SCHEDULE FOR FINISHES and FINISH LEGEND in drawings.
- B. Stainless steel base: Section 05 70 50, ARCHITECTURAL METAL FABRICATIONS.
- C. Resilient sheet flooring with integral base: Section 09 65 16, RESILIENT SHEET FLOORING.
- D. Terrazzo floor tile and base: Section 09 66 16, TERRAZZO FLOOR TILE.
- E. Carpet and transition strips: Section 09 68 00, CARPETING.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
1. Description of each product including material type, thickness, height, and standards to which product complies.
 2. Base material manufacturer's recommendations for adhesives.
 3. Application and installation instructions.
- C. Samples:
1. Base: 300 mm (12 inches) long; for each type, color, texture, and pattern required.
 2. Adhesive: Literature indicating each type.
- D. Certified Installer: Submit proof of certification; see QUALITY ASSURANCE below.
- E. LEED Submittals:
1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
 2. Product Data for Credit IEQ 4.1: For installation adhesives, documentation including printed statement of VOC content.

1.4 QUALITY ASSURANCE

- A. Materials: Provide products of the types specified manufactured by nationally known and recognized firms and certified by the manufacturer to equal or exceed specified characteristics.
- B. Installer: Specialist in the installation of resilient flooring materials and regularly engaged in the installation of same; qualified in, and familiar with, manufacturer's recommendations for the installation of the materials.
 - 1. Certified Installer: Installer shall be a "certified installer" where manufacturer offers a "certified installer" program; see SUBMITTALS above.
- C. Fire-Test-Response Characteristics:
 - 1. Wall Base (ASTM E 84):
 - a. Flame Resistance: Class A.
 - b. Smoke Development: 450 or less.
- D. Job Mock-up: Refer to applicable flooring section.
 - 1. Base: Refer to room mock-up required for paint finish. Provide base for all walls in paint room mock-up. Mock-up to show workmanship of base installation and suitability of substrate. Imperfections in substrate must be re-worked by wall trade.

1.5 DELIVERY

- A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number and date of manufacture.
- B. Materials from containers which have been distorted, damaged or opened prior to installation will be rejected.

1.6 STORAGE

- A. Store materials in weather tight and dry storage facility.
- B. Protect material from damage by handling and construction operations before, during, and after installation.

1.7 APPLICABLE PUBLICATIONS

- A. The publication listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Latest edition unless otherwise noted.
- B. American Society for Testing and Materials (ASTM):
 - 1. F710 Preparing Concrete Floors to Receive Resilient Flooring
 - 2. F1344 Rubber Floor Tile
 - 3. F1859 Rubber Sheet Floor Covering without Backing
 - 4. F1861 Resilient Wall Base

PART 2 - PRODUCTS

2.1 GENERAL

- A. Use only products by the same manufacturer and from the same production run.
- B. Use primers, adhesives, and miscellaneous materials recommended by the base material manufacturer.
- C. Colors, Patterns, Textures, Finish, Profiles: See Section 09 06 00, SCHEDULE FOR FINISHES and FINISH LEGEND in drawings.

2.2 RESILIENT BASE

- A. ASTM F1861, 3 mm (1/8 inch) thick, 100 mm (4 inches) high unless indicated otherwise, Type TP Rubber, Thermoplastics, Group 1 (solid) with molded top.
 - 1. Style B (cove) typical; Style A (straight) at carpet and elsewhere indicated.
 - 1. Hardness (Shore A; ASTM D 2240): 85.
 - 2. Flexibility: No cracking, breaking, or signs of fatigue when bent around 1/4 inch diameter cylinder.

2.3 ADHESIVES

- A. Use products recommended by the material manufacturer for the conditions of use.
- B. Use low-VOC adhesive during installation. Water based adhesive with low VOC is preferred over solvent based adhesive.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

- A. Maintain temperature of materials above 18° C (65° F), for 48 hours before installation.
- B. Maintain temperature of rooms where work occurs, between 18° C and 27° C (65° F and 80° F) for at least 48 hours, before, during, and after installation.
- C. Do not install materials until building is permanently enclosed and wet construction is complete, dry, and cured.

3.2 INSTALLATION REQUIREMENTS

- A. The respective manufacturer's instructions for application and installation will be considered for use when approved by the Resident Engineer.
- B. Submit proposed installation deviation from this specification to Resident Engineer indicating the differences in the method of installation.

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- C. Resident Engineer reserves the right to have test portions of material installation removed to check for non-uniform adhesion and spotty adhesive coverage.

3.3 PREPARATION

- A. Examine surfaces on which material is to be installed.
- B. Fill cracks, pits, and dents with leveling compound.
- C. Level to 3 mm (1/8 inch) maximum variations.
- D. Do not use adhesive for leveling or filling.
- E. Grind, sand, or cut away protrusions; grind high spots.
- F. Clean substrate area of oil, grease, dust, paint, and deleterious substances.
- G. Substrate area dry and cured. Perform manufacturer's recommended bond and moisture test.
- H. Preparation of existing installation:
 - 1. Remove existing base including adhesive.
 - 2. Do not use solvents to remove adhesives.
 - 3. Prepare substrate as specified.

3.4 BASE INSTALLATION

- A. Location:
 - 1. Unless otherwise specified or shown, where base is scheduled provide base where floor intersects vertical surfaces, including but not limited to , free standing columns, pilasters, walls, and base of casework, lockers, laboratory, pharmacy furniture island cabinets and where other equipment occurs.
 - 2. Extend base scheduled for room into adjacent closet, alcoves, and around columns.
- B. General: Unroll and allow to acclimate before cutting to required length.
 - 1. Lengths: Cut base in as long lengths as possible. Pieces less than 24 inches long not permitted unless required length of run is less. Double cut adjoining lengths.
 - 2. Corners: Form internal corners by coping. Form external corners by bending around corner 18" minimum to provide anchorage. Provide factory formed base where proper anchorage cannot be obtained. External mitered corners are not acceptable.
 - 3. Terminal ends at base shall be beveled and toes rounded.
 - 4. Adhere base to substrate in straight lines with top edges level and true and bottom edges fitted tightly to flooring material.
- C. Application:
 - 1. Apply adhesive uniformly with no bare spots.
 - 2. Set base with joints aligned and butted to touch for entire height.
 - 3. Before starting installation, layout base material to provide the minimum number of joints with no strip less than 600 mm (24 inches) length.

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- a. Short pieces to save material will not be permitted.
 - b. Locate joints as remote from corners as the material lengths or the wall configuration will permit.

D. Roll base for complete adhesion.

3.5 CLEANING AND PROTECTION

- A. Clean all exposed surfaces of base and adjoining areas of adhesive spatter before it sets.
- B. Keep traffic off resilient material for at least 72 hours after installation.
- C. Clean and polish materials in the following order:
 - 1. After two weeks, scrub resilient base with a minimum amount of water and a mild detergent. Leave surfaces clean and free of detergent residue. Polish resilient base to a gloss finish.
- D. Where protective materials are removed and immediately prior to acceptance, replace damaged materials and re-clean resilient materials. Damaged materials are defined as having cuts, gouges, scrapes or tears and not fully adhered.

3.6 REPAIR

- A. Touch-up and repair minor damage to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired.

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SECTION 09 65 16
RESILIENT SHEET FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This Section includes sheet flooring with heat welded seams and integral cove base including work designated on the FINISH LEGEND as "SV", Resilient Sheet Flooring. ~~series except SV-9 specified elsewhere.~~
1. Integral cove base noted as "ICB" on FINISH LEGEND.
 2. Welding rod noted as "WR" on FINISH LEGEND.
 3. Adhesives: See Section 09 60 15, FLOORING ADHESIVES.
- B. Refer to Section 07 26 14, Topical Vapor Retarders for requirements of "Flooring Trades" for amounts and quantities to be included and listed with Bid.
- C. Alternate: See Section 01 23 00, Alternates for work affecting this Section

1.2 RELATED WORK (Items not included in this Project Manual are available through Construction Manager upon request)

- A. Concrete floors: Section 03 30 09, CAST-IN-PLACE CONCRETE.
- B. Topping, patching mechanically abrade concrete floors: Section 03 54 00, Cast Underlayment.
- C. Topical Vapor Retarder: Section 07 26 14, TOPICAL VAPOR RETARDER.
- D. Color, pattern and texture: Section 09 06 00, SCHEDULE FOR FINISHES and FINISH LEGEND in drawings.
- E. Flooring adhesives: Section 09 60 15, FLOORING ADHESIVES
- F. Applied (non-integral) resilient base: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.
- G. Resilient tile flooring Section 09 65 19, RESILIENT TILE FLOORING.

1.3 QUALITY CONTROL

- A. The Contracting Officer shall approve products or service of proposed manufacturer, suppliers, and installers, and the Construction manager shall submit certification that:
1. Heat welded seaming is manufacturer's prescribed method of installation.
 2. Installer is approved by manufacturer of materials and has technical qualifications, experience, trained personnel, and facilities to install specified items.
 3. Manufacturer's product submitted has been in satisfactory operation, on three installations similar and equivalent in size to this project for three years. Submit list of installations.

- B. The sheet floor coverings shall meet fire performance characteristics as determined by testing products, per ASTM test method, indicated below by Underwriters Laboratories, Inc. or another recognized testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Critical Radiant Flux: 0.45 watts per sq. cm or more, Class I, per ASTM E648.
 - 2. Smoke Density: Less than 450 per ASTM E662.
- C. The floor covering manufacturer shall certify that products supplied for installation comply with local regulations controlling use of volatile organic compounds (VOC's).
- D. Pre-installation Conference: Section 09 60 15.
- E. Job Mock-Ups: Install materials indicated below in areas designated by Architect. Obtain Architect's approval of mock up before proceeding with work. Accepted mockups to remain as an acceptable standard of workmanship and can be part of completed Work.
 - 1. Seamless Sheet: Provide minimum 4 foot x 8 foot of sheet flooring with one seam.
 - 2. Integral Cove Base: Provide one interior corner, one exterior corner, and one termination at hollow metal door frame.
 - 3. Protection: After acceptance from Architect and Resident Engineer, protect floor mock-up with layer of kraft paper and overlay with plywood minimum 1/4 inch thick until ready for final acceptance. Remove protection when directed by Resident Engineer.
- F. Technical Service Representative: Manufacturer to have technical service representative present on job to instruct installer on proper installation.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Description of resilient material and accessories to be provided.
 - 2. Resilient material manufacturer's recommendations for adhesives, weld rods, sealants, and underlayment.
 - a. Adhesive: See Section 09 60 15.
 - 3. Application and installation instructions.
- C. Samples:
 - 1. Sheet material, 300 mm (12 inches) square of each color and pattern with a welded seam using proposed welding rod.
 - 2. Cap strip and fillet strip, 300 mm (12 inches) for integral base.
 - 3. Edge strips: 150 mm (6 inches) long each type.
 - 4. Adhesive, underlayment and primer: Pint container, each type.
- D. Shop Drawings: Layout of joints showing patterns where joints are expressed, and type and location of obscure type joints. Indicate orientation of directional patterns.
- E. Certificates: Quality Control Certificate Submittals and lists specified in paragraph QUALIFICATIONS.
- F. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
2. Adhesive: See Section 09 60 15.
3. Product Data for Credit IEQ 4.3: For resilient sheet flooring, documentation from an independent testing agency indicating compliance with the FloorScore Standard.

1.5 PROJECT CONDITIONS

- A. Maintain temperature of floor materials and room, where work occurs, above 18° C (65° F) and below 38° C (100° F) for 48 hours before, during and for 48 hours after installation. After above period, room temperature shall not fall below 13° C (55° F).
- B. Construction in or near areas to receive flooring work shall be complete, dry and cured. Do not install resilient flooring over slabs until they have been cured and are sufficiently dry to achieve a bond with adhesive. Follow flooring manufacturer's recommendations for bond and moisture testing.
- C. Building shall be permanently enclosed. Schedule construction so that floor receives no construction traffic when completed.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site in original sealed packages or containers; labeled for identification with manufacturer's name and brand.
- B. Deliver sheet flooring full width roll, completely enclosed in factory wrap, clearly marked with the manufacturer's number, type and color, production run number and manufacture date.
- C. Store materials in weathertight and dry storage facility. Protect from damage due to handling, weather, and construction operations before, during and after installation. Store sheet flooring on end with ambient temperatures maintained as recommended by manufacturer.
- D. Store sheet flooring on end.
- E. Move sheet floor coverings and installation accessories into spaces where they will be installed at least 48 hours in advance of installation.

1.7 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only. Latest edition unless otherwise noted.
- B. American Society For Testing Materials (ASTM):
 1. D3389 Coated Fabrics Abrasion Resistance (Rotary Platform, Double-Head Abrader).
 2. E648 Critical Radiant Flux of Floor-Covering Systems Using a Radiant Energy Source.
 3. E662 Specific Optical Density of Smoke Generated by Solid Materials.
 4. F710 Practice for Preparing Concrete Floors to Receive Resilient Flooring.

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| 5. | F970 | Static Load Limit. | |
| 6. | F1859 | Rubber Sheet Floor Covering without Backing. | Resistance of Synthetic Polymeric Materials to Fungi. |

1.8 SCHEDULING

- A. Interior finish work such as plastering, drywall finishing, concrete, terrazzo, ceiling work, and painting work shall be complete and dry before installation. Mechanical, electrical, and other work above ceiling line shall be completed. Heating, ventilating, and air conditioning systems shall be installed and operating in order to maintain temperature and humidity requirements.

1.9 SEQUENCING

- A. Except as scheduled otherwise on drawings for specific casework or equipment, comply with the sequences listed below.
- B. Flooring Without Integral Cove Base: Install before installation of permanent floor-mounted casework and equipment.
- C. Flooring With Integral Cove Base: Install after installation of permanent floor-mounted casework and equipment.

1.10 WARRANTY

- A. Submit written warranty, in accordance with FAR clause 52.246-21, Warranty of Construction requirements except that warranty period shall be extended to include two (2) years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. See FINISH LEGEND FOR COLOR, Basis of Design manufacturer/model, and other information.

2.2 SHEET VINYL FLOOR COVERINGS

- A. Sheet Vinyl Floor Coverings: Smooth face, minimum thickness nominal 2 mm (0.08 inch). Sheet flooring shall conform to ASTM F1913 and material requirements specified in ASTM F1303, Type II, Grade 1, backing classification not applicable. Foam backed sheet flooring is not acceptable.
- B. Size: Provide maximum size sheet material produced by manufacturer to provide minimum number of joints. Minimum size width acceptable - 1200 mm (48 inches).
- C. Each color and pattern of sheet flooring shall be of same production run.
- D. FloorScore Compliance: Resilient sheet flooring shall comply with requirements of FloorScore Standard.

E. Color, Pattern, Texture, Finish:

1. See FINISH LEGEND.

2.3 SHEET RUBBER FLOORING (ALTERNATE)

- A. ASTM F1859, Type II, Grade 1, except backing classification not applicable. Foam backed sheet flooring is not acceptable.
- B. Size: Provide maximum size sheet material produced by manufacturer to provide minimum number of joints. Minimum size width acceptable - 1200 mm (48 inches).
- C. Each color and pattern of sheet flooring shall be of same production run.
- D. FloorScore Compliance: Resilient sheet flooring shall comply with requirements of FloorScore Standard.
- E. Color, Pattern, Texture, Finish:
 1. See FINSH LEGEND.

2.4 WELDING ROD

- A. Product of floor covering manufacturer in color shall match field color of sheet floor covering.

2.5 APPLICATION MATERIALS AND ACCESSORIES

- A. Floor and Base Adhesive: See ADHESIVES below.
- B. Mastic Underlayment (for concrete floors): Provide products with latex or polyvinyl acetate resins in mix. Condition to be corrected shall determine type of underlayment selected for use.
- C. Base Accessories: Compatible with the sheet flooring.
 1. Fillet Strip: 19 mm (3/4 inch) radius.
 2. Cap Strip: Zero edge reducer approximately 25 mm (one inch) exposed height with 13 mm (1/2 inch) flange.

2.6 ADHESIVES

- A. Adhesives: See Section 09 60 15 for types required.

2.7 LEVELING COMPOUND (FOR CONCRETE FLOORS)

- A. Provide cementitious products with latex or polyvinyl acetate resins in the mix.
- B. Determine the type of selected for use by the condition to be corrected.

2.8 PRIMER (FOR CONCRETE SUBFLOORS)

- A. As recommended by the adhesive or sheet flooring manufacturer.

2.9 EDGE STRIPS

- A. Extruded aluminum, mill finish, mechanically cleaned.
- B. 28 mm (1-1/8 inch) wide, 6 mm (1/4 inch) thick, bevel one edge to 3 mm (1/8 inch) thick.
- C. Drill and counter sink edge strips for flat head stainless steel screws. Space holes near ends and approximately 225 mm (9 inches) on center in between.
- D. Color, Pattern, Texture, Finish: See Section 09 06 00 - SCHEDULE FOR FINISHES.

2.10 SEALANT

- A. As specified in Section 07 92 00, JOINT SEALANTS.
- B. Compatible with sheet flooring.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

- A. Maintain temperature of sheet flooring above 18 degrees C (65 degrees F), for 48 hours before installation.
- B. Maintain temperature of rooms where work occurs between 18° C and 27° C (65° F and 80° F), for at least 48 hours, before, during and after installation.
- C. After installation, maintain temperature at or above 18 degrees C □ 65 degrees F. □
- D. Do not install flooring until building is permanently enclosed and wet construction in or near areas to receive tile materials is complete, dry and cured, and permanent HVAC system is running.

3.2 SUBFLOOR PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of floor coverings and as follows. Where instructions disagree follow the more stringent requirement.
- B. Concrete Subfloor: Test for moisture content, alkalinity, and bond; install no flooring over concrete until the slabs have been cured and are sufficiently dry to achieve permanent bond with adhesive as determined by the test listed below. Provide additional or more stringent tests if recommended by flooring manufacturer. Remove curing agents before testing.
 - 1. Moisture Content and Alkalinity Testing: Test concrete in conformance with Section 01 45 24 - Concrete Internal relative humidity testing & Alkalinity Testing.
 - a. Internal relative humidity testing.

- b. pH (Alkalinity) testing.
 - 2. Bond Test:
 - a. Install 3-foot square panels spaced approximately 50 feet apart throughout the area to receive flooring. Minimum 4 panels per area. Select areas next to walls, columns or other light traffic areas. Select areas with deepest concrete structural elements.
 - b. Tape panel edges to slab to prevent edge drying of adhesive.
 - c. Minimum Time Period before Testing: 72 hours
 - d. Result for Passing Test: Resilient flooring remains securely bonded to concrete subfloor.
 - e. If bond test fails, perform additional subfloor preparation to obtain satisfactory adherence of flooring and repeat Bond Test.
- C. Concrete Subfloors:
 - 1. Verify that concrete slabs comply with ASTM F710.
 - a. Installer shall examine surfaces on which resilient sheet flooring is to be installed, and shall advise Construction manager, in writing, of areas which are unacceptable for installation of flooring material. Installer shall advise Construction manager which methods are to be used to correct conditions that will impair proper installation. Installation shall not proceed until unsatisfactory conditions have been corrected.
 - 2. Preparation shall include the removal of existing resilient floor and existing adhesive, if any. Do not use solvents to remove adhesives.
 - 3. Sand or otherwise abrade concrete floors with steel troweled (slick) finish to ensure suitable adhesion. Do not use solvents.
 - 4. Mechanically abrade concrete floor to remove bond breakers, curing compound, sealer, hardener, oil, and other foreign matter which may be detrimental to the completed flooring installation. Mechanically abrade concrete floor in conformance with Section 01 73 00 – Execution. Provide cast underlayment at mechanically abrade areas in conformance with Section 03 54 00 - Cast Underlayment, with cast concrete underlayment coplanar with adjacent concrete floor surface.
 - 5. Leave concrete subfloors dry and clean.
- D. Correct conditions which will impair proper installation, including trowel marks, pits, dents, protrusions, cracks or joints.
- E. Fill cracks, joints, depressions, and other irregularities in concrete with leveling compound.
 - 1. Underlayment: Apply underlayment to all subfloor surfaces containing score marks, pockmarks, and surface roughness. Trowel underlayment as required to finish smooth surface without defects which might telegraph through flooring.
 - 2. Transitions: Provide underlayment as needed for transition to thicker floor coverings specified elsewhere. Slope not to exceed 1/8 inch in one foot.
 - 3. Do not use adhesive for filling or leveling purposes.
 - 4. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.
 - 5. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joint lines.
- F. Vacuum subfloors immediately prior to installation to remove loose particles.
- G. Primer: If recommended by flooring manufacturer, prior to application of adhesive, apply concrete slab primer in accordance with manufacturer's directions.

3.3 INSTALLATION

- A. Install work in compliance with manufacturer's instructions and approved layout drawings.
- B. Casework: See SEQUENCE in Part 1 above.
- C. Maintain uniformity of sheet floor covering direction and avoid cross seams.
- D. Arrange for a minimum number of seams and place them in inconspicuous and low traffic areas, but in no case less than 150 mm (6 inches) away from parallel joints in flooring substrates.
- E. Match edges of resilient floor coverings for color shading and pattern at seams.
- F. Where resilient sheet flooring abuts other flooring material floors shall finish level. Taper at 1/16 to 1/8 inch per foot.
- G. Extend sheet floor coverings into toe spaces, door reveals, closets, and similar openings.
- H. Inform the Architect of conflicts between this section and the manufacturer's instructions or recommendations for auxiliary materials, or installation methods, before proceeding.
- I. Install sheet in full coverage adhesives as specified under Section 09 60 15.
 - 1. Trim sheet materials to touch in the length of intersection at pipes and vertical projections; seal joints at pipe with waterproof cement or sealant.
- J. High Moisture and High Performance Adhesives: See Section 09 60 15.
- K. Keep joints to a minimum; avoid small filler pieces or strips.
- L. Follow manufacturer's recommendations for seams at butt joints. Do not leave any open joints that would be readily visible from a standing position.
- M. Follow manufacturer's recommendations regarding pattern match, if applicable.
- N. Installation of Edge Strips:
 - 1. Locate edge strips under center lines of doors unless otherwise indicated.
 - 2. Set aluminum strips in adhesive, anchor with anchors and screws.
- O. Integral Cove Base Installation:
 - 1. Integral base shall be 100 mm (4 inches) high except as shown higher.
 - 2. Set preformed fillet strip to receive base.
 - 3. Install the base with adhesive; terminate expose edge with the cap strip.
 - 4. Form internal and external corners to the geometric shape generated by the cove at either straight or radius corners.
 - 5. Solvent weld joints as specified for the flooring. Seal cap strip to wall with an adhesive type sealant.
 - 6. Unless otherwise specified or shown where sheet flooring is scheduled, provide integral base at intersection of floor and vertical surfaces. Provide sheet flooring and base scheduled for room on floors and walls under and behind areas where casework, laboratory and pharmacy furniture and other equipment occurs, except where mounted in wall recesses.

3.4 WELDING

- A. Heat weld all joints of flooring and base using equipment and procedures recommended by flooring manufacturer.
- B. Welding shall consist of routing joint, inserting a welding rod into routed space, and terminally fusing into a homogeneous joint.
- C. Upon completion of welding, surface across joint shall finish flush, free from voids, and recessed or raised areas.
- D. Fusion of Material: Joint shall be fused a minimum of 65 percent through thickness of material, and after welding shall meet specified characteristics for flooring.

3.5 CLEANING

- A. Clean small adhesive marks during application of sheet flooring and base before adhesive sets, exposed adhesive smearing is not acceptable.
- B. Remove visible adhesive and other surface blemishes using methods and cleaner recommended by floor covering manufacturers.
- C. Clean and polish materials per flooring manufacturer's written recommendations.
- D. Vacuum floor thoroughly.
- E. Do not wash floor until after period recommended by floor covering manufacturer and then prepare in accordance with manufacturer's recommendations.
- F. Upon completion, Resident Engineer shall inspect floor and base to ascertain that work was done in accordance with manufacturer's printed instructions.
- G. Perform initial maintenance according to flooring manufacturer's written recommendations.

3.6 PROTECTION

- A. Protect installed flooring as recommended by flooring manufacturer against damage from rolling loads, other trades, or placement of fixtures and furnishings.
- B. Keep traffic off sheet flooring for 24 hours after installation.
- C. Where construction traffic is anticipated, cover sheet flooring with reinforced kraft paper properly secured and maintained until removal is authorized by the Resident Engineer.
- D. Where protective materials are removed and immediately prior to acceptance, repair any damage, re-clean sheet flooring, lightly re-apply polish and buff floor.

3.7 LOCATION

- A. Unless otherwise specified or shown, install flooring on floor under areas where casework, laboratory and pharmacy furniture and other equipment occurs, except where mounted in wall recesses.
- B. Extend flooring for room into adjacent closets and alcoves.

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SECTION 09 65 19
RESILIENT TILE FLOORING**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. This section specifies vinyl composition tile flooring, and accessories including work designated on the Finish Legend as "VCT", Vinyl Composition Tile series.
 - 1. Adhesives: See Section 09 60 15, FLOORING ADHESIVES.
- B. Refer to Section 07 26 14, Topical Vapor Retarders for requirements of "Flooring Trades" for amounts and quantities to be included and listed with Bid.

1.2 RELATED WORK (Items not included in this Project Manual are available through Construction Manager upon request)

- A. Concrete floors: Section 03 30 09, CAST-IN-PLACE CONCRETE.
- B. Color and pattern and location in room finish schedule: Section 09 06 00, SCHEDULE FOR FINISHES and FINISH LEGEND in drawings.
- C. Flooring adhesives: Section 09 60 15, FLOORING ADHESIVES.
- D. Applied (non-integral) Resilient Base: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

1.3 QUALITY CONTROL - QUALIFICATIONS:

- A. The Contracting Officer shall approve products or service of proposed manufacturer, suppliers, and installers, and the Contractor shall submit certification that:
 - 1. Installer is approved by manufacturer of materials and has technical qualifications, experience, trained personnel, and facilities to install specified items.
 - 2. Manufacturer's product submitted has been in satisfactory operation, on three installations similar and equivalent in size to this project for three years. Submit list of installations.
- B. The floor coverings shall meet fire performance characteristics as determined by testing products, per ASTM test method, indicated below by Underwriters Laboratories, Inc. or another recognized testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Critical Radiant Flux: 0.45 watts per sq. cm or more, Class I, per ASTM E648.
 - 2. Smoke Density: Less than 450 per ASTM E662.
- C. The floor covering manufacturer shall certify that products supplied for installation comply with local regulations controlling use of volatile organic compounds (VOC's).
- D. Preinstallation Conference: Conduct conference at project site.
 - 1. Review methods and procedures related to resilient tile floor coverings including, but not limited to, the following:

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- a. Examination and preparation of substrates to receive floor covering.
 - b. Installation, including seamless installation techniques and integral cove bases.
 - c. Field quality-control testing.
 - 1) For the meeting provide copies of test for concrete floor demonstrating that concrete substrate is suitable for installation of resilient tile flooring materials in compliance with Section 01 45 24, Concrete Vapor Emission and Alkalinity Testing.
 - 2) Have a minimum of three areas ready to demonstrate to the Architect and Resident Engineer that the resilient tile flooring system floor bonds well to concrete substrate. See bond test below.
 - d. Parties required to have a representative attend meeting:
 - 1) Construction Manager
 - 2) Installer
 - 3) Resident Engineer
 - 4) Architect
 - 5) Testing Agency
- E. Job Mock-Ups: See Section 01 43 39 – Mock-Up Requirements. Install materials indicated below in areas designated by Architect. Installation to serve as minimum standard of workmanship. Obtain Architect's approval of mock up before proceeding with work.
- 1. Protection: After acceptance from Architect and Resident Engineer, protect floor with layer of kraft paper and overlay with plywood minimum ¼ inch thick until ready for final acceptance. Remove protection when directed by Resident Engineer.
- F. Technical Service Representative: Manufacturer to have technical service representative present on job to instruct installer on proper installation.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Description of each product.
 - 2. Resilient material manufacturer's recommendations for adhesives, underlayment, primers and cleaning materials.
 - 3. Adhesive: See Section 09 60 15.
 - 4. Application, installation, and maintenance instructions.
- C. Samples:
 - 1. Tile: 300 mm by 300 mm (12 inches by 12 inches) for each type, pattern and color.
 - 2. Edge Strips: 150 mm (6 inches) long, each type.
 - 3. Feature Strips: 150 mm (6 inches) long.
- D. Shop Drawings:
 - 1. Layout of patterns shown on the drawings and in Section 09 06 00, SCHEDULE FOR FINISHES.
 - 2. Edge strip locations showing types and detail cross sections.
- E. Test Reports:
 - 1. Abrasion resistance: Depth of wear for each tile type and color and volume loss of tile, certified by independent laboratory.

2. Tested per ASTM F510.

F. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
2. Adhesive: See Section 09 60 15.
3. Product Data for Credit IEQ 4.3: For resilient tile flooring, documentation from an independent testing agency indicating compliance with the FloorScore Standard.

1.5 PROJECT CONDITIONS

- A. Maintain temperature of floor materials and room, where work occurs, above 18° C (65° F) and below 38° C (100° F) for 48 hours before, during and for 48 hours after installation. After above period, room temperature shall not fall below 13° C (55° F).
- B. Construction in or near areas to receive flooring work shall be complete, dry and cured. Do not install resilient flooring over slabs until they have been cured and are sufficiently dry to achieve a bond with adhesive. Follow flooring manufacturer's recommendations for bond and moisture testing.
- C. Building shall be permanently enclosed. Schedule construction so that floor receives no construction traffic when completed.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number and date of manufacture.
- B. Materials from containers which have been distorted, damaged or opened prior to installation will be rejected.
- C. Store materials in weathertight and dry storage facility.
- D. Protect from damage from handling, water, and temperature.
- E. Move resilient tile floor coverings and installation accessories into spaces where they will be installed at least 48 hours in advance of installation.

1.7 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Latest edition unless noted otherwise.
- B. American Society for Testing and Materials (ASTM):
 1. D4078 Water Emulsion Floor Finish
 2. E648 Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source
 3. E662 Specific Optical Density of Smoke Generated by Solid Materials
 4. E1155 Determining Floor Flatness and Floor Levelness Numbers

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- 5. E1907 Evaluating Moisture Conditions of Concrete Floors to Receive Resilient Floor Coverings
 - 6. F510) Resistance to Abrasion of Resilient Floor Coverings Using an Abrader with a Grit Feed Method
 - 7. F710 Preparing Concrete Floors to Receive Resilient Flooring
 - 8. F1066 Vinyl Composition Floor Tile
- C. Resilient Floor Covering Institute (RFCI):
- 1. IP #2 Installation Practice for Vinyl Composition Tile (VCT)
- D. Federal Specifications (Fed. Spec.):
- 1. SS-T-312 Tile Floor: Asphalt, Rubber, Vinyl and Vinyl Products

1.8 SCHEDULING

- A. Interior finish work such as plastering, drywall finishing, concrete, terrazzo, ceiling work, and painting work shall be complete and dry before installation. Mechanical, electrical, and other work above ceiling line shall be completed. Heating, ventilating, and air conditioning systems shall be installed and operating in order to maintain temperature and humidity requirements.

1.9 SEQUENCE

- A. Install tile flooring before installation of permanent floor-mounted casework and equipment.
- B. Install base after installation of floor-mounted casework and equipment.

1.10 WARRANTY

- A. Submit written warranty, in accordance with FAR clause 52.246-21, Warranty of Construction requirements except that warranty period shall be extended to include two (2) years.

PART 2 - PRODUCTS

2.1 GENERAL

- A. See FINISH LEGEND for color, Basis of Design manufacturer/model and other information.
- B. Furnish product type, materials of the same production run.
- C. Use adhesives, underlayment, and primers recommended by the floor material manufacturer.
- D. Adhesives: See Section 09 60 15 for types required.
- E. Critical Radiant Flux: 0.45 watts per sq. cm or more, Class I, per ASTM E 648.
- F. Smoke density: Less than 450 per ASTM E662.

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- G. FloorScore Compliance: Resilient tile flooring shall comply with requirements of FloorScore Standard.

2.2 VINYL COMPOSITION TILE

- A. ASTM F1066 except non-PVC, Composition 1, Class 2 (through pattern), available 300 mm (12 inches) square by 3 mm (1/8 inch) thick.
- B. Color and pattern uniformly distributed throughout thickness.
- C. Recycled Content: Minimum 10 percent post-consumer recycled content, or minimum 40 percent pre-consumer recycled content at contractor's option.
- D. Physical Characteristics:
1. Surface Profile: Smooth.
 2. ASTM F 1066: Class 2.
 3. Abrasion Resistance (ASTM F 510): Resistant.
 4. Static Load Limit (ASTM F 970): 2,000 psi.
 5. Static Coefficient of Friction (ASTM 2047): 0.8 minimum.
 6. Indentation (ASTM F 142): Exceeds standard.
 7. Impact Sound Transmission (ASTM E 2179): 12 dB.
 8. Air Borne Sound (ASTM E 429): 12 dB.
 9. Chemical Resistance (ASTM F 925): No or Slight Change.
 10. Resistance to Impact (ASTM F 1265): Excellent.
 11. Light Stability (ASTM F 1515): Excellent.
- E. Color, Pattern, Texture, Finish: See FINISH LEGEND.

2.3 ADHESIVES

- A. Adhesives: See Section 09 60 15 for types required

2.4 PRIMER (FOR CONCRETE SUBFLOORS)

- A. As recommended by the adhesive and floor covering manufacturers.

2.5 LEVELING COMPOUND (FOR CONCRETE FLOORS)

- A. Provide cementitious products with latex or polyvinyl acetate resins in the mix.
- B. Determine the type of underlayment selected for use by the condition to be corrected.

2.6 CLEANERS

- A. Cleaners: As recommended by flooring manufacturer.
- B. Polish: Not required.

2.7 EDGE STRIPS

- A. 28 mm (1-1/8 inch) wide unless shown otherwise.
- B. Bevel from maximum thickness to minimum thickness for flush joint unless shown otherwise.
- C. Extruded aluminum, mill finish, mechanically cleaned:
 - 1. Drill and counter sink edge strip for flat head screws.
 - 2. Space holes near ends and approximately 225 mm (9 inches) on center between.
- D. Resilient Edge Strip or Reducer Strip: Fed. Specs. SS-T-312, Solid vinyl.
- E. Color, Pattern, Texture, Finish: See Section 09 06 00 - SCHEDULE FOR FINISHES.

2.8 SCREWS

- A. Stainless steel flat head screw. Provide suitable expansion sleeves for use in concrete substrate.

2.9 FEATURE STRIPS

- A. Use same material as floor tile.
- B. Sizes and shapes as shown.
- C. Color, Pattern, Texture, Finish: See Section 09 06 00 - SCHEDULE FOR FINISHES.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

- A. Maintain temperature of materials a minimum of 18° C (65° F,) for 48 hours before installation.
- B. Maintain temperature of rooms where work occurs between 18° C and 27° C (65° F and 80° F), for at least 48 hours, before, during and after installation.
- C. After installation, maintain temperature at or above 18 degrees C (65 degrees F).
- D. Do not install flooring until building is permanently enclosed and wet construction in or near areas to receive tile materials is complete, dry and cured, overhead work complete, and permanent HVAC system is running.

3.2 SUBFLOOR PREPARATION

- A. Prepare surfaces to receive resilient tile flooring as follows:
- B. Prepare substrates according to manufacturer's written instructions to ensure adhesion of floor coverings and as follows. Where instructions disagree follow the more stringent requirement.

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- C. Concrete Subfloor: Test for moisture content, alkalinity, and bond; install no flooring over concrete until the slabs have been cured and are sufficiently dry to achieve permanent bond with adhesive as determined by the test listed below. Provide additional or more stringent tests if recommended by flooring manufacturer. Remove curing agents before testing.
1. Moisture Content and Alkalinity Testing: Test concrete in conformance with Section 01 45 24 - Concrete Vapor Emission & Alkalinity Testing
 - a. Internal relative humidity testing.
 - b. pH (Alkalinity) testing.
 2. Bond Test:
 - a. Install 3-foot square panels spaced approximately 50 feet apart throughout the area to receive flooring. Minimum 4 panels per area. Select areas next to walls, columns or other light traffic areas. Select areas with deepest concrete structural elements.
 - b. Tape panel edges to slab to prevent edge drying of adhesive.
 - c. Minimum Time Period before Testing: 72 hours
 - d. Result for Passing Test: Resilient flooring remains securely bonded to concrete subfloor.
 - e. If bond test fails, perform additional subfloor preparation to obtain satisfactory adherence of flooring and repeat Bond Test.
- D. Correct conditions which will impair proper installation, including trowel marks, pits, dents, protrusions, cracks or joints.
- E. Fill cracks, joints, depressions, and other irregularities in concrete with leveling compound.
1. Underlayment: Apply underlayment to all subfloor surfaces containing score marks, pockmarks, and surface roughness. Trowel underlayment as required to finish smooth surface without defects which might telegraph through flooring.
 2. Transitions: Provide underlayment as needed for transition to thicker floor coverings specified elsewhere. Slope not to exceed 1/8 inch in one foot.
 3. Do not use adhesive for filling or leveling purposes.
 4. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.
 5. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joint lines.
- F. Vacuum subfloors immediately prior to installation to remove loose particles.
- G. Primer: If recommended by flooring manufacturer, prior to application of adhesive, apply concrete slab primer in accordance with manufacturer's directions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions for application and installation unless specified otherwise.
- B. Mix tile from at least two containers. An apparent line either of shades or pattern variance will not be accepted.
- C. Tile Layout:
1. If layout is not shown on drawings, lay tile symmetrically about center of room or space with joints aligned.
 2. No tile shall be less than 150 mm (6 inches) and of equal width at walls.
 3. Place tile pattern in the same direction; do not alternate tiles.

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- D. Trim tiles to touch for the length of intersections at pipes and vertical projections, seal joints at pipes with waterproof cement.
- E. Application:
1. Apply adhesive uniformly with no bare spots.
 - a. Conform to RFC1-TM-6 for joint tightness and for corner intersection unless layout pattern shows random corner intersection.
 - b. More than 5 percent of the joints not touching will not be accepted.
 2. Roll tile floor with a minimum 45 kg (100 pound) roller. No exceptions.
 3. The Resident Engineer may have test tiles removed to check for non-uniform adhesion, spotty adhesive coverage, and ease of removal. Install new tile for broken removed tile.
- F. Installation of Edge Strips:
1. Locate edge strips under center line of doors unless otherwise shown.
 2. Set resilient edge strips in adhesive. Anchor metal edge strips with anchors and stainless steel screws specified.
 3. Where tile edge is exposed, butt edge strip to touch along tile edge.
 4. Where thin set ceramic tile abuts resilient tile, set edge strip against floor file and against the ceramic tile edge.

3.4 CLEANING AND PROTECTION

- A. Clean adhesive marks on exposed surfaces during the application of resilient materials before the adhesive sets. Exposed adhesive is not acceptable.
- B. Keep traffic off resilient material for a minimum 72 hours after installation.
- C. Clean materials in accordance with manufacturer's written procedures and in the following order:
1. General Cleaning: Perform after traffic is permitted on flooring; minimum 72 hours after installation.
 - a. Dust mop or vacuum to remove dirt or grit.
 - b. Remove adhesive residue.
 - c. Wet mop using diluted initial maintenance product and 10 minute dwell.
 - d. Machine scrub with red cleaning pad.
 - e. Wet vacuum, rinse, and allow to dry.
 2. Periodic Cleaning: Perform as needed based on traffic and soiling. Procedure same as "General Cleaning".
 3. Prior to Substantial Completion: Procedure same as "General Cleaning" plus machine buff with carpet cotton bonnet pad.
 4. Do not use polish in any cleaning procedures.
- D. When construction traffic occurs over flooring, cover resilient materials with reinforced kraft paper properly secured and maintained until removal is directed by Resident Engineer. At entrances and where wheeled vehicles or carts are used, cover tile with plywood, hardboard, or particle board over paper, secured and maintained until removal is directed by Resident Engineer.
- E. When protective materials are removed and immediately prior to acceptance, replace any damage flooring, re-clean resilient materials, and buff floors.

3.5 LOCATION

- A. Unless otherwise specified or shown, install tile flooring on floor under areas where casework, laboratory and pharmacy furniture and other equipment occurs, except where mounted in wall recesses.
- B. Extend tile flooring for room into adjacent closets and alcoves.

--- E N D ---

SECTION 09 66 16
TERRAZZO FLOOR TILE (ALTERNATE)

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Resilient terrazzo tile with "fusion" joints for installation over concrete floors and indicated on drawings as "TT" series.
- B. Resilient terrazzo tile base for installation over gypsum board partitions and indicated on drawings as "TERB" series.
- C. Adhesives: See Section 09 60 15, FLOORING ADHESIVES
- D. All work of this Section is included in an Alternate; see Section 12 23 00, Alternates.
- E. Refer to Section 07 26 14, Topical Vapor Retarders for requirements of "Flooring Trades" for amounts and quantities to be included and listed with Bid.

1.2 RELATED WORK (Items not included in this Project Manual are available through Construction Manager upon request)

- A. Resilient rubber base: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.
- B. Concrete floors: Section 03 30 09, CAST-IN-PLACE CONCRETE. .
- C. Color and Pattern: Section 09 06 00, SCHEDULE FOR FINISHES and FINISH LEGEND in drawings.
- D. Flooring adhesives: Section 09 60 15, FLOORING ADHESIVES

1.3 MANUFACTURER'S QUALIFICATIONS

- A. Approval by Contracting Officer is required of products or service, or proposed manufacturer, suppliers and installers, and will be based upon submission by Contractor of certification that:
 - 1. Manufacturer regularly and presently manufactures terrazzo tile as one of his principal products.
 - 2. Installer has technical qualifications, experience, trained personnel and facilities to install specified items. Approval will not be given, however, where experience record is one of unsatisfactory performance.
 - 3. Manufacturer's product submitted has been in satisfactory and efficient operation on three installations similar or equivalent to this project for three years. Submit list of installations. List shall include name of project, and owner and location of project.

1.4 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following:
- B. Flooring Manufacturer's Literature and Data: Printed installation instructions for conditions indicated.
 - 1. Adhesive: See Section 09 60 15.
- C. Certificates: Indicating materials conform to specified requirements. Indicating flooring manufacturer's approval of underlayment, adhesive and cleaners.
- D. Samples: Each color and pattern to be used.
 - 1. Terrazzo tile , Full size.
 - 2. Terrazzo straight base, full height x 150 mm (12 inch) length.
 - 3. Fusion joint in tile; provide two 6" x 12" tiles with fusion joint in long dimension. Show appearance of completed joint including sealer and polish. Submit for each color required.
- E. LEED Submittals:
 - 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
 - 2. Adhesive: See Section 09 60 15.
 - 3. Product Data for Credit IEQ 4.3: For resilient terrazzo tile flooring, documentation from an independent testing agency indicating compliance with the FloorScore Standard.

1.5 DELIVERY

- A. Deliver materials to job in manufacturer's original unopened containers, free of damage, with manufacturer's brand name marked thereon.

1.6 STORAGE

- A. Store materials in a protected area. Storage area shall be kept dry and temperature of storage area shall not be lower than 10 degrees C (50 degrees F) or higher than 32 degrees C (90 degrees F).

1.7 PROJECT CONDITIONS

- A. Tiles shall not be installed until all other work that could cause damage to the finish flooring has been completed. Maintain a temperature of not less than 21 degrees C (70 degrees F) in spaces where tile is to be installed for at least 48 hours before, during and after the laying of tiles. Bring tile into such spaces and allow it to condition at not less than 21 degrees C (70 degrees F) at least 48 hours before installing. A minimum temperature of 13 degrees C (55 degrees F) shall be maintained thereafter.

1.8 WARRANTY

- A. Terrazzo tile is subject to terms of "Warranty of Construction" FAR clause 52.246-21, except that warranty period is two years in lieu of one year.

1.9 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only. Latest edition unless otherwise noted.
- B. American Society for Testing And Materials (ASTM):
1. C109 Compressive Strength of Hydraulic Cement Mortars
 2. D2047 Static Coefficient of Friction of Polish Coated Floor Surfaces as Measured by the James Machine
 3. E648 Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
- C. Military Specifications (Mil. Spec.):
1. MIL-D-3134J Deck Covering Materials

PART 2 - PRODUCTS

2.1 TERRAZZO FLOOR TILE

- A. See FINISH LEGEND for Basis of Design manufacturer, model, sizes, and colors.
- B. FloorScore Compliance: Resilient terrazzo tile flooring shall comply with requirements of FloorScore Standard.
- C. Terrazzo tile shall consist of marble, glass and stone chips embedded in a flexible thermo-set resin matrix. Tiles shall be 5 mm (3/16-inch) thick. Tiles shall have a smooth polished finish with uniform color distribution of chips. Chips shall be manufacturer's standard gradation. Tile shall have the following properties.
1. Critical Radiant Flux: Minimum 0.45 w/sq.m per ASTM E 648.
 2. Static Coefficient of Friction: 0.80 per ASTM D 2047.
 3. Static Load Limit: 1,000 psi per ASTM 970.
 4. Durometer Shore Hardness: 100 per ASTM D2240.

2.2 TERRAZZO TILE WALL BASE

- A. Same as Terrazzo Floor Tile above except sizes as listed on FINISH LEGEND. Colors to match floor tile.

2.3 ADHESIVE

Adhesives: See Section 09 60 15 for types required.

2.4 ACCESSORIES

- A. Metal Edge Strips: Extruded aluminum, butt-type, approximately 38 mm (1-1/2 inches) wide with thickness to set top surface flush with top of tile and with bevel at exposed edge. Edge strips shall have countersunk holes, near each end and spaced at no more than 300 mm (8 inches) on center for securement.
- B. Products as recommended by tile manufacturer
 - 1. Sealer: Clear, non-staining penetrating type.
 - 2. Polish:

PART 3 - EXECUTION

3.1 GENERAL

- A. Provide flooring and base on floor surfaces and walls where shown on the drawings. Provide resilient base as scheduled for room or space, for freestanding columns, pilasters, furred spaces convectors and where shown. Resilient base required over metal base of casework is specified in other sections. Except as necessary to install new tile, keep all traffic off new tile for at least 24 hours after installation.

3.2 SUBSTRATE PREPARATION

- A. Concrete Floors (New Construction): Fill holes and cracks with approved mortar. Concrete floors shall be free of curing compounds, grease, dirt, loose particles and other foreign matter that would prevent adhesion. Remove projecting irregularities by chipping or grinding smooth. Fill depressions and level uneven surfaces with underlayment. Then mop subfloors with clean water and allow them to dry thoroughly before applying adhesive.

3.3 MOISTURE TEST

- A. After concrete floor surfaces have been cleaned, spread small patches of adhesive to be used, in several locations in each room and allow to dry overnight. If the adhesive can be peeled easily from the floor surfaces, the floor is not sufficiently dry. The test shall be repeated until the adhesive adheres properly. Lay tile flooring when the adhesive adheres tightly to the subfloor.

3.4 INSTALLATION

- A. Install tile in accordance with the tile manufacturer's approved installation instructions, except as specified herein. Lay design symmetrical about center lines of rooms. Joints shall be in true alignment; see "Fusion Joints" below. Cut tile to fit snugly at pipes and other fixed vertical surfaces. Seal joints at pipes with adhesive. Remove spots or smears of adhesive immediately. Make entire surfaces of finished tile floors smooth, straight, and free from bleeding adhesive, buckles, waves or projecting tile edges upon completion. Remove any surface film on back of

base due to mold release agents as recommended by base manufacturer, before applying base adhesive.

1. Where metal edge strip or transition strip is required, install as detailed.
 2. Bleeding of adhesive on finished floors is considered cause for rejection. Replace damaged tiles.
- B. "Fusion Joints": Provide "fusion grout" joints in accordance with manufacturer's recommendations.
1. Dry lay portions of floor prior to installation for appearance; adjust/turn tiles as needed for uniform appearance.
 2. Install tiles with 1/32 inch gap between tiles; use spacers to maintain uniform width.
 3. Fill gap with manufacturer's resinous grout in color matching tile background color. Fill joint completely.
 4. Treat joints in accordance with manufacturer's instructions including removing excess grout, re-grouting, and wet polishing to remove residue and eliminate lippage.
 - a. Provide hand work where machine polishing cannot reach.
- C. Metal Edge Strips: Secure strips with No. 10 aluminum alloy, counter sunk flathead machine screws with expansion sleeves. Provide metal edge strips, in one piece, at any exposed edges of tile.
- D. Transition Strips: Apply transition strips with adhesive continuous between ceramic tile finish floors and resilient tile finish floors as shown.
- E. Wall Base: Install as specified in Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

3.5 CLEANING AND FINISH

- A. Upon completion of the installation, and after adhesive has cured, clean flooring in accordance with manufacturer's recommendations.
- B. Apply two coats of sealer and follow with polish; all in accordance with manufacturer's recommendations.

3.6 PROTECTION

- A. From the time of laying until acceptance, protect the flooring from damage. Replace damaged, loose, broken, or curled tiles.

--- E N D ---

SECTION 09 67 25
RESINOUS FLOOR & WALL COVERING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Seamless flooring system with integral base.
 - 1. Epoxy resin, aggregate, and finish coats for slip-resistant finish.
 - 2. ~~Two~~ Flooring systems required:
 - a. Decorative flake at approximate 1/16 inch thickness. RES-1, ~~2, 3, & 5.~~
 - b. ~~Colored quartz over urethane cement base at approximate 3/16 inch thickness.~~
RES-4.
- B. Seamless wall system. RESW-2 & 4. Advise Construction Manager of requirements and limitations for wall substrate including joint compounds, fillers, and primers which may be provided under other Sections.
- C. Waterproof membrane.
- D. Cementitious fill for shower receptor and patient toilet rooms.
- E. Refer to Section 07 26 14, Topical Vapor Retarders for requirements of "Flooring Trades" for amounts and quantities to be included and listed with Bid.
- F. 4th Floor Vivarium: Seal all penetrations and joints under this Section. Penetrations made through completed resinous work to be sealed under this Section at cost of penetrating trade. See Section 07 92 00, Joint Sealants for description of sealing work in these areas.
- G. Alternate: See Section 01 23 00, Alternates for work affecting this Section.

1.2 RELATED WORK (Items not included in this Project Manual are available through Construction Manager upon request)

- A. Section 07 26 14, TOPICAL VAPOR RETARDERS.
- B. Color and room finish schedule: Section 09 06 00, SCHEDULE FOR FINISHES and FINISH LEGEND in drawings.
- C. Membrane waterproofing at ceramic tile shower walls: Section 09 30 13 – CERAMIC/PORCELAIN TILING.
- D. Abuse-Resistant Wallboard: Section 09 29 02.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:

1. Description of product to be provided; technical data showing compliance with specifications.
 2. Application and installation instructions, including proposed deviations from specifications.
- C. LEED Submittals: Submit Product Data for the IEQ credits listed below: For liquid-applied components, documentation including printed statement of VOC content
1. Credit IEQ 4.3: For liquid-applied flooring components.
 2. Credit IEQ 4.2: For liquid-applied wall components.
- D. Samples:
1. Each color specified on FINISH LEGEND.
 2. Sample 300 mm (12-inch) square in each finish specified.
 3. Sample showing construction from substrate to finish surface in thickness specified.
- E. Certification and Approval:
1. Manufacturer's certification of material compliance.
 2. Manufacturer's approval of installers.
 3. Contractor's certificate of compliance with Quality Assurance requirements.
 4. Manufacturer's certification of material compatibility with Topical Vapor Retarder provided at slab on grade conditions with resinous flooring system provide by this Section.
 5. Manufacturer's certification of material compatibility with membrane waterproofing provided at shower wall conditions with resinous flooring system provided by this Section.
- F. Warranty: Manufacturer's warranty of materials and installation.

1.4 QUALITY ASSURANCE

- A. Single Source Responsibility:
1. Obtain primary resinous flooring materials including primers, resins, hardening agents, finish or sealing coats from a single manufacturer.
 2. Provide secondary materials only of type and from source recommended by manufacturer of primary materials.
- B. Installer trained and approved by manufacturer of primary material and having completed at least five projects of similar size and complexity.
- C. Mockup: Provide mockups as specified below where directed by Architect. Accepted mockups to remain as an acceptable standard of workmanship and can be part of completed Work.
1. Topical Vapor Retarder as substrate for resinous flooring if required.
 2. Floor: Nominal 8 x 8-foot resinous floor with membrane waterproofing showing integral base on two walls with inside and outside corners.
 3. Walls: Two full-height walls x 8 foot wide with one inside and one outside corner.
 4. Site-built shower receptor showing membrane waterproofing tie to membrane wall waterproofing specified by ceramic tile trade. Coordinate with mock-up of ceramic tile shower.
- D. Pre-Installation Conference
1. Arrange a meeting not less than thirty days prior to starting work.
 2. Attendance
 - a. Contractor
 - b. Resident Engineer

c. Manufacturer and Installer's Representative

1.5 MATERIAL PACKAGING DELIVERY AND STORAGE

- A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number and date of manufacture.
- B. Protect materials from damage and contamination in storage.
- C. Maintain temperature of storage area between 15° C and 32° C (60° F and 90° F)
- D. Package materials in factory pre-weighed and in single, easy to manage batches sized for ease of handling and mixing proportions from entire package or packages.

1.6 WARRANTY

- A. Work subject to the terms of the Article "Warranty of Construction" FAR clause 52.246-21.
- B. Extend warranty period to three years.

1.7 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Latest edition unless noted otherwise.
- B. American Society for Testing and Materials (ASTM):
 - 1. B221 Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
 - 2. C267 Chemical Resistance of Mortars, Grouts, and Monolithic Surfacing
 - 3. C413 Absorption of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing, and Polymer Concretes
 - 4. C580 Flexural Strength and Modulus of Elasticity of Chemical Resistant Mortars, Grouts, Monolithic Surfacing and Polymer Concretes
 - 5. C722-04 Specification for Chemical-Resistant Resin Monolithic Surfacing.
 - 6. C811} Surface Preparation of Concrete for Application of Chemical-Resistant Resin Monolithic Surfacing
 - 7. C882 Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear
 - 8. D696 Coefficient of Linear Thermal Expansion of Plastics Between -30C and 30C With a Vitreous Silica Dilatometer.
 - 9. **D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.**
 - 10. D1894 Static and Kinetic Coefficients of Friction of Plastic Film and Sheet.
 - 11. D2047 Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
 - 12. D4060 Abrasion Resistance of Organic Coatings by the Taber Abraser.
 - 13. D4541 Pull-Off Strength of Coatings Using Portable Adhesion-Testers.
 - 14. **D7234 Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.**
- C. National Association of Architectural Metal Manufacturers (NAAMM):

1. AMP 501 Finishes for Aluminum

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 1. Dex-O-Tex, Rancho Dominguez, CA. www.dexotex.com.
 2. Dudick, Streetsboro, OH, www.dudick.com.
 3. General Polymers Corporation, Cincinnati, OH. www.generalpolymers.com.
 4. Key Resin Co., Batavia, OH, www.keyresin.com.
 5. Sika Corporation, Lyndhurst, NJ www.sikafloorusa.com
 6. Stonhard, Inc., Maple Shade, NJ, www.stonhard.com.
 7. Tnemec Co., Inc., Kansas City, MO, www.tnemec.com.

2.2 SYSTEM DESCRIPTION

- A. See FINISH LEGEND for color, and Basis of Design manufacture/model No.
- B. Epoxy resinous flooring includes concrete epoxy primer, colored quartz aggregate and decorative flake epoxy resin mortars, clear epoxy sealer coat, and finish coats for slip-resistant finish.
- C. System resistant to chemicals and abrasion.
- D. Membrane waterproofing at designated locations.

2.3 RESINOUS FLOORING SYSTEMS

- A. Conform to ASTM C722 Epoxy resin, flake and urethane quartz aggregate as applicable.
- B. Epoxy System: 1/16-inch thick with flakes; **epoxy resin body coat with urethane resin top coats**. Physical Properties of flooring system in addition to C722 when tested as follows:

Property	Test	Value
Hardness	ASTM D2240 Shore Durometer D	75-80 or 75-90
Bond	ASTM C882 Bonding epoxy flooring to hardened concrete ----- or ASTM D7234 (100% to concrete failure)	min 400 psi ----- >300 psi
Water Absorption	ASTM C413	max 0.1 percent
Abrasion Resistance	ASTM D4060 Taber Abrader CS-17 wheel, 1000 gm load; 1000 cycle	max 0.10 gms. weight loss
Flexural Strength	ASTM C580 ----- or ASTM D790	min 2200 psi ----- min 4000 psi
Extent of Burning extinguishing Heat Resistant	ASTM D635 For continuous exposure min 140 deg. F For intermittent spills min 200 deg. F	max 0.25 inch self- extinguishing No Effect No Effect
Coefficient of Friction	ASTM D 2047 ----- or ASTM F1679	0.6 ----- 0.79 Dry; 0.65 Wet
Chemical Resistance of the following: Acetic acid Ammonium hydroxide Citric Acid Fatty acid Motor Oil, 20W Hydrochloric acid Salt water Sodium Hydroxide Sulfuric acid Trisodium phosphate Urine Feces Hydrogen peroxide Distilled Water Sodium Hypochloride	ASTM C267 5 percent 10 percent 50 percent 10 percent 10 percent 10 percent 5 percent 28 percent (splash spill) 5.28 percent	No Effect

~~C. Urethane System: 3/16-inch thick with colored quartz aggregate. Physical Properties of flooring system in addition to C722 when tested as follows:~~

Property	Test	Value
Service Temperature	-	-40°F to 240°F
Hardness	ASTM D2240 Shore Durometer	80-85
Bond	ASTM D4541 Bonding epoxy flooring to hardened concrete	min 250 psi or concrete failure.
Water Absorption	ASTM C413	max 0.18 percent
Abrasion Resistance	ASTM D4060 Taber Abrader CS-17 wheel, 1000 gm load; 1000 cycle	max 0.11 gms. weight loss
Flexural Strength	ASTM C580	min 1,675 psi
Flammability	ASTM E648	Class 1

D.	Heat Resistant	For continuous exposure min- 200°F (93°C) For intermittent spills min 240°F (115°C)	No Effect No Effect
E.	Coefficient of Friction	ASTM D1894	Not less than 0.8 wet or dry.
	Coefficient of Thermal Expansion	ASTM D696	1.56×10^{-5} in./in./°F
	Thermal Shock	ASTM C884	Pass
	Chemical Resistance	See "Epoxy System" above	No Effect

- C.** Decorative Flakes: Colored vinyl flakes of varying sizes from 1/16" to 1/4"; manufacturer's standard.
- D.** Primer, Coloring, Sealer, and Finish coats as standard with manufacture of flooring system.
- 1.** Finish Coat: Polyaspartic based type.
- a.** Coats: As recommended by manufacturer; minimum 2 coats.
- E.** Membrane Waterproofing: Flexible epoxy membrane coating used to reduce reflective cracking from substrate; and as waterproofing membrane. Hybrid chemistry assures long-term performance. Low odor. Two components Physical Properties of flooring system when tested as follows:

Property	Test	Value
Hardness	ASTM D2240 Shore Durometer	40
Bond	ASTM D4541 Bonding membrane to hardened concrete	min 520 psi -
Flammability	ASTM D635	Self-extinguishing
Tensile Strength	ASTM D638	min 1,050 psi
Tensile Elongation	ASTM D638	125%
Tear Strength	ASTM D 1938	90 lbs.
Thermal Cycling: 24 hrs. -5.8 to 77 degrees F	ASTM C884	No Cracking

1. Coats: As recommended by manufacturer; minimum 2 coats at 20 mil DFT per coat.

- F.** VOC Content of Liquid-Applied Flooring Components: Not more than 100 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- G.** Base cap: Extruded aluminum, clear anodized finish unless specified otherwise in Section 09 06 00, SCHEDULE FOR FINISHES.

2.4 WALL SYSTEMS

- A. Conform to ASTM C722, Type TR or SP, except traffic bearing requirements not applicable, Epoxy resin base with Urethane topcoats.
- B. Type: Flexible epoxy, non-reinforced.
1. Typical from top of base to ceiling.
 2. System Thickness: Total 23-27 mils DFT approximate
 - a. Prime Coat: 2 mils DFT
 - b. Base System: 16-20 mils DFT approximate in two coats.
 - c. Top Coats: 5 mils DFT approximate in two coats.
- C. Performance Requirements:
1. Base System: Epoxy.
 - a. Flexibility: Passes 1" mandrel without cracking; ASTM D 522.
 - b. Volatile Organic Compounds: <17 g/l.
 - c. Impact Resistance: Greater than 160 in-lbs; Gardner Impact Tester, ASTM D2794.
 - d. Abrasion Resistance: 0.019 g loss; ASTM D 1044.
 - e. Fire Resistance: Class 1 or A; ASTM E 84.
 2. Top Coats: Urethane, water based.
 - a. Scrubbability: No effect (1000 cycles); Gloss before/after 86/85.
 - b. Water Vapor Transmission: Less than 1 perm; ASTM E 96.
 - c. Color Retention: No fading loss of gloss or effect on film after 100 hours; ASTM G 152 or G 153
 - d. Fire Resistance: Class 1 or A; ASTM E 84.
 - e. Hardness: 35; Sward Hardness.
 - f. Tabor Abrasion: 0.025 g loss after 14 day cure; ASTM D 4060.
 - g. Volatile Organic Compounds: 0<238 g/l.

- D. VOC Content of Liquid-Applied Wall Components: Not more than 100 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

2.5 BASE CAP STRIP

- A. Aluminum, Extruded: ASTM B221, Alloy 6063-T6.
- B. Shape for 5 mm (3/16 inch) depth of base material, "J" configuration.
- C. Finish:
1. Finish exposed surfaces in accordance with NAAMM Metal Finishes Manual.
 2. Aluminum: NAAMM Amp 501:
 - a. Clear anodic coating, AA-C22A41 chemically etched medium matte, with Architectural Class 1, 0.7 mils or thicker.
 - b. Colored anodic coating, AA-C22A42, chemically etched medium matte with Architectural Class 1, 0.7 mils or thicker.

2.6 CEMENTITIOUS FILL

- A. Rapid setting repair mortar/concrete with extended working time.
1. Compressive Strength; minimum; ASTM C 39.
 - a. 3,500 psi at 1 day.
 - b. 5,000 psi at 28 days:
 2. Drying Shrinkage: 0.06% at 28 days; ASTM C 596.
- B. Aggregate: 3/8" course, non-reactive; ASTM C 1260, C 227, and C 289.
- C. Water: Potable.
- D. Moisture Content: Sufficiently limited to allow epoxy coating to be applied 6 hours after completion of fill (73° F/50% R.H.).
- E. Reinforcing: As recommended by manufacturer if needed to control cracking. Some products may not require reinforcing.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS, EXAMINATION

- A. Maintain temperature of materials above 21° C (70° F), for 48 hours before installation.
- B. Maintain temperature of rooms where work occurs, between 21° C and 32° C (70° F and 90° F) for at least 48 hours, before, during, and 24 hours after installation. Maintain temperature at least 21° C (70° F) thereafter.
- C. Do not install materials until building is permanently enclosed and wet construction is complete, dry, and cured.
- D. Examine substrates for conformity with manufacture's requirements. Verify that work of this Section can be satisfactorily installed for long term performance; proceed only after

unsatisfactory conditions have been corrected. Proceeding with installation of resinous floor and wall covering will be considered manufacturer's acceptance of the substrate.

- E. Concrete substrate cured and not less than 30 days old.
- F. Wall Substrate: Verify substrate complies with list of requirements and limitations given to the Construction Manager as required under SECTION INCLUDES in Part 1 above.
 - 1. Painted substrate or wallboard finished to Level 4 or 5 not acceptable unless specifically approved by manufacturer.
- G. Area free of other trades during and for a period of 24 hours after installation.

3.2 INSTALLATION REQUIREMENTS

- A. The respective manufacturer's instructions for application and installation will be considered for use when approved by the Resident Engineer.
- B. Submit proposed installation deviation from this specification to the Resident Engineer indicating the differences in the method of installation.

3.3 PREPARATION

- A. Prepare surface in accordance with ASTM C811 except where manufacturer's specific instructions supersede.
- B. Mechanically remove bond inhibiting materials and loose or laitance materials to ensure bond.
- C. Prepare wall and set base cap mold level.

3.4 CEMENTITIOUS FILL

- A. Install fill at recessed slabs for patient toilet rooms including job-built shower receptors.
- B. Install in accordance with approved shop drawings and manufacturers recommendations.
 - 1. Mix with specified aggregate.
 - 2. Slope to drain. Top of fill flush with adjacent floor slab.
 - 3. Trowel to a smooth surface free from ridges and irregularities which may telegraph in the completed installation or be detrimental to the resinous floor coating.
- C. Cure with method acceptable to resinous flooring manufacturer and leave ready to receive resinous flooring.

3.5 APPLICATION - FLOORING

- A. Mix and apply each component of resinous flooring system in compliance with manufacturer's specifications to produce a uniform monolithic flooring surface with thickness not less than the following:
 - 1. ~~RES-4: 5 mm (3/16 inch).~~
 - 2. ~~RES-1, & 2, 3, & 5: 1/16 inch.~~

- B. Waterproofing at Floor and Base: Install elastomeric membrane in multiple coats to a dry film thickness of not less than 40 mils (0.8 mm). Extend waterproofing up wall as recommended by manufacturer, but not less than height of base and as required for a waterproof wall base.
 - 1. At shower receptors, lap over wall waterproofing specified elsewhere by ceramic tile trade. Verify compatibility of membranes and make joint watertight.
- C. Turn flooring up for coved 100 mm (4-inch) high base at vertical wall surfaces and penetrations. Cove joint with floor; 6 mm (1/4 inch) radius. Round interior and external corners.
- D. Apply primer over prepared substrate at manufacturer's specified rate. Coordinate timing of primer application with application of troweled mortar to ensure optimum adhesion between resinous flooring materials and substrate.
- E. Uniformly spread mortar over substrate adjusted to manufacturer's recommended maximum thickness to plane line of floor.
- F. Trowel finish for smooth surface on base and coved surface.
- G. Grout mortar surface as specified by manufacturer and broad cast colored quartz aggregate uniformly distributed for non-slip texture on floors to within one inch of base cove horizontal edge.
- H. Apply a clear finish in two separate coats. One heavy coat not acceptable.

3.6 APPLICATION – WALLS

- A. Mix and apply each component of resinous wall system in compliance with manufacturer's specifications to produce a uniform monolithic wall surface not less than specified under "Types" under EPOXY WALL SYSTEMS in Part 2 above.
- B. Blend Reinforced System with Non-reinforced System to visually hide transition.
- C. Provide ½ inch tooled cove corners, typical.

3.7 CURING, PROTECTION AND CLEANING

- A. Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process.
- B. Close area of application for a minimum of 24 hours.
- C. Protect resinous flooring materials from damage and wear during construction operation.
 - 1. Cover flooring with kraft paper.
 - 2. Cover paper with 6 mm (1/4 inch) thick hardboard, plywood, or particle board where area is in foot or vehicle traffic pattern, rolling or fixed scaffolding and overhead work occurs.
- D. Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer.

3.8 TOLERANCE

- A. From line of plane: Maximum 3 mm (1/8 inch) in total distance of flooring and base.
- B. From radius of cove: Maximum of 3 mm (1/8 inch) plus or 1.6 mm (1/16-inch) minus.

--- E N D ---

SECTION 09 68 00
CARPETING**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section includes modular carpet tile identified as "CPT" on FINISH LEGEND.
- B. Carpet, adhesive installation.
- C. Refer to Section 07 26 14, Topical Vapor Retarders for requirements of "Flooring Trades" for amounts and quantities to be included and listed with Bid.

1.2 RELATED WORK (Items not included in this Project Manual are available through Construction Manager upon request):

- A. Topical vapor retarders at slab on grade: Section 07 26 14 - Topical Vapor Retarders.
- B. Color and texture of carpet and edge strip: Section 09 06 00, SCHEDULE FOR FINISHES and FINISH LEGEND in drawings.
- C. Resilient wall base: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

1.3 DEFINITION

- A. Fluorochemical: A chemical compound containing fluorine, especially a fluorocarbon.
- B. Recycled Content (RC) Value = (Value of Product) X (Post-consumer RC % + ½ Pre-consumer RC %).

1.4 QUALITY ASSURANCE

- A. General: Comply with all applicable state, local, and federal codes.
- B. Carpet installed by mechanics certified by the International Certified Floor covering Installers Association at the Master II certification level.
- C. Certify and label the carpet that it has been tested and meets criteria of CRI IAQ Carpet Testing Program for indoor air quality.

1.5 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data:

1. Manufacturer's catalog data and printed documentation stating physical characteristics, durability, resistance to fading and flame resistance characteristics for each type of carpet material and installation accessory.
2. Manufacturer's printed installation instructions for the carpet, including preparation of installation substrate, seaming techniques and recommended adhesives and tapes.

C. LEED Submittals

1. Product Data for Credit MR 4:
 - a. Indicate recycled content; indicate percentage of pre-consumer and post-consumer recycled content per unit of product.
 - b. Indicate relative dollar value of recycled content product to total dollar value of product included in project.
 - c. If recycled content product is part of an assembly, indicate the percentage of recycled content product in the assembly by weight.
 - d. If recycled content product is part of an assembly, indicate relative dollar value of recycled content product to total dollar value of assembly.
 - e. Salvaged/Refurbished: Indicate percentage of salvaged/refurbished content per unit of product.
2. Product Data for Credit EQ 4.1: For adhesives and sealants, documentation including printed statement of VOC content.
3. Product Data for Credit EQ 4.3:
 - a. For carpet tile, documentation indicating compliance with testing and product requirements of CRI's "Green Label Plus" program.
 - b. For installation adhesive, documentation including printed statement of VOC content, and compliance with South Coast Quality Management District (SCAQMD) Rule 1168. VOC limits correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005

D. Samples:

1. Carpet: "Production Quality" samples 300 x 300 mm (12 x 12 inches) of carpets, showing quality, pattern and color specified in Section 09 06 00, SCHEDULE FOR FINISHES.
2. Floor Edge Strip (Molding): 150 mm (6 inches) long of each color and type specified.
3. Base Edge Strip (Molding): 150 mm (6 inches) long of each color specified.

E. Shop Drawings: Installers layout plan for each area to be covered showing seams and cuts for sheet carpet and carpet module.

F. Sample Warranty: Submit sample of manufacturer's warranty required under WARRANTY below.

G. Test Reports: Submit reports from approved testing laboratory certifying compliance with the following specification requirements:

1. DOC FF 1-70 (pill test) applied to back and wearing surface.
2. Critical radiant flux limits when tested according to ASTM E 648.
3. Optical density when tested according to ASTM E 662.

H. Affidavit: Submit manufacturer's affidavit certifying carpet delivered to job site meets all specification and Code requirements including Air Quality test.

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- I. Maintenance Data: Carpet manufacturer's maintenance instructions describing recommended type of cleaning equipment and material, spotting and cleaning methods and cleaning cycles.

1.6 DELIVERY AND STORAGE

- A. Deliver carpet in manufacturer's original wrappings and packages clearly labeled with manufacturer's name, brand, name, size, dye lot number and related information.
- B. Deliver adhesives in containers clearly labeled with manufacturer's name, brand name, number, installation instructions, safety instructions and flash points.
- C. Store in a clean, dry, well ventilated area, protected from damage and soiling. Maintain storage space at a temperature above 16 degrees C (60 degrees F) for 2 days prior to installation.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Areas in which carpeting is to be installed shall be maintained, with relative humidity not exceeding 65%, and at a temperature between 18 to 35°C (65 to 95°F) for 2 days before installation, during installation and for 3 days after installation. A minimum temperature of 13°C (55°F) shall be maintained thereafter for the duration of the Contract. Traffic or movement of furniture or equipment in carpeted area shall not be permitted for 24 hours after installation. Other work which would damage the carpet shall be completed prior to installation of carpet.

1.8 WARRANTY

- A. Carpet and installation subject to terms of "Warranty of Construction" FAR clause 52.246-21, except that warranty period is extended to 10 years and as described below:
1. Carpet Fiber: Manufacturer and fiber producer to furnish standard 10-year warranties against the following:
 - a. Unusual wear.
 - b. Loss of static properties.
 2. Carpet: Carpet to be guaranteed for a period of ten years against the following:
 - a. Edge ravel and sprouting.
 - b. Delamination.
 - c. Shrinkage, expansion, dome, or cup of carpet tile.
- B. Provide special project warranty, signed by contractor and each manufacturer (carpet mill), agreeing to repair or replace defective materials and workmanship during warranty period of two years at no cost to Owner.

1.9 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only. Latest edition unless otherwise noted.
- B. American National Standards Institute (ANSI):
1. ANSI/NSF 140- Sustainable Carpet Assessment Standard
- C. American Association of Textile Chemists and Colorists (AATCC):

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1. AATCC 16 Colorfastness to Light
 2. AATCC 129 Colorfastness to Ozone in the Atmosphere under High Humidities
 3. AATCC 134 Electric Static Propensity of Carpets
 4. AATCC 165 Colorfastness to Crocking: Textile Floor Conerings-AATCC Crockmeter Method
 5. AATCC 189 Test Method for Fluorine Content of Carpet Fibers

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

1. ASTM D1335 Tuft Bind of Pile Yarn Floor Coverings
2. ASTM D3278 Flash Point of Liquids by Small Scale Closed-Cup Apparatus
3. ASTM D5116 Determinations of Organic Emissions from Indoor Materials/Products
4. ASTM D5252 Operation of the Hexapod Tumble Drum Tester
5. ASTM D5417 Operation of the Vettermann Drum Tester
6. ASTM E648 Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
7. ASTM E662 Test Method for Specific Optical Density of Smoke Generated by Solid Materials
8. F 710 Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring.

E. The Carpet and Rug Institute (CRI):

1. CRI 2011 Carpet Installation Standard

PART 2 - PRODUCTS

2.1 CARPET

A. Minimum Physical Requirements:

1. Carpet free of visual blemishes, streaks, poorly dyed areas, fuzzing of pile yarn, spots or stains and other physical and manufacturing defects.
2. Manufacturers standard construction commercial carpet:
3. Modular Tile Size: 660 mm (24 inches) square except where noted otherwise.
4. Provide static control to permanently control static build up to less than 3.5 kV when tested at 20 percent relative humidity and 21 degrees C (70 degrees F) and 20% relative humidity in accordance with AATCC 134.
5. Pile Fiber: Nylon 6,6; Antron Legacy or Antron Lumina nylon.
6. Recycled Content Value: 11 percent minimum branded (federally registered trademark).
7. Backing materials: Manufacturer's backing designed for glue-down installation using recovered materials.
8. Appearance Retention Rating (ARR): Carpet shall be tested and have the minimum 3.5-4.0 Severe ARR when tested in accordance with either the ASTM D 5252 (Hexapod) or ASTM D 5417 (Vettermann) test methods using the number of cycles for short and long term tests as specified.
9. Tuft Bind: Minimum force of 40 N (10 lb) required to pull a tuft or loop free from carpet backing. Test per ASTM D1335.
10. Colorfastness to Crocking: Dry and wet crocking and water bleed, comply with AATCC 165 Color Transference Chart for colors, minimum class 4 rating.

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11. Colorfastness to Ozone: Comply with AATCC 129, minimum rating of 4 on the AATCC color transfer chart, unless noted otherwise.
 12. Soil / Stain Protection: Fluorochemical soil resistance technology with fluorine to alter surface-energy properties to providing permanent stain protection and soil protection for the life of the product; and guaranteed by the carpet manufacturer to last the life of the carpet.
 13. Delamination Strength: Minimum of 440 N/m (2.5 lb/inch) between secondary backing.
 14. Dyelot: Carpet of each type to be one dyelot for each building area.
 15. Carpet shall meet requirements of CRI's "Green Label Plus" program.
 16. End of Life Reclamation – Carpet manufacturers must have existing program in place to achieve landfill diversion. Carpet manufacturer's reclamation program shall be similar to CARPET RECLAMATION outlined in PART 3.
 17. Flammability and Critical Radiant Flux Requirements:
 - a. Test Carpet (Glue Down) in accordance with ASTM E 648.
 - 1) Class I: Not less than 0.45 watts per square centimeter.
 18. Flammability: Passes Methenamine Pill Test (DOC-FF1-70).
 19. Smoke Density: ASTM E 662 Less than 450.
 20. Density: Average Pile Yarn Density (APYD):
 - a. Corridors, lobbies, entrances, common areas or multipurpose rooms, open offices, waiting areas and dining areas: Minimum APYD 6000, and not less than indicated for the scheduled carpet type.
 - b. Other areas: Minimum APYD 4000, and not less than indicated for the scheduled carpet type.
- B. Shall meet gold level of ANSI/NSF 140.
- C. Basis of Design manufacturer, Color, Texture, and Pattern: See FINISH LEGEND.
- D. Carpet Tile:
1. CPT-1 Construction:
 - a. Product Construction: Patterned Loop
 - b. Fiber: 100% Antron Nylon by Invista, with a minimum of 85% being Antron Lumena.
 - c. Dye Method: 100% solution dyed or part solution dyed along with part yarn dyed
 - d. Primary Backing: Non-woven synthetic.
 - e. Secondary Backing: Synthetic.
 - f. Yarn Weight: 18 oz/sq. yd.
 - g. Machine Gauge: 5/64 inch.
 - h. Pile Thickness: 0.072 inch.
 - i. Stitches Per Inch: 8.9.
 - j. Density Factor: 9,000 oz. per cubic yd. (Yarn weight x 36 ÷ Pile Thickness).
 - k. Total Thickness: 0.284 inch.
 2. CPT-4 Construction: (Walk-off mat)
 - a. Product Construction: Patterned Loop
 - b. Fiber: 100% polypropylene
 - c. Dye Method: 100% solution dyed
 - d. Primary Backing: Rubber, non-woven.
 - e. Stitches Per Inch: 8.9.
 - f. Total Thickness: 7/16 inch.
 - g. Total Weight: 73 oz/sq. yd

2.2 ADHESIVE AND CONCRETE PRIMER

- A. Adhesives: Waterproof, resistant to cleaning solutions, steam and water, nonflammable, complies with air-quality standards as specified. Adhesives flashpoint minimum 60 degrees C (140 degrees F), complies with ASTM D 3278. Provide adhesive as recommended carpet manufacturer for backing system utilized and, where applicable, acceptable to carpet pad manufacturer.
1. Use adhesives meeting South Coast Quality Management District (SCAQMD) Rule 1168. VOC limits correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005.

2.3 EDGE STRIPS (MOLDING)

- A. Vinyl Edge Strip: Glue-down type.
1. Beveled floor flange minimum 50 mm (2 inches) wide.
 2. Beveled surface to finish flush with carpet for tight joint and other side to floor finish.
 3. Color as specified in Section 09 06 00, SCHEDULE FOR FINISHES.

2.4 LEVELING COMPOUND (FOR CONCRETE FLOORS)

- A. Provide Portland cement bases polymer modifier, recommended by the carpet manufacturer, with latex or polyvinyl acetate resin manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.
- B. Determine the type of underlayment selected for use by condition to be corrected.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet performance. Examine carpet for type, color, pattern, and potential defects.
- B. Clean floor of oil, waxy films, paint, dust and deleterious substances that prevent adhesion, leave floor dry and cured, free of residue from curing or cleaning agents, and existing floor covering material.
- C. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710.
- D. Preparation: Comply with CRI 2011, Section 7, "Site Conditions; 7.3 Floor Preparation," and with carpet manufacturer's written installation instructions for preparing substrate.
- E. Fill cracks, joints depressions, and other irregularities in concrete with leveling compound.
1. Do not use adhesive for filling or leveling purposes.
 2. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.

3. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joint lines.

3.2 CARPET INSTALLATION

A. General:

1. Do not install carpet until work of other trades including painting is complete and dry and permanent floor-mounted casework and equipment is installed. Proceed with installation only after unsatisfactory conditions have been corrected. Comply with carpet manufacturer's written recommendations and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.
2. Install in accordance with CRI 2011 Section 13 direct glue down installation.
 - a. Relax/Condition carpet in accordance with Section 10.
 - b. Comply with indoor air quality recommendations.
 - c. Maintain temperature and humidity in accordance with Section 7.2. Secure carpet to subfloor of spaces with adhesive applied as recommended by carpet manufacturer.
4. Follow carpet manufacturer's recommendations for matching pattern and texture directions.
5. Do not bridge building expansion joints with carpet.
6. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.
 - a. Bind or seal cut edges as recommended by carpet manufacturer.
7. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.

Cut openings in carpet where required for installing equipment, pipes, outlets, and penetrations.

Bind or seal cut edge of sheet carpet and replace flanges or plates.

Use additional adhesive to secure carpets around pipes and other vertical projections.

B. Carpet Modules:

1. Install per CRI 2011, Section 18, Adhesive Application.
2. Lay carpet modules with pile in same direction unless specified otherwise in Section 09 06 00, SCHEDULE FOR FINISHES or FINISH LEGEND.
3. Install carpet modules so that cleaning methods and solutions do not cause dislocation of modules.
4. Lay carpet modules uniformly to provide tight flush joints free from movement when subject to traffic.

3.3 TERMINATIONS/TRANSITION STRIPS

- A. All exposed edges of the carpet that abut an adjacent floor surface shall be trimmed with suitable vinyl edging.
- B. Anchor vinyl edge strip to floor with adhesive apply adhesive to edge strip and insert carpet into lip and press lip down over carpet.

- C. Install carpet around floor outlets or similar obstructions. Mechanical or electrical plates, where used in floor, to rest on top of carpet.
- D. Intersection of Carpet and Other Flooring: Treat exposed edges of carpet that abut an adjacent floor surface as follows:
 - 1. Resilient Flooring and Ceramic Tile: Butt carpet to vertical metal trim, provided by tile trade.
- E. Seam sealer must be applied to the edge of the carpet at the transition area.

3.4 FIELD QUALITY CONTROL

- A. Contractor to have each manufacturer's qualified representative visit site at beginning of carpet work and periodically thereafter as needed to ensure installation of carpet in accordance with manufacturer's recommendations.
- B. Contractor to notify Construction Manager when such visits will be made.
- C. Manufacturer's representative to report irregularities in work to installing contractor and Construction Manager.

3.5 PROTECTION AND CLEANING

- A. Perform the following operations immediately after installing carpet:
 - 1. Remove waste, fasteners and other cuttings from carpet floors.
 - 2. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.
 - 3. Remove yarns that protrude from carpet surface
 - 4. Vacuum carpet with beater type vacuum cleaner. Remove any soiled spots or excessive adhesive on carpet with proper spot remover.
- B. Do not permit traffic on carpeted surfaces for at least 48 hours after installation. Protect the carpet in accordance with CRI 2011 Section 20 and as follows:
 - 1. Provide non-staining protective covering to prevent soiling and damage after installation. Do not use polyethylene film.
- C. Do not move furniture or equipment on unprotected carpeted surfaces.
- D. Just before final acceptance of work, remove protection and vacuum carpet clean.
- E. Wrap, bind and label all excess pieces of usable carpet for future repairs as follows:
 - 1. Carpet Tiles: Over 12" wide.

3.6 CARPET RECLAMATION – BROADLOOM CARPETING AND CARPET TILE

<p>This Article only applicable to the extent referenced in 2.1.A.16, End of Life Reclamation as an example of program requirement. There is no existing carpet to be reclaimed.</p>
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This specification is for carpet reclamation and is designed to manage carpet recycling for any type of used carpet or carpet pad.

A. CARPET REMOVAL – BROADLOOM

1. Remove used carpet in carpet pieces, roll tightly, and pack neatly in container. (Include carpet scrap and waste from new installation.) Immediately remove used carpet from Site. For reclamation projects coordinated by carpet manufacturer's reclamation department, place in carpet manufacturer provided covered containers.
2. Deposit only clean, dry used carpets in containers. Clean shall be defined as carpet free from demotion debris or asbestos contamination, garbage, and tack strips.

B. CARPET REMOVAL – CARPET TILE

1. Remove used carpet tile and stack neatly on pallets. Neatly stack carpet tiles or repack in cardboard boxes prior to placing in container. Do not stack higher than 6 feet on pallets. (Include carpet scrap and waste from new installation.) Immediately remove used carpet from Site. For reclamation projects coordinated by carpet manufacturer's reclamation department, place in carpet manufacturer provided covered containers.
2. Deposit only clean, dry used carpets in containers. Clean shall be defined as carpet free from demotion debris or asbestos contamination, garbage, and tack strips.

C. CONTAINER HANDLING

1. Place used carpet in container supplied by carpet manufacturer's reclamation department. Containers are fully enclosed and shall be kept locked or supervised.
2. Broadloom carpet must be segregated in separate containers from tile carpeting.
3. Use effective packing techniques to maximize the amount of material in the container. On average the following amounts are the related container capacities.

<u>Container Size</u>	<u>Broadloom Capacity</u>	<u>Tile Capacity</u>
53' Foot	4,800	3,500

D. CONTAINER REMOVAL

1. When container is full, contact carpet manufacturer's reclamation department to coordinate pickup and drop-off of replacement container, if needed. If container is locked for security purposes, remove the lock prior to pick up.
2. The carpet manufacturer reclamation department toll free number is (877) 3RE-CYCL or (877) 373-2925.

E. RECLAMATION CERTIFICATE

1. The carpet manufacturer reclamation department will issue a reclamation certificate once used carpet is removed from the job site and or dealer location and delivered to reclamation facility.

--- E N D ---

SECTION 09 84 33
SOUND-ABSORBING WALL UNITS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the requirements for fabric covered acoustical wall panels. Panels also function as tack boards. Fabric is designated as WF-1 on FINISH LEGEND.
- B. Support system.

1.2 RELATED WORK

- A. Color and location for hanging: Section 09 06 00, SCHEDULE FOR FINISHES and FINISH LEGEND in drawings.
 - 1. Architectural Woodwork: Section 06 40 00.
 - 2. Gypsum Wallboard: Section 09 29 00.
 - 3. Acoustic Ceilings: Section 09 51 00.
 - 4. Painting: Section 09 91 00.

1.3 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in text by basic designation only. (Latest edition unless otherwise noted).
- B. American Association of Textile Chemists and Colorists (AATCC):
 - 1. TM 16 Test Method: Colorfastness to Light
- C. American Society for Testing and Materials (ASTM):
 - 1. C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
 - 2. D 1117 Nonwoven Fabrics
 - 3. D 5034 Breaking Strength and Elongation of Textile Fabrics (Grab Test)
 - 4. E 84 Surface Burning Characteristics of Building Materials.
 - 5. G 21 Determining Resistance of Synthetic Polymeric Materials to Fungi.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples: Fabric Covering in quadruplicate, as specified in Section 09 06 00, SCHEDULE FOR FINISHES, size 200 mm (1/4 yard), full width of mill run for each color specified.

1. System Mock up: Show frame, acoustic padding, fabric covering, and typical seam on corner. Show panel with fabric covering and all corner conditions (square, radius, or other) as required. Submit two samples for each type of edge profile required.
- C. Manufacturer's Literature and Data: Complete instructions for installation of wall panels.
- D. Certificate: Flame spread smoke density factors. Fungi resistance.

PART 2 - PRODUCTS

2.1 PANELS

- A. Width: As shown.
- B. Height: As shown.
- C. Thickness: 25 mm (1 inch) nominal.
- D. Fabric Covering: See WF-1 on FINISH LEGEND for Basis of Design manufacturer, model #, and colors.
 1. Seamless plain woven 2-ply 100 percent polyester, unbacked; minimum 0.47 kg per linear meter (14 ounces per linear yard). Tear strength shall be minimum 129 N (29 pounds). Tensile strength shall be 667 N (150 pounds) minimum in accordance with ASTM D 5034. Fabric covering shall be stretched free of wrinkles and then bonded to the edges and back or bonded directly to the panel face, edges, and back of panel a minimum distance standard with the manufacturer. Light fastness (fadeometer) shall be approximately 40 hours in accordance with AATCC TM 16.
- E. Fire rating for the complete composite system: Class A, 200 or less smoke density and flame spread less than 25, when tested in accordance with ASTM E 84.
- F. Fungi Resistance: Fabric will not support growth; ASTM G 21.
- G. Substrate: Inert, noncombustible and dimensionally stable acoustical fiberboard or rigid fiberglass; density not less than 7 lbs/cu. ft. Suitable for use as tackboard.
- H. Noise Reduction Coefficient (NRC) Range: 0.50-0.60 ASTM C 423.

2.2 ALUMINUM

- A. Manufacturer's standard concealed aluminum mounting system.
- B. Mounting system shall be capable of supporting twice the weight of the panel.

2.3 FASTENERS

- A. Use screws for wood panels; toggle bolts for gypsum board: Wire wings are not acceptable.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. Surfaces shall be clean, smooth, oil free, contain no protrusions, and prepared in accordance with manufacturers printed instructions.

3.2 INSTALLATION

- A. Apply panels using concealed aluminum devices, attached to vertical surfaces in accordance with the manufacturer's installation instructions and approved shop drawings.
- B. Locate panels as shown.
- C. Field measure existing conditions to establish the exact layout of the system as indicated on the drawings. Coordinate with shop drawings for dimensions of Architectural Woodwork Section 06 40 00.

--- E N D ---

SECTION 09 91 00
PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work includes but is not Limited to finishes designated on Finish Legend as "P", paint; "EP"; Epoxy Paint; "SCONC", concrete sealer.
- B. Section specifies field painting.
- C. Work includes surface preparation for concrete, stucco, and metal surfaces in Dixie Building as indicated under SURFACE PREPARATION in Part 3 below. Surface preparation is required for all work, new and existing.
 - 1. Existing and new metal structure is scheduled to receive fireproofing specified elsewhere. These surfaces are exempt from work of this Section.
- D. Section specifies prime coats which may be applied in shop under other sections.
- E. Painting includes shellacs, stains, varnishes, coatings specified, and striping or markers and identity markings.
- F. Section Includes: Paint and finish for all exposed surfaces of project except those specifically excluded. Work includes, but not necessarily limited to, the following:
 - 1. Walls, ceilings and soffits of gypsum board, plaster.
 - 2. Walls receiving wallcovering, specified elsewhere, to receive paint coatings under this Section as a protective film below the wallcovering to prevent damage to gypsum surface when wallcovering is removed.
 - 3. Hollow metal doors, frames, transoms, and panels.
 - 4. Unfinished exposed wood including wood doors, frames, trim, casework, and millwork (see Divisions 6 and 8 for extent of prefinished work).
 - 5. Exposed structure including deck and all framing. See RFI 7991 for clarification
 - 6. Prime paint steel in interstitial spaces that is not fireproofed.
 - 7. Exposed bare ferrous metal of any type, interior and exterior and prime-painted only exterior ferrous metal.
 - 8. Zinc-based and zinc-aluminum alloy coatings on ferrous metal
 - 9. Exposed sheet metal, ductwork, conduit, and piping in finished areas (Not mechanical/electric equipment rooms). See RFI 7991 for clarification
 - 10. Exposed prime coated or unfinished mechanical/electrical items outside of mechanical equipment rooms. See RFI 7991 for clarification
 - 11. Interior exposed concrete masonry units (C.M.U.)
 - 12. Exterior exposed concrete masonry units (C.M.U.) except where such units are pre-finished with integral color.
 - 13. Exposed steel relief angles and lintels at masonry construction, including galvanized steel.
 - 14. Where noted or scheduled.
 - 15. Electrostatic Painting.
 - 16. Floor numbers in elevator hoistways.
 - 17. Fire-Rating Identification of interior walls and partitions.
 - 18. Metal surfaces, except aluminum, of cooling towers exposed to view, including connected pipes, rails, and ladders.
 - 19. Exposed concrete ceilings in parking structures.

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20. Painting of disturbed, damaged and repaired or patched surfaces when entire space is not scheduled for complete repainting or refinishing.
21. Identity painting and safety painting.
- G. Section 09 06 00, SCHEDULE FOR FINISHES and FINISH LEGEND in Drawings for schedule of colors and finishes.
- H. Painting of Metal that is Hot Dipped Galvanized in accordance with Section 05 05 15 - Hot Dip Galvanizing.: See Section 05 05 15 - Hot Dip Galvanizing.
- I. Surfaces not to be painted unless specifically noted otherwise:
1. Prefinished items:
 - a. Items with factory finish or natural finish (brick, stone, stainless steel, aluminum, and others).
 - b. Casework, doors, elevator entrances and cabs, metal panels, wallcovering, and similar items specified factory finished under other sections.
 - c. Factory finished equipment and pre-engineered metal building components such as metal roof and wall panels.
 2. Finished surfaces:
 - a. Hardware except ferrous metal.
 - b. Anodized aluminum, stainless steel, chromium plating, copper, and brass, except as otherwise specified.
 - c. Signs, fixtures, and other similar items integrally finished.
 3. Concealed surfaces:
 - a. Inside dumbwaiter, elevator and duct shafts, pipe basements, crawl spaces, pipe tunnels, above ceilings, attics, except as otherwise specified.
 - b. Inside walls or other spaces behind access doors or panels.
 - c. Surfaces concealed behind permanently installed casework and equipment.
 4. Moving and operating parts:
 - a. Shafts, chains, gears, mechanical and electrical operators, linkages, and sprinkler heads, and sensing devices.
 - b. Tracks for overhead or coiling doors, shutters, and grilles.
 5. Labels:
 - a. Code required label, such as Underwriters Laboratories Inc., Inchcape Testing Services, Inc., or Factory Mutual Research Corporation.
 - b. Identification plates, instruction plates, performance rating, and nomenclature.
 6. Galvanized metal:
 - a. Exterior chain link fence and gates, corrugated metal areaways, and gratings, unless indicated otherwise.
 - b. Gas Storage Racks.
 7. Metal safety treads and nosings.
 8. Gaskets.
 9. Sprayed fireproofing and items receiving sprayed fireproofing in enclosed areas.
 10. Concrete curbs, gutters, pavements, retaining walls, exterior exposed foundation walls and interior walls in pipe basements.
- J. Paint and finish not required on the following:
1. Permanently concealed items, unless noted otherwise.
 2. Wall areas permanently concealed by fixed equipment or accessories.
 3. Where specifically omitted.
 4. Structural steel encased in concrete, masonry, or other enclosure.
 5. Ceilings, walls, and columns in pipe basements.
- K. Mechanical/Electrical Equipment Rooms: Painting in mechanical equipment rooms subject to the following requirements:

1. Paint finish on walls, ceilings, and exposed structure, when scheduled on drawings, to be applied prior to installation of mechanical/electrical work as much as possible.
2. Spray painting not permitted after electric motors have been installed.
3. Paint finish on railings, stairs (and floors when scheduled) to be performed after most M/E work is completed.

L. Alternate: See Section 01 23 00, Alternates for work affecting this Section.

1.2 RELATED WORK

- A. Sustainable Design Requirements: Section 01 81 13.
- B. Removal of lead-based paint: WP-9A.
- C. Shop prime painting of steel and ferrous metals: Division 05 - METALS, Division 08 - OPENINGS, Division 10 - SPECIALTIES, Division 11 - EQUIPMENT, Division 12 - FINISHINGS, Division 14 - CONVEYING EQUIPMENT, Division 21 - FIRE SUPPRESSION, Division 22 - PLUMBING, Division 23 - HEATING, VENTILATION AND AIR-CONDITIONING, Division 26 - ELECTRICAL, Division 27 - COMMUNICATIONS, and Division 28 - ELECTRONIC SAFETY AND SECURITY sections.
- D. Shop Applied Coatings for Metal: Section 05 05 13.
- E. Shop primer and field painting of hot dipped galvanized steel: Section 05 05 15.
- F. Finishes on architectural woodwork: Section 06 40 00 - Architectural Woodwork.
- G. Type of Finish, Color, and Gloss Level of Finish Coat: Section 09 06 00, SCHEDULE FOR FINISHES .
- H. Floor identification at stairwells: See Signage in Table of Contents.
- I. Pipe, valve, and equipment identification and coding: Divisions 21-23.
- J. Conduit and equipment identification and coding: Division 26.

1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

- F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Before work is started, or sample panels are prepared, submit manufacturer's literature, the current Master Painters Institute (MPI) "Approved Product List" indicating brand label, product name and product code as of the date of Contract award, will be used to determine compliance with the submittal requirements of this specification. The Contractor may choose to use subsequent MPI "Approved Product List", however, only one list may be used for the entire Contract and each coating system is to be from a single manufacturer. All coats on a particular substrate must be from a single manufacturer. No variation from the MPI "Approved Product List" where applicable is acceptable.
- C. LEED Submittal:
 - 1. Product Data for Credit EQ 4.2: For paints, including printed statement of VOC content and chemical components.
 - 2. Product Data for Credit IEQ 4.3: For liquid floor treatments and curing and sealing compounds, documentation including printed statement of VOC content.
- D. Sample Panels:
 - 1. After painters' materials have been approved and before work is started submit sample panels showing each type of finish and color specified.
 - 2. Panels to show color: Composition board, 100 by 250 by 3 mm (4 inch by 10 inch by 1/8 inch).
 - 3. Panel to show transparent finishes: Wood of same species and grain pattern as wood approved for use, 100 by 250 by 3 mm (4 inch by 10 inch face by 1/4 inch) thick minimum, and where both flat and edge grain will be exposed, 250 mm (10 inches) long by sufficient size, 50 by 50 mm (2 by 2 inch) minimum or actual wood member to show complete finish.
 - 4. Attach labels to panel stating the following:
 - a. Federal Specification Number or manufacturers name and product number of paints used.
 - b. Specification code number specified in Section 09 06 00, SCHEDULE FOR FINISHES.
 - c. Product type and color.
 - d. Name of project.
 - 5. Strips showing not less than 50 mm (2 inch) wide strips of undercoats and 100 mm (4 inch) wide strip of finish coat.
- E. Sample of identity markers if used.

- F. Manufacturers' Certificates indicating compliance with specified requirements:
1. Manufacturer's paint substituted for Federal Specification paints meets or exceeds performance of paint specified.
 2. High temperature aluminum paint.
 3. Epoxy coating.
 4. Intumescent clear coating or fire retardant paint.
 5. Plastic floor coating.
 6. Letters: Letter of Acceptance: Submit from USDA (U.S. Department of Agriculture) for any wall coating used in connection with the food service areas. Material(s) use based on "Incidental Food Contact" unless a lesser use rating is specifically allowed by the USDA or local Department of Health having jurisdiction.
- G. Finish Information: Submit data for finishes as required for "Operation and Maintenance Manual" specified under Section 01 78 23, Operation and Maintenance Manuals. Submittal is for information only and will not be approved or returned to Construction Manager.

1.5 QUALITY ASSURANCE

- A. Applicator to be approved by the Architect and shall, upon request, furnish in writing his qualifications attesting to past satisfactory experience in painting and finishing work of not less than the scope of this project.
1. Applicator must employ qualified personnel.
 2. Materials to be approved by the Architect.
- B. Applicator shall, upon request by the Architect, supply an 8" x 16" sample of each specified paint and finish for approval.
1. One half of sample to show final finish and other half to show successive steps taken to produce final finish.
 2. Approved samples shall become standard of finish and color to be accepted.
 3. All samples to be labeled on back side with paint manufacturer, type, color, sheen, project name, date, and other relevant information.
- C. Material Compatibility:
1. Single-Source Responsibility: Provide primers and undercoat material produced by the same manufacturer as the finish coats for each type of coating. Use only thinners recommended by the manufacturer and only within recommended limits.
 2. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 3. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- D. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
 - b. Other Items: Architect will designate items or areas required.
 2. Final approval of color selections will be based on mockups.
 3. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 5. Finish and texture approved by Resident Engineer will be used as a standard of quality for remainder of work.
- E. Do not proceed with work until samples are approved. Additional coats which may be required to match approved samples or Mockups shall be applied at no additional cost to Owner.
- F. Provide materials compliant with the Ozone Transport Commission (OTC) for VOC limits as applicable for Project location.

1.6 DELIVERY AND STORAGE

- A. Deliver materials to site in manufacturer's sealed container marked to show following:
1. Name of manufacturer.
 2. Product type.
 3. Batch number.
 4. Instructions for use.
 5. Safety precautions.
- B. In addition to manufacturer's label, provide a label legibly printed as following:
1. Federal Specification Number, where applicable, and name of material.
 2. Surface upon which material is to be applied.
 3. If paint or other coating, state coat types; prime, body or finish.
- C. Maintain space for storage, and handling of painting materials and equipment in a neat and orderly condition to prevent spontaneous combustion from occurring or igniting adjacent items.
- D. Store materials at site at least 24 hours before using, at a temperature between 18 and 30 degrees C (65 and 85 degrees F).

1.7 APPLICABLE PUBLICATIONS (Latest edition unless otherwise noted)

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by basic designation only.
- B. American Conference of Governmental Industrial Hygienists (ACGIH):
1. ACGIH TLV-BKLT Threshold Limit Values (TLV) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs)
 2. ACGIH TLV-DOC Documentation of Threshold Limit Values and Biological Exposure Indices, (Sixth Edition)
- C. American National Standards Institute (ANSI):
1. A13.1 Scheme for the Identification of Piping Systems
- D. American Society for Testing and Materials (ASTM):

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1. D 260 Boiled Linseed Oil
 2. D 4258 Surface Cleaning Concrete for Coating.
 3. D 4259 Abrading Concrete
 4. D 4285 Test Method for Indicating Oil or Water in Compressed Air.
- E. Commercial Item Description (CID):
1. A-A-1555 Water Paint, Powder (Cementitious, White and Colors) (WPC)
(cancelled)
- F. Federal Specifications (Fed Spec):
1. TT-P-1411A Paint, Copolymer-Resin, Cementitious (For Waterproofing Concrete
and Masonry Walls) (CEP)
- G. Master Painters Institute (MPI):
1. 1-09 Aluminum Paint (AP)
 2. 4-09 Interior/ Exterior Latex Block Filler
 3. 5-09 Exterior Alkyd Wood Primer
 4. 7-09 Exterior Oil Wood Primer
 5. 8-09 Exterior Alkyd, Flat MPI Gloss Level 1 (EO)
 6. 9-09 Exterior Alkyd, Enamel MPI Gloss Level 6 (EO)
 7. 10-09 Exterior Latex, Flat (AE)
 8. 11-09 Exterior Latex, Semi-Gloss (AE)
 9. 18-09 Organic Zinc Rich Primer
 10. 19-09 Inorganic Zinc Rich Primer
 11. 22-09 Aluminum Paint, High Heat (up to 590° - 1100F) (HR)
 12. 26-09 Cementitious Galvanized Metal Primer
 13. 27-09 Exterior / Interior Alkyd Floor Enamel, Gloss (FE)
 14. 31-09 Polyurethane, Moisture Cured, Clear Gloss (PV)
 15. 36-09 Knot Sealer
 16. 43-09 Interior Satin Latex, MPI Gloss Level 4
 17. 44-09 Interior Low Sheen Latex, MPI Gloss Level 2
 18. 45-09 Interior Primer Sealer
 19. 46-09 Interior Enamel Undercoat
 20. 47-09 Interior Alkyd, Semi-Gloss, MPI Gloss Level 5 (AK)
 21. 48-06 Interior Alkyd, Gloss, MPI Gloss Level 6 (AK)
 22. 50-09 Interior Latex Primer Sealer
 23. 52-09 Interior Latex, MPI Gloss Level 3 (LE)
 24. 53-09 Interior Latex, Flat, MPI Gloss Level 1 (LE)
 25. 54-09 Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE)
 26. 60-09 Interior/Exterior Latex Porch & Floor Paint, Low Gloss
 27. 67-09 Interior Latex Fire Retardant, Top-Coat (ULC Approved) (FR)
 28. 71-09 Polyurethane, Moisture Cured, Clear, Flat (PV)
 29. 74-09 Interior Alkyd Varnish, Semi-Gloss
 30. 77-09 Epoxy Cold Cured, Gloss (EC)
 31. 79-09 Marine Alkyd Metal Primer
 32. 90-09 Interior Wood Stain, Semi-Transparent (WS)
 33. 91-09 Wood Filler Paste
 34. 94-09 Exterior Alkyd, Semi-Gloss (EO)
 35. 95-09 Fast Drying Metal Primer

36. 99-09 Sealer, Water Based, for Concrete Floors
37. 101-09 Epoxy Anti-Corrosive Metal Primer
38. 107-09 Primer, Rust-Inhibitive, Water Based,
39. 108-09 High Build Epoxy Coating, Low Gloss (EC)
40. 114-09 Interior Latex, Gloss (LE) and (LG)
41. 119-09 Exterior Latex, High Gloss (acrylic) (AE)
42. 138-09 Interior High Performance Latex, MPI Gloss Level 2 (LF)
43. 139-09 Interior High Performance Latex, MPI Gloss Level 3 (LL)
44. 140-09 Interior High Performance Latex, MPI Gloss Level 4
45. 141-09 Interior High Performance Latex (SG) MPI Gloss Level 5

H. National Sanitation Foundation (NSF)

1. Standard 61 For use in drinking water.

I. Steel Structures Painting Council (SSPC):

1. SSPC SP 1 Solvent Cleaning
2. SSPC SP 2 Hand Tool Cleaning
3. SSPC SP 3 Power Tool Cleaning
4. SSPC-SP 6/NACE No. 3 Commercial Blast Cleaning

J. U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

1. EPA Method 24(00) Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Wood Sealer: MPI 31 (gloss) or MPI 71 (flat) thinned with thinner recommended by manufacturer at rate of about one part of thinner to four parts of varnish.
- B. Plastic Tape:
 1. Pigmented vinyl plastic film in colors as specified in Section 09 06 00, SCHEDULE FOR FINISHES or specified. If colors are not indicated provide colored tapes, as selected by Architect, from manufacturer's full range of colors.
 2. Pressure sensitive adhesive back.
 3. Widths as shown. If width of lines is not shown base the bid on 2" wide lines, and confirm width with Architect when shop drawings are submitted.
- C. Identity markers options:
 1. Pressure sensitive vinyl markers.
 2. Snap-on coil plastic markers.
- D. Interior/Exterior Latex Block Filler: MPI 4.
- E. Exterior Alkyd Wood Primer: MPI 5.

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- F. Exterior Oil Wood Primer: MPI 7
 - G. Exterior Alkyd, Flat (EO): MPI 8.
 - H. Exterior Alkyd Enamel (EO): MPI 9.
 - I. Exterior Latex, Flat (AE): MPI 10.
 - J. Exterior Latex, Semi-Gloss (AE): MPI 11. Organic Zinc rich Coating (HR): MPI 18. High Heat Resistant Coating (HR): MPI 22.
 - M. Cementitious Galvanized Metal Primer: MPI 26.
 - N. Interior Alkyd Floor Enamel, Gloss (FE): MPI 27.
 - 1. Interior: MPI 27/ E3.
 - 2. Exterior: MPI 27/ E1.
 - O. Knot Sealer: MPI 36.
 - P. Interior Low Sheen Latex: MPI 44/ E1/EPR 2. E1 EPR 2
 - Q. Interior Primer Sealer: MPI 45.
 - R. Interior Alkyd, Semi-Gloss (AK): MPI 47: VOC level shall not exceed 150 g/L.
 - S. Interior Latex Primer Sealer: MPI 50/E1/ EPR 2.
 - T. Interior Latex, Eggshell, MPI Gloss Level 3 (LE): MPI 52/ E1/EPR 3.
 - U. Interior Latex, Flat, MPI Gloss Level 1 (LE): MPI 53/ E3/EPR 2.5.
 - V. Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE): MPI 54/ E1/EPR 2.
 - W. Interior/ Exterior Latex Porch & Floor Paint, Low Gloss: MPI 60/ E3/EPR 3.
 - X. Interior Latex Fire Retardant, Top-Coat (ULC Approved) (FR): MPI 67.
 - Y. Epoxy Cold Cured, Gloss (EC): MPI 77. approved products are outside LEED VOC limits
 - Z. Marine Alkyd Metal primer: MPI 79.
 - AA. Interior Wood Stain, Semi-Transparent (WS): MPI 90/E3. E3
 - BB. Wood Filler Paste: MPI 91.
 - CC. Exterior Alkyd, Semi-Gloss (EO): MPI 94.
 - DD. Fast Drying Metal Primer: MPI 95.
 - EE. Epoxy Anti-Corrosive Metal Primer: MPI 101/E3.
 - FF. Primer, Rust-Inhibitive, Water Based, MPI 107/E3/EPR3.
 - GG. High Build Epoxy Marine Coating (EC): MPI 108/EPR 6.5

- HH. Interior latex, Gloss (LE) and (LG): MPI 114/3.
- II. Exterior Latex, High Gloss (acrylic) (AE): MPI 119.
- JJ. Interior High Performance Latex, MPI Gloss Level 2(LF): MPI 138/E2/EPR 6.
- KK. Interior High Performance Latex, MPI Gloss Level 3 (LL): MPI 139/E3/EPR 6.
- LL. Interior High Performance Latex, MPI Gloss Level 4: MPI 140/ E3/EPR 6.5.
- MM. Interior High Performance Latex (SG), MPI Gloss Level 5: MPI 141/E3/EPR 7.

2.2 PAINT PROPERTIES

- A. Use ready-mixed (including colors), except two component epoxies, polyurethanes, polyesters, paints having metallic powders packaged separately and paints requiring specified additives.
- B. Where no requirements are given in the referenced specifications for primers, use primers with pigment and vehicle, compatible with substrate and finish coats specified.

2.3 REGULATORY REQUIREMENTS/QUALITY ASSURANCE

- A. In addition to requirements specified elsewhere for environmental protection, provide coating materials that conform to the restrictions of the EPA, local Air Pollution Control District, and regional jurisdiction. Notify Contracting Officer of any paint specified herein which fails to conform.
- B. Paint materials shall conform to the restrictions of the local Environmental and Toxic Control jurisdiction.
- C. VOC Content for Interior Conditions: Products shall comply with the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 1. Flat Paints and Coatings: 50 g/L.
 - 2. Non-flat Paints and Coatings: 150 g/L.
 - 3. Dry-Fog Coatings: 400 g/L.
 - 4. Primers, Sealers, and Undercoaters: 200 g/L.
 - 5. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
 - 6. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
 - 7. Pretreatment Wash Primers: 420 g/L.
 - 8. Floor Coatings: 100 g/L.
 - 9. Shellacs, Clear: 730 g/L.
 - 10. Shellacs, Pigmented: 550 g/L.
- D. Lead-Base Paint:
 - 1. Comply with Section 410 of the Lead-Based Paint Poisoning Prevention Act, as amended, and with implementing regulations promulgated by Secretary of Housing and Urban Development.
 - 2. Regulations concerning prohibition against use of lead-based paint in federal and federally assisted construction, or rehabilitation of residential structures are set forth in Subpart F, Title 24, Code of Federal Regulations, Department of Housing and Urban Development.

- 3. Lead Content:
 - a. Interior Materials: Not permitted.
 - b. Exterior: Do not use coatings having a lead content over 0.06 percent by weight of nonvolatile content.
- E. Asbestos: Materials shall not contain asbestos.
- F. Chromate, Cadmium, Mercury, and Silica: Materials shall not contain zinc- chromate, strontium-chromate, Cadmium, mercury or mercury compounds or free crystalline silica.
 - 1. Abrasive blast media shall not contain free crystalline silica.
- G. Human Carcinogens: Materials shall not contain any of the ACGIH-BKLT and ACGHI-DOC confirmed or suspected human carcinogens.
- H. Use high performance acrylic paints in place of alkyd paints, where possible.

2.4 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
 - 1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
 - 2. Testing agency will perform tests for compliance with product requirements.
 - 3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Safety: Observe required safety regulations and manufacturer's warning and instructions for storage, handling and application of painting materials.
 - 1. Take necessary precautions to protect personnel and property from hazards due to falls, injuries, toxic fumes, fire, explosion, or other harm.
 - 2. Deposit soiled cleaning rags and waste materials in metal containers approved for that purpose. Dispose of such items off the site at end of each days work.
- B. Comply with manufacturer's recommendations as to environmental conditions under which coatings can be applied. Do not apply finish in areas where dust is being generated.
- C. Atmospheric and Surface Conditions:
 - 1. Do not apply coating when air or substrate conditions are:
 - a. Less than 3 degrees C (5 degrees F) above dew point.

- b. Below 10 degrees C (50 degrees F) or over 32 degrees C (90 degrees F), unless specifically pre-approved by the Contracting Officer and the product manufacturer. Under no circumstances shall application conditions exceed manufacturer recommendations.
2. Exterior: Do no exterior painting during or immediately after rain or frost, or likely to drop to freezing, or when surfaces are exposed to hot sun, or likely to be during the drying period.
3. Interior: Do interior work only when building is thoroughly dry, and area of work is properly ventilated and as clean and dust-free as possible.
 - 1) Apply interior finishes only when a minimum 60 degrees F. can be maintained during application and drying.
 - 2) Maintain 75 degrees F. during application and drying of stains and similar treatments.
4. Maintain interior temperatures until paint dries hard.
5. Do no exterior painting when it is windy and dusty.
6. Do not paint in direct sunlight or on surfaces that the sun will soon warm.
7. Apply only on clean, dry and frost free surfaces except as follows:
 - a. Dampened with a fine mist of water on hot dry days concrete and masonry surfaces to which water thinned acrylic and cementitious paints are applied to prevent excessive suction and to cool surface.
8. Varnishing:
 - a. Apply in clean areas and in still air.
 - b. Before varnishing vacuum and dust area.
 - c. Immediately before varnishing wipe down surfaces with a tack rag.

3.2 PROTECTION OF AREAS AND SPACES NOT TO BE PAINTED

- A. Prior to surface preparation and coating applications, remove, mask, or otherwise protect, machined surfaces, radiator covers, plates, lighting fixtures, public and private property, and other such items not to be coated that are in contact with surfaces to be coated. Following completion of painting, workmen skilled in the trades involved shall reinstall removed items. Restore surfaces contaminated by coating materials, to original condition and repair damaged items.

3.3 SEQUENCE.

- A. Base and Wall Cabinets:
 1. Painted Walls: Allow installation of cabinets, specified elsewhere, after prime + body coat (1st topcoat) and before finish coat of paint.

3.4 SURFACE PREPARATION

- A. General:
 1. Remove prefinished items not to be painted such as lighting fixtures, escutcheon plates, hardware, trim, and similar items for reinstallation after paint is dried.
 2. Remove items for reinstallation and complete painting of such items and adjacent areas when item or adjacent surface is not accessible or finish is different.
 3. See other sections of specifications for specified surface conditions and prime coat.
 4. Clean surfaces for painting and with materials and methods compatible with substrate and specified finish. Remove any residue remaining from cleaning agents used. Do not use solvents, acid, or steam on concrete and masonry.

5. Cleaning shall be programmed so that dust and other contaminants will not fall on wet, newly painted surfaces.
6. Factory Primed Surfaces:
 - a. Include substrates prime painted under other Sections. Cleaning shall be programmed so that dust and other contaminants will not fall on wet, newly painted surfaces.
 - b. It is the intention of this section that new substrates be ready for decoration as specified herein except for normal construction dust and soiling.
 - c. Clean primed surfaces of all dirt, grease, oil, or other contaminants leaving surface ready to receive scheduled coatings. Factory primed surfaces shall receive prime coat and finish coats as specified in this section. Provide primers by the same manufacturer as the finish coats for each type of coating.
7. Existing Paint: Remove existing paint remaining after lead paint removal under WP-9A for items receiving paint finish under this Section.

B. Wood:

1. Sand to a smooth even surface and then dust off.
2. Sand surfaces showing raised grain smooth between each coat.
3. Wipe surface with a tack rag prior to applying finish.
4. Surface painted with an opaque finish:
 - a. Coat knots, sap and pitch streaks with MPI 36 (Knot Sealer) before applying paint.
 - b. Apply two coats of MPI 36 (Knot Sealer) over large knots.
 - c. Exposed ferrous metals such as nail heads on or in contact with surfaces to be painted with water-thinned paints, shall be spot-primed with a suitable corrosion-inhibitive primer capable of preventing flash rusting and compatible with the coating specified for the adjacent areas.
5. After application of prime or first coat of stain, fill cracks, nail and screw holes, depressions and similar defects with wood filler paste. Sand the surface to make smooth and finish flush with adjacent surface.
6. Before applying finish coat, reapply wood filler paste if required, and sand surface to remove surface blemishes. Finish flush with adjacent surfaces.
7. Fill open grained wood such as oak, walnut, ash and mahogany with MPI 91 (Wood Filler Paste), colored to match wood color.
 - a. Thin filler in accordance with manufacturer's instructions for application.
 - b. Remove excess filler, wipe as clean as possible, dry, and sand as specified.
8. See "Existing Paint" under General above.

C. Ferrous Metals: Include exiting stairs, ladders, railings, landings, catwalks, and exposed to view metal in Dixie Building. Note, steel structure and cast-iron columns receiving fireproofing are exempt from work of this Section.

1. Remove oil, grease, soil, drawing and cutting compounds, flux and other detrimental foreign matter in accordance with SSPC-SP 1 (Solvent Cleaning).
2. Remove oil, dust, dirt, mill scale, rust, oxides, coatings, corrosion products, and other foreign matter by commercial blast cleaning of uncoated or coated steel surfaces by the use of abrasives as defined in SSPC-SP 6/NACE No. 3, Commercial Blast Cleaning). Exception: where high temperature aluminum paint is used, prepare surface in accordance with paint manufacturer's instructions.
 - a. Treat tight rust remaining, if any, after above procedure with commercial rust conversion products in according to manufacturer's instructions.
3. Fill dents, holes and similar voids and depressions in flat exposed surfaces of hollow steel doors and frames, access panels, roll-up steel doors and similar items specified to

- have semi-gloss or gloss finish with TT-F-322D (Filler, Two- Component Type, For Dents, Small Holes and Blow-Holes). Finish flush with adjacent surfaces.
- a. This includes flat head countersunk screws used for permanent anchors.
 - b. Do not fill screws of item intended for removal such as glazing beads.
4. Spot prime abraded and damaged areas in shop prime coat which expose bare metal with same type of paint used for prime coat. Feather edge of spot prime to produce smooth finish coat.
 5. Spot prime abraded and damaged areas which expose bare metal of factory finished items with paint as recommended by manufacturer of item.
 6. See "Existing Paint" under General above.
- D. Zinc-Coated (Galvanized) Metal, Aluminum, Copper and Copper Alloys Surfaces Specified Painted:
1. Clean surfaces to remove grease, oil and other deterrents to paint adhesion in accordance with SSPC-SP 1 (Solvent Cleaning).
 2. Spot coat abraded and damaged areas of zinc-coating which expose base metal on hot-dip zinc-coated items with MPI 18 (Organic Zinc Rich Coating). Prime or spot prime with MPI 134 (Waterborne Galvanized Primer) depending on finish coat compatibility.
 3. See "Existing Paint" under General above.
- E. Masonry, Concrete, Cement Board, Cement Plaster and Stucco:
1. Curing: Concrete, stucco and masonry surfaces shall be allowed to cure at least 30 days before painting, except concrete slab on grade, which shall be allowed to cure 90 days before painting.
 2. Clean and remove dust, dirt, oil, grease efflorescence, form release agents, laitance, and other deterrents to paint adhesion.
 3. Use emulsion type cleaning agents to remove oil, grease, paint and similar products. Use of solvents, acid, or steam is not permitted.
 4. Remove loose mortar in masonry work.
 5. Replace mortar and fill open joints, holes, cracks and depressions with mortar specified in Section 04 05 13, MASONRY MORTARING. Do not fill weep holes. Finish to match adjacent surfaces.
 6. Provide filler for CMU receiving coatings under this Section unless specifically noted otherwise.
 7. Neutralize Concrete floors to be painted by washing with a solution of 1.4 Kg (3 pounds) of zinc sulfate crystals to 3.8 L (1 gallon) of water, allow to dry three days and brush thoroughly free of crystals.
 8. Where sealer, SCONC, is scheduled for concrete floors, prepare slab after final job clean up and immediately prior to sealer application. Remove residual curing compound by suitable abrasive methods; acid or chemical removal methods not permitted.
 9. Repair broken and spalled concrete edges with concrete patching compound to match adjacent surfaces as specified in CONCRETE Sections. Remove projections to level of adjacent surface by grinding or similar methods.
 10. Fungus and Mold: Wash surfaces with a solution composed of 0.2 liter 1/2 cup trisodium phosphate, 0.1 liter 1/4 cup household detergent, 1.6 liters 1 quart 5 percent sodium hypochlorite solution and 4.8 liters 3 quarts of warm water. Rinse thoroughly with fresh water.
 11. Paint and Loose Particles: Remove by wire brushing.
 12. Efflorescence: Remove by scraping or wire brushing followed by washing with a 5 to 10 percent by weight aqueous solution of hydrochloric (muriatic) acid. Do not allow acid to remain on the surface for more than five minutes before rinsing with fresh water. Do not acid clean more than 0.4 square meter 4 square feet of surface, per workman, at one time.

13. Allowable Moisture Content: Latex coatings may be applied to damp surfaces, but not to surfaces with droplets of water. Do not apply epoxies to damp vertical surfaces as determined by ASTM D 4263 or horizontal surfaces that exceed 3 lbs of moisture per 1000 square feet in 24 hours as determined by ASTM F 1869. In all cases follow manufacturer's recommendations. Allow surfaces to cure a minimum of 30 days before painting.
14. See "Existing Paint" under General above.

F. Gypsum Plaster and Gypsum Board:

1. Surface Cleaning: Plaster and stucco shall be clean and free from loose matter; gypsum board shall be dry. Remove loose dirt and dust by brushing with a soft brush, rubbing with a dry cloth, or vacuum-cleaning prior to application of the first coat material. A damp cloth or sponge may be used if paint will be water-based.
2. Remove efflorescence, loose and chalking plaster or finishing materials.
3. Remove dust, dirt, and other deterrents to paint adhesion.
4. Fill holes, cracks, and other depressions with CID-A-A-1272A Plaster, Gypsum (Spackling Compound) finished flush with adjacent surface, with texture to match texture of adjacent surface. Patch holes over 12 mm (1/2-inch) in diameter as specified in Section for plaster or gypsum board.
5. Allowable Moisture Content: Do not apply epoxies to damp surfaces as determined by ASTM D 4263. Plaster to be coated shall have a maximum moisture content of 8 percent, when measured in accordance with ASTM D 4444, Method A, unless otherwise authorized. In addition to moisture content requirements, allow plaster to age a minimum of 30 days before preparation for painting.
6. See Section 09 96 53 - ELASTOMERIC COATINGS for Exterior Portland Cement Plaster coatings.

3.5 PAINT PREPARATION

- A. Thoroughly mix painting materials to ensure uniformity of color, complete dispersion of pigment and uniform composition.
- B. Do not thin unless necessary for application and when finish paint is used for body and prime coats. Use materials and quantities for thinning as specified in manufacturer's printed instructions.
- C. Remove paint skins, then strain paint through commercial paint strainer to remove lumps and other particles.
- D. Mix two component and two part paint and those requiring additives in such a manner as to uniformly blend as specified in manufacturer's printed instructions unless specified otherwise.
- E. For tinting required to produce exact shades specified, use color pigment recommended by the paint manufacturer.

3.6 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
 1. Use applicators and techniques suited for paint and substrate indicated.

2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. Start of surface preparation or painting will be construed as acceptance of the surface as satisfactory for the application of materials.
- C. Filler for CMU: Provide in sufficient coats to close voids completely.
1. Vivarium Walls: Texture of CMU may be apparent, but slope of water-retaining surfaces/voids must not be less than 10 degrees from a vertical plane.
- D. Unless otherwise specified, apply paint in three coats; prime, body, and finish. When two coats applied to prime coat are the same, first coat applied over primer is body coat and second coat is finish coat.
- E. Apply each coat evenly and cover substrate completely. Thoroughly work coating materials into joints, crevices, and open spaces. Special attention shall be given to insure that all edges, corners, crevices, welds, and rivets receive a film thickness equal to that of adjacent painted surfaces. Touch up damaged coatings before applying subsequent coats. Interior areas shall be broom clean and dust free before and during the application of coating material.
- F. Allow not less than 48 hours between application of succeeding coats, except as allowed by manufacturer's printed instructions, and approved by Resident Engineer.
1. Thermosetting Paints: Topcoats over thermosetting paints (epoxies and urethanes) should be applied within the overcoating window recommended by the manufacturer.
- G. Primers and Intermediate Coats: Do not allow primers or intermediate coats to dry more than 30 days, or longer than recommended by manufacturer, before applying subsequent coats. Follow manufacturer's recommendations for surface preparation if primers or intermediate coats are allowed to dry longer than recommended by manufacturers of subsequent coatings. Each coat shall cover surface of preceding coat or surface completely and there shall be a visually perceptible difference in shades of successive coats.
- H. Finish surfaces to show solid even color, free from runs, lumps, brushmarks, laps, holidays, or other defects.
- I. Apply all coatings by brush or roller unless spray application is specified or approved by the Architect. Rollers for applying paints and enamels shall be of a type designed for the coating to be applied and the surface to be coated. Wear protective clothing and respirators when applying oil-based paints or using spray equipment with any paints.
- J. The following shall be spray painted:
1. Metal door frames and metal doors.
 2. Handrails and guardrails exposed to public view. Does not include hand rails and guard rails within fire rated stair enclosure.
- K. Do not spray paint in existing occupied spaces unless approved by Resident Engineer, except in spaces sealed from existing occupied spaces.
1. Apply painting materials specifically required by manufacturer to be applied by spraying.

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2. In areas, where paint is applied by spray, mask or enclose with polyethylene, or similar air tight material with edges and seams continuously sealed including items specified in WORK NOT PAINTED, motors, controls, telephone, and electrical equipment, fronts of sterilizes and other recessed equipment and similar prefinished items.
 - L. Do not paint in closed position operable items such as access doors and panels, window sashes, overhead doors, and similar items except overhead roll-up doors and shutters.
 - M. Interior Wood:
 1. Sanding:
 - a. Use 220-grit sandpaper.
 - b. Sand sealers and varnish between coats.
 - c. Sand enough to scarify surface to assure good adhesion of subsequent coats, to level roughly applied sealer and varnish, and to knock off "whiskers" of any raised grain as well as dust particles.
 2. Sealers:
 - a. Apply sealers specified except sealer may be omitted where pigmented, penetrating, or wiping stains containing resins are used.
 - b. Allow manufacturer's recommended drying time before sanding, but not less than 24 hours or 36 hours in damp or muggy weather.
 - c. Sand as specified.
- 3.7 PRIME PAINTING
- A. After surface preparation prime surfaces before application of body and finish coats, except as otherwise specified.
 - B. Spot prime and apply body coat to damaged and abraded painted surfaces before applying succeeding coats.
 - C. Prime rebates for stop and face glazing of wood, and for face glazing of steel.
 - D. Wood and Wood Particleboard:
 1. Use same kind of primer specified for exposed face surface.
 2. Apply two coats of primer sealer MPI 45 (Interior Primer Sealer) top and bottom edges of wood doors which are cut for fitting or for other reason.
 3. Apply one coat of primer MPI 5 (Exterior Alkyd Wood Primer) or sealer MPI 45 (Interior Primer Sealer) to surfaces of unfinished woodwork, except concealed surfaces of shop fabricated or assembled millwork and surfaces specified to have varnish, stain or natural finish. Application of the primer and sealer shall be done prior to delivery to the unfinished woodwork to the building site.
 4. Back prime and seal ends of exterior woodwork, and edges of exterior plywood specified to be finished.
 5. Apply MPI 67 (Interior Latex Fire Retardant, Top-Coat (ULC Approved) (FR)) to wood for fire retardant finish over opaque finish systems.
 - E. Interior Metal Work:
 1. Apply to exposed surfaces.
 2. Omit body and finish coats on surfaces totally concealed from view after installation, except electrical conduit containing conductors over 600 volts.

3.8 PAINT TABLES GENERAL

- A. Apply following finish coats over prime coats in spaces as specified in Paint Tables, below. Color of finish coat specified in Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Paint specified surfaces.
- C. All Dry Film Thicknesses (DFT) are minimum values. Use only interior paints and coatings that meet VOC requirements of LEED low emitting materials credit.
- D. Exterior Paint Tables: Paints in this table apply to materials in or at exterior wall, materials exposed to weather, and materials in unconditioned spaces.
- E. Interior Paint Tables: Paints in this table apply to materials not included in Exterior Paint Tables.

3.9 EXTERIOR PAINT TABLES

A. Exterior Concrete Paint Table

- 1. Vertical surfaces, including undersides of balconies and soffits but excluding tops of slabs:
 - a. Provide elastomeric paint as specified in Section 09 96 53 - Elastomeric Coatings.

B. Exterior Concrete Masonry Units Paint Table

- 1. Elastomeric system; on uncoated surface:
 - a. ~~Elastomeric Coating: Provide in accordance with Section 09 96 53 - ELASTOMERIC COATINGS.~~

SEE RFI 06394

C. Exterior Metal, Ferrous And Non-Ferrous Paint Table

- 1. Steel / Ferrous Surfaces:
 - a. Steel that has been hand or power tool cleaned to SSPC SP 2 or SSPC SP 3
 - 1) Alkyd
 - MPI EXT 5.1Q-G5 (Semigloss)
 - Primer: Intermediate: Topcoat:
 - MPI 23 MPI 94 MPI 94
 - System DFT: 5.25 mils 131 microns
 - MPI EXT 5.1Q-G6 (Gloss)
 - Primer: Intermediate: Topcoat:
 - MPI 23 MPI 9 MPI 9
 - System DFT: 5.25 mils 131 microns
 - b. Steel that has been blast-cleaned to SSPC SP 6:
 - 1) Alkyd
 - MPI EXT 5.1D-G5 (Semigloss)

Primer: Intermediate: Topcoat:
MPI 79 MPI 94 MPI 94
System DFT: 5.25 mils 131 microns

MPI EXT 5.1D-G6 (Gloss)
Primer: Intermediate: Topcoat:
MPI 79 MPI 9 MPI 9
System DFT: 5.25 mils 131 microns

c. Steel blast cleaned to SSPC SP 10:

1) Waterborne Light Industrial

MPI EXT 5.1R-G5 (Semigloss)
Primer: Intermediate: Topcoat:
MPI 101 MPI 108 MPI 163
System DFT: 8.5 mils 212 microns

MPI EXT 5.1R-G6 (Gloss)
Primer: Intermediate: Topcoat:
MPI 101 MPI 108 MPI 164
System DFT: 8.5 mils 212 microns

2) Pigmented Polyurethane

MPI EXT 5.1J-G6 (Gloss)
Primer: Intermediate: Topcoat:
MPI 101 MPI 108 MPI 72
System DFT: 8.5 mils 212 microns

d. Metal floors (non-shop-primed surfaces or non-slip deck surfaces) with non-skid additive (NSA), load at manufacturer's recommendations.

1) Alkyd Floor Enamel

MPI EXT 5.1S-G6 (Gloss)
Primer: Intermediate: Topcoat:
MPI 79 MPI 27 MPI 27 (+NSA)
System DFT: 5.25 mils 131 microns

D. Exterior Galvanized Surfaces: Galvanized metal items not otherwise specified.

1. Galvanized surfaces:

a. Cementitious primer / Latex

MPI EXT 5.3A-G1 (Flat)
Primer: Intermediate: Topcoat:
MPI 26 MPI 10 MPI 10
System DFT: 4.5 mils 112 microns

MPI EXT 5.3A-G5 (Semigloss)
Primer: Intermediate: Topcoat:
MPI 26 MPI 11 MPI 11
System DFT: 4.5 mils 112 microns

MPI EXT 5.3A-G6 (Gloss)

Primer:	Intermediate:	Topcoat:
MPI 26	MPI 119	MPI 119

System DFT: 4.5 mils 112 microns

b. Waterborne Primer / Latex

MPI EXT 5.3H-G1 (Flat)

Primer:	Intermediate:	Topcoat:
MPI 134	MPI 10	MPI 10

System DFT: 4.5 mils 112 microns

MPI EXT 5.3H-G5 (Semigloss)

Primer:	Intermediate:	Topcoat:
MPI 134	MPI 11	MPI 11

System DFT: 4.5 mils 112 microns

MPI EXT 5.3H-G6 (Gloss)

Primer:	Intermediate:	Topcoat:
MPI 134	MPI 119	MPI 119

System DFT: 4.5 mils 112 microns

c. Waterborne Primer / Waterborne Light Industrial Coating

MPI EXT 5.3J-G5 (Semigloss)

Primer:	Intermediate:	Topcoat:
MPI 134	MPI 163	MPI 163

System DFT: 4.5 mils 112 microns

MPI EXT 5.3J-G6 (Gloss)

Primer:	Intermediate:	Topcoat:
MPI 134	MPI 164	MPI 164

System DFT: 4.5 mils 112 microns

d. Epoxy Primer / Waterborne Light Industrial Coating

MPI EXT 5.3K-G5 (Semigloss)

Primer:	Intermediate:	Topcoat:
MPI 101	MPI 163	MPI 163

System DFT: 5 mils 125 microns

MPI EXT 5.3K-G6 (Gloss)

Primer:	Intermediate:	Topcoat:
MPI 101	MPI 164	MPI 164

System DFT: 5 mils 125 microns

e. Pigmented Polyurethane

MPI EXT 5.3L-G6 (Gloss)

Primer:	Intermediate:	Topcoat:
MPI 101	N/A	MPI 72

System DFT: 5 mils 125 microns

E. Terne Metal and Zinc Coated Metal:

a. Alkyd

MPI EXT 5.1D-G5 (Semigloss)

Primer: Intermediate: Topcoat:

MPI 79 MPI 94 MPI 94

System DFT: 5.25 mils 131 microns

MPI EXT 5.1D-G6 (Gloss)

Primer: Intermediate: Topcoat:

MPI 79 MPI 9 MPI 9

System DFT: 5.25 mils 131 microns

F. Exterior Surfaces, Other Metals (Non-Ferrous)

1. Aluminum, aluminum alloy and other miscellaneous non-ferrous metal items not otherwise specified except hot metal surfaces, roof surfaces, and prefinished equipment. Match surrounding finish, unless noted otherwise:

a. Alkyd

MPI EXT 5.4F-G1 (Flat)

Primer: Intermediate: Topcoat:

MPI 95 MPI 8 MPI 8

System DFT: 5 mils 125 microns

MPI EXT 5.4F-G5 (Semigloss)

Primer: Intermediate: Topcoat:

MPI 95 MPI 94 MPI 94

System DFT: 5 mils 125 microns

MPI EXT 5.4F-G6 (Gloss)

Primer: Intermediate: Topcoat:

MPI 95 MPI 9 MPI 9

System DFT: 5 mils 125 microns

b. Waterborne Light Industrial Coating

MPI EXT 5.4G-G3 (Eggshell)

Primer: Intermediate: Topcoat:

MPI 95 MPI 161 MPI 161

System DFT: 5 mils 125 microns

MPI EXT 5.4G-G5 (Semigloss)

Primer: Intermediate: Topcoat:

MPI 95 MPI 163 MPI 163

System DFT: 5 mils 125 microns

MPI EXT 5.4G-G6 (Gloss)

Primer: Intermediate: Topcoat:

MPI 95 MPI 164 MPI 164

System DFT: 5 mils 125 microns

2. Surfaces adjacent to painted surfaces; Mechanical, Electrical, Fire extinguishing sprinkler systems including valves, conduit, hangers, supports, exposed copper piping, and miscellaneous metal items not otherwise specified except floors, hot metal surfaces, and prefinished equipment. Match surrounding finish:

a. Alkyd

MPI EXT 5.1D-G1 (Flat)

Primer: Intermediate: Topcoat:
MPI 79 MPI 8 MPI 8

System DFT: 5.25 mils 131 microns

MPI EXT 5.1D-G5 (Semigloss)

Primer: Intermediate: Topcoat:
MPI 79 MPI 94 MPI 94

System DFT: 5.25 mils 131 microns

MPI EXT 5.1D-G6 (Gloss)

Primer: Intermediate: Topcoat:
MPI 79 MPI 9 MPI 9

System DFT: 5.25 mils 131 microns

b. Waterborne Light Industrial Coating

MPI EXT 5.1C-G3 (Eggshell)

Primer: Intermediate: Topcoat:
MPI 79 MPI 161 MPI 161

System DFT: 5 mils 125 microns

MPI EXT 5.1C-G5 (Semigloss)

Primer: Intermediate: Topcoat:
MPI 79 MPI 163 MPI 163

System DFT: 5 mils 125 microns

MPI EXT 5.1C-G6 (Gloss)

Primer: Intermediate: Topcoat:
MPI 79 MPI 164 MPI 164

System DFT: 5 mils 125 microns

3. Hot metal surfaces subject to temperatures up to 205 degrees C (400 degrees F):

a. Heat Resistant Enamel

MPI EXT 5.2A

Primer: Intermediate: Topcoat:
MPI 21 Surface preparation and number of coats per
manufacturer's instructions.

System DFT: Per Manufacturer

4. Ferrous metal subject to high temperature, up to 400 degrees C (750 degrees F):

a. Inorganic Zinc Rich Coating

MPI EXT 5.2C

Primer: Intermediate: Topcoat:
MPI 19 Surface preparation and number of coats per
manufacturer's instructions.
System DFT: Per Manufacturer

b. Heat Resistant Aluminum Enamel

MPI EXT 5.2B (Aluminum Finish)
Primer: Intermediate: Topcoat:
MPI 2 Surface preparation and number of coats per
manufacturer's instructions.
System DFT: Per Manufacturer

5. Surfaces made bare cleaning to SSPC SP 10 subject to temperatures up to 593 degrees C (1100 degrees F):

a. Heat Resistant Coating

MPI EXT 5.2D
Primer: Intermediate: Topcoat:
MPI 22 Surface preparation and number of coats per
manufacturer's instructions.
System DFT: Per Manufacturer

G. Exterior Wood; Dressed Lumber, Paneling, Decking, Shingles Paint Table:

1. Dressed lumber, Wood and plywood, trim, not otherwise specified:

a. Alkyd

MPI EXT 6.3B-G5 (Semigloss)
Primer: Intermediate: Topcoat:
MPI 7 MPI 94 MPI 94
System DFT: 5 mils 125 microns

MPI EXT 6.3B-G6 (Gloss)
Primer: Intermediate: Topcoat:
MPI 7 MPI 9 MPI 9
System DFT: 5 mils 125 microns

H. Exterior Stucco Paint Table

1. New and Existing stucco:

a. Latex

New; MPI EXT 9.1A-G1 (Flat) / Existing; MPI REX 9.1A-G2 (Flat)
Primer: Intermediate: Topcoat:
MPI 10 MPI 10 MPI 10
System DFT: 4.5 mils 112 microns]

New; MPI EXT 9.1A-G5 (Semigloss) / Existing; MPI REX 9.1A-G5 (Semigloss)
Primer: Intermediate: Topcoat:
MPI 11 MPI 11 MPI 11
System DFT: 4.5 mils 112 microns]

Primer as recommended by manufacturer. Topcoat: Coating to match adjacent surfaces. On existing stucco, apply primer based on surface condition.]

I. Exterior Cloth Coverings and Bituminous Coated Surfaces Paint Table

1. Insulation and surfaces of insulation coverings (canvas, cloth, paper): (Interior and Exterior Applications)

a. Latex

MPI EXT 10.1A-G5 (Semigloss)

Primer: Intermediate: Topcoat:

N/A MPI 11 MPI 11

System DFT: 3.2 mils 80 microns

Topcoat: Coating to match adjacent surfaces.

3.10 INTERIOR PAINT TABLES

A. Concrete Paint Table:

1. Concrete Floors scheduled to receive SCONC: Install two coats of MPI #99 in compliance with manufacturers written recommendations.

a. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2. Vertical surfaces and walls: Concrete, vertical surfaces, not specified otherwise. Provide satin finish unless indicated otherwise:

a. High Performance Architectural Latex

1) MPI INT 3.1C-G2 (Flat)

Primer: Intermediate: Topcoat:

MPI 50 MPI 138 MPI 138

System DFT: 4 mils 100 microns

2) MPI INT 3.1C-G3 (Eggshell)
(Eggshell)

Primer: Intermediate: Topcoat:

MPI 50 MPI 139 MPI 139

System DFT: 4 mils 100 microns

3) MPI INT 3.1C-G4 (satin)

Primer: Intermediate: Topcoat:

MPI 50 MPI 140 MPI 140

System DFT: 4 mils 100 microns

4) MPI INT 3.1C-G5 (Semigloss)

Primer: Intermediate: Topcoat:

MPI 50 MPI 141 MPI 141

System DFT: 4 mils 100 microns

3. Concrete ceilings, uncoated: RFI 06803: Exposed Concrete Structures Are Not To Be Painted.

- a. Latex Aggregate
 - 1) MPI INT 3.1N
 - Primer: Intermediate: Topcoat:
 - N/A N/A MPI 42
 - System DFT: Per Manufacturer.
 - Texture - Medium. Surface preparation, number of coats, and primer in accordance with manufacturer's instructions. Topcoat: Coating to match adjacent surfaces.

4. Concrete floors :

- a. Epoxy: Low VOC, 100% solids, high build
 - 1) Epoxy Primer/Sealer:
 - a) Adhesion: ~350 psi, 100% Concrete failure, ASTM D4541.
 - b) Compressive Strength: ~900 psi,ASTMD695
 - c) Flexural Strength: ~5000 psi, ASTM D790
 - d) Hardness: 65-75: ASTM D2240
 - e) Tensile Strength: ~3000 psi, D638
 - f) VOC: Less than 100 g/l.
 - g) DFT: Not less than 8 mils
 - 2) Intermediate Epoxy Coat:
 - a) Self-leveling/recoatable epoxy
 - b) Abrasion Resistance: 100mg loss when tested per ASTM D4060 with CS17 wheel, 1000 cycles, 1KG load.
 - c) Flexural Strength: ~12,400psi, ASTM D790.
 - d) Hardness- Shore D: 75, ASTM D2240.
 - e) Tensile Strength: ~6,000 psi
 - f) DFT: 20-30 mils
 - g) VOC: Less than 50 g/l.
 - 3) Abrasive: Uniformly graded, washed silicon carbide sand; Uniformly graded, washed silica sand; or uniformly graded, washed flint shot silica; of particle sizes, shape, and minimum hardness recommended in writing by paint coating manufacturer.
 - a) Broadcast into Intermediate Finish Coat.
 - 4) Finish Coat:
 - a) Self-leveling/recoatable epoxy
 - b) Abrasion Resistance: 100mg loss when tested per ASTM D4060 with CS17 wheel, 1000 cycles, 1KG load.
 - c) Flexural Strength: ~12,400psi, ASTM D790.
 - d) Hardness- Shore D: 75, ASTM D2240.
 - e) Tensile Strength: ~6,000 psi
 - f) DFT: 20-30 mils.
 - g) VOC: Less than 50 g/l.
- b. Latex: Use only at new uncoated concrete in Electrical Rooms (including switchgear rooms)and emergency electrical rooms (including switchgear rooms):

- 1) MPI INT 3.2A-G2 (Flat)
 - Primer: Intermediate: Topcoat:
 - MPI 60 MPI 60 MPI 60
 - System DFT: 5 mils 125 microns]

5. Floor Marking in Elevator Shafts:

- a. High Performance Architectural Latex

- 1) MPI INT 3.1C-G2 (Satin)
Primer: Intermediate: Topcoat:
MPI 50 MPI 138 MPI 138
System DFT: 4 mils 100 microns

B. Concrete Masonry Units (CMU) Paint Table

1. General: Provide semi-gloss finish unless indicated otherwise:
2. Concrete masonry:

a. High Performance Architectural Latex

- 1) MPI INT 4.2D-G4 (Satin):
Filler Primer: Intermediate: Topcoat:
MPI 4 N/A MPI 140 MPI 140
System DFT: 11 mils 275 microns

- 2) MPI INT 4.2D-G5 (Semigloss)
Filler Primer: Intermediate: Topcoat:
MPI 4 N/A MPI 141 MPI 141
System DFT: 11 mils 275 microns

b. Epoxy

- | | | | |
|---------|---------|---------------|----------|
| Filler | Primer: | Intermediate: | Topcoat: |
| MPI 4** | N/A | MPI 108 | MPI 108 |

**See "Filler for CMU" under APPLICATION above.

Fill all holes in masonry surface

C. Interior Metal, Ferrous and Non-Ferrous Paint Table

1. General: Provide semi-gloss finish unless indicated otherwise:
2. Interior Steel / Ferrous Surfaces: Metal, Mechanical, Electrical, Fire extinguishing sprinkler systems including valves, conduit, hangers, supports, Surfaces adjacent to painted surfaces (Match surrounding finish), exposed copper piping, and miscellaneous metal items not otherwise specified except floors, hot metal surfaces, and prefinished equipment:

a. Alkyd

- 1) MPI INT 5.1E-G3 (Eggshell)
Primer: Intermediate: Topcoat:
MPI 107 MPI 51 MPI 51
System DFT: 5.25 mils 131 microns

- 2) MPI INT 5.1E-G5 (Semigloss):
Primer: Intermediate: Topcoat:
MPI 107 MPI 47 MPI 47
System DFT: 5.25 mils 131 microns

- 3) MPI INT 5.1E-G6 (Gloss)
Primer: Intermediate: Topcoat:
MPI 107 MPI 48 MPI 48
System DFT: 5.25 mils 131 microns

-
3. Metal floors (non-shop-primed surfaces or non-slip deck surfaces) with non-skid additive (NSA), load at manufacturer's recommendations.
- a. Alkyd
- 1) MPI INT 5.1E-G5 (Semigloss)
Primer: Intermediate: Topcoat:
MPI 107 MPI 47 MPI 47 (+NSA)
System DFT: 5.25 mils 131 microns
- 2) MPI INT 5.1E-G6 (Gloss)
Primer: Intermediate: Topcoat:
MPI 107 MPI 48 MPI 48 (+NSA)
System DFT: 5.25 mils 131 microns
4. Metal in Sanitary Spaces and High Humidity Spaces: Uncoated metal in toilets, food-preparation, food-serving, restrooms, laundry areas, shower areas, areas requiring a high degree of sanitation, trash rooms, clean rooms, swimming pool spaces, water therapy, SPD, rooms with water pumps, and other high-humidity areas not otherwise specified.
- a. Epoxy
- 1) MPI INT 5.1L-G5 (Semi-Gloss)
Primer: Intermediate: Topcoat:
MPI 101 MPI 108 MPI 108
System DFT: 5.25 mils 131 microns
5. Aluminum: Primer shall be approved by manufacturer in writing, as an acceptable primer for an aluminum substrate.
- 1) Alkyd
- a) MPI INT 5.1E-G5 (Semigloss): Default gloss level.
Primer: Intermediate: Topcoat:
MPI 107 MPI 47 MPI 47
System DFT: 5.25 mils 131 microns
- b) MPI INT 5.1E-G6 (Gloss)
Primer: Intermediate: Topcoat:
MPI 107 MPI 48 MPI 48
System DFT: 5.25 mils 131 microns
6. Copper and Copper Alloys:
- 1) MPI INT 5.1M????
Primer: Intermediate: Topcoat:
MPI 79 MPI 139 MPI 139
System DFT: 4.25 mils 106 microns
7. Aluminum: Primer shall be approved by manufacturer for metal substrate.
- 1) MPI INT 5.1M
Primer: Intermediate: Topcoat:
MPI 107 MPI 139 MPI 139
System DFT: 4.25 mils 106 microns
8. Miscellaneous non-ferrous metal items not otherwise specified except floors, hot metal surfaces, and prefinished equipment. Match surrounding finish:

-
- a. High Performance Architectural Latex
- 1) MPI INT 5.4F-G2 (Flat)
Primer: Intermediate: Topcoat:
MPI 95 MPI 138 MPI 138
System DFT: 5 mils 125 microns
- 2) MPI INT 5.4F-G3 (Eggshell)
Primer: Intermediate: Topcoat:
MPI 95 MPI 139 MPI 139
System DFT: 5 mils 125 microns
- 3) MPI INT 5.4F-G4 (Satin): Default Gloss Level
Primer: Intermediate: Topcoat:
MPI 95 MPI 140 MPI 140
System DFT: 5 mils 125 microns
- 4) MPI INT 5.4F-G5 (Semigloss)
Primer: Intermediate: Topcoat:
MPI 95 MPI 141 MPI 141
System DFT: 5 mils 125 microns
9. Hot metal surfaces over 94 degrees C. (200 degrees F), Boilers, Incinerator Stacks, and Engine Exhaust Pipes subject to temperatures up to 205 degrees C (400 degrees F):
- a. Heat Resistant Enamel
- 1) MPI INT 5.2A
Primer: Intermediate: Topcoat:
MPI 21 Surface preparation and number of coats per
manufacturer's instructions.
System DFT: Per Manufacturer
10. Ferrous metal subject to high temperature, up to 400 degrees C (750 degrees F):
- a. Inorganic Zinc Rich Coating
- 1) MPI INT 5.2C
Primer: Intermediate: Topcoat:
MPI 19 Surface preparation and number of coats per
manufacturer's instructions.
System DFT: Per Manufacturer
- b. Heat Resistant Aluminum Paint
- 1) MPI INT 5.2B (Aluminum Finish)
Primer: Intermediate: Topcoat:
MPI 2 Surface preparation and number of coats per
manufacturer's instructions.
System DFT: Per Manufacturer
11. Ferrous metal subject to temperatures up to 593 degrees C (1100 degrees F): Clean metal substrate to SSPC SP 10 immediately prior to paint application:
- a. High Heat Resistant Coating
- 1) MPI INT 5.2D
Primer: Intermediate: Topcoat:
MPI 22 Surface preparation and number of coats per
manufacturer's instructions.

System DFT: Per Manufacturer

- D. Electrostatic Painting:. Work to be performed by specialist in electrostatic coatings.
1. Provide for the following substrates:
 - a. Architectural Stairs and associated care rail.
 2. Paint: A catalyzed polyurethane system by Sherwin-Williams or approved equal by listed acceptable manufacturers.
 3. Primer: Provide products below based on when topcoat will be applied. Note, designated items shall be provided with specified shop-applied primer under their scope of work.
 - a. Shop-Applied Primer: S/W Polane Primer/Sealer E65A4; a 2-part polyurethane product; flat gray color
 - 1) Provide where topcoat may not be applied within 14 days.
 - 2) Typical for products primed off site.
 - 3) Can be topcoated with hot solvent topcoats without repriming in field.
 - b. Field-Applied Primer: S/W "Polane Primer Sealer Grey", E65A4; a 2-component urethane product. Provide where topcoat will be applied within 14 days.
 4. Finish Coats: S/W Series F63 "Polane Polyurethane Enamel"; a 2 component product. Low gloss as selected by Architect.
 5. Equipment:
 - a. Spray Gun: Ramsburg #2 or equal providing 100 percent coverage with no overspray.
 - b. Other: As required for complete installation.

- E. Interior Wood Paint Table: Finish on Architectural Woodwork shall be provided by and in conformance with Section 06 40 00 - Architectural Woodwork

1. General: Provide satin finish unless indicated otherwise:
2. Uncoated Wood and plywood not otherwise specified:
 - a. Institutional Low Odor / Low VOC Latex
 - 1) MPI INT 6.3V-G4 (Satin)

Primer:	Intermediate:	Topcoat:
MPI 39	MPI 146	MPI 146
System DFT: 4 mils 100 microns		
3. Wood and Plywood, except floors; natural finish or stained. Provide as specified in Section 06 40 00 - : Architectural Woodwork.
4. Wood surfaces in sanitary spaces and high humidity spaces: in toilets, food-preparation, food-serving, restrooms, laundry areas, shower areas, areas requiring a high degree of sanitation, trash rooms, clean rooms, swimming pool spaces, water therapy, SPD and other high-humidity areas not otherwise specified.

Waterborne Light Industrial

- 1) MPI INT 6.3P-G5 (Semigloss): Default gloss level.

Primer:	Intermediate:	Topcoat:
MPI 45	MPI 153	MPI 153
System DFT: 4.5 mils 112 microns		
- 2) MPI INT 6.3P-G6 (Gloss)

Primer:	Intermediate:	Topcoat:
MPI 45	MPI 154	MPI 154
System DFT: 4.5 mils 112 microns		

- F. Division 9: Interior Plaster, Gypsum Board, Textured Surfaces Paint Table:

1. General: Provide eggshell finish unless indicated otherwise:
 - a. Exception: Epoxy coats shall be gloss finish.
 2. Plaster and Wallboard not otherwise specified:
 - a. High Performance Architectural Latex - High Traffic Areas: Prior to applying coatings listed below the gypsum substrate shall be primed with one coat of Primer 1, listed below, over gypsum board with a Level 4 finish. At contractor's risk the "primer 2" coat indicated with the MPI system may be deleted if the manufacturer of the top coat certifies in writing that the Top Coat system is compatible with the "Primer 1" used as the substrate for the finish coat.
 - 1) Primer 1: Solids by Volume: Paint shall be a minimum of 57 % solids by weight and 39% solids by volume. Dry film thickness 1.5 mils.
 - 2) MPI INT 9.2B-G2 (Flat): Default gloss level for ceilings and horizontal surfaces of soffits.

Primer 1	Primer 2:	Intermediate:	Topcoat:
See Primer 1 above	MPI 50	MPI 138	MPI 138
for Level 4 Finish.			
System DFT: 4 mils 100 microns without Primer 1			
 - 3) MPI INT 9.2B-G3 (Eggshell): Default gloss level for vertical and sloped surfaces.

Primer 1	Primer 2:	Intermediate:	Topcoat:
See Primer 1 above	MPI 50	MPI 139	MPI 139
for Level 4 Finish.			
System DFT: 4 mils 100 microns without Primer 1			
 - 4) MPI INT 9.2B-G5 (Semigloss)

Primer 1	Primer 2:	Intermediate:	Topcoat:
See Primer 1 above	MPI 50	MPI 141	MPI 141
for Level 4 Finish.			
System DFT: 4 mils 100 microns without Primer 1			
 3. Surfaces scheduled to receive fabric wallcovering:
 - a. Latex
Primer:
MPI 50
 4. Plaster, and Wallboard in Sanitary Spaces and High Humidity Spaces: in toilets, food-preparation, food-serving, restrooms, laundry areas, shower areas, areas requiring a high degree of sanitation, trash rooms, clean rooms, swimming pool spaces, water therapy, SPD and other high-humidity areas not otherwise specified.
 - a. Epoxy
 - 1) MPI INT 9.2E-G6 (Gloss)

Primer:	Intermediate:	Topcoat:
MPI 50	MPI 115	MPI 115
System DFT: 4 mils 100 microns		
- G. Interior Exposed Piping, Conduit, Canvas Pipe Covering, Pipe Wrapping and Ductwork Coverings: [See RFI 7991 for details](#)

1. General: Provide semi-gloss finish unless indicated otherwise:
2. All exposed to view piping, conduit, ductwork, hangers and supports (outside of M/E Rooms) to be painted. Painting of mechanical work inside of mechanical equipment rooms and tagging provided under Division 15; see "Mechanical Equipment Rooms" under SUMMARY in Part 1. Provide pastel colors for ductwork and 100% deep tones for piping; color schedule to be provided by the Architect.
3. Exposed Insulated Pipe and Ductwork: Outside of M/E Rooms:

RFI 7991 - Lab spaces exposed MEP and structure to be painted to match lab frames.

RFI 8699 - All exposed ceilings to be gray

- a. High Performance Architectural Latex
 - 1) MPI INT 5.4F-G2 (Flat)

Primer:	Intermediate:	Topcoat:
MPI 95	MPI 138	MPI 138
System DFT: 5 mils 125 microns		

See RFI 7991 for clarification

4. Ferrous Pipe: See Interior Metal coatings. Provide suitable primer for galvanized metals.
5. Nonferrous Pipe: Not painted.
6. Foil-Faced Insulation:
 - a. See Interior Metal coatings. Provide suitable primer.

3.11 MECHANICAL/ELECTRICAL SPACES

- A. Provide finishes for mechanical and electrical rooms and closets as listed below.
- B. Spaces Scheduled on Drawings to Receive paint finish:
 1. Walls: Primer and 2 topcoats as specified in INTERIOR PAINT TABLES.
 2. Ceiling (if any): Primer and topcoats as specified unless otherwise scheduled on drawings.
 3. Structure including Metal Deck: Coating system as specified unless otherwise scheduled on drawings.
- C. Spaces Not Scheduled on Drawings:
 1. Walls: Primer and 1 topcoat as specified.
 2. Ceiling (if any): Primer and 1 topcoat.
 3. Structure including Metal Deck: No finish.

3.12 MISCELLANEOUS MATERIALS AND FINISH REQUIREMENTS

- A. Finish duct throat surfaces, interior of convector cabinets and other partially visible surfaces (behind louvers, grilles, and registers) as follows:
 1. Prepare and/or prime coat same as for "Interior Metal Work"; see PAINT AND COATING SCHEDULE in Part 2 above.
 2. Paint flat black, only prime coat and finish coat required
- B. Provide suitable surface preparation and finish paint for all exposed interior and exterior equipment, air distribution devices, grilles, louvers, piping (including jacketed piping), electrical conduit, panel covers, and access panels.
 1. Paint to match adjacent surfaces or as otherwise directed.
 2. Include those items with factory applied finishes.
- C. Hoistway Floor Numbers: Provide inside hoistway in accordance with ASME A17.1, Rules 2.29, 3.29, and 5.10.1.22; see Division 14 for ASME reference. Utilize stencils for background and numbers. Paint suitable for substrate.
 1. Background: White, minimum 3 inches higher and wider than numbers.
 2. Numbers: Black, minimum 4 inches high; center on background.

3. Location: Above hoistway doors, centered on opening, or other location as directed by governing authority for elevators. Coordinate with Division 14.
- D. Fire-Rating Identification: Identify fire-rated walls and partitions with stenciled marking corresponding to the required rating identified on drawings. Except where requirements of governing authorities supersede these requirements, provide the following:
 1. Provide marking on both sides of walls; provide not less than one marking per designated wall.
 2. Provide permanent marking typical.
 - a. In public finished spaces without ceilings provide temporary marking or marking that will not show in completed work.
 - b. In occupied spaces without finish decoration on walls, provide temporary marking. Remove temporary marking at Substantial Completion or when directed by Architect.
 3. Locations: Provide marking as follows:
 - a. Walls and Partitions with Ceilings:
 - 1) Locate approximately 12 inches above ceiling.
 - 2) Space at 4 foot centers.
 - b. Walls and Partitions Without Ceilings:
 - 1) In Non-Occupied Spaces: Mechanical/electrical rooms, maintenance closets/rooms, and similar spaces.
 - a) Locate at approximately 9 feet above floor.
 - b) Space at 10 foot centers.
 - 2) In Occupied or Public Spaces: Lobbies, stairs, and other non-ceiling public spaces. Not required.
 4. Text: Red, 6-inch high text unless otherwise noted, with minimum ½ inch wide stroke; provide as applicable.
 - a. "1-HR FIRE"
 - b. "2-HR FIRE"
 - c. "3-HR FIRE"
 - d. "Smoke Barrier": (4-inch high; 3/8" stroke).
 - e. "Smoke Resistant": (4-inch high; 3/8" stroke).

3.13 PAINT COLOR

- A. Color and gloss of finish coats is specified in Section 09 06 00, SCHEDULE FOR FINISHES. If Finish Schedule does not indicate level of gloss base the bid on the default gloss level indicated in Paint Tables. Verify undefined gloss level with Architect in writing during SUBMITTAL process.
- B. For additional requirements regarding color see Articles MECHANICAL AND ELECTRICAL FIELD PAINTING SCHEDULE.
- C. Coat Colors:
 1. Color of priming coat: Lighter than body coat.
 2. Color of body coat: Lighter than finish coat.
 3. Color prime and body coats to not show through the finish coat and to mask surface imperfections or contrasts.
- D. Painting, Caulking, Closures, and Fillers Adjacent to Casework:
 1. Paint to match color of casework where casework has a paint finish.

2. Paint to match color of wall where casework is stainless steel, plastic laminate, or varnished wood.

3.14 MECHANICAL AND ELECTRICAL WORK FIELD PAINTING SCHEDULE

- A. Field painting of mechanical and electrical consists of cleaning, touching-up abraded shop prime coats, and applying prime, body and finish coats to materials and equipment if not factory finished in space scheduled to be finished.
- B. In spaces not scheduled to be finish painted in Section 09 06 00, SCHEDULE FOR FINISHES paint as specified under paragraph G, colors.
- C. Paint various systems specified in Division 21 – FIRE SUPPRESSION, Division 22 - PLUMBING, Division 23 – HEATING, VENTILATION AND AIR-CONDITIONING, Division 26 - ELECTRICAL, Division 27 - COMMUNICATIONS, and Division 28 – ELECTRONIC SAFETY AND SECURITY.
- D. Paint after tests have been completed.
- E. Finish painting of mechanical and electrical equipment is not required when located in interstitial spaces, above suspended ceilings, in concealed areas such as pipe and electric closets, pipe basements, pipe tunnels, trenches, attics, roof spaces, shafts and furred spaces except on electrical conduit containing feeders 600 volts or more.
- F. Color:
 1. Paint items having no color specified in Section 09 06 00, SCHEDULE FOR FINISHES shall be as selected by Architect.
 2. Paint colors as specified in Section 09 06 00, SCHEDULE FOR FINISHES except for following:
 - a. White: Exterior unfinished surfaces of enameled plumbing fixtures. Insulation coverings on breeching and uptake inside boiler house, drums and drum-heads, oil heaters, condensate tanks and condensate piping.
 - b. Gray: Heating, ventilating, air conditioning and refrigeration equipment (except as required to match surrounding surfaces), pumps, and water and sewage treatment equipment and sewage ejection equipment.
 - c. Aluminum Color: Ferrous metal on outside of boilers and in connection with boiler settings including supporting doors and door frames and fuel oil burning equipment, and steam generation system (bare piping, fittings, hangers, supports, valves, traps and miscellaneous iron work in contact with pipe).
 - d. Federal Safety Red: Exposed fire protection piping hydrants, post indicators, electrical conduits containing fire alarm control wiring, and fire alarm equipment.
 - e. Federal Safety Orange: Entire lengths of electrical conduits containing feeders 600 volts or more.
 3. Interior Locations:
 - a. Apply paint, per Interior Paint Table, to following items:
 - 1) Metal under 94 degrees C (200 degrees F) of items such as bare piping, fittings, hangers and supports.

- 2) Equipment and systems such as hinged covers and frames for control cabinets and boxes, cast-iron radiators, electric conduits and panel boards.
 - 3) Heating, ventilating, air conditioning, plumbing equipment, and machinery having shop prime coat and not factory finished.
- b. Apply paint, per Interior Paint Table, to ferrous metal surface over 94 degrees K (200 degrees F) of following items:
- 1) Exterior of boilers and ferrous metal in connection with boiler settings including supporting members, doors and door frames and fuel oil burning equipment.
 - 2) Steam line flanges, bare pipe, fittings, valves, hangers and supports over 94 degrees K (200 degrees F).
 - 3) Engine generator exhaust piping and muffler.
- c. Paint electrical conduits containing cables rated 600 volts or more using two coats of specified system in INTERIOR PAINT TABLE. Color of paint is Federal Safety Orange color in exposed and concealed spaces full length of conduit.

3.15 IDENTITY PAINTING SCHEDULE

- A. Identify designated service in accordance with ANSI A13.1, unless specified otherwise, on exposed piping, piping above removable ceilings, piping in accessible pipe spaces, interstitial spaces, and piping behind access panels.
1. Legend may be identified using 2.1 G options or by stencil applications.
 2. Apply legends adjacent to changes in direction, on branches, where pipes pass through walls or floors, adjacent to operating accessories such as valves, regulators, strainers and cleanouts a minimum of 12000 mm (40 feet) apart on straight runs of piping. Identification next to plumbing fixtures is not required.
 3. Locate Legends clearly visible from operating position.
 4. Use arrow to indicate direction of flow.
 5. Identify pipe contents with sufficient additional details such as temperature, pressure, and contents to identify possible hazard. Insert working pressure shown on drawings where asterisk appears for High, Medium, and Low Pressure designations as follows:
 - a. High Pressure - 414 kPa (60 psig) and above.
 - b. Medium Pressure - 104 to 413 kPa (15 to 59 psig).
 - c. Low Pressure - 103 kPa (14 psig) and below.
 - d. Add Fuel oil grade numbers.
 6. Legend name in full or in abbreviated form as follows:

PIPING	COLOR OF EXPOSED PIPING	COLOR OF BACK-GROUND	COLOR OF LETTERS	LEGEND ABBREVIATIONS
Blow-off		Yellow	Black	Blow-off
Boiler Feedwater		Yellow	Black	Blr Feed
A/C Condenser Water Supply		Green	White	A/C Cond Wtr Sup
A/C Condenser Water Return		Green	White	A/C Cond Wtr Ret
Chilled Water Supply		Green	White	Ch. Wtr Sup
Chilled Water Return		Green	White	Ch. Wtr Ret
Shop Compressed Air		Yellow	Black	Shop Air

Addendum 03-Post Bid

7/3/2013

Air-Instrument Controls		Green	White	Air-Inst Cont
Drain Line		Green	White	Drain
Emergency Shower		Green	White	Emg Shower
High Pressure Steam		Yellow	Black	H.P. _____*
High Pressure Condensate Return		Yellow	Black	H.P. Ret _____*
Medium Pressure Steam		Yellow	Black	M. P. Stm _____*
Medium Pressure Condensate Return		Yellow	Black	M.P. Ret _____*
Low Pressure Steam		Yellow	Black	L.P. Stm _____*
Low Pressure Condensate Return		Yellow	Black	L.P. Ret _____*
High Temperature Water Supply		Yellow	Black	H. Temp Wtr Sup
High Temperature Water Return		Yellow	Black	H. Temp Wtr Ret
Hot Water Heating Supply		Yellow	Black	H. W. Htg Sup
Hot Water Heating Return		Yellow	Black	H. W. Htg Ret
Gravity Condensate Return		Yellow	Black	Gravity Cond Ret
Pumped Condensate Return		Yellow	Black	Pumped Cond Ret
Vacuum Condensate Return		Yellow	Black	Vac Cond Ret
Fuel Oil - Grade		Green	White	Fuel Oil-Grade ____*
Boiler Water Sampling		Yellow	Black	Sample
Chemical Feed		Yellow	Black	Chem Feed
Continuous Blow-Down		Yellow	Black	Cont. B D
Pumped Condensate			Black	Pump Cond
Pump Recirculating		Yellow	Black	Pump-Recirc.
Vent Line		Yellow	Black	Vent
Alkali		Yellow	Black	Alk
Bleach		Yellow	Black	Bleach
Detergent		Yellow	Black	Det
Liquid Supply		Yellow	Black	Liq Sup
Reuse Water		Yellow	Black	Reuse Wtr
Cold Water (Domestic)	White	Green	White	C.W. Dom
Hot Water (Domestic)				
Supply	White	Yellow	Black	H.W. Dom
Return	White	Yellow	Black	H.W. Dom Ret
Tempered Water	White	Yellow	Black	Temp. Wtr
Ice Water				
Supply	White	Green	White	Ice Wtr
Return	White	Green	White	Ice Wtr Ret
Reagent Grade Water		Green	White	RG
Reverse Osmosis		Green	White	RO
Sanitary Waste		Green	White	San Waste
Sanitary Vent		Green	White	San Vent
Storm Drainage		Green	White	St Drain
Pump Drainage		Green	White	Pump Disch
Chemical Resistant Pipe				
Waste		Yellow	Black	Acid Waste
Vent		Yellow	Black	Acid Vent
Atmospheric Vent		Green	White	ATV
Silver Recovery		Green	White	Silver Rec
Oral Evacuation		Green	White	Oral Evac
Fuel Gas		Yellow	Black	Gas
Fire Protection Water				
Sprinkler		Red	White	Auto Spr
Standpipe		Red	White	Stand
Sprinkler		Red	White	Drain
Hot Water Supply Domestic/Solar Water		H.W. Sup Dom/SW		

Hot Water Return Domestic/Solar Water H.W. Ret Dom/SW

7. Electrical Conduits containing feeders over 600 volts, paint legends using 50 mm (2 inch) high black numbers and letters, showing the voltage class rating. Provide legends where conduits pass through walls and floors and at maximum 6100 mm (20 foot) intervals in between. Use labels with yellow background with black border and words Danger High Voltage Class, 5000, 15000, or 25000 as designated by Resident Engineer.
8. See Sections for methods of identification, legends, and abbreviations of the following:
 - a. Regular compressed air lines: Section 22 15 00, GENERAL SERVICE COMPRESSED-AIR SYSTEMS.
 - b. Dental compressed air lines: Section 22 61 13.74, DENTAL COMPRESSED-AIR PIPING / Section 22 61 19.74, DENTAL COMPRESSED-AIR EQUIPMENT.
 - c. Laboratory gas and vacuum lines: Section 22 62 00, VACUUM SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES / Section 22 63 00, GAS SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES.
 - d. Oral evacuation lines: Section 22 62 19.74, DENTAL VACUUM AND EVACUATION EQUIPMENT.
 - e. Medical Gases and vacuum lines: Section 22 62 00, VACUUM SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES / Section 22 63 00, GAS SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES.
 - f. Conduits containing high voltage feeders over 600 volts: Section 26 05 33, RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS / Section 27 05 33, RACEWAYS AND BOXES FOR COMMUNICATIONS SYSTEMS / Section 28 05 33, RACEWAYS AND BOXES FOR ELECTRONIC SAFETY AND SECURITY.

B. Fire and Smoke Partitions:

1. Identify partitions above ceilings on both sides of partitions except within shafts in letters not less than 3 inches high, with minimum 1/8" wide stroke.
2. Stenciled message:
 - a. First Line: "SMOKE PARTITION" or, "X-FIRE PARTITION" as applicable.
 - 1) "X-HR FIRE WALL" where "X" is substituted by the applicable hourly rating such as "1", "2", etc.
 - b. Second Line: 1-1/2 inch high text, with minimum 1/8 inch wide stroke: "Penetrations by Permit Only"
3. Locate not more than 6100 mm (20 feet) on center on corridor sides of partitions, and with a least one message per room on room side of partition.
4. Walls and Partitions without Ceilings:
 - 1) In Non-Occupied Spaces such as Mechanical/electrical rooms, maintenance closets/rooms, and similar spaces:
 - (a) Locate at approximately 9 feet above floor.
 - (b) Space at 10 foot centers.
 - 2) In Occupied or Public Spaces such as Lobbies, stairs, and other non-ceiling public spaces: No marking.
5. Use semigloss paint of color that contrasts with color of substrate.

C. Identify columns in pipe basements and interstitial space:

1. Apply stenciled number and letters to correspond with grid numbering and lettering shown.

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2. Paint numbers and letters 100 mm (4 inches) high, locate 450 mm (18 inches) below overhead structural slab.
 3. Apply on four sides of interior columns and on inside face only of exterior wall columns.
 4. Color:
 - a. Use black on concrete columns.
 - b. Use white or contrasting color on steel columns.
- D. Elevator Shaft Floor Markings: Floor numbers in elevator hoistways. Provide inside hoistway in accordance with ASME A17.1, Rules 2.29, 3.29, and 5.10.1.22; see Division 14 for ASME reference. Utilize stencils for background and numbers.
1. Apply stenciled number and letters to correspond with floor numbering shown. Paint numbers and letters 100 mm (4 inches) high.
 2. Background: White, minimum 3 inches higher and wider than numbers.
 3. Numbers: Black, center on background.
 4. Location: Above hoistway doors, centered on opening, or other location as directed by governing authority for elevators. Coordinate with Division 14.
- 3.16 PROTECTION CLEAN UP, AND TOUCH-UP
- A. Protect work from paint droppings and spattering by use of masking, drop cloths, removal of items or by other approved methods.
 - B. Upon completion, clean paint from hardware, glass and other surfaces and items not required to be painted of paint drops or smears.
 - C. Before final inspection, touch-up or refinished in a manner to produce solid even color and finish texture, free from defects in work which was damaged or discolored.

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SECTION 09 96 53
ELASTOMERIC COATINGS

RFI 06394

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and application of elastomeric coatings to the following exterior substrates where shown on site work drawings:
1. Concrete.
 2. Concrete unit masonry.

1.2 RELATED WORK

- A. CMU: Section 04 20 00 - Unit Masonry.
- B. Sealants: Section 07 92 00 – Joint Sealants.
- C. Type of Finish, Color, and Gloss Level of Finish Coat: Section 09 06 00, SCHEDULE FOR FINISHES.
- D. Surface preparation for painting: Section 09 91 00 – Painting.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: For each type of product indicated.
- C. Samples for Initial Selection: For each type of elastomeric coating indicated.
- D. Samples for Verification: For each type of elastomeric coating indicated and in each color and gloss.
1. Submit Samples on same type of substrate as that to receive application, 8 inches square.
 2. Step coats on Samples to show each separate coat, including primers and block fillers as applicable.
 3. Label each coat of each Sample.
 4. Label each Sample for location and application area.
- E. Product List: For each product indicated, including the following:
1. Cross-reference to coating system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 2. Manufacturer's recommended spreading rate for each separate coat, including primers and block fillers for each type of substrate as applicable.

3. Printout of current "MPI Approved Products List" for each product category specified in Part 2 that specifies coatings approved by MPI, with the proposed product highlighted.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that are from same production run (batch mix) as materials applied and that are packaged for storage in unopened, factory-sealed containers and identified with labels describing contents.

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

1.5 QUALITY ASSURANCE

- A. MPI Standards: Comply with MPI standards indicated and provide elastomeric coatings listed in the "MPI Approved Products List."

1. Preparation and Workmanship: Comply with requirements in the "MPI Architectural Painting Specification Manual" for products and coating systems indicated.

- B. Mockups: Prepare two mockups of each coating system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select two wall surfaces of at least 100 sq. ft. to represent surfaces and conditions for application of each type and texture of elastomeric coating.
2. Final approval of color and texture selections will be based on mockups.

- a. If preliminary color selections are not approved, prepare additional mockups of additional color and textures selected by Architect at no added cost to Owner.

- C. Material Compatibility:

1. Single-Source Responsibility: Provide primers and undercoat material produced by the same manufacturer as the finish coats for each type of coating. Use only thinners recommended by the manufacturer and only within recommended limits.
2. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
3. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

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

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

1.7 PROJECT CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between 50 and 90 deg F unless otherwise permitted by manufacturer's written instructions.
- B. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
- C. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before starting or continuing coating operation.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace elastomeric coatings that fail within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Water penetration through the coating.
 - b. Deterioration of coating beyond normal weathering.
 - c. Delimitation of paint from substrate.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. VOC: Not to exceed (50 g/L) per ASTM D3960.
- B. All products submitted must be breathable type coating allowing water vapor to escape from the interior of all surfaces without loss of adhesion.
- C. General Properties:
 - 1. Over 300 percent ultimate elongation.
 - 2. Up to 98 percent elongation recovery.
- D. Anti-Algae Resistant: Passed per Singapore Test, SS 345-1990.
- E. Ultimate Elongation: 300 percent per ASTM D412.
- F. Elongation recovery, per ASTM D412:
 - 1. After 10 Minutes: 96.9 percent.
 - 2. After 24 Hours: 98.4 percent.
- G. Tensile Strength: 220 psi (1.5 MPa) per ASTM D412.
- H. Flexibility: Passed per ASTM D522. 1/8 inch mandrel at minus 30 degrees F (minus 34 degrees C).
- I. Wind-Driven Rain, TT-C-555B or ASTM D6904-03: Passed.

- J. Minimum Water-Vapor Permeance: 10 perms per ASTM E96.
- K. Accelerated Weathering at 5,000 Hours: Passes per ASTM G23, Type D.
- L. Freeze/Thaw Resistance at 60 Cycles: Passed per ASTM C67.
- M. Salt Spray Resistance: Passes per ASTM B117 at 300 hours.
- N. Fungus Resistance: No growth per ASTM D3273

2.2 MATERIALS, GENERAL

A. Material Compatibility:

- 1. Provide elastomeric finish coatings and crack fillers, primers, and block fillers as applicable for use within elastomeric finish coatings that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
- 2. For each material or coat, provide products and spreading rates recommended in writing by elastomeric coating manufacturer for use on substrate indicated.

2.3 ELASTOMERIC FINISH COATINGS

A. Exterior Flat Waterborne, Pigmented Elastomeric Coating: MPI #113.

- 1. Surface Profile: Fine texture.

2.4 OTHER MATERIALS

- A. Crack Fillers: Elastomeric Coatings manufacturer's recommended, factory-formulated crack fillers or sealants, including crack filler primers, compatible with substrate and other materials indicated; VOC content complying with limits of authorities having jurisdiction.
- B. Primer: Elastomeric coating manufacturer's recommended, factory-formulated, alkali-resistant primer compatible with substrate and other materials indicated.
- C. Concrete Unit Masonry Block Filler: Elastomeric coating manufacturer's recommended, factory-formulated, high-performance latex block filler compatible with substrate and other materials indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

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

- B. Begin coating only when moisture content of substrate is 12 percent or less when measured with an electronic moisture meter.
- C. Begin coating no sooner than 28 days after substrate is constructed and is visually dry on both sides.
- D. Verify that substrate is within the range of alkalinity recommended by manufacturer.
- E. Verify suitability of substrates including surface conditions and compatibility with existing finishes and primers.
- F. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

3.2 PREPARATION

- A. General:
 - 1. Comply with manufacturer's written instructions and recommendations in the "MPI Architectural Painting Specification Manual" applicable to substrates and coating systems indicated.
 - 2. Comply with SURFACE PREPARATION in Section 09 91 00 – Painting.
- B. Remove hardware and hardware accessories, plates, machined surfaces, light fixtures, and similar items already installed that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.
 - 1. After completing coating operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of coatings, including dirt, oil, grease, and incompatible paints and encapsulants. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce coating systems indicated.
 - 2. Perform cleaning and coating application so dust and other contaminants from cleaning process will not fall on wet, newly coated surfaces.
- D. Crack Repair: Fill cracks according to manufacturer's written instructions before coating surfaces.
- E. Concrete Repair: Existing concrete has spalled and been damaged. The Construction Manager shall designate trade contractor to repair concrete in conformance with Section 01 73 29 - Cutting, Patching & Sleeves. The finish of the repaired area shall match finish of adjacent concrete that is not damaged so repaired area does not telegraph through finish coat provided by this Section.

3.3 APPLICATION

- A. Apply elastomeric coatings according to manufacturer's written instructions.

1. Use equipment and techniques best suited for substrate and type of material being applied.
 2. Coat surfaces behind movable items the same as similar exposed surfaces.
 3. Apply each coat separately according to manufacturer's written instructions.
- B. Primers: Apply at a rate to ensure complete coverage.
- C. Block Fillers: Apply at a rate to ensure complete coverage with pores filled.
- D. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats similar to color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- E. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform finish, color, and appearance.
- F. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- G. Apply coatings to prepared surfaces as soon as practicable after preparation and before subsequent surface soiling or deterioration.
- H. Spray Application: Use spray equipment for application only when permitted by authorities having jurisdiction. Wherever spray application is used, do not double back with spray equipment to build up film thickness of two coats in one pass.

3.4 FIELD QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following testing procedures:
1. Owner will engage the services of a qualified testing agency to sample materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 2. Testing agency will perform tests for compliance of materials with product requirements.
 3. Owner may direct Contractor to stop coating application if test results show materials being used do not comply with requirements. Remove noncomplying materials from Project site, pay for testing, and recoat surfaces that were coated with rejected materials. Remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.
- B. Field Testing and Inspection: Owner reserves the right to engage the services of a qualified testing agency to verify installed thickness of elastomeric coatings.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

- C. Protect work of other trades against damage from coating application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities, touch up and restore damaged or defaced coated surfaces.

3.6 COATING SCHEDULE

- A. Concrete Substrates: Generally, but not necessarily limited to underside of exterior sunshades, exterior columns at ground level, and, other areas indicated on drawings.
 - 1. Primer: Concrete primer if required by manufacturer.
 - 2. Elastomeric Finish Coat(s): Minimum two coats with a total dry film thickness of 16 to 18 mils.
 - 3. Finish-Coat Color: Match Architect's samples.
- B. Stucco Substrates: Generally, but not necessarily limited to exterior stucco, and other areas indicated on drawings.
 - 1. Primer: Stucco primer.
 - 2. Elastomeric Finish Coat(s): Minimum two coats with a total dry film thickness of 16 to 18 mils.
 - 3. Finish-Coat Color: Custom color as selected by Architect.

END OF SECTION

SECTION 09 97 37
DRY-ERASE COATINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies field-applied dry-erase coatings identified on drawings as SCP-1.

1.2 RELATED WORK

- A. Color of writing surface: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Gypsum Wallboard: Section 09 29 00.
- C. Section 10 11 00 - Visual Display Surfaces; whiteboard and chalkboard substrates

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 3 years manufacturing dry-erase coatings.
- B. Mock-ups: Prepare mock-ups for Architect's review and to establish requirements for substrate finish and final coating application, texture and color.
1. Install dry-erase coatings mock-up in area designated by Architect.
 2. Correct areas, modify method of application/installation, or adjust finish texture as directed by Architect to comply with specified requirements.
 3. Maintain mock-ups accessible to serve as a standard of quality for this Section.
 4. Accepted mock-ups may remain in place.
- C. Sustainable Design:
1. Indoor Air Quality: Green Certified Product, Greenguard Children and Schools program.
 2. USGBC LEED IEQ Credit 4.2 - Low-Emitting Materials: Paints and Coatings

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Manufacturer's Literature and Data:
1. Preparation instructions and recommendations
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
- C. Maintenance Instructions: Provide precautions against cleaning materials and methods that may be detrimental to finish and performance.
- D. Samples: Submit verification and test samples of specified color on manufacturer's standard sample card. Reviewer may test for writing and removal characteristics with dry erase markers.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original factory wrappings and containers, clearly labeled with manufacturer, product name, and fire hazard classification.
- B. Store materials in original undamaged packages and containers inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity. Store at temperatures above 40 degrees F. Do not allow product to freeze.

1.6 PROJECT CONDITIONS

- A. Maintain ambient temperature not less than 50 deg F minimum and 90 deg F maximum 72 hours prior to beginning of installation.
 - 1. Do not install dry-erase coatings unless substrate temperature is above 60 degrees F.
 - 2. Do not install dry-erase coatings until the space is enclosed and weatherproof.
 - 3. Do not install dry-erase coatings until temperature is stabilized and permanent lighting is in place.

1.7 WARRANTY

- A. Warranty: Manufacturer's 10 year limited material warranty

PART 2 - PRODUCTS

2.1 PRODUCT

- A. Basis of Design: CREATE by IdeaPaint or equal products.
- B. Properties:
 - 1. Provides a surface suitable for use of dry-eraser markers.
 - 2. Color: White.
 - 3. Fire Rating (ASTM E84): Class A, flame spread index 10, smoke developed index 20.
 - 4. VOC (EPA Method 24): 97 g/L Part A and B mixed, 15.1 g/L Part A only, 253.4 g/L Part B only.
 - 5. Solids: 98.8 percent Part A, 66.2 percent Part B.
 - 6. Density: 12.18 lbs/gal Part A, 8.14 lbs/gal Part B.
 - 7. Opacity/Hiding Power (ASTM D2805): 98.3 percent.
 - 8. Sag Resistance (ASTM D4400 Method 6.5.6): 4.8.
 - 9. Flow and Leveling (ASTM D2801): 6.
 - 10. Crack Resistance (ASTM D522): 29 percent.
 - 11. Finish/Gloss (ASTM D523) on Dry Wall Board:
 - a. 20 degrees: 22.4.
 - b. 60 degrees: 66.0.
 - c. 85 degrees: 66.8.
 - 12. Scrub Resistance (ASTM D2486): Greater than 11,100 cycles.
 - 13. Stain Removal/Washability (ASTM D3450): 94.9 percent.
 - 14. Flashpoint (ASTM D92 Open Cup): Greater than 200 degrees F Part A, greater than 200 degrees F Part B.

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15. QUV (following 500 hours of exposure, samples prepared on Kilz primed drywall): Control panel: L = 96.74, a = -1.02, b = 2.14. Test panel: L = 96.27, a = -1.44, b = 4.04. Delta E = 2.00.
- C. Primer: PVA primer, Ideapaint BASE, Sherwin-Williams Premium Wood and Wall Latex
- D. Primer, or Kilz Premium Latex, manufacturer's standard.
- E. Roller Covers: Provided by manufacturer.
- F. Erasers: Provide one eraser for each 5 square feet of coated area and not less than 1 eraser for each room with work of this Section.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

- A. Surface Preparation: Remove hardware, accessories, plates and similar items to allow dry-erase coatings to be installed.
1. Repair damaged areas by filling voids with spackle. Sand smooth repaired or textured surfaces. Scuff glossy and non-porous surfaces using medium grit sandpaper. Paint product is a high gloss coating; imperfections and visible seams will telegraph.
 2. Plaster Surface: Remove surface chalk. In new work use moisture meter to determine moisture content. Do not begin installation when moisture content is greater than five percent.
 3. Gypsum Board Surface: Provide Level 4 finish per ASTM C840 and GA-214. Recess nails and screws. Repair irregular tape joints, sand and remove dust.
 4. Previously Painted Surface: Remove loose paint or scale. Sand surface of enamel or gloss paint and remove dust with tack cloth or denatured alcohol.
- B. Prime substrate using materials recommended by manufacturer. Prime surface until the color of the existing surface does not show through.
- C. Ventilate area thoroughly to prevent the odor from permeating to other areas in the building. Provide 100 percent outside air ventilation of application areas.

3.3 APPLICATION

- A. Install units in accordance with the manufacturer's installation instructions. Mix components in accordance with manufacturer's instructions. Pot life is 1 hour maximum.

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- B. Apply dry-erase coating with specified roller only or industrial spray application. Comply with the following for roller-application:
1. Apply heavy single coat only. Do not recoat or touch up applied coating.
 2. Paint surface by working from one end to the other.
 3. Begin by cutting in the edges of an approximately 2 foot wide section.
 4. Paint 2 foot wide section, maintaining a wet edge.
 5. Roll new section into wet edge.
 6. Continuously check for skips, holes, and holidays as application progresses.
 7. Remove masking tape within 1 hour of painting.
- C. Coating shall cure for a minimum of 4 days after application before use.
- D. Application Rate: 5 mils wet film thickness as measured with a wet film gage; maximum 50 square feet per quart.

3.4 CLEANING AND MAINTENANCE

- A. Comply with manufacturer's recommendations.

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