# SECTION 09 21 16 GYPSUM BOARD ASSEMBLIES

# PART 1 GENERAL

## 1.1 SUMMARY

- A. SECTION INCLUDES
  - 1. Performance criteria for gypsum board assemblies.
  - 2. Metal stud wall framing.
  - 3. Gypsum wallboard (partitions and ceilings).
  - 4. Joint treatment and accessories.
  - 5. Metal Studs

# 1.2 RELATED DOCUMENTS

A. PAINTING AND COATING SECTION 09 9000

## 1.3 REFERENCE STANDARDS

- A. Comply with manufacturer's specifications and Gypsum Association Documents GA-216 "Recommended Specifications for Application and Finishing of Gypsum Board" and GA214 "Levels of Gypsum Board Finish", latest edition.
- B. For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency and the "Fire Resistive Design Manual" published by the Gypsum Association.
- C. "Gypsum Construction Handbook'' published by United States Gypsum.

# 1.4 SUBMITTALS

- A. See Section 01 33 00 Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
  - 1. Contractor to provide drawings indicating location of control joints in walls, ceilings and soffits.
- C. Product Data: Provide data on metal framing, gypsum board, glass mat faced gypsum board, accessories, and joint finishing system.
- D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
- E. Test Reports: For all stud framing products that do not comply with ASTM C645 or C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

### 1.5 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing gypsum board application and finishing, with minimum 5 years of documented experience.

# PART 2 PRODUCTS

## 2.1 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.1. See PART 3 for finishing requirements.
- B. Interior Partitions Indicated as Acoustic: Provide completed assemblies with the following characteristics:
  - 1. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- C. Fire Rated Assemblies: Provide completed assemblies as indicated on the drawings

# 2.2 METAL WALL STUD MANUFACTURERS

- A. CEMCO: www.cemcosteel.com.
- B. Clark-Western Metal Lath Company: www.westsidebmc.com.
- C. ClarkDietrich Building Systems: <a href="http://www.clarkdietrich.com">www.clarkdietrich.com</a>.
- D. MarinoWare: www.marinoware.com.
- E. Studco US: www.studcosystems.com.
- E. United States Gypsum Company: www.usg.com.
- F. Other approved manufacturers.

#### 2.3 METAL FRAMING MATERIALS

- A. Drywall Studs: 25-gauge, 3-5/8" and 6". Use 20-gauge studs both sides of hollow metal frames (double studs) and behind wall mounted shelving or cabinets
- B. Stud Runners: 25-gauge Metal Runner, 3-5/8-inch. Provide runners to accommodate other stud widths where required.
- C. Runner Channels: 1-1/2-inch, 16-gauge cold-rolled channels, black asphaltum painted
- D. Furring Channels: 25-gauge metal furring channels
- E. Resilient Channels: Resilient furring channels.
- F. Stud Fasteners: Pan-head stud screws.

### 2.4 BOARD MATERIALS

- A. Manufacturers Gypsum-Based Board:
  - 1. Eagle Materials: <u>www.eaglematerials.com</u>.
  - 2. Georgia-Pacific Corporation: www.buildgp.com.
  - 3. Louisiana-Pacific Corporation: www.lpcorp.com.
  - 4. National Gypsum Company: www.nationalgypsum.com.
  - 5. Pabco Gypsum Co. www.pabcogypsum.com.
  - 6. Pittcon Industries: <a href="http://www.pittconindustries.com">www.pittconindustries.com</a>.
  - 7. United States Gypsum Company: <a>www.usg.com</a>.
  - 8. Approved substitute.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.

- 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated on drawings or specified below.
- Glass mat faced gypsum panels as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
- Unfaced fiber-reinforced gypsum panels as defined in ASTM C1278/C1278M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
- At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
- 5. Type: X
- 6. Thickness:
  - a. Vertical Surfaces: 5/8 inch.
  - b. Ceilings: 5/8 inch.
  - c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.
- 7. Edges: tapered.

# 2.5 ACCEPTABLE GYPSUM BOARD ACCESSORIES AND RELATED MATERIALS

- A. Gypsum Board: USG "Sheetrock Firecode" (Type X), 5/8-inch thick, 48inch wide, tapered edge boards (1-hour fire rated), or equal of other acceptable manufacturer in conformance with ASTM C36.
- B. Water-Resistant Gypsum Board: USG "Sheetrock Water-Resistant Firecode" (Type X), 5/8-inch thick, 48-inch wide tapered edge boards (1-hour fire rated), or equal of other acceptable manufacturer in conformance with ASTM C630
- C. Drywall Screws: USG "Type S" or "Type S-12" drywall screws or equal of other acceptable manufacturer. Use proper type for gauge of stud. Use proper length for panels to be fastened.
- D. Metal Trim: USG No. 200-B steel "L" trim or 5/8" Fry Reglet Non-Vented # DRMF-625-625
- E. Joint Treatment: USG "Sheetrock Joint Tape", cross-fiber paper reinforcing tape, with USG "Sheetrock All Purpose Ready Mixed Joint Compound" or equal of other acceptable manufacturer.
- F. Adhesive: Ohio Sealants, Inc., "Formula #38 Adhesive" or equal of other acceptable manufacturer.
- G. Sound Insulating Batts: 3-inch thickness, unfaced fiberglass, widths to fit stud spacing.
- H. Control Joints: USG "No. 093" or equal of other acceptable manufacturer.
- I. Corner Bead: USG "No. 103" or equal of other acceptable manufacturer.

# 2.6 INSTALLATION OF GYPSUM BOARD CEILINGS

- A. Apply gypsum board, of maximum practical length, with long dimension at right angles to joints in a single layer construction.
- B. Install 1½" 16 ga. channels at 48" o.c. suspended from structure with 8 ga. wire ties at .24" o.c. Install 7/8" furring at 16" o.c. with clips perpendicular to ½" channels. The use of metal studs is acceptable; Contractor's option.
- C. Stagger end joints in adjacent rows.
- D. Secure gypsum board with fasteners spaced a maximum of 12 inches o.c. in the field and along the edges of the gypsum board
- E. Space fasteners not less than 3/8" from edges and ends.
- F. Fastener Heads: Shall be driven slightly below surface of gypsum board in a uniform simple without breaking the face paper
- G. Joint Treatment and Accessories: Shall be applied as specified here after.

# PART 3 EXECUTION

## 3.1 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

### 3.2 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Studs: Space studs at 16" O.C. unless otherwise noted;
  - 1. Extend partition framing as indicated.
  - Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
  - 3. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
- C. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- D. Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.

- E. Acoustic Furring: Install resilient channels at maximum 24 inches on center. Locate joints over framing members.
- F. Furring for Fire Ratings: Install as required for fire resistance ratings indicated and to GA-600 requirements.
- G. Blocking: Install blocking (backing) as detailed for support of:
  - 1. Wall anchored and wall mounted shelving.
  - 2. Wall mounted cabinets.
  - 3. Plumbing fixtures.
  - 4. Toilet partitions.
  - 5. Toilet accessories.
  - 6. Wall mounted door hardware.

## 3.3 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
  - 1. Place one bead continuously on substrate before installation of perimeter framing members.
  - 2. Place continuous bead at perimeter of each layer of gypsum board.
  - 3. In non-fire-rated construction, seal around all penetrations by conduit, pipe, ducts, and rough-in boxes.

## 3.4 BOARD INSTALLATION

- A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.1. Exception: Tapered edges to receive joint treatment at right angles
  - to framing.
- C. Double-Layer Non-Rated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.
- D. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- E. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.
- F. Cementitious Backing Board: Install over steel framing members where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
- G. Installation on Metal Framing: Use screws for attachment of all gypsum board .
- H. Curved Surfaces: Apply gypsum board to curved substrates in accordance with GA-226.
- I. Moisture Protection: Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.

# 3.5 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

## 3.6 JOINT TREATMENT

- A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
  - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
  - 2. Level 3: Walls to receive textured wall finish.
  - 3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
  - Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.
  - 5. Level 0: Temporary partitions and surfaces indicated to be finished in later stage of project.
- B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
  - 1. Feather coats of joint compound so that camber is maximum  $1/32 \,$  inch.
  - 2. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.
  - Taping, filling and sanding is not required at base layer of double layer applications.
- C. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.
- D. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

# 3.7 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

### END OF SECTION 09 21 16

# SECTION 09 51 00 ACOUSTICAL CEILINGS

### PART 1 GENERAL

- A. Suspended metal grid ceiling system to match adjacent and existing.
- B. Acoustical units to match adjacent and existing

## 1.2 REFERENCE STANDARDS

- A. ASTM C635/C635M Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2013a.
- B. ASTM E1264 Standard Classification for Acoustical Ceiling Products; 2008e1.

# 1.3 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on suspension system components.
- C. Samples: Submit 3 samples 6x6 inch in size illustrating material and finish of each type, pattern, & color of acoustical units.
- D. Samples: Submit 3 samples each, 12 inches long, of suspension system main runner.

# 1.4 QUALITY ASSURANCE

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Noise reduction coefficient (NRC) min. 0.70.
- D. Ceiling attenuation class (CAC) min. 35.

# 1.5 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

### PART 2 PRODUCTS

# 2.1 ACOUSTICAL UNITS

- A. Manufacturers:
  - 1. Armstrong World Industries, Inc; www.armstrongceilings.com.
  - 2. USG Interiors; www.usg.com
  - 3. CertainTeed; <a href="http://www.certainteed.com">www.certainteed.com</a>
  - 4. Rockfon Products; www.rockfon.com
  - 5. Substitutions: See Section 01 6000 Product Requirements.
- B. Acoustical Units General: ASTM E1264, Class A.

- C. Acoustical Panels Type As Scheduled on the drawings: Painted mineral fiber, ASTM E1264 Type III, with the following characteristics:
- D. Size: 24"x48"3/4"

# 2.2 SUSPENSION SYSTEM

- A. Suspension Systems General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
- B. Manufacturers:
  - Armstrong World Industries, Inc; www.armstrongceilings.com.
  - 2. Chicago Metallic: <u>www.rockfon.com</u>.

# 2.3 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.
- B. Perimeter Moldings: Same material and finish as grid.
- C. Acoustical Insulation: Specified in Section 07 2100.
- D. Acoustical Sealant For Perimeter Moldings: Specified in Section 07 9005.

# PART 3 EXECUTION

# 3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

# 3.2 INSTALLATION - SUSPENSION SYSTEM

- A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- B. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- C. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- E. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- F. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- G. Do not eccentrically load system or induce rotation of runners.

- H. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
  - 1. Use longest practical lengths.
  - 2. Overlap and rivet corners.

# 3.3 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling work is complete.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
  - 1. Make field cut edges of same profile as factory edges.

END OF SECTION 09 51 00

# SECTION 09 65 00 RESILIENT FLOORING & BASE

# PART 1 - GENERAL

#### 1.01 DESCRIPTION OF WORK:

- A. Refer to Drawings for details and schedules for all areas to receive resilient flooring, rubber base.
- B. Provide all resilient flooring, complete in place, as indicated on the Drawings, specified herein, or otherwise required for a complete and proper installation.
- C. Rubber Base under this section is only to be provided in areas to receive resilient flooring (VCT).

# 1.02 REFERENCE STANDARDS:

- A. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
- B. ASTM F1066 Standard Specification for Vinyl Composition Floor Tile
- C. ASTM F1344 Standard Specification for Rubber Floor Tile
- D. ASTM F1861 Standard Specification for Resilient Wall Base; 2008 (Reapproved 2012).

#### 1.03 QUALITY ASSURANCE:

- A. Manufacturer: Provide each type of resilient flooring and accessories as produced by a single manufacturer with not less than 5 years experience in manufacturing the type of products listed, including recommended primers, adhesives, sealants, and leveling compounds. Provide all materials to be completely free of asbestos.
- B. Installer: Shall have not less than three years of successful experience in the installation of similar types of products specified.
- C. Fire Test Performance: Provide resilient flooring which complies with the following fire test performance criteria as determined by an independent testing laboratory acceptable to authorities having jurisdiction.
- D. Critical Radiant Flux (CRF): Not less than the following rating per ASTM E 648. 0.22 watts per sq. cm.
  - 1. Flame spread: Not more than 75 per ASTM E 84.
  - 2. Smoke Developed: Not more than 450 per ASTM E 84.

- 3. Smoke density: Not more than 450 per ASTM E 662.
- 4. Warranty: Installer to provide a 2-year warranty.
- E. Warranty: Provide written warranty on system and finish for a period of two (2) years.

#### 1.04 SUBMITTALS:

- A. Comply with pertinent provisions of Section 01340. After award of Contract, submit:
  - 1. Complete materials list of all items proposed to be furnished and installed under this Section.
  - 2. Manufacturer's specifications and other data required to demonstrate compliance with these Specifications.
  - 3. Samples of each item, color, and pattern as specified.
  - 4. Manufacturer's recommended methods of installation.
- B. The manufacturer's recommended methods of installation, when accepted by the Architect, will become the basis for inspecting and accepting or rejecting actual installation methods used on the Work.
- C. Certification for Fire Test Performance: Submit certification from an independent testing laboratory acceptable to authorities having jurisdiction that resilient flooring complies with fire test performance requirements, and specification requirements.
- D. Maintenance Instructions: Submit two (2) copies of manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.

### 1.05 DELIVERY, STORAGE AND HANDLING:

- A. Deliver materials and store in their original unopened containers with all labeling intact and legible.
- B. Store in strict compliance with manufacturer's recommendations.

#### PART 2 - PRODUCTS

# 2.01 ACCEPTABLE MANUFACTURERS:

- A. Vinyl Composition Tile
  - 1. "Tarkett" (basis of design)
- B. Rubber Base:
  - 1. "Roppe"

- C. Adhesives:
  - 1. Henry Adhesives The Company
  - 2. Miracle Adhesives Corp.
  - 3. Others as recommended by resilient product manufacturer with Architect written acceptance.

### 2.02 <u>MATERIALS:</u>

- A. Vinyl Composition Tile (VCT) shall conform to Federal Specifications SS-T-312B (1), Type IV. Size shall be 12" x 12" x 1/8" thick, factory waxed. Colors shall be from the *Tarkett* color line:
  - 1. Color as selected by Architect
- B. Rubber base shall be 4" conforming to Federal Specifications SS-W-40a, Type I. Use pre-formed inside and outside corners whenever possible. Use coved base where adjacent to VCT floors.
  - 1. Color as selected by Architect
- C. Resilient Edge Strips: 1/8" thick, homogeneous vinyl or rubber composition, tapered or bullnose edge, color to match flooring, or as selected by Architect from standard colors available; not less than 1" wide.
- E. Tile and base adhesives shall be as recommended by the manufacturers for the conditions involved.
- F. Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.
- F. Leveling and Patching Compounds: Portland Cement latex types as recommended by flooring manufacturer.

#### PART 3 - EXECUTION

## 3.01 **PREPARATION:**

- A. Remove grease, dirt, and other substances from substrates. Inspect substrates for holes, cracks and smoothness. Do NOT proceed with laying of tile until substrates are smooth and holes and cracks are filled.
- B. Contractor should correct any surface that does not meet the manufacturers requirements for material receiving the flooring.
- C. Maintain 65° F minimum temperature in rooms for 48 hours before and during time of laying the tile and for 48 hours after laying. Maintain a minimum temperature of 55° F thereafter. Place flooring in rooms at above temperature 24 hours before laying.

D. Contractor shall test the substrates for dampness before any flooring is laid. Follow manufacturer's recommendations before proceeding.

# 3.02 INSTALLATION:

- A. Installation General:
  - Install resilient flooring using method indicated in strict compliance with manufacturer's printed instructions. Extend resilient flooring into toe spaces, door reveals, and into closets and similar openings.
  - Scribe, cut, and fit resilient flooring to permanent fixtures, built-in furniture and cabinets, pipes, outlets and permanent columns, walls and partitions.
  - 3. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.
  - 4. Install resilient flooring on covers for telephone, electrical ducts, plumbing cleanouts and similar items occurring within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers. Tightly cement edges to perimeter of floor around covers and to covers.
  - 5. Tightly cement resilient flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll resilient flooring at perimeter of each covered area to assure adhesion.
  - 6. Provide edging strips at all unprotected edges of flooring.
- B. Installation of Tile Floors:
  - Lay tile pattern from the point of origin shown in the Contract Documents. Lay tile square to room axis, unless otherwise shown.
  - Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped, or deformed tiles are not acceptable.
  - Lay tile in "checkerboard" fashion with grain reversed in adjacent tiles.
  - Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.

- C. Installation of Accessories:
  - 1. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with preformed corner units, or fabricated from base materials with mitered or coped inside corners. Tightly bond base to substrate through length of each piece, with continuous contact at horizontal and vertical surfaces.
  - On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
  - 3. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

# 3.03 CLEANING AND PROTECTION:

- A. Perform following operations immediately upon completion of resilient flooring:
  - 1. Sweep or vacuum floor thoroughly.
  - 2. Do not wash floor until time period recommended by resilient flooring manufacturer has elapsed to allow resilient flooring to become well-sealed in adhesive.
  - 3. Damp-mop floor being careful to remove black marks and excessive soil.
  - Remove any excess adhesive or other surface blemishes, using appropriate cleaner recommended by resilient flooring manufacturers.
- B. Protect flooring against damage during construction period to comply with resilient flooring manufacturer's directions.
  - Protect resilient flooring against damage from rolling loads for initial period following installation by covering with plywood or hardboard. Use dollies to move stationary equipment or furnishings across floors.
- C. Clean resilient flooring not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Clean resilient flooring by method recommended by resilient flooring manufacturer.
  - 1. Strip protective floor polish, which was applied after completion of installation, prior to cleaning.
  - 2. Reapply floor polish after cleaning.

D. The Contractor should coordinate the control of the temperature and humidity within the ranges the building section where the material is installed and will operate in.

# 3.04 PROTECTION OF EXISTING FLOORING

A. Failure to protect the floor will result in replacement of the damaged floor at no cost to the owner.

END OF SECTION 09 65 00

# SECTION 09 67 23 RESINOUS FLOORING

# PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This section includes the following:
  - 1. Resinous flooring system on existing concrete floor as shown on the drawings and finish schedule (noted as epoxy).
  - 2. Seamless acrylic, methyl methacrylate (MMA) flooring system as shown on the drawings and in schedules.

#### 1.3 SYSTEM DESCRIPTION

- A. The work shall consist of preparation of the substrate, the furnishing and application of an epoxy based multi roller applied flooring system with Micro colored decorative chips and urethane topcoat. The system shall have the color and texture as specified by the Owner with a nominal thickness of 60 mils. It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.
- B. Cove base (if required) to be applied where noted on plans and per manufacturers standard details unless otherwise noted.
- C. The work shall consist of preparation of the substrate, the furnishing and application of a methyl methacrylate (MMA) based multi roller applied flooring system with Macro or Micro size decorative colored chips and topcoats. The system shall have the color and texture as specified by the Owner with a nominal thickness of 1/16 inch. It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.

### 1.4 SUBMITTALS

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

#### 1.5 QUALITY ASSURANCE

A. The Manufacturer shall have a minimum of 10 years experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.B. The Applicator shall have experience in installation of the flooring system as confirmed by the manufacturer in all phases of surface preparation and application of the product specified.C. No requests for substitutions shall be considered that would change the generic type of the specified System.

D. System shall be in compliance with requirements of United States Department of Agriculture (USDA),
Food, Drug Administration (FDA), and local Health Department.
E. System shall be in compliance with the Indoor Air Quality requirements of California section
01350 as verified by a qualified independent testing laboratory.
F. A pre-installation conference shall be held between Applicator, General Contractor and the Owner to review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.

# 1.6 **PRODUCT DELIVERY, STORAGE, AND HANDLING**

- A. Packing and Shipping
  - All components of the system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the product type and batch number.
- B. Storage and Protection
  - The Applicator shall be provided with a storage area for all components. The area shall be between 35 F and 85 F, dry, out of direct sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.
  - 2. Copies of Safety Data Sheets (SDS) for all components shall be kept on site for review by the Engineer or other personnel.
- C. Waste Disposal
  - 1. The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the system.

## 1.7 **PROJECT CONDITIONS**

- A. Site Requirements
  - Application may proceed while air, material and substrate temperatures are between 35 F and 90 F providing the substrate temperature is above the dew point. Outside of this range, the Manufacturer shall be consulted.
  - The relative humidity in the specific location of the application shall be less than 85 % and the surface temperature shall be at least 5 F above the dew point.
  - 3. The Applicator shall ensure that adequate ventilation is available for the work area. This shall include the use of manufacturer's approved fans, smooth bore tubing and closure of the work area.
  - 4. The Applicator shall be supplied with adequate lighting equal to the final lighting level during the preparation and installation of the system.
- B. Conditions of new concrete to be coated with MMA material.
  - 1. Concrete shall be moisture cured for a minimum of 7 days and have fully cured a minimum of twenty

eight days in accordance with ACI-308 prior to the application of the coating system pending moisture tests.

- 2. Concrete shall have a flat rubbed finish, float or light steel trowel finish (a hard steel trowel finish is neither necessary nor desirable).
- 3. Sealers and curing agents should not to be used.
- Concrete surfaces on grade shall have been constructed with a vapor barrier to protect against the effects of vapor transmission and possible delamination of the system.
- C. Safety Requirements
  - 1. All open flames and spark-producing equipment shall be removed from the work area prior to commencement of application.
  - 2. "No Smoking" signs shall be posted at the entrances to the work area.
  - 3. The Owner shall be responsible for the removal of foodstuffs from the work area.
  - 4. Non-related personnel in the work area shall be kept to a minimum.

## 1.8 WARRANTY

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

#### PART 2 - PRODUCTS

# 2.1 FLOORING

- A. Dur-A-Flex, Inc, Cryl-A-Chip, MMA-Based seamless acrylic flooring system
  - System Materials:

     a. Primer Coat: Dur-A-Flex, Inc. Cryl-A-Prime P-101 MMA-based, two-component primer.
     b. Bond Coat: Dur-A-Flex, Inc. Cryl-A-Glaze G-201, MMA-based two-component resin.
     c. The chips shall be Dur-A-Flex, Inc., Micro decorative colored chips.
     d. Topcoats: Dur-A-Flex, Inc. Cryl-A-Top T-301, MMA-based, two-component resin
  - 2. Patch Materials

a. Shallow Filler/Patch Material: Use Dur-A-Flex, Cryl-A-Glaze G-201 with MMA SL Filler Blend in ¼ inch maximum lifts. b. Deep Fill and Sloping Material (over ¼ inch): Use Cryl-A-Tex Polymer Concrete as manufactured by Dur-A-Flex. As required, extend with approved aggregate per manufacturers recommendations.

### 2.2 MANUFACTURER

A. Dur-A-Flex, Inc., 95 Goodwin Street, East Hartford, CT 06108, Phone: (860) 528-9838, Fax: (860) 528-2802

B. Manufacturer of Approved System shall be single source and made in the USA. 2.3 **PRODUCT REQUIREMENTS** A. Primer Cryl-A-Prime P-101 1. Percent reactive resin 100 % 2. VOC <100 g/L Water absorption ASTM D 570
 Tensile strength, ASTM D 638
 Tensile modulus ASTM D 638
 Coefficient of thermal expansion 0.04 % 3,550 psi 400,000 psi ASTM D 696 0.000035 in/in/F 7. Electrical resistivity ASTM D 257 Volume resistance Surface resistance 1015 ohm-cm 1012 ohm . cure Rate @ 68 F 10. Recoat time @ 68 F 11. Multi-coat app' 10-20 minutes 45-60 minutes 45-60 minutes 11. Multi-coat application, solution weld yes B. Bond Coat Cryl-A-Glaze G-201 1. Percent Reactive 100 % 2. VOC <100 g/L Water Absorption, ASTM D 570
 Tensile Strength, ASTM D 638 0.04 % 2,175 psi 5. Coefficient of thermal expansion ASTM D 696 0.000035 in/in/F 6. Electrical Resistivity, ASTM D 257 Volume resistance 1015 ohm-cm Surface resistance Life @ 68 F 1012 ohm 7. Pot Life @ 68 F 10-20 minutes 8. Cure Rate @ 68 F 45-60 minutes 9. Recoat Time @ 68 F45-60 minutes10. Multi-coat Application, solution weldyes C. Topcoat Cryl-A-Top T-301 1. Percent reactive resin 100 % 2. VOC <100 g/L Water absorption ASTM D 570
 Tensile strength, ASTM D 638
 Tensile modulus, ASTM D 638 0.4 % 3,550 psi 300,000 psi 6. Coefficient of thermal expansion ASTM D 638 0.000035 in/in/F 7. Electrical resistance ASTM D 257 Volume resistance 1015 ohm-cm 1012 ohm Surface resistance 8. Water vapor transmission 0.9 g/cm-hr-mm HG x 10 -9 DIN 53122 9. Pot Life @ 68 F 10-15 minutes 10. Cure Rate @ 68 F10-13 minutes11. Recoat Time @ 68 F45-60 minutes12. Multi-coat application, solution weldyes

### PART 3 - EXECUTION

# 3.1 EXAMINATION

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

## 3.2 PREPARATION

- A. General
  - New and existing concrete surfaces shall be free of oil, grease, curing compounds, loose particles, moss,
    - algae growth, laitance, friable matter, dirt, and bituminous products.
  - 2. Bond Test: Random tests for adequate bond strength shall be conducted on the substrate while the surface preparation is ongoing and prior to application of the primer, in accordance with the Manufacturer's recommendations.
    - a. A minimum frequency of three tests per 5000 sf. Smaller areas shall receive a minimum of three tests.
    - b. Based on the test results, additional substrate preparation may be required before proceeding with the installation of the system.
  - Moisture Testing: Perform tests recommended by manufacturer and as follows.
    - a. Perform relative humidity test using is situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 85% relative humidity level measurement.
    - b. If the relative humidity exceeds 85% then the Owner and/or Engineer shall be notified and advised of additional cost for the possible installation of a vapor mitigation system that has been approved by the manufacturer or other means to lower the value to the acceptable limit.
  - 4. There shall be no visible moisture present on the surface at the time of application of the system. Compressed oil-free air and/or a light passing of a propane torch may be used to dry the substrate.
  - 5. Mechanical surface preparation
    - a. Shot blast all surfaces to receive flooring system with a mobile steel shot, dust recycling machine (Blastrac or equal). All surface and embedded accumulations of paint, toppings hardened concrete layers, laitance, power trowel finishes and other similar surface characteristics shall be completely removed leaving a bare concrete surface having a minimum CSP of 3-4 profile.
    - b. Floor areas inaccessible to the mobile blast machines shall be mechanically abraded to the same degree of cleanliness, soundness and profile using diamond grinders, needle guns, bush hammers, or other suitable equipment.
    - c. Where the perimeter of the substrate to be coated is not adjacent to a wall or curb, a minimum 1/4 inch key cut shall be made to properly seat the system, providing a smooth transition between areas. The detail cut shall also apply to drain perimeters and expansion joint edges.

- d. Cracks and joints (non-moving) greater than 1/8 inch wide are to be chiseled or chipped-out and repaired.
- At spalled or worn areas, mechanically remove loose or delaminated concrete to a sound concrete and patch per manufactures recommendations.

### 3.3 APPLICATION

- A. General
  - The system shall be applied in six distinct steps as listed below:

     a. Substrate preparation, Bond Tests
    - b. Priming
    - c. First bond coat application with first chip broadcast

d. Second bond coat with second chip broadcast, brush with floor machine and medium stiffness brush.

- e. Topcoat application, sand floor (if required)
- f. Second topcoat application

Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.
 The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.

4. The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.5. A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.

B. Primer

The Cryl-A-Prime P-101 shall consist of one roller applied coat with a coverage rate of 90-100 sf/gal.
 All components shall be measured and mixed in accordance with the

Manufacturer's recommendations. 3. The primer shall cure tack-free before application of the floor topping. 4. Porous concrete may require a second coat of primer should the first coat be absorbed.

C. Bond Coat

 The first Bond Coat of Cryl-A-Glaze G-201 shall be applied with a roller at a rate of 90 - 100 sq ft/gal and broadcast to excess, Micro chip at 0.15 lbs/sf.
 The second Bond coat of Cryl-A-Glaze G-201 shall be applied at 90-100 sf/gal and broadcast to excess, Micro chips at 0.15 lbs/sf.
 Allow material to fully cure. Vacuum, sweep, and/or blow to remove all loose chips.
 Brush surface with a floor machine and medium stiffness brush. Vacuum, sweep, and/or blow to remove all loose chips.

D. Topcoat

1. The first roller applied topcoat of Cryl-A-Top T-301 shall have a coverage rate of 90-100 sf/gal.

2. The first topcoat coat will be allowed to cure then can be sanded or scraped to give desired finish texture.

- 3. The second topcoat is applied at a coverage rate of 90-100 sf/gal.
- 4. The finish floor will have a nominal thickness of 1/16 inch.

# 3.4 FIELD QUALITY CONTROL

- A. Tests, Inspection
  - 1. The following tests shall be conducted by the Applicator: a. Temperature
    - 1. Air, substrate temperatures and, if applicable, dew point.

1. Rates for all layers shall be monitored by checking quantity of material used against the area covered.

# 3.5 CLEANING AND PROTECTION

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

END OF SECTION 09 67 23

b. Coverage Rates

## SECTION 09 90 00 PAINTING AND COATING

## PART 1 GENERAL

# 1.1 SECTION INCLUDES

- A. Surface preparation. Field application of paints, stains, varnishes, and other coatings.
- B. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
  - Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
  - 2. Exposed surfaces of steel lintels and ledge angles.
  - 3. Mechanical and Electrical:
    - a. In finished areas, paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
    - b. In finished areas, paint shop-primed items.
- C. Do Not Paint or Finish the Following Items:
  - Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Items indicated to remain unfinished.
  - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
  - 5. Ductwork, conduit, hangers, etc. when concealed above finished ceilings or within walls
  - 6. Operating parts such as dampers, sprinkler heads, etc.
  - 7. Galvanized finished metals, except in interior public finished areas
  - 8. Floors, unless specifically so indicated.
  - 9. Glass.
  - 10. Concealed pipes, ducts, and conduits.

#### 1.2 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D4442 Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 2007.

# 1.3 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of all products to be used, with the following information for each:
  - Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
  - 2. MPI product number (e.g. MPI #47)

- 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
- C. Samples: Submit two paper chip samples, 4x4 inch in size illustrating range of colors and textures available for each surface finishing product scheduled.
- D. Operation & Maintenance Information:
  - 1. Color Finish Schedule
  - 2. Color draw-downs
  - 3. Color Formula for each color used on the project.
  - 4. Paint Manufacturer
  - 5. Paint Subcontractor
  - 6. Maintenance Instruction

## 1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 5 years experience.
- B. Along with other standards, follow recommendation of the Architectural Specification Manual by the Painting & Decorating Contractors of America.
- C. Provide a complete finish coat mock-up for approval prior to proceeding with the remainder of the project.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

### 1.6 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

#### PART 2 PRODUCTS

# 2.1 MANUFACTURERS

- A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
- B. Pittsburgh Paints and Stains: www.pittsburghpaintsandstains.com.

- C. Sherwin-Williams: www.sherwin-williams.com.
- D. Diamond Vogel: www.diamondvogel.com.
- E. Benjamin Moore: <a href="http://www.benjaminmoore.com">www.benjaminmoore.com</a>.
- F. Approved substitute

## 2.2 PAINTS AND COATINGS - GENERAL

- A. Paints and Coatings: Ready mixed, unless intended to be a fieldcatalyzed coating.
  - Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
  - 2. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
  - 3. Supply each coating material in quantity required to complete entire project's work from a single production run.
  - Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Volatile Organic Compound (VOC) Content:
  - 1. Provide coatings that comply with the most stringent requirements specified in the following:
    - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
    - b. Architectural coatings VOC limits of Colorado.
  - Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- D. Sheens: Interior and exterior painted surfaces shall be finished with a semi-gloss finish.
- E. Colors: To match adjacent walls unless noted otherwise
  - In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.

## 2.3 PAINT SYSTEMS

- A. All Surfaces Indicated to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, concrete masonry, wood, uncoated steel, and shop primed steel.
  - 1. Two top coats and one coat primer (or filler). Allow 24 hrs. between coats.
  - 2. Top Coat(s): 100% late
  - 3. Interior and exterior metal door frames, doors, and handrails shall receive water based alkyd or water based epoxy.
  - 4. Wood doors shall be pre-finished with a water borne polyurethane.
- B. Plaster and Drywall Painted:

- 1) First coat: Suitable primer.
- 2) Second coat: Latex enamel.
- 3) Third coat: Latex enamel, walls semi-gloss, ceiling eggshell.

C. Exposed Exterior Structural Steel, Metal Doors, Hollow Metal Door and Window Frames.

- 1) First coat: Factory prime coat Tnemec Series 161 1255.
- Second coat: Tnemec Series 73, Endura Shield II (Spray Applied) 4.0-5.0 dry film thickness.

### 2.4 ACCESSORY MATERIALS

- A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

### PART 3 EXECUTION

# 3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
  - 1. Gypsum Wallboard: 12 percent.
  - 2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
  - 3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
  - 4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

## 3.2 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to coating application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals

with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

- G. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.
- H. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- I. Corroded Steel and Iron Surfaces to be Painted: Prepare using at least SSPC-PC 2 (hand tool cleaning) or SSPC-SP 3 (power tool cleaning) followed by SSPC-SP 1 (solvent cleaning).
- J. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand or power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.
- K. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
- L. Interior Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.
- M. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

# 3.3 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's instructions.
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry for 24 hours before next coat is applied.
- D. Apply each coat to uniform appearance.
- E. Sand wood and metal surfaces lightly between coats to achieve required finish.
- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- G. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

# 3.4 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

## 3.5 PROTECTION

- A. Protect finished coatings until completion of project.
- B. Touch-up damaged coatings after Substantial Completion.

## 3.6 VENTILATION AND SAFETY

- A. Application of alkyd enamel in interior spaces must be performed during non-occupied building hours or; positive ventilation must be provided to assure that fumes from painting operations are exhausted directly to the exterior of the building.
- B. Application of alkyd enamel in interior spaces shall not occur less than 4 hours prior to the scheduled occupancy of the building.

# 3.7 EXTRA MATERIALS

- A. Draw downs of each color and type used to be included in O&Ms.
- B. Furnish from same production run as materials applied.
- C. Containers shall be clearly labeled describing contents, color, and formula.
- D. Identify using the same designation as found on the finish schedule in the operations and maintenance manual.
- E. One gallon of each color used to be stored at each school where paint color was applied.
- F. Two new boxes of each type of acoustical tile, to be painted by contractor, to match newly painted tile to be stored at each school.

#### END OF SECTION 09 90 00