

SECTION 092116 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. Provide all labor, materials, accessories, equipment, incidentals to complete gypsum board assembly work, as indicated and required including, but not necessarily limited to, the following:

1. Interior Gypsum Wallboard.
2. Non-Load-Bearing Steel Framing and Furring.
3. Metal Grid Ceiling and Soffit Suspension System.
4. Accessories and trim.
5. Taping and Spackling.
6. Reinforcing and blocking to receive and support the work of other trades.
7. Building in items furnished by other trades and/or contracts.

- B. Related Work Specified Elsewhere:

Cold-Formed Metal Framing	Division 5
Rough Carpentry	Division 6
Building Insulation	Division 7
Ceramic Tile	Division 9
Painting	Division 9
Mechanical and Electrical Items and Fixtures	Divisions 22,23,26 & 28

1.3 SUBMITTALS

- A. Submit manufacturer's product data and installation instructions for each type of product indicated.
- B. Shop Drawings showing layout, locations, fabrication, and installation of all control and expansion joints including plans, elevations, sections, details of components and attachments of other units of work including concealed blocking.
- C. Submit ceiling grid and soffit suspension system layout drawings, to scale, showing spacing, dimensions of members, direction of main runners, edge conditions where abutting other surfaces, seismic bracing details, custom trim and ceiling opening locations including; location of diffusers, grilles, lighting fixtures, smoke detectors, sprinklers, and other items.

- D. Submit Seismic Calculations: Submit seismic calculations for metal grid ceiling and soffit suspension system confirming compliance with IBC International Building Code 2015, New Jersey Edition, Section 1613 Earthquake Loads signed and sealed by a Professional Engineer Licensed in the state having jurisdiction for this Project.

1.4 QUALITY ASSURANCE

- A. Comply with the requirements of the following:

1. ASTM C 474 “Standard Test Methods for Joint Treatment Materials for Gypsum Board Construction.”
2. ASTM C 475 “Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.”
3. ASTM C 588 “Specification for Gypsum Base for Veneer Plaster.”
4. ASTM C 645 “Standard Specification for Nonstructural Steel Framing Members.”
5. ASTM C 754 “Standard Specification for Installation of Steel Framing Members to Receive Screw Attached Gypsum Panel Products.”
6. ASTM C 840 “Standard Specification for Application and Finishing of Gypsum Board.”
7. ASTM C 843 “Specification for Application of Gypsum Veneer Plaster.”
8. ASTM C 844 “Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster.”
9. ASTM C 919 “Standard Specification for Use of Sealants in Acoustical Applications.”
10. ASTM C 954 “Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 inches (0.84 mm) to 0.112 in. (2.84 mm) in thickness.”
11. ASTM C 1002 “Standard Specification for Specification for Steel Drill Screws for the Application of Gypsum Panel or Metal Plaster Bases.”
12. ASTM C 1047 “Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.”
13. ASTM C 1177 “Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing”.
14. ASTM C 1396 “Standard Specification for Gypsum Wallboard.”
15. GA-216 “Recommend Specifications for the Application and Finishing of Gypsum Board.”
16. GA-600 “Fire Resistance Design Manual.”

- B. Sound Rated Assemblies: Provide materials and construction identical to assemblies indicated and in accordance with ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency to achieve the STC Rating indicated, or if not indicated, a minimum STC Rating of 50.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original unopened containers, packages or bundles bearing brand name and identification of manufacturer or supplier.

- B. Use or develop a written plan for the management of the jobsite for the delivery, storage, installation and protection of the products until completion of the project.
- C. Store materials inside under cover and in manner to keep them dry, protected from direct exposure to rain, snow, condensation, direct sunlight, surface contamination, corrosion, damage, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.
- D. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal corner beads and trim from being bent or damaged.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Room temperatures shall be maintained at not less than 50 degrees F, during application of gypsum board for a minimum period of 48 hours prior to, during and following application of gypsum board, joint treatment materials and bonding of adhesives.
- B. Further maintain not more than 80 degrees F (27 deg C) for 7 days prior to application of gypsum base, continuously during application, and after application until plaster skim coat is dry.
- C. Avoid exposure to excessive, repetitive or continuous moisture, before, during, and after installation. Eliminate sources of moisture immediately
- D. Ventilation: Adequate ventilation shall be maintained in the work area of building spaces as required to remove water in excess of that required for drying of joint treatment material and plaster skim coat during installation and curing period. Avoid drafts during dry, hot weather to prevent too rapid drying.
- E. Do not install interior gypsum panels until installation areas are enclosed and conditioned.
- F. Do not install panels that are wet, moisture damaged, and those that are mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
- G. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products of one of the following or approved equal.

1. Metal Support Materials:

Dale/Incor, Inc.
National Gypsum Co.
Dietrich Industries, Inc.

2. Grid Suspension Assemblies:

Armstrong World Industries, Inc.
Chicago Metallic Corp.
USG Interiors, Inc.

3. Gypsum Board and Related Products:

Georgia-Pacific Corp.
Gold Bond Building Products Div., National Gypsum Co.
United States Gypsum Co.

4. Deflection Track and Clips:

The Steel Network, Inc.
or approved equal

2.2 STEEL PARTITION & SOFFIT FRAMING

A. Metal Studs: ASTM C645; 0.0329 (20 gauge) min. thickness of base metal unless otherwise indicated. Hot dipped galvanized per ASTM A 653, G 40, G60 at showers, toilet rooms, and other interior locations subject to high humidity, steam and water.

1. Depth of Section: 3-5/8", or as otherwise indicated.

2. Runners: Match studs; type recommended by stud manufacturer for floor and ceiling support of studs, and for vertical abutment of drywall work at other work.

B. Furring Members: ASTM C645; 0.0179 (25 gauge) hat-shaped. Face width, 1-1/4" with 7/8" depth. Designed for screw attachment. Hot dipped galvanized per ASTM A 653, G 40, G60 at showers, toilet rooms, and other interior locations subject to high humidity, steam and water.

C. Fasteners for Metal Framing: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.

2.3 GRID CEILING & SOFFIT SUSPENSION SYSTEM

A. Grid Suspension System: Interior Ceilings and Soffits shall be constructed with direct hung drywall T-Bar suspension system used in lieu of carrying channel and metal furring. System shall meet minimum requirements of ASTM C 645; minimum G60 hot dipped galvanized for exterior use and for use at showers, toilet rooms, and other interior locations subject to high

humidity, steam and water; minimum G40 hot dipped galvanized at other interior areas. Steel thickness shall be .0179 before application of protective coating. Structural Classification to comply with ASTM C 635 for heavy duty system.

1. Main Beam: Heavy duty, double-web steel construction, conforming with ASTM C 635, hot dipped galvanized, 1-1/2" web height (1-11/16" at curved ceilings) with rectangular top bulb, and prefinished 15/16" flange or 1-1/2" flange (1-1/2" at curved ceilings). Fire-rated main beam shall be formed to include integral splice for expansion relief. Web is to be formed to receive override cross tee.
2. Primary Furring Cross Tees: Double-web steel construction, hot-dipped galvanized, 1-1/2" web height with rectangular bulb and hot dipped 1-1/2" knurled flange.
3. Secondary Framing Cross Tees: (for fixtures) Double web steel construction, hot dipped galvanized, 1-1/2" web height with rectangular bulb and 15/16" flange (48" for 'Type G' fixtures); (49" for 'Type F' fixtures).
4. Hat Channel Furring: 48" x 1 3/8" x 7/8" hot dipped galvanized steel compatible with main beams.
5. Wall Molding: Hot dipped galvanized steel, hemmed angle molding, 1-1/4" height with 1-1/4" flange or unhemmed channel molding 3/4" x 1-9/16" x 1-1/4".
6. Ceiling Hanger Wire: Hot dipped galvanized steel, no. 12 gauge. Hanger pull out to exceed 500 lbs.
7. Screws meeting ASTM C 1002 for wallboard application shall be bugle head screws in accordance with thickness of used material.
8. Assorted Trims and Reinforcing Clips that may be required include, but are not limited to manufacturer's appropriate clips for the system specified as follows:
 - a. Angle Molding and Reverse Angle Moldings, Curved perimeter Trim, Angled and Radius Drywall Clips, Transition Clips, Adapter Clips, Retention Clips, Beam End Retaining Clips, Direct Load Ceiling Clips, Stiffening, etc. as indicated and required.

2.4 INTERIOR GYPSUM WALLBOARD

- A. Panel Size: Provide panels in maximum lengths and widths available that will minimize joints in each area and correspond with the support system indicated.
- B. All Gypsum Wallboards: ASTM C-1396; tapered edges, Type X for fire resistance rated assemblies.
 1. Smooth Regular Faced Gypsum Wallboard: 5/8" thick, unless otherwise indicated, with long ends tapered. Use Type X where required for fire resistance rated assemblies.

2. Flexible Gypsum Wallboard: 1/4" thick, unless otherwise indicated, manufactured to bend to fit tight radii and to be more flexible than standard regular-type panels of the same thickness, with long ends tapered. Apply in double layer at curved assemblies unless additional layers are indicated.
3. Interior Gypsum Ceiling Board: 1/2" thick, unless otherwise indicated, manufactured with a special gypsum core containing additives to offer greater support and sag resistance for water based spray texture paints and insulation than 5/8" standard regular-type panels. Use Type X where required for fire resistance rated assemblies.
4. High Abuse-Resistant Gypsum Wallboard: 5/8" thick, unless otherwise indicated, manufactured with gypsum and cellulose fiber without a paper face to be abraded and incorporates embedded fiberglass mesh in the back of the panel and with long ends tapered. Panels offer greater resistance to surface indentation and through-penetration and is not compromised by cutting, scoring, or overdriven fasteners than standard regular-type panels of the same thickness. Panels shall be classified as non-combustible to allow use in place of Type X where fire resistance rated assemblies are required. Use this product when gypsum wallboard is installed within 8 feet of the finished floor and at.

2.5 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047. Provide manufacturer's standard trim accessories of types indicated for drywall work, formed of electro-galvanized steel 28 gage (minimum) unless otherwise indicated with either knurled and perforated or expanded flanges for nailing or screwing and beaded for concealment of flanges in joint compound.
 1. Provide corner beads at outside corners, LC-Beads (J-Bead) at exposed panel edges, L-Beads, U-Beads, special L-kerf-type edge trim beads and one-piece expansion (control) joint beads.

2.6 JOINT TREATMENT MATERIALS

- A. Joint Treatment Materials: Comply with ASTM C 475 and recommendations of manufacturer.
- B. Joint tape:
 1. Use perforated paper type for interior wallboard and ceiling board.
- C. Joint compound: Comply with ASTM C 475 and recommendations of the manufacturer.
 1. For interior gypsum wallboard and use setting-type taping compound followed by coats of setting-type sandable topping compound or as otherwise recommended by manufacturer.

- D. Concealed Acoustical Sealant: Non-drying, non-hardening, non-skinning, non-staining, non-bleeding, gunnable synthetic rubber sealant recommended for sealing interior concealed applications per ASTM C 919.

2.7 AUXILIARY MATERIALS

- A. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- B. Plaster Bonder: For bonding new plaster to any structurally sound interior surface of the type recommended by the drywall/veneer plaster manufacturer.
- C. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot grouting steel door frames, transoms, side lites and borrowed lites.
- D. Fastening Adhesive for Wood: ASTM C 557.
- E. Fastening Adhesive for Metal: Special adhesive recommended for laminating gypsum panels to steel framing.
- F. Steel Drill Screws: ASTM C 1002
- G. Framing screws: ASTM C 646 - Corrosion Resistant
- H. Power actuated fasteners: Type recommended by manufacturer for securing runners and furring strips to masonry and concrete.
- I. Steel drill screws: ASTM C 954 - Corrosion Resistant for fastening panels to steel members.
- J. Screws for cementitious backer units: Type and size as recommended by the backer unit manufacturer.
- K. Isolation Strip at Exterior Walls: Foam gasket, adhesive-backed, closed-cell, vinyl foam strips that allow fastener penetration without foam displacement, 1/8" thick in width to suit steel stud size.
- L. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
 - 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of Acoustical Sealant: As specified in Division 07 Section "Joint Sealants."

PART 3 - EXECUTION

3.1 INSPECTION

- A. Installer must examine the areas and conditions under which gypsum board assembly work is to be installed and notify the General Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
- B. Thermal Barrier: All foam plastic insulation shall be separated from the interior of a building by metal roof deck or by 1" minimum thickness of masonry or concrete. Where separation is less than 1" of masonry or concrete, provide an approved thermal barrier of not less than 1/2" gypsum wallboard or equivalent in compliance with **ASTM E119**. Thermal barrier shall be installed such that it will stay in place for a minimum of 15 minutes.

3.2 METAL SUPPORT

- A. Comply with specified standards.
- B. Metal Studs: Space maximum 16" o/c, unless otherwise indicated.
- C. Furring Channels: Space maximum 16" o/c, unless otherwise indicated, and at not more than 4" from floor and ceiling lines or abutting walls, Secure in place 24" o/c on alternate flanges.
- D. Install Framing, Bracing and Connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, etc., whether shown or not, as required to provide a complete, rigid, stable and structurally sound installation.
- E. Install supplementary framing and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, handrails, grab bars, accessories, furnishings, otherwise indicated, to comply with applicable published recommendations of gypsum board manufacturer and "Gypsum Construction Handbook" published by United States Gypsum Co.
- F. Extend partition framing tight to overhead roof construction except as otherwise shown.
- G. Install auxiliary framing at termination of drywall work, and at openings, as required for support of both the drywall construction and other work indicated for support thereon.
- H. Do not bridge building expansion joints and control joints with support system, frame both sides of joints with furring and other supports as indicated.
- I. Install grid suspension system materials in accordance with Ceiling and Interior Systems Construction Association's (CISCA) "Ceiling System's Handbook" and manufacturer's printed instructions. Also comply with governing regulations, referenced standards, industry standards applicable to the work and as shown on final approved shop drawings.
- J. Install grid suspension systems to comply with ASTM C 636, with hangers supported from overhead construction. Locate hangers near each end and spaced on 4' centers along carrying channel or main runners. Level to a tolerance of 1/8" in 12'-0".
- K. Seismic Restraints: Comply with Seismic Hazard Exposure Group II requirements in compliance with IBC International Building Code 2015, New Jersey Edition, Section 1613

Earthquake Loads, ASTM E 580 and CISCA's "Recommendations for Direct-Hung Acoustical and Lay-in Panel Ceilings — Seismic Zones 0 - 2."

- L. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
 - 1. Hangers: No. 12 hanger wires spaced 4'-0" o/c in both directions, closer spacing if loads increase due to additional loading. Provide extra wires to hang lights, diffusers, etc. independent of grid.
 - 2. Provide additional independent hanger wires for lighting fixtures or air diffusers etc. to prevent fixture dropout, minimum four hangers per unit or as otherwise required by IBC International Building Code 2015, New Jersey Edition, Section 1613 Earthquake Loads.
 - 3. Main Beam: Install at 4'-0" o/c with internal splice having expansion detail on both ends. Rout holes spaced 8" o/c to receive cross tees (spaced 16" o/c).
 - 4. Cross Tees: Install at 16" o/c.
 - 5. Vertical Steps, Soffits, Slopes, Curves: Use Drywall Angle Clips, Direct Load Ceiling Clips, Radius Clips, Drywall Attachment Clips, Transition Clips, Beam Adapter Clips, Retention Clips, Beam End Retaining Clips, Stiffening Braces, etc. or approved equal and additional wires as needed.
 - 6. Accessories: Use Perimeter Trim and Angle Trim, Perimeter Channel Molding, Clips, Reinforcing Plates as recommended by system manufacturer or approved equal and additional wires as required.
- M. Drywall to Acoustical transition: To form a transition from a drywall ceiling to an acoustical ceiling, use Drywall Transition Clips which allows use of the grid as a transitional trim.
- N. Provide additional framing and blocking to build in and support items furnished in other Sections and other Contracts.

3.3 INSTALLATION OF METAL SYSTEM SUPPORT

- A. Attach metal floor and top tracks in accordance with ASTM C 745 to beams and to underside of roof deck with suitable fasteners spaced no more than 24" on centers. Apply three (3) continuous bead of acoustical sealant above ceiling runner channels.
- B. Install metal studs of appropriate gage and depth at specified spacing to meet intended fire rating and structural requirements.
- C. Insert metal studs into floor and ceiling tracks and twist into position. Space studs on 16 inch centers. Screw studs to bottom and top/ceiling runners with sheet metal screws, (2) at top/ceiling and bottom. Provide additional studs not more than 2 inches from abutting partitions, and other construction. At corners, position on stud so that it forms the outside corner.

Construct rough bucks and erect in place by cutting flanges and rigidly fastening to face of double studs with screws. Provide stud on each side of control joint set 1/2 inches apart.

- D. Provide two rows of stiffener channels at 1/3 points of studs. Erect hollow metal door frames in rough opening frames, weld clips to double rough opening framing. Conform to details shown on approved shop drawings. Pot grout frames with gypsum at jamb anchor clips.
- E. Provide offsets and furring framing to form soffits, for pipe chases and other work. Fabricate special framing and hangers using 1-1/2" screw channels in addition to studs and runners specified. Space framing at not greater than 20" centers. Fasten members where required for rigidity using sheet metal screws or staples, as recommended by framing manufacturer.
- F. Provide additional framing to build in and support items such as handrails, grab bars, electrical components, etc. furnished under other sections. All work shall be accurately located, plumb, level and true to line.
- G. Install sound attenuation blankets between studs of operable partition soffits. Carry full height above finished ceiling. Butt all joints tight.

3.4 WALLBOARD INSTALLATION

- A. Installation of gypsum board products shall be in accordance with ASTM C 840 "Standard Specification for Application and Finishing of Gypsum Board".
- B. Inspect all surfaces and framing to which gypsum wallboard is to be applied. Remedy all conditions that will jeopardize satisfactory finish walls prior to installation of drywall. Check alignment and plumb of all framing and furring. Insulation will be double layer of wallboard unless noted otherwise.
- C. Install sound attenuation blankets as indicated, and in accordance with insulation manufacturer's recommendations for installation and attachment, prior to gypsum base unless readily installed after base has been installed on one side.
- D. Install appropriate gypsum panel perpendicular to the framing and up against the floor and metal deck. Use the correct type and length of fastener, including spacing to meet the intended fire resistance rating. Install panels on both sides of the metal framing unless otherwise indicated.
- E. Install gypsum soffit and ceiling boards across framing to minimize the number of abutting end joints and avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- F. Install single layer wallboard assemblies horizontally with Type "S" Bugle head drywall screws spaced not more than 12" o.c. Stagger joints on both sides of two sided partitions. Tightly install sound or thermal batt insulation as indicated between studs. Run three continuous beads of caulking at top of beam prior to installing wallboard. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.

- G. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Provide temporary bracing as required until fully adhered.
- H. Install gypsum board with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16-inch open space between panels. Do not force into place.
- I. Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories. Spacing of control and expansion joints shall be as shown and/or in accordance with the gypsum board manufacturer's written recommendations.
- J. Install in maximum practical lengths to span wall and ceiling framing without end (butt) joints. If butt joints do occur, stagger joints and locate as far as possible from center of walls and ceilings.
- K. Cut openings in gypsum board to fit items to be built in, including electrical outlets, accessories, etc. Openings shall fit snugly and shall be small enough to be covered by plates and escutcheons. Both face and back paper shall be cut for all cutouts that are not made by use of a saw. Support gypsum board securely around all cutouts and openings.
- L. Allow the other trades to install the needed services (MEP) through the first layer of gypsum board.
- M. Install all required through stop penetrations. Continue installing the remaining gypsum panels to complete the wall in accordance with the fire rated design.
- N. Install fasteners not more than 1" and no closer than 3/8" to end or edges. Space fasteners opposite each other on adjacent ends or edges. Begin fastening from center of wallboard and proceed toward outer end of edges. Apply pressure on wallboard adjacent to fasteners being driven to ensure that wallboard will be secured tightly to framing members. Check for looseness at fastener. Drive fasteners with shank reasonably perpendicular to face of board. Drive screws with a power screwdriver of type recommended by the wallboard manufacturer. Surface of head shall be below surface of paper without cutting paper. Apply acoustic sealant at all penetrations for electric receptacles, switches, wire, piping, ductwork and other applicable sources of sound transmission.
- O. Pack voids in steel door and lite frames and the like, etc. with sound attenuation.

3.5 ACCESSORY INSTALLATION

- A. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges by nailing or stapling in accordance with manufacturer's instructions and recommendations.
- B. Install metal corner beads at external corners of drywall work.

- C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. Provide type with face flange to receive joint compound except where semi-finishing type is indicated. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work kerfed to receive long leg of L-type trims. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).
- D. Install J-type semi-finishing trim where gypsum board edges are not covered by applied moldings.
- E. Omit fastening wallboard closer than one support away from area where casing trim will be installed. Insert metal flange between wallboard and bearing surface, and move in until properly aligned. Fasten wallboard through metal flange before bedding perforated tape.
- F. Maintain metal edge in a true line.

3.6 JOINT TREATMENT

- A. Apply bedding compound to edge and end joints and to fastener heads. Use types as recommended by gypsum manufacturer for use with gypsum product being installed. Shear off surplus leaving a tapered groove for embedding tape. Leave no material on high edge. Allow 12 hours for drying before taping.
- B. Apply a uniformly thin layer of bedding compound over the joint approximately 4" wide. Center tape over joints and embed into compound.
- C. Allow compound to dry thoroughly for approximately 24 hours. Cover tape with a coat of compound and spread out 3" on each side of tape. Feather out at edges.
- D. After preceding coat is thoroughly dry, apply another coat with slight uniform crown over joints. This coat must be smooth and with edges feathered out 3" beyond preceding coat.
- E. All fastener heads and dimples shall receive at least three (3) coats of compound. Apply as each coat is applied to joints, allowing at least 24 hours between each coat.
- F. Cover flanges of beads and trim with at least two (2) coats of compound. First layer shall be bedding compound. Apply along with respective coats of compound on joints. Feather out compound approximately 9" from metal bead.
- G. Sand coats of compounds when thoroughly dry and sanding is needed. Avoid roughing surface of gypsum board product.
- H. Leave wallboard uniformly smooth and ready for decoration.

3.7 PROTECTION OF WORK

NEW TRANSPORTATION BUILDING
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COMMISSION NO. 18K040

- A. Provide temporary protection to installed panels, such as tarps, as required. The intent is to protect the gypsum panels in those areas where, when installed, exhibit increased potential for impingement by water in its liquid state. Protect from cascading water.
- B. Provide final protection and maintain conditions, in a manner suitable to installer, which ensures gypsum board assembly work being without damage or deterioration at time of substantial completion.

END OF SECTION 092116.

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. Provide all labor, materials, accessories, equipment and incidentals to complete ceramic tile work as shown, specified, and as required for a complete installation including, but not necessarily limited to, the following:

- 1. All necessary surface preparation and leveling of substrates.
- 2. Porcelain Wall Tile and Trims.
- 3. Tile pattern and field layout of borders, patterns and fields.

- B. Related Work Specified Elsewhere:

Concrete	Division 3
Unit Masonry	Division 4
Joint Sealers	Division 7
Toilet Accessories	Division 10

1.3 QUALITY ASSURANCE

- A. Provide materials obtained from one source for each type and color of tile, grout, and setting materials.
- B. Comply with ANSI A137-1 "American National Standard Specifications for Ceramic Tile" for types and grades of tile indicated. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.
- C. Comply with ANSI standard referenced with products and materials indicated for setting and grouting.
- D. Conform to the requirements of the Tile Council of North America, "Handbook for Ceramic, Glass, and Stone Tile Installation", current edition.
- E. Static Coefficient of Friction: Floor tile shall have a static coefficient of friction greater than 0.6 in accordance with ANSI A-137.1 and ASTM C 1028 (wet).

1.4 SUBMITTALS

- A. Submit product data, properly identified manufacturer's literature giving material specifications, mortar and grout mixes and installation directions for approval.
- B. For initial selection purposes, submit manufacturer's color pallettes consisting of actual tiles or selections of tile showing full range of colors, textures and patterns available for each type of tile indicated. Include samples of grout and accessories requiring color selection. Colors shall be as indicated on drawings or approved equal provided that they blend in with the color schemes selected for the overall project and are of equivalent price grouping as the selected colors.

1.5 DELIVERY AND STORAGE

- A. Deliver all packaged materials to the site in original, unopened containers, clearly indicating manufacturer's name, brand name, and other identifying information.
- B. Store materials in a dry location, off the ground, and in such a manner as to prevent damage or intrusion of foreign matter. Replace all materials that have become damaged or otherwise unfit for use, during delivery or storage.
- C. Tile containers shall be branded with, or have sealed within, the shipping mark and other designations corresponding with the information given on the Master Grade Certificate. Keep containers dry until tiles are removed and checked. Take every precaution not to stain tiles before they are set in place. Do not place warped, over or under burned, stained, or spalled tile in the work.
- D. Deliver extra materials to Owner. Furnish extra materials that match products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.
- E. Quantity of Tile and Trim Extra Materials: Provide 3% of each type, composition, color, pattern and size of tile installed on the project. Package in original manufacturer's protective wrapping and clearly identify each container, indicating its contents.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide colors, patterns, borders, fields and designs as indicated, or if not indicated, as selected by the Architect from the manufacturer's full color range of colors for the products listed below as manufactured by:
 - 1. DalTile Inc.
 - 2. American Olean
 - 3. Or approved equal.

B. Porcelain Wall Tile:

1. Matte or gloss glazed wall tile in multiple colors and layout patterns as indicated or another approved manufacturer having matching colors to blend with the color schemes selected for adjacent materials included in the project.
2. Refer to drawings for interior finish schedule

C. Accessory and Trim Tiles

1. Provide accessory and trim tiles to match colors of floor, base, and wall tile as indicated. Field butt inside corners, bullnose out corners. Trims for thinset and mudset installations as indicated and transitions from mud set to thinset and other floor finishes or transition strips or saddles.

D. Setting and Mortar Materials:

1. Flexible Polymer modified Portland cement mortar; consisting of two components - liquid polymer and dry set mortar, Hydroment PM by Bostick or approved equal - conforming to A.N.S.I. A118.4 with the polymer having the following characteristics:
2. Walls: Flexible polymer Latex Modified Portland Cement mortar, A.N.S.I. A118.4 as described above.
3. Wall Grout: Latex Modified Cement Grout, A.N.S.I. A118.6 in colors as selected by Architect.

E. Reinforced Portland Cement Mortar Setting Bed: ANSI A108.1b:

1. Metal Lath: ASTM A 185 and ASTM A 82, galvanized.
2. Portland Cement: ASTM C 150 Type 1.
3. Lime: ASTM C 206 Type S or ASTM C 207 Type S.
4. Sand: ASTM C 144.
5. Water: Potable.

F. Penetrating Sealer/Grout Release: Of type and consistency as recommended by the manufacturer to prevent staining by grouts and reduce staining by waters and oils. Apply to tiles in strict accordance with manufacturer's written requirements.

G. Tile Cleaner

1. Product specifically acceptable to manufacturer of tile and grout manufacturer for application indicated and as recommended by National Tile Promotion Federation, 112 North Alfred St., Alexandria, VA 22134 or Ceramic Tile Institute, 700 N. Virgil Ave., Los Angeles, CA 90029.

PART 3 - EXECUTION

3.1 INSPECTION AND PREPARATION

- A. Examine substrates and areas where tile will be installed with installer present, for compliance with requirements for installation tolerances, square of layout and other conditions affecting performance of work. Report discrepancies to the Architect in writing prior to proceeding with work for resolution. Commencement of work indicates Contractor's acceptance of existing conditions and any corrective work thereafter will be corrected by the Contractor at no additional cost to the Owner.
- B. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.
- C. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units or work, and similar items located in or behind tile has been completed before installing tile.

3.2 INSTALLATION

- A. Conform to the TCNA "Handbook for Ceramic, Glass, and Stone Tile Installation" and to the ANSI Specifications referenced therein.
- B. Comply with the manufacturer's instructions for mixing and installation of proprietary materials.
- C. Turn waterproof membrane up walls a minimum of 6" above finish floor level.
- D. Center design layout for fields, patterns, borders and designs on applied areas and so that no tile is less than half size. Start corner tile at half tile width minimum. Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor and base are the same size. Provide uniform widths. Design layout for fields, patterns, borders and designs shall be provided by time of submittal review by Architect.
- E. Extend tile work into recesses and under or behind equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown.
- F. Terminate work neatly at obstructions, edges and corners without disrupting pattern of joint alignments.
- G. Cut and drill tile and trim shapes accurately without damage. Rub all exposed cut edges smooth with abrasive stone.
- H. Comply with recommendations of TCNA for location and design of expansion joints, if not shown on the drawings. Notify Architect of intended locations prior to beginning work.
- I. Press tile firmly into mortar and beat it to a true surface before initial set occurs. See that full contact is obtained to insure that there are no sizable voids. Adjust any tile that is out of alignment.

- J. Locate expansion joint and other sealant filled joints, including control, contraction and isolation joints, where indicated, or if not indicated, at spacing and locations recommended in TCNA "Handbook for Ceramic, Glass, and Stone Tile Installation", and approved by Architect.
- K. Grout tile is to comply with referenced installation standards, using grout materials indicated. Mix and install proprietary components to comply with grout manufacturer's directions.

3.3 SETTING METHODS

- A. Conform to the following listed setting methods described in the latest edition of the TCNA Handbook Specification.
- B. Ceramic Tile Walls, Base:
 - 1. W202: Clean, sound, dimensionally stable masonry walls, Latex Portland Cement Mortar Bond Coat. Latex Modified Cement grout.
- C. Thresholds: TR611-2K.

3.4 CURING

- A. Moist cure floor tile per TCNA recommendations. Cover floor with polyethylene sheets. Add water to surface on second day after setting and replace sheeting.

3.5 CLEANING AND PROTECTION

- A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter. Cleaning materials, other than water, and methods must be specifically acceptable to the manufacturer's of each tile, each grout, and the waterproofing/setting bed material and so indicated in manufacturer's printed instructions or approval on letterhead. Protect adjacent work. Flush with clean water before and after cleaning. Leave finished installations clean and free of cracked, chipped, broken, unbonded, or otherwise defective tile work.
- B. Protection: When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with Kraft paper or other heavy covering during construction period to prevent damage and wear.
- C. Prohibit foot and wheel traffic from using tiles floors for at least 3 days after grouting is completed. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 093000.

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:

1. Acoustical Panels.
2. Metal Suspension Systems.
3. Metal Edge Moldings and Trim.
4. Acoustical Sealant.
5. Miscellaneous accessories including Beam End Retaining Clips, Hold-Down Clips, Stiffening Braces and Hanger Wire, etc.

- B. Related Requirements:

1. Section 092900 "Gypsum Board" for ceilings and soffits.
2. Division 21 – Fire Suppression related work.
3. Division 22 – Plumbing related work.
4. Division 23 – Mechanical related work.
5. Division 26 – Electrical related work.

- C. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product and accessory.
- B. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
 1. Acoustical Panel: Set of 6-inch square samples of each type, color, pattern, and texture.

2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch long Samples of each type, finish, and color.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 1. Suspended ceiling components including spacing, direction of main runners, edge conditions, trim(s) and room centering.
 2. Structural members to which suspension systems will be attached.
 3. Size and location of initial access modules for acoustical panels.
 4. Items penetrating finished ceiling including the following:
 - a. Lighting fixtures.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Sprinklers.
 - e. Access panels.
 - f. Smoke Detectors.
 5. Perimeter moldings.

1.6 SEISMIC STANDARDS

- A. Provide acoustical panel ceilings designed and installed to withstand the effects of earthquake motions according to the following:
 1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.
 2. ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads" (for New Jersey: including Supplement #1 and excluding Chapter 14 and Appendix 11A).
- B. Reflected ceiling plan shall be accompanied by a seismic study of the ceilings to be installed and include a copy of the seismic calculations.
- C. Submit seismic calculations confirming compliance with the latest adopted version of IBC International Building Code, New Jersey Edition: Section 1613 "Earthquake Loads" for Architectural, Mechanical and Electrical Component Seismic Design Requirements signed and sealed by a Professional Engineer Licensed in the state having jurisdiction for this Project.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Acoustical Ceiling Panels: Full-size panels equal to 2 percent of quantity installed.
 - 2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
 - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.
- B. Contractor should be aware that the reflected ceiling plans and layouts may vary due to job conditions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.

2. Smoke-Developed Index: 50 or less.

C. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 ACOUSTICAL PANELS, GENERAL

A. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer.

B. Glass-Fiber-Based Panels: Made with binder containing no urea formaldehyde.

C. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances unless otherwise indicated.

1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface according to ASTM E 795.

D. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.

1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

E. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.3 ACOUSTICAL PANEL TYPES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers of products that may be include in the work include, but are not limited to the following, or approved equal:

1. Armstrong Corporation. (Basis of Design for performance, design and quality)
2. CertainTeed Corporation, a Saint-Gobain Company.
3. USG Corporation.

B. Acoustical panel designations below are interior applications for high humidity and unconditioned spaces. Provide antimicrobial paint to inhibit mold and mildew growth and provide 30 year performance guarantee against sag or warp.

C. **ACP-1**

Panel Style/Model:	#1775, Dune (Beveled Tegular)
Size:	24"x24"x5/8"
Fire Rating:	Class A, not for use as a fire rated ceiling assembly
NRC:	0.50
CAC:	35
LR:	0.83
Color	White
Suspension System:	Superfine XL 9/16" Exposed Tee System
Color	White

2.4 METAL SUSPENSION SYSTEMS, GENERAL

A. Metal Suspension-System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.

1. High-Humidity Finish: Comply with ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.

B. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing according to ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.

- a. Type: Post installed expansion anchors.
- b. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 for Class SC 1 service condition.

2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190, conducted by a qualified testing and inspecting agency.

- C. Components: Main runner and cross tees shall be double-web hot dipped galvanized steel construction per ASTM A635 with 15/16" type exposed flange design, unless otherwise indicated. Members shall be fire/flame rated and seismic zone rated. Each exposed bottom flange shall be continuous with unbroken roll formed cap the length of the member. Cap shall be steel, finished as specified below.
1. Structural Classification: Intermediate duty.
 2. Main Beam: Routed 6" center to center, continuously along the length of its web to locate intersecting cross tees. Web Height shall be 1-1/2".
 3. 4' Cross Tees: Web height shall be 1-1/2".
 4. 2' Cross Tees: Web height shall be 1-3/8".
 5. End condition of Cross Tees: Staked-on (stab) end detail with override flange.
- D. Cross Tee shall be double web bulb section of steel conforming to ASTM A 366, web height 1-1/2" and have a 15/16" bottom flange. Exposed bottom flange shall be continuous with unbroken roll formed cap the length of the member.
- E. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641, Class 1 zinc coating, soft temper.
 2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 12 gauge diameter wire.
- F. Hanger Rods or Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
- G. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch thick, galvanized-steel sheet complying with ASTM A 653, G90 coating designation; with bolted connections and 5/16-inch diameter bolts.
- H. Hanger Channels shall be 1 1/2"; 0.475 lb. per 1,000 ft.; cold rolled steel or 1.12 lb. per 1,000 ft. hot rolled steel for integrating with metal stud framing for supporting suspended ceiling system.
- I. Bulb Tee Hanger shall be used for suspending bulb tees from 1 1/2" hanger channels - hanger will slide onto and hang from channel and bulb tee will slide and be clipped to bulb tee hanger. Hanger is also known as "New York City Clip".
- J. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.
- K. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.
- L. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in place.
- M. Stiffening Brace shall be provided to the entire grid system of vestibule areas leading to the exterior and within 10 feet of exterior doors in areas exposed to wind uplift of up to 90 lbs./sq.

ft. Brace shall be attached between the upper and lower ties on each vertical hanger wire. Combine with hold-down clips.

- N. Beam End Retaining Clips shall be provided for attachment of beam ends to wall moldings for seismic stabilization, and or stabilizer bars when required by current Seismic Code.
- O. Impact Clips: Where indicated, provide manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.
- P. Lighting fixtures to have lighting fixture support clips in addition to being supported from above independent of ceiling grid.

2.5 METAL SUSPENSION SYSTEM

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers of products that may be include in the work include, but are not limited to the following, or approved equal:
 - 1. Armstrong (Basis of Design for performance, design and quality).
 - 2. Certain Teed.
 - 3. Chicago Metallic.
 - 4. USG.
- B. Refer to Part 2.3 for suspension systems listed with specific Acoustic Panel Ceiling types.

2.6 METAL EDGE MOLDINGS AND TRIM

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers of products that may be include in the work include, but are not limited to the following, or approved equal:
 - 1. Armstrong (Basis of Design for performance, design and quality).
 - 2. Certain Teed.
 - 3. Chicago Metallic.
 - 4. USG.
- B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
 - 1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners unless otherwise indicated.
 - 2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.

3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
- C. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements and the following:
1. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils. Comply with ASTM C 635 and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
 2. Aluminum Alloy: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of aluminum extrusions complying with ASTM B 221 for Alloy and Temper 6063-T5.
 3. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.
- D. Wall moldings shall be "L" shape molding and have at least 7/8" exposed flanges, not less than .019 nominal steel with finish specified below. Use shadow molding with square edge lay-in and 15/16" flanges where indicated. Include inside and outside corner moldings with rounded inside corners for bullnose block walls.
- E. Bullnose Corner Cover: For use with 15/16" grids. Armstrong No. 7866 or approved equal. Cover snaps over molding to trim outside corners. Fits 1" radius block.
- F. Special Profiled Perimeter Trim as indicated and shall be of extruded aluminum channel trim compatible with the exposed suspension system. Profile height as indicated and finished to match ceiling grid.
- 2.7 ACOUSTICAL SEALANT
- A. Acoustical Sealant for exposed and concealed joints: Manufacturer's standard sealant complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
1. Exposed and Concealed Joints: Non-sag, paintable, non-staining latex sealant.
 2. Acoustical sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Pre-Installation Conference: Prior to the start of acoustical ceiling installation, meet at the Project Site with the Installers of related work, including lighting, sprinklers, ductwork and similar work in the ceiling plenum. Review areas of potential interference and resolve conflicts before proceeding with the work. Coordinate ceiling layout with the layout of other work that penetrates or is supported by the ceiling in each space of the building.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Unless otherwise indicated on the drawings, avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook." Comply with governing regulations, referenced standards, industry standards applicable to the work and as shown on final approved shop drawings.
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.

4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 8. Do not attach hangers to steel deck tabs.
 9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Seismic Restraints: Comply with CISCA's "Recommendations for Direct-Hung Acoustical and Lay-in Panel Ceilings and requirements of the latest adopted version of the IBC International Building Code, New Jersey Edition: Section 1613 "Earthquake Loads" for Architectural, Mechanical and Electrical Component Seismic Design Requirements. Provide additional independent hanger wires for lighting fixtures or air diffusers etc. to prevent fixture dropout, minimum four hangers per unit or as otherwise required.
- E. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- F. Suspend main runners not more than 48" center-to-center, from overhead structure by not less than #12 gauge galvanized steel wire spaced 48", center-to-center, accurately leveled. Join cross tees to main runners through pre-routed openings in runners, locking webs together by

means of die-formed end tabs to form a positive interlock. Main runners and cross tees shall rest on angel moldings at walls.

- G. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- H. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
 - 1. Arrange directionally patterned acoustical panels as indicated on reflected ceiling plans.
 - 2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
 - 3. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 - 4. For reveal-edged panels on suspension-system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension-system surfaces and panel faces flush with bottom face of runners.
 - 5. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
 - 6. Install hold-down and/or impact clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions unless otherwise indicated.
 - 7. Install clean-room gasket system in areas indicated, sealing each panel and fixture as recommended by panel manufacturer's written instructions.
 - 8. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.
- I. Apply acoustic sealant, concealed on backs of vertical legs of trim moldings; at ceiling perimeters; around penetrating fixtures and elsewhere as required.

3.4 COORDINATION

- A. Cooperate with other trades for installation of their materials and equipment, particularly with those installing the ductwork ceiling diffusers, electrical fixtures and plumbing fixtures so that diffusers, lighting fixtures and other items are located on center lines of tile or on centers of joints, as shown on approved shop drawings.
- B. Where light fixtures or other recessed items occur in ceilings, frame properly to permit installation of such recessed items, and do all necessary cutting and fitting of acoustical materials and suspension systems to accommodate work. Cut neatly around all pipes passing through ceilings.

3.5 CLEANING AND PROTECTION

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.
- B. The Installer shall advise the Contractor of required protection for the acoustical ceilings, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the time of acceptance by the Owner.

END OF SECTION 095113

PART 1 - SECTION 096500 - RESILIENT FLOORING

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. Provide all labor, materials, accessories, equipment and incidentals to complete Resilient Flooring work, as shown and/or specified, including but not necessarily limited to the following:

1. Quartz Tile Flooring.
2. Resilient Rubber Wall Base.
3. Resilient Flooring Accessories.
4. Inspection and preparation of subfloors.
5. Design patterns, logos, features and borders.

- B. Related Sections Specified Elsewhere:

Cast-In-Place Concrete	Division 3
Miscellaneous Metals	Division 5
Rough Carpentry	Division 6

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing resilient floor coverings of the type(s) required for this Project and with a record of successful in-service performance and who is certified or approved by the flooring manufacturer.
- B. Source Limitations: Obtain each type, color, and pattern of each type of resilient flooring product specified from one source for each resilient floor covering product with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.
- C. Fire Test Performance: Provide resilient flooring products and accessories that comply with the following fire performance characteristics as determined by testing products per ASTM test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
1. Critical Radiant Flux: Class II, Not less than 0.22 watts per sq. cm when tested in conformance with ASTM E 648.

2. Smoke Density: Less than 450 in conformance with ASTM E 662.
3. Static Coefficient of Friction: Greater than 0.6 for level surfaces and greater than 0.8 for ramped surfaces in accordance with ASTM D 2047.

1.4 SUBMITTALS

- A. Product data: Submit manufacturer's product data, installation instructions, and maintenance recommendations for each type of product specified.
- B. Shop Drawings: Show layout of special tile, special patterns, logos, details and color coding for verification of correct color and pattern locations coordinated with layout on Architectural drawings. Show locations of seams, expansion joints, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
- C. Samples for selection purposes of each type of flooring, base and accessory consisting of actual tiles or 6-by-9 inch sections showing full range of colors and patterns available for each type of product indicated for approval and color selection.
- D. Heat-Welding Samples: Submit samples of each heat-welding bead and flooring product, color, and pattern combination required, with seam running lengthwise in the center of a 6-by-9 inch made and applied to a rigid backing by the installer for this project.
- E. Certification by manufacturer of each type of resilient flooring product that products provided for resilient flooring installation comply with local regulations controlling use of volatile organic compounds (VOC's).
- F. Installer Certificates: Signed by the certifying that installers comply with specified requirements.
- G. Maintenance Data: Submit three copies of manufacturer's recommended maintenance practices for each type of resilient flooring product and accessory required.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver resilient flooring and accessory products and installation accessories to the Project site in manufacturer's original unopened cartons and containers each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.
- B. Store and handle materials in strict compliance with manufacturer's recommendations.
- C. Store materials in dry spaces protected from the weather with ambient temperatures maintained between 50 deg F (10 deg C) and 90 deg F (32 deg C) or as otherwise recommended by the manufacturer. Store tiles on flat surfaces. Store rolls upright.
- D. Move resilient products and installation accessories into spaces where they will be installed at least 72 hours in advance of installation.

- E. Deliver Materials sufficiently in advance of installation to condition materials to room temperature prior to installation.

1.6 PROJECT CONDITIONS

- A. Maintain temperature of not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C) in spaces to receive resilient flooring products for at least 72 hours prior to installation, during installation, and for not less than 72 hours after installation. Subsequently, maintain a temperature of not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C) in areas where work is completed.
- B. Do not install resilient flooring materials and accessories until they are at the same temperature as the space where they are to be installed.
- C. Maintain relative humidity in spaces to receive resilient flooring products and accessories before, during, and after installation within the range recommended in writing by manufacturer.
- D. Close spaces to traffic during flooring installation and for time period after installation recommended in writing by manufacturer.
- E. Install resilient flooring and accessories after other finishing operations, including painting and ceiling operations, have been completed. Moisture content of concrete slabs and environmental conditions must be within limits recommended by manufacturer of products being installed for sufficient bonding with adhesives as determined by moisture tests.

1.7 ADDITIONAL STOCK

- A. Deliver additional stock to Owner. Furnish additional materials matching products installed, packaged with protective covering for storage and identified with labels clearly describing contents. Furnish not less than one box for each 50 boxes or fraction thereof, of each type, color, pattern class, wearing surface and size of each resilient tile flooring item installed. Furnish not less than 10 linear feet (3 linear m) in roll form for each 500 linear feet (150 linear m) or fraction thereof, of each type, color, pattern, and size of resilient accessory installed.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Designs, Logos, Features, Colors and Patterns: Multiple colors for patterns, logos, features, borders, fields and designs shall be selected by Architect from manufacturer's full range of colors.

- B. Quartz Tile: High performance, commercial grade fully flexible, compressed quartz tile.
1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
 - a. Spartan Surfaces.; Upofloor Quartz (Basis of Design)
 - b. Or approved equal.
 2. Performance Requirements:
 - a. Thickness: 0.08-inch
 - b. Size: 24-inch x 24-inch
 - c. Static Load Limit, ASTM 970: Pass
 - d. Critical Radiant Flux, ASTM E648: Pass
 - e. Smoke Generation, ASTM E662: Pass
 - f. Taber Abrasion, ASTM C501: Pass
- C. Resilient Base: Rubber base; FS SS-W-40a, Type I (rubber), Style B (with a cove toe, for use with hard surface flooring); with matching end stops and preformed or molded corners; 4” height or as otherwise indicated indicated; 1/8" gauge.
1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
 - a. Johnsonite; Traditional 4” (Basis of Design)
 - b. Or approved equal.
- D. Resilient Edge Strips: Homogenous vinyl or rubber composition; 1/8" thick; not less than 1" wide; tapered or bullnose edge from manufacturer’s full range as selected by the Architect.
- E. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edge of tiles, and in maximum available lengths to minimize running joints.
- F. Concrete Slab Primer: Nonstaining type as approved and recommended by the flooring product manufacturer.
- G. Trowelable Underlayment, Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic cement based formulation provided by or approved by the resilient product manufacturer for applications intended.
- H. Adhesives (Cements): Water-resistant adhesive of type recommended by the flooring manufacturer to suite resilient flooring products and substrate conditions indicated.
- I. Epoxy Caulking Compound: Water-resistant type two-component epoxy caulking compound by the tread manufacturer to suite resilient flooring products and substrate conditions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installation, inspect subfloors and surfaces to verify that conditions are satisfactory for flooring installation and comply with resilient flooring manufacturer's requirements and those specified in this section. Notify Architect in writing of any serious defects or conditions which will interfere or prevent a satisfactory installation and do not proceed with work until unsatisfactory conditions are corrected. Starting of installation shall imply acceptance of the surface. Comply with manufacturer's recommendations including the following:
1. Substrates shall be dry and clean.
 2. Substrates shall be free of depressions, raised areas, or other defects that would telegraph through installed flooring.
 3. Temperature of resilient flooring and substrate shall be tested and within specified tolerances.
 4. Moisture condition and adhesive bond tests shall be performed as specified and recorded.
- B. For applications on concrete, verify that concrete slabs and substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond, moisture, and pH tests recommended in writing by the flooring manufacturer. Do not proceed with installation until improper conditions have been removed or corrected have been removed as specified and in accordance with resilient product manufacturer's written requirements.
- C. For applications on concrete slab on grade or below grade, verify vapor barrier below slab was installed. If no vapor barrier was installed, do not proceed with work unless written acceptance of such conditions is received and submitted.
- D. Perform moisture condition test in each major area, minimum 1 per 1,000 square feet, prior to installation. Moisture condition shall not exceed 3 pounds per 1,000 square feet per 24 hour day and in accordance with flooring manufacturers recommended test method. Do not proceed with work until results of moisture condition tests are acceptable.
- E. Perform adhesive bond test in each major area, minimum 1 per 1,000 square feet, prior to installation. Examine after 72 hours to determine whether bond is solid and no moisture is present. Do not proceed with work until results of bond test are acceptable.

3.2 PREPARATION

- A. Comply with ASTM F 710 and manufacturer's written recommendations for surface preparation of substrates and installation methods. Remove substances incompatible with resilient flooring adhesive by method acceptable to manufacturer.
- B. Use trowelable leveling and patching compounds, in accordance with manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.

- C. Concrete subfloors shall be dry and free of curing compounds, sealers, hardeners, solvents, soaps, wax, oils, silicones and other materials whose presence would interfere with bonding adhesive and show through the surface, stain and/or destruct the flooring products. Perform moisture tests to determine whether concrete slabs are sufficiently cured.
- D. Clean substrates thoroughly of all dust, dirt, grease, or other foreign matter before installing flooring and base. Fill cracks, holes and level irregularities with leveling and patching compounds. Apply primer if recommended by flooring manufacturer.
- E. Concrete floors with steel troweled (slick) finish shall be properly roughened up (sanded) to ensure suitable adhesion.
- F. Perform acid etching or other preparation procedures required to obtain proper bond to concrete substrate.
- G. Broom and vacuum clean substrates to be covered by flooring immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 INSTALLATION

- A. Floor Covering Installation General: Comply with manufacturer's written installation instructions.
- B. Scribe, cut, and fit flooring to but neatly and tightly to vertical surfaces and permanent fixtures, including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.
- C. Extend flooring into toe spaces, door reveals, closets, and similar openings.
- D. Maintain reference markers, holes and openings that are in place or marked for future cutting by repeating of finish flooring as marled on the subfloor.
- E. Install flooring on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern with flooring cut, scribed and installed on covers. Tightly adhere edges to perimeter of substrate around covers and to covers.
- F. Adhere floor coverings to substrates using a full spread of adhesives applied to substrate to comply with adhesive and floor covering manufacturer's written instructions, including those for trowel notching, adhesive mixing, and adhesive open and working times.
- G. Provide complete installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- H. Roll floor coverings according to floor covering manufacturer's written instructions.
- I. Tile Installation:

1. Lay flooring from center marks established with principal walls or center aisles, discounting minor offsets, so that tile at opposite edges of areas are of equal width. Adjust as necessary to avoid use of cut width less than 1/2 tile at room perimeters. Lay flooring square to room axis, unless otherwise shown.
2. Match floor tiles for color and pattern by using tile from cartons of the same batch and mixing tiles as recommended in writing by the manufacturer. Cut tile neatly around all fixtures. Broken, cracked, chipped or deformed tiles are not acceptable.
3. Lay flooring with grain running in one direction unless directed otherwise.
4. Lay flooring in pattern layout design with respect to location of colors, patterns, borders, fields and design layout, and sizes as provided by time of submittal review by Architect.
5. Place flooring with adhesive cement in strict conformance with manufacturer's recommendations. Scribe, cut and fit flooring materials as required. Butt tightly to vertical surfaces, thresholds, nosing and edgings. Extend flooring into toe spaces, door reveals and into closets and similar openings. Make joints even, straight and as inconspicuous as possible and laid tight. The entire surface shall be smooth, straight, and free from buckles, waves and projecting edges.
6. 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.
7. 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.
8. Install flooring on covers for telephone and electrical ducts, and other such items as occur within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers.
9. Use full spread of adhesive applied to substrate in accordance with tile manufacturer's directions including those for trowel notching, adhesive mixing, and adhesive open and working times.

3.4 ACCESSORIES

- A. 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. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.
 1. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material and at

bullnose masonry corners where preformed base is used, fill void with heat-weld seaming material.

- B. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Touch-up and repair minor damage to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired.
- B. Perform all cleaning and protective operations immediately after installing flooring products as per manufacturer's written instructions, and leave floor and base in perfect condition.
- C. Remove adhesive and other surface blemishes from face of flooring materials, accessories, and base using cleaner recommended in writing by the flooring product manufacturer as work progresses. Remove all spots and stains.
- D. Clean surfaces only after adhesive has fully cured, no sooner than 72 hours after installation and in accordance with flooring product manufacturer's written recommendations. Clean surfaces using non-abrasive materials and methods recommended by manufacturer. Remove and replace work that cannot be successfully cleaned.
- E. After cleaning, apply a protective coating and/or sealer as recommended and in accordance with the flooring manufacturer's recommendations and procedures.
- F. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated and recommended in writing by flooring manufacturer.
- G. Keep all traffic off finished resilient floors except where absolutely necessary. If traffic cannot be avoided, protect resilient flooring with approved reinforced building paper with taped joints. At completion and acceptance of building, all work shall be clean and whole and in perfect condition.

END OF SECTION 096500.

SECTION 096723 - RESINOUS FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes resinous flooring systems.
 - 1. Fluid applied resinous flooring.
 - 2. Integral sanitary cove base.
- B. Related Sections:
 - 1. Section 033000 "Cast-in-Place Concrete".
 - 2. Section 079200 "Joint Sealants".

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.
- B. Samples for Initial Selection: For each type of exposed finish required.
- C. Samples for Verification: For each resinous flooring system required, **6 inches** square, applied to a rigid backing by Installer for this Project.

1.5 INFORMATIONAL SUBMITTALS

- A. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
- B. Material Certificates: For each resinous flooring component, from manufacturer.

- C. Material Test Reports: For each resinous flooring system, by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For resinous flooring to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated with a minimum of (3) three years' experience.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
- B. Store materials in a dry protected area at a temperature between 60°F and 80°F, unless otherwise recommended in writing by manufacturer.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for 24 hours after application unless manufacturer recommends a longer period for curing.
- D. Coordinate work with other trades.
- E. Commence preparation and application after all other trades have completed their work.

1.10 WARRANTY

- A. Submit a written warranty, signed by the manufacturer and applicator, agreeing to repair or replace failures and defects in material and workmanship for a period of two (2) years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. 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).
- B. Flammability: Self-extinguishing according to ASTM D 635.
- C. Static Coefficient of Friction: Greater than 0.6 for level surfaces in accordance with ASTM D2047.

2.2 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following or approved equal:
 - 1. Palma, Inc.; PalmaLite-Palikrom 185 (Basis of Design)
 - 2. Dura-A-Flex, Dur-A-Quartz.
 - 3. Dex-O-Text, Décor-Flor.
- B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source from single manufacturer. Obtain secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from manufacturer recommended in writing by manufacturer of primary materials.

2.3 RESINOUS FLOORING

- A. Resinous Flooring System: Abrasion-, impact-, and chemical-resistant, aggregate-filled, and resin-based monolithic floor surfacing designed to produce a seamless floor and integral cove base.
- B. System Characteristics:
 - 1. Color and Pattern: As selected by Architect from manufacturer's full range.
 - 2. Wearing Surface: Textured for slip resistance.
 - 3. Overall System Thickness: 3/16 inch.
 - 4. Federal Agency Approvals: USDA & FDA approved for food-processing environments.
- C. Primer: Type recommended by resinous flooring manufacturer for substrate and resinous flooring system indicated.
 - 1. Formulation Description: 100 percent solids.

- D. Waterproofing Membrane: Type recommended by resinous flooring manufacturer for substrate and resinous flooring system indicated.
1. Formulation Description: 100 percent solids.
- E. Reinforcing Membrane: Flexible resin formulation that is recommended by resinous flooring manufacturer for substrate and resinous flooring system indicated and that inhibits substrate cracks from reflecting through resinous flooring.
1. Formulation Description: 100 percent solids.
 - a. Provide fiberglass scrim embedded in reinforcing membrane.
- F. Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.
- G. Body Coats:
1. Resin: Epoxy.
 2. Formulation Description: 100 percent solids.
 3. Type: Pigmented.
 4. Application Method: Self-leveling slurry with broadcast aggregates [Troweled or screeded].
 5. Number of Coats: Two (2).
 6. Thickness of Coats: As required to attain overall system thickness, but no less than 1/8 inch.
 7. Aggregates: Manufacturer's standard for the specified system.
- H. Grout Coat:
1. Resin: Epoxy.
 2. Formulation Description: 100 percent solids.
 3. Type: Pigmented.
 4. Thickness of Coat: Minimum of 8 mils.
- I. Topcoats: Sealing or finish coats.
1. Resin: Urethane.
 2. Formulation Description: 100 percent solids.
 3. Type: Clear.
 4. Number of Coats: Two (2).
 5. Finish: Gloss.
- J. Cove Caps: Provide aluminum cove caps to top of integral cove base to match thickness of flooring system. Adhere caps to substrates per the manufacturer's recommendations at heights indicated on the drawings. Mitre corners for neat transitions and grind outside corners to remove sharp edges.

- K. Divider Strips: Provide aluminum divider strips at locations indicated on drawings to match thickness of flooring system. Adhere caps to substrates per the manufacturer's recommendations. Mitre corners at changes in direction.
- L. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:
1. Compressive Strength: 13,500 psi minimum according to ASTM C 579.
 2. Tensile Strength: 1,790 psi minimum according to ASTM C 307.
 3. Flexural Modulus of Elasticity: 7.03×10^6 psi minimum according to ASTM C 580.
 4. Water Absorption: 0.37 percent maximum according to ASTM C 413.
 5. Thermal Coefficient of Expansion: 22×10^{-6} in./in./°F according to ASTM C 531.
 6. Indentation: Withstands 2,000 psi for 30 minutes without indentation according to MIL-D-3134F.
 7. Impact Resistance: No chipping, cracking, or delamination and not more than 1/16-inch permanent indentation according to MIL-D-3134J.
 8. Resistance to Elevated Temperature: No slip or flow at required temperature of 158°F according to MIL-D-3134J.
 9. Abrasion Resistance: 32mg maximum weight loss according to ASTM D 4060.
 10. Hardness: 80-84, Shore D according to ASTM D 2240.
 11. Critical Radiant Flux: 0.22 W/sq. cm or greater according to NFPA 253.

PART 3 - EXECUTION

3.1 PREPARATION (GENERAL)

- A. Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry substrate for resinous flooring application.
- B. Notify the Architect in writing prior to commencing work of any conditions deemed unsatisfactory for the installation. Installation of flooring materials is considered acceptance of the substrate(s) as satisfactory.
- C. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
1. Roughen concrete substrates as follows:
 - a. Effectively remove concrete laitance by steel shot-blasting or other method approved by flooring manufacturer. Surface profile must be a minimum CSP-3 profile according to International Concrete Repair Institute, Guideline #03732. Flooring contractor shall document surface profile using ASTM D-7682 test method.

- b. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
 - c. Comply with ASTM C 811 requirements unless manufacturer's written instructions are more stringent.
 2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written instructions.
 3. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.
 - a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with application of resinous flooring only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. of slab area in 24 hours.
 - b. Relative Humidity Test: Use in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement. For test results indicating excessive levels of moisture content or vapor emission rate, apply manufacturer's recommended moisture vapor emission control system based on the highest test reading.
 4. Alkalinity and Adhesion Testing: Verify that concrete substrates have pH within acceptable range. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- D. Patching and Filling: Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
 1. Control Joint Treatment: Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.
- E. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.

3.2 APPLICATION

- A. Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 3. Expansion and Isolation Joint Treatment: At substrate expansion and isolation joints, comply with resinous flooring manufacturer's written instructions.
- B. Primer: Apply primer over prepared substrate at manufacturer's recommended spreading rate.

- C. Waterproofing Membrane: Apply waterproofing membrane over entire substrate surface, in manufacturer's recommended thickness.
 - 1. Apply waterproofing membrane to integral cove base substrates.
- D. Reinforcing Membrane: Apply reinforcing membrane to substrate cracks.
- E. Integral Cove Base: Apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details, including those for taping, mixing, priming, troweling, sanding, and topcoating of cove base. Round internal and external corners.
 - 1. Integral Cove Base: 6 inches high.
 - 2. If required, provide cove trim strips at top of base and trowel material up wall to form smooth, integral transition and base.
- F. Self-Leveling Body Coats: Apply self-leveling slurry body coats in thickness indicated for flooring system.
 - 1. Aggregates: Broadcast aggregates at rate recommended by manufacturer and, after resin is cured, remove excess aggregates to provide surface texture indicated.
- G. Troweled or Screeded Body Coats: Apply troweled or screeded body coats in thickness indicated for flooring system. Hand or power trowel and grout to fill voids. When body coats are cured, remove trowel marks and roughness using method recommended by manufacturer.
- H. Grout Coat: Apply grout coat, of type recommended by resinous flooring manufacturer, to fill voids in surface of final body coat.
- I. Topcoats: Apply topcoats in number indicated for flooring system and at spreading rates recommended in writing by manufacturer and to produce wearing surface indicated.
- J. Match finish work of approved mockup(s) and uniform in thickness, sheen, color, pattern and texture, and free from defects detrimental to appearance.

3.3 PROTECTION

- A. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

END OF SECTION 096723

SECTION 099000 – PAINTING AND COATING

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 DESCRIPTION OF WORK

- A. Provide all plant, labor, materials, accessories, equipment and incidentals required to complete Painting and Coating work, including but not necessarily limited to, the following:
1. Surface preparation, priming and finish painting and coating of surfaces, except as otherwise specified.
 2. Multiple colors, patterns, borders, fields and designs as indicated and/or selected by the Architect.
 3. Finish painting and coating primed surfaces, except as otherwise indicated.
 4. Exposed to view structural steel, joists, decking, lintels, covered and bare pipes and ducts (including color coding), hangers and the like along with primed metal surfaces of mechanical and electrical equipment, unless otherwise indicated, are to be painted and are included in the work of this section.
 5. Do not paint prefinished items, conceal surfaces, finished metal surfaces, operating parts and labels.
 6. Where touch-up painting and coating work is required, re-finish the entire surface plane.
 7. All other surfaces, not specifically noted, that require painting or coatings.
- B. Paint or coat exposed surfaces, except where the finish schedule indicates that a surface or material is not to be painted, coated or is to remain natural. If the schedules do not specifically mention an item or a surface, paint or coat the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.
1. Painting and coating work includes field finishing of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.
- C. Following categories of work are not included as part of field applied finish work or are included in other sections of these specifications.
1. Shop Priming: Shop priming of ferrous metals items is included under various sections covering structural steel, miscellaneous metal, hollow metal work and similar items.

2. Factory finished materials and equipment, including aluminum doors and frames, aluminum windows, skylights, curtain walls, exterior wall louvers, toilet partitions, toilet accessories, architectural woodwork to extent shop finished, prefinished wood doors, storage shelving, lockers, visual display board trim, prefinished gravel stop, coping and fascia, metal edges, flashing, cyclone fence, acoustic plaster, and similar items.
3. Painting, coating and identification systems for mechanical and electrical work is specified in Plumbing, HVAC and Electrical Contracts Divisions, except as otherwise indicated.
4. Unless otherwise indicated, painting and coatings are not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, furred areas, pipe spaces, duct shafts, lift shafts.
5. Do not paint moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts, unless otherwise indicated.

1.3 REFERENCES

- A. SSPC (The Society for Protective Coating) – Steel Structures Painting Manual
- B. EPA (Environmental Protection Agency) Method 24
- C. UL (Underwriters' Laboratories)
- D. ASTM E 84 – Test method for Surface Burning Characteristics of Building Materials
- E. OTC (Ozone Transport Commission)
- F. Applicable state requirement for VOC (Volatile Organic Compounds)

1.4 DEFINITIONS

- A. Sheen: Specular gloss readings in accordance with ASTM D52
 1. Flat less than 5 (measured at 85 degrees)
 2. Eggshell 5-20 (measured at 60 degrees)
 3. Satin 15-35 (measured at 60 degrees)
 4. Low Luster 25-35 (measured at 60 degrees)
 5. Semi-Gloss 30-65 (measured at 60 degrees)
 6. Gloss 65 or more (measured at 60 degrees)

1.5 SUBMITTALS

- A. **Product Data:** Submit manufacturer's descriptive product data for each paint and coating product finish system specified. Include block fillers and primers. Product data shall include the product name and number, product descriptive performance data, (generic classification or binder type), manufacturer's stock number and date of manufacture, contents by volume for pigment and vehicle constituents, thinning, mixing, application and curing instructions, color name and number, and VOC content and . Submit certification on manufacturer's letterhead certifying all paint and coating products being provided are in compliance with VOC requirements as required by all applicable local and state regulatory agencies with initial submittal and again at time of application. Submit manufacturer's printed application instructions and methods, including mixing, surface preparation, compatible primers and topcoats, recommended wet and dry film thickness.

- B. Prior to delivery of materials to the site, the Painting subcontractor shall submit for approval, the names and products of the manufacturer to be used. This list shall be on the manufacturer's letterhead and as detailed as the list specified below in Painting and Coating Schedule. The list shall include the specific brands of paints, coatings and finishes that will be provided for each differing surface, plus a statement that the products are suitable for the purposes intended and that they comply with the Specifications. This list shall identify where each product will be used within the project, and on what surface. Submission of manufacturer's materials list and certification of compliance shall receive Architect's approval and/or comment prior to ordering materials.

- C. **Colors and Samples:** Colors shall be selected by the Architect. The Architect will furnish the Painting subcontractor a schedule of colors and locations of various colors.
 - 1. Selected color may or may not be ready mixed colors. Painting subcontractor shall furnish all colors, whether ready mixed, intermixed or special. The Architect will not be restricted in number of colors selected.
 - 2. Submit for Architect's preliminary approval two 6" x 8" stepped brush out samples defining each separate coat. First coat shall be 50% than specified finish coat color. Each succeeding coat shall be 50% lighter than specified finish coat color. Include block fillers and primers of each standard and intermix color selected in a step down fashion on a leneta display card by the approved painting and coating manufacturer and each color shall have manufacturer's identification designation thereon. Provide brush out samples on actual wood surfaces of the appropriate species for transparent finished woods.
 - 3. Identify each sample with color name and number; and product name and number
 - 4. Final acceptance of colors will be from samples applied on the job.

1.6 QUALITY ASSURANCE

- A. **Applicator Qualifications:** Engage an experienced applicator who has complete painting and coating system applications similar in material and extent to that indicated for this Project with a record of successful in service performance. Applicator for textured systems shall be one who is approved by the textured system manufacturer for proper application of the system.

- B. Source limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.
- C. Material application shall be applied under adequate illumination, evenly spread and smoothly applied, free of runs, sags, holidays, lap marks, air bubbles, and pin holes to assure a smooth finish.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the job site in original unbroken sealed containers with manufacturer's labels intact and in strict accordance with manufacturer's written recommendations. Each container shall be inspected and approved prior to being opened for use. Maintain containers in clean condition, free of foreign materials and residue.
- B. Take every precaution against fire. Store materials in tightly covered containers, in a well ventilated locked area with ambient temperatures continuously maintained at not less than 45 deg. F (7 deg. C) and in accordance with manufacturer's written requirements. Keep rags, waste, debris, and materials which may constitute fire hazard in water-filled closed, tightly covered, properly labeled, metal containers for daily removal. If tarpaulins are used, they shall be kept neat and no smoking shall be permitted within the space. Provide and maintain proper Class C hand fire extinguishers in the immediate area and all personnel shall be instructed in their use and informed of their location.
- C. Take every precaution against the hazards of fume inhalation. Keep all areas well ventilated at all times. Where natural ventilation is insufficient to provide suitable conditions, provide special fans. If necessary, provide suitable face masks for mechanics.

1.8 PROJECT CONDITIONS

- A. Apply paints and coatings only when temperature of surfaces to be painted or coated and surrounding air temperatures is above 50 and below 90 deg F. (10 and 35 deg. C), unless otherwise permitted by and in accordance with manufacturer's printed instructions.
- B. Do not apply paint and coatings in snow, rain, fog, mist, or when relative humidity exceeds 70 percent and the surface temperature is at least 5 deg. F (3 deg. C) above the dew point. Prevent wide variation of temperature that might result in condensation on freshly coated surfaces.
- C. Provide adequate continuous ventilation and sufficient heating facilities to maintain temperatures above 50 deg. F (3 deg. C) for 24 hours before, during and 48 hours after application of finishes.
- D. Painting and coating work may be continued during inclement weather if areas and surfaces to be finished are enclosed and heated within temperature and ambient limits specified by the manufacturer during application and drying periods.

- E. Take moisture readings of surfaces to be finished on a daily basis with a reliable electronic moisture meter and record moisture readings. Moisture content shall not vary more than the amount allowed by the paint manufacturer's written requirements and recommendations.

1.9 EXTRA MATERIALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
 - 1. Quantity: Furnish an additional (2) percent, but not less than 1 gal. (3.8 L) of each material and color applied.
 - 2. Label each container with color, type, gloss and room locations in addition to manufacturer's clear and unobstructed label.

PART 2 - PRODUCTS

2.1 MANUFACTURER'S QUALITY

- A. Materials shall be the highest quality grade (first line architectural), products of their respective kinds. Primers, stains and finish(es) of each coating system shall be of the same manufacturer.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
 - 1. Sherwin Williams
 - 2. Benjamin Moore
 - 3. PPG.
- C. Coatings for each system shall be the product of the same manufacturer to ensure compatibility of systems. Substitutions of equivalent products of other manufacturers may be submitted for approval providing the products submitted are of the same types, have label analyses similar to those specified, meet or exceed the performance criteria, and are suitable for the use intended as approved by the Architect.
- D. Use thinning materials only as specified by manufacturer's labeled directions for each type of paint and coating. All coatings shall conform to all Federal, State and Local Regulations including VOC rules and air quality standards in effect at the Project location at the time of application.

2.2 MATERIALS GENERAL

- A. Material Compatibility:

1. Provide materials for use within each paint, coating, finishing 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.
 2. For each coat in a paint, coating and finishing system, provide products recommended in writing by manufacturers of topcoat for use in paint, coating and finishing system and on substrate indicated.
- B. Colors: As indicated, or if not indicated, as selected by the Architect from manufacturers full range.

2.3 PAINTING AND COATING SCHEDULE

- A. The following is a general guide for the finish painting required, but does not include every surface or material to be finished or painted. Paint schedule is based on each Manufacturer's first line quality products.
- B. Each of various undercoats of paint other than natural finishes to be a slightly different shade from the preceding coat stepping up to color selected in order to verify number of coats applied.

2.4 EXTERIOR PAINT AND COATING SCHEDULE

- A. Exterior Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer. Touch up fabricator primer and spot coat.
1. Semi Gloss Finish/Latex Exposed structural steel, Louvers, etc. for average use locations:
 - a. Prime Coat: 1 coat
 - 1) Sherwin Williams; Kem Bond HS Primer B50Z Series.
 - 2) Benjamin Moore; Moorcraft Super Spec Alkyd Metal Primer (Z06).
 - 3) MAB; Rustolastic Anti-Corrosive Primer (073 line).
 - 4) PPG; Speedhide Alkyd Metal Primer 6-208.
 - 5) Or approved equal.
 - b. Finish Coats: 2 coats
 - 1) Sherwin Williams; DTM Acrylic Coating, B66 Series.
 - 2) Benjamin Moore; Moorcraft SuperSpec DTM Latex Semi Gloss (Z24).
 - 3) MAB; Rustolastic Latex Finish Coating (063 line).
 - 4) PPG; Latex Gloss Industrial Enamel 7-282 Series.
 - 5) Or approved equal.
 2. Full-Gloss, Alkyd-Enamel Finish: 2 finish coats over a rust-inhibitive primer Bollards, Hollow Metal Doors and Frames, etc. for high use locations:

- a. Prime Coat: 1 coat
 - 1) Sherwin Williams; Kem Bond HS Primer B50Z Series.
 - 2) Benjamin Moore; Moorcraft; Super Spec Alkyd Metal Primer (Z06).
 - 3) MAB; Rustolastic Anti-Corrosive Primer (073 line).
 - 4) PPG; Speedhide Alkyd Metal Primer 6-208.
 - 5) Or approved equal.
 - b. Finish Coats: 2 coats
 - 1) Sherwin Williams; Industrial Enamel HS, B54Z-400 Series.
 - 2) Benjamin Moore; Moorcraft Super Spec DTM Alkyd Gloss Enamel Z26.
 - 3) MAB; Rustolastic Alkyd Finish Coating (074 line).
 - 4) PPG; Alkyd Gloss Industrial Enamel 7-282 Series.
 - 5) Or approved equal.
- B. Galvanized Ferrous Metal: Provide the following finish systems over galvanized ferrous metal:
1. Semigloss, Acrylic Finish: Two finish coats over a primer.
 - a. Primer: As recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer.
 - 1) Sherwin Williams; DTM Acrylic Primer/Finish, B66W1 for galvanized steel.
 - 2) Benjamin Moore; Acrylic Metal Primer #M04.
 - 3) MAB; Rustolastic Hydroprime Primer (073-189 line).
 - 4) PPG; Pitt Tech DTM Acrylic Metal Primer 90-712.
 - 5) Or approved equal.
 - b. 2 Finish Coats: Semigloss, at spreading rate recommended by the manufacturer.
 - 1) Sherwin Williams; DTM Acrylic Coating B66.
 - 2) Benjamin Moore; DTM Acrylic SemiGloss #M29.
 - 3) MAB; Rust-O-Lastic Acrylic DTM (063 line).
 - 4) PPG; Pitt Tech DTM Acrylic Satin Enamel 90-474 Series.
 - 5) Or approved equal.
- C. Exterior Application to Exterior Wood Surfaces, Gypsum Soffit Board: Low Luster/Latex:
1. Prime Coat: 1 coat
 - a. Sherwin Williams; A-100 Exterior Latex Primer, B42W41.
 - b. Benjamin Moore; Fresh Start 100% Acrylic Primer (023).
 - c. MAB; Sea Shore Acrylic Primer (056-958).
 - d. PPG; Speedhide Exterior Acrylic Primer 6-609.

2. Finish Coats: 2 coats
 - a. Sherwin Williams; A-100 Exterior Latex Satin A82 Series.
 - b. Benjamin Moore; Moorgard Low Luster Latex House Paint (103).
 - c. MAB; Sea Shore Satin House Paint (060 line).
 - d. PPG; Speedhide Exterior Satin Acrylic House Paint 6-2045 Series.

D. Exterior Exposed Block: New and previously painted surfaces unless specifically noted otherwise. Low Luster/Latex:

1. Prime Coat: 1 coat
 - a. Sherwin Williams; Loxon Block Surfacer, A24W200.
 - b. Benjamin Moore; Super Craft Latex Block Filler #285.
 - c. MAB; 1 coat Block Cote 2000 or 1000.
 - d. PPG; Speedhide Acrylic Block Filler 6-15.
 - e. Or approved equal.
2. Finish Coats: 2 coats
 - a. Sherwin Williams; A-100 Exterior Latex Satin A82 Series.
 - b. Benjamin Moore; MoorGard Latex Low Luster Finish (103).
 - c. MAB; 2 coats Sea Shore Satin House Paint (060 line).
 - d. PPG; Speedhide Exterior Stain Acrylic House Paint 6-2045 Series.
 - e. Or approved equal.

2.5 INTERIOR PAINT AND COATING SCHEDULE

A. Interior Ferrous Metal: Provide the following finish systems over ferrous metal: for low abuse areas such as exposed ductwork, decking, trusses, etc.

1. Flat, Latex Finish: Two finish coats over a primer.
 - a. Primer: Quick-drying, rust-inhibitive, metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer.
 - 1) Sherwin Williams: Pro Industrial DTM Acrylic Primer
 - 2) Moore: IronClad Latex Low Lustre Metal & Wood Enamel
 - 3) MAB: Rust-O-Lastic Hydro Prime, (073 line)
 - 4) PPG: Pitt-Tech DTM Enamel, Acrylic Primer 90-712
 - 5) Or approved equal.
 - b. Finish Coats: Flat, latex, applied at spreading rate recommended by the manufacturer.
 - 1) Sherwin Williams; Pro Industrial DTM Acrylic

- 2) Benjamin Moore; Eco Spec Interior Latex Flat, (#219)
- 3) MAB; EnviroPure Latex Flat, (040 line)
- 4) PPG; Pure Performance Flat Latex, 9-100 Series
- 5) Or approved equal.

B. Interior Ferrous Metal: Provide the following finish systems over ferrous metal: For use at higher abuse areas such as metal doors and frame, trim, etc.

1. Semigloss, Latex Finish: Two finish coats over a primer.

a. Primer: Quick-drying, rust-inhibitive, metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer.

- 1) Sherwin Williams: Pro Industrial DTM Acrylic Primer
- 2) Benjamin Moore: IronClad Latex Low Lustre Metal & Wood Enamel, (#363)
- 3) MAB: Rust-O-Lastic Hydro Prime, (073 line)
- 4) PPG: Pitt-Tech DTM Industrial Enamel, Acrylic Primer 90-712
- 5) Or approved equal.

b. Finish Coats: Semi-Gloss, latex, applied at spreading rate recommended by the manufacturer.

- 1) Sherwin Williams: Pro Industrial DTM Acrylic
- 2) Benjamin Moore: Eco Spec Interior Latex Semi-Gloss Enamel, (#224)
- 3) MAB; EnviroPure Latex Semi-Gloss, (047 line)
- 4) PPG; Pure Performance Semi-Gloss Latex, 9-500 Series
- 5) Or approved equal.

C. Interior Exposed Structural Ferrous Metal: Provide the following finish systems over ferrous metal: For use at exposed interior structural steel.

1. Two-Package Epoxy polyamine Finish: Two finish coats over a primer.

a. Primer: Quick-drying, rust-inhibitive, metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer.

- 1) Sherwin Williams: Pro Industrial Pro-Cryl Primer
- 2) Or approved equal.

b. Finish Coats: Epoxy finish, applied at spreading rate recommended by the manufacturer.

- 1) Sherwin Williams: Pro Industrial High Performance Epoxy
- 2) Or approved equal.

D. Interior Non-Ferrous Metal, New Galvanized and Aluminum:

1. Semigloss, Latex Finish: Two finish coats over a primer.

a. Primer: As recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer.

- 1) Sherwin Williams: Pro Industrial DTM Acrylic Primer
- 2) Benjamin Moore: IronClad Latex Low Lustre Metal & Wood Enamel, (#363)
- 3) MAB: Rust-O-Lastic Hydro Prime, (073 line)
- 4) PPG: Pitt-Tech DTM Industrial Enamel, Acrylic Primer 90-712
- 5) Or approved equal.

b. Finish Coats: Semi-Gloss, latex, at spreading rate recommended by the manufacturer.

- 1) Sherwin Williams: Pro Industrial DTM Acrylic
- 2) Benjamin Moore: Eco Spec Interior Latex Semi-Gloss Enamel, (#224)
- 3) MAB: EnviroPure Latex Semi-Gloss, (047 line)
- 4) PPG: Pure Performance Semi-Gloss Latex, 9-500 Series
- 5) Or approved equal.

E. Interior Exposed Concrete Masonry Units: Restrooms, Locker Rooms, Shower Rooms, Corridors and High Traffic Areas unless specifically noted otherwise. (Washable).

1. Semi-Gloss Finish: 2 finish coats over an undercoat and a filled surface at all interior masonry walls unless otherwise noted.

a. Block Filler: High-performance, latex-based, block filler applied at spreading rate recommended by the manufacturer.

- 1) Sherwin Williams: PrepRite Block Filler
- 2) Moore: Eco Spec Interior Latex Primer Sealer
- 3) MAB: Block Kote #2000 (064-140)
- 4) PPG: Speedhide Acrylic Block Filler 6-15
- 5) Or approved equal.

b. First and Second Coats: (Semi-Gloss), applied at spreading rate recommended by the manufacturer.

- 1) Sherwin Williams: ProMar400 Zero VOC Interior Latex
- 2) Moore: Eco Spec Interior Latex Semi-Gloss Enamel, (#224)
- 3) MAB: EnviroPure Latex Semi-Gloss, (047 line)
- 4) PPG: Pure Performance Semi-Gloss Latex, 9-500 Series
- 5) Or approved equal.

F. Interior Exposed Concrete Masonry Units: Office areas. Eggshell Finish/Latex:

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1. Eggshell Finish: 2 finish coats over an undercoat and a filled surface at all interior masonry walls unless otherwise noted.
 - a. Block Filler: High-performance, latex-based, block filler applied at spreading rate recommended by the manufacturer.
 - 1) Sherwin Williams; PrepRite Block Filler
 - 2) Moore: Eco Spec Interior Latex Primer Sealer
 - 3) MAB: Block Kote #2000 (064-140)
 - 4) PPG: Speedhide Acrylic Block Filler 6-15
 - 5) Or approved equal.
 - b. First and Second Coats: (Eggshell), applied at spreading rate recommended by the manufacturer.
 - 1) Sherwin Williams; ProMar400 Zero VOC Interior Latex
 - 2) Benjamin Moore: Eco Spec Interior Latex Eggshell Enamel (223)
 - 3) MAB: EnviroPure Latex Eggshell Enamel, (045 line)
 - 4) PPG: Pure Performance, Interior Eggshell Latex, 9-300 Series
 - 5) Or approved equal.
- G. Interior Plaster and Drywall: General Use Unless specifically noted otherwise, Eggshell Finish/Latex:
 1. Eggshell, Latex Finish: Two finish coats over a primer.
 - a. Prime Coat: 1 coat New wall surfaces:
 - 1) Sherwin Williams; ProMar400 Zero VOC Primer
 - 2) Benjamin Moore: EcoSpec Interior Latex, Primer Sealer (231)
 - 3) MAB: EnviroPure Latex Primer, (037-195)
 - 4) PPG: Pure Performance, Interior Latex Primer, Series 9-900
 - 5) Or approved equal.
 - b. First and Second Coats: Eggshell, applied at spreading rate recommended by the manufacturer
 - 1) Sherwin Williams; ProMar400 Zero VOC Interior Latex
 - 2) Benjamin Moore: EcoSpec Interior Latex Eggshell Enamel (223)
 - 3) MAB: EnviroPure Latex Eggshell Enamel, (045 line)
 - 4) PPG: Pure Performance, Interior Eggshell Latex, 9-300 Series
 - 5) Or approved equal.
- H. Interior Plaster and Drywall: (Subject to moisture) Kitchen, showers, locker and toilet areas, etc. SemiGloss Latex Finish.
 1. Semi-Gloss, Latex Finish: Two finish coats over a primer.
 - a. Prime Coat: 1 coat New wall surfaces:

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- 1) Sherwin Williams; Harmony Wall Primer and Sealer
 - 2) Benjamin Moore: Rich Lux Latex Sealer Undercoater (037-154)
 - 3) MAB: EnviroPure Latex Primer, (037-195)
 - 4) PPG: Pure Performance, Interior Latex Primer, Series 9-900
 - 5) Or approved equal.
- b. First and Second Coats: Semi-Gloss, applied at spreading rate recommended by the manufacturer
- 1) Sherwin Williams; Harmony Interior Acrylic Latex
 - 2) Benjamin Moore: EcoSpec Interior Latex Eggshell Enamel (224)
 - 3) MAB: EnviroPure Latex Semi-Gloss, (047 line)
 - 4) PPG: Pure Performance, Interior Semi-Gloss Latex, 9-500 Series
 - 5) Or approved equal.
- I. Interior Woodwork – Painted Finish: Wood Trim, Sills, etc., (Wood Doors are Prefinished).
Semi Gloss/Latex Finish.
1. Semi-Gloss, Latex Finish: Two finish coats over a primer.
 - a. Prime Coat: 1 coat New wall surfaces:
 - 1) Sherwin Williams; Harmony Primer and Sealer
 - 2) Benjamin Moore: EcoSpec Interior Latex, Primer Sealer (231)
 - 3) MAB: EnviroPure Latex Primer, (037-195)
 - 4) PPG: Pure Performance, Interior Latex Primer, Series 9-900
 - 5) Or approved equal.
 - b. First and Second Coats: Semi-Gloss, applied at spreading rate recommended by the manufacturer
 - 1) Sherwin Williams; Harmony Interior Acrylic Latex
 - 2) Benjamin Moore: EcoSpec Interior Latex Eggshell Enamel (224)
 - 3) MAB: EnviroPure Latex Semi-Gloss, (047 line)
 - 4) PPG: Pure Performance, Interior Semi-Gloss Latex, 9-500 Series
 - 5) Or approved equal.

2.6 MISCELLANEOUS

A. Miscellaneous Items:

1. Provide multiple colors, patterns, borders, fields and designs as indicated, or if not indicated, as selected by the Architect.
2. Items not specifically detailed or mentioned in specifications but necessary to be painted for proper completion of job, shall be painted in accordance with instructions from Architect.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Applicator shall examine areas and conditions under which painting work is applied and take moisture readings with a reliable electronic moisture meter in sufficient area in each space and as often as necessary to determine the proper moisture content for application and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Applicator and in accordance with paint manufacturer's written requirements for surface preparation. Starting of painting work will be construed as Applicator's acceptance of such faces and conditions within any particular area.

3.2 SURFACE PREPARATION

- A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's written instructions and recommendations and as herein specified, for each particular substrate condition.
- B. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection prior to surface preparation and painting operations.
- C. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed item.
- D. Contractor shall prepare all surfaces, walls, ceilings, metal frames, etc., which are to be painted, including but not limited to, scraping, sanding, spackling, patching etc. as necessary to remove loose particles, paint, mildew, greasy residue, splatters, burrs, graffiti, surface decals, surface applied texture materials, mastic, glue, etc. Repoint and/or spackle holes, voids, defects, etc. to form a smooth level surface. Remove nails, screws, anchors and the like. Sand existing metal frames, etc. to smooth out edges of various paint layers.
- E. Clean surfaces to be painted before applying paint or surface treatments. Remove dirt, oil and grease using an oil and grease emulsifier such as Moore's M83, or approved equal in accordance with SSPC-SPI Method B2 prior to mechanical cleaning. Program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly painted surfaces.
- F. Ferrous Metals: Clean ferrous surfaces, which are not galvanized or shop-coated of oil, grease, dirt loose mill scale and other foreign substances by solvent or mechanical cleaning (SSPC – SP-1).
- G. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum base solvent and artificial abrasive pad.

3.3 MATERIALS PREPARATION

- A. Mix and prepare painting materials in accordance with manufacturer's directions.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.
- C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and if necessary, strain material before using.

3.4 APPLICATION

- A. General: Apply paint in accordance with manufacturer's written instructions and recommendations. Use applicators and techniques best suited for substrate and type of material being applied. Apply according to recommended dry film thickness and recommended square foot per gallon.
- B. Apply materials under adequate illumination, evenly spread and smoothly applied, free of runs, sags, holidays, lap marks, air bubbles, and pin holes to assure a smooth finish.
- C. Apply additional coats when undercoat, stains or other conditions show through final paint coat, until paint film is of uniform finish, color and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces. Deep color base primers are to be used under deep finish colors to achieve proper color appearance.
- D. Paint surfaces behind moveable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.
- E. Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.
- F. Sand lightly all abrasions and damaged spots, between each succeeding enamel, varnish coat, textured paint coat, and degloss previous painted surfaces if necessary. Spot prime water soluble stains. Reprime prior to applying finish coats as required.
- G. Omit first coat (primer) on metal surfaces that have been shop primed- and touch-up painted, unless otherwise indicated. Bare areas are to be spot primed.
- H. Scheduling Painting: Apply first-coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
- I. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb

pressure, and application of another coat of paint does not cause lifting or loss of adhesion of the under coat.

- J. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.
- K. Prime Coats: Apply prime coat of material which is required to be painted or finished, and which has not been prime coated by others. Prime coats shall be of the same manufacturer as the top coat.
- L. Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.
- M. Pigmented (Opaque) Finished: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.
- N. Provide satin finish or semi-gloss for final coats as indicated in the painting schedule, unless otherwise indicated.
- O. Guarantee: Manufacturer shall warrant material to conform to specification and be free of manufacturing defects for a period of one year. Applicator will guarantee that its installation of materials conforms to manufacturer's recommendations shall further guarantee its workmanship connected with the installation for a period of one year from the date of installation.
- P. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.
- Q. Touch-up work: Touch-up work shall be the responsibility of the Painting Subcontractor.

3.5 CLEAN-UP AND PROTECTION

- A. Clean-up: During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.
- B. Upon completion of painting work, clean window glass, plumbing fixtures, etc., and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.
- C. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting as acceptable to Architect.
- D. Provide '*Wet Paint*' signs as required to protect newly painted finishes. Remove temporary protective wrappings provided for protection of their work, after completion of painting operations.

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- E. At completion of work of other trades, Painting Subcontractor shall touch-up and restore all damaged or defaced painted surfaces.

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