SECTION 09 21 16

GYPSUM BOARD

PART 1: GENERAL

1.01 RELATED DOCUMENTS

A. Drawings, Details of Construction and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work specified in this section.

1.02 SUMMARY

A. Section includes:

1. Gypsum wallboard and joint system.
2. Mold and moisture resistant gypsum board at inside face of exterior walls (at locker rooms).
3. "Z" furring and rigid wall insulation.

B. Related work specified in other sections:

1. Insulation - Section 07 21 00.

1.03 SUBMITTALS

A. Submit in accordance with Section 01 33 00.

1. UL listings for gypsum board partitions for proposed products.
2. UL listings for shaft wall assemblies proposed.
3. Samples of mold and moisture resistant gypsum board.

1.04 QUALITY ASSURANCE

A. Referenced Specifications: Current Gypsum Associates publications (www.gypsum.org).

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery and Handling

1. Deliver materials to the project site with manufacturer's labels intact and legible.
2. Handle materials with care to prevent damage.
3. Deliver fire-rated materials bearing testing agency label and required fire classification numbers.
4. The plastic packaging used to wrap gypsum panel products for shipment is intended to provide temporary protection from moisture exposure during transit only and is not intended to provide protection during storage after delivery. Such plastic packaging shall be removed immediately upon receipt of the shipment.
    a. Failure to remove protective plastic shipping covers can result in condensation which can lead to damage, including mold.

B. Storage

1. Store materials inside under cover, stack flat, properly supported on a level surface, all in same direction, off of floor. Gypsum panel products to be fully protected from weather, direct sunlight exposure and condensation.

2. Avoid overloading floor system

3. Store adhesives in dry area; provide protection against freezing at all times.

4. Steel framing and related accessories shall be stored and handled in accordance with AISI's "Code of Standard Practice".

1.06 JOB CONDITIONS

A. Environmental Conditions

1. Do not install gypsum board products at temperatures below 40°F for mechanical installation and 50°F for adhesive installation, unless approved by manufacturer.

2. Measure temperature and humidity on a daily basis during taping operations. Re-application of taping compound shall not occur sooner than shown on the table in Gypsum Association Brochure GA-236.

3. Temperature: During cold weather, in areas receiving wallboard installation, maintain temperature range between 55°0 F to 90° F for 48 hours before, and during gypsum board and joint treatment application. Maintain specified temperature range until joint treatment is completely dry.

4. Ventilation

a. Provide ventilation during and following adhesives and joint treatment applications.

b. Use temporary air circulators in enclosed areas lacking natural ventilation.

c. Under slow drying conditions, allow additional drying time between coats of joint treatment.

d. Protect installed materials from drafts during hot, dry weather.

B. Protect adjacent surfaces against damage and stains.

1.07 JOB COORDINATION

A. Coordinate Work with installation of metal framing and electrical work.

B. Coordinate framing and blocking for wall mounted accessories with Section 06 10 53.

PART 2: PRODUCTS

2.01 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

B. General: Complying with ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.

2.02 GYPSUM BOARD

A. Standard

1. Panel Physical Characteristics.

   a. Core: Regular
   b. Surface Paper: 100% recycled content paper on front, back and long edges.
   c. Long Edges: Tapered; square edge acceptable at areas with Level 1 finish.
   d. Thickness: As noted on drawings.
   e. Panel shall comply with requirements of ASTM C 1396 Standard Specification for Gypsum Board.

B. Fire-Resistance Rated.

1. Type X, Panel Physical Characteristics

   a. Core: Fire-resistant rated gypsum core.
   b. Surface Paper: 100% recycled content paper on front, back and long edges.
   c. Long Edges: Tapered; square edge acceptable at areas with Level 1 finish.
   d. Thickness: 5/8"
   e. Panel shall comply with Type X requirements of ASTM C 1396 Standard Specification for Gypsum Board.

2. Type C, Panel Physical Characteristics

   a. Core: Fire-resistant rated gypsum core.
   b. Surface Paper: 100% recycled content paper on front, back and long edges.
   c. Long Edges: Tapered; square edge acceptable at areas with Level 1 finish.
   d. Thickness: 1/2"
   e. Panel shall comply with Type C requirements of ASTM C 1396 Standard Specification for Gypsum Board.

C. Mold and Moisture Resistant

1. Panel Physical Characteristics

   a. Core: Moisture resistant (moisture and fire-resistant rated at Type X).
   b. Surface Paper: Coated fiberglass mat on face, back and long edges.
   c. Long Edges: Tapered; square edge acceptable at areas with Level 1 finish.
   d. Thickness: As noted on drawings. (5/8" at fire-resistant applications)
   e. Humidified Deflection: Not more than ¼" when tested in accordance with ASTM C473 and C1658.
   f. Water Absorption: Less than 5% of weight when tested in accordance with ASTM C1396/C1396M and C1658.
   g. Mold/Mildew Resistance: 10 when tested in accordance with ASTM D 3273

D. Metal Framing:

1. Protective Coating: ASTM C 645/C, 645M G40 (Z120) or equivalent corrosion resistance.

   a. Metal studs and runners.
      1) Metal Thickness
         a) 20 gauge or ProSTEEL 20 gauge equivalent.
         b) 25 gauge or ProSTEEL 25 gauge equivalent.
      2) Size: 1 5/8", 2 ½", 3 5/8", 4" or 6" deep as noted on drawings.

b. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

c. Fire Stop Track: Top runner designed to allow partition head to move while maintaining integrity of assembly fire-resistance rating. Thickness not less than indicated for studs, and of width to accommodate depth of studs.

d. Hat-Shaped, Rigid Furring Channels
   1) Base Metal Thickness: 0.0179 inch.
   2) Depth: 7/8" or 1 ½" as noted on drawings.

e. Resilient Furring Channels: ½" deep, steel members designed to reduce sound transmission.

f. Z-Shaped Furring: With slotted or non-slotted web, face flange of 1 ¼", wall attachment flange of 7/8", minimum bare metal thickness of 0.0179 inch and depth required to fit insulation thickness.

g. Radius Framing: Steel sheet runner for non-structural curves, bends, variable radii and arches. Design to provide higher strength capacity than conventional lighter gauge material by using a work-hardened steel base strip.
   1) Base Metal Thickness and Size: Match studs.

h. Flat Strap and Backing Plate Sheet: For blocking or bracing.
   1) Base Metal Thickness: 20 gauge.
   2) Width: 6 inch.

i. Fasteners for Metal Framing: Provide fasteners of type, material, size, corrosion resistance, holding power and other properties required to fasten steel framing and furring member securely to substrates involved; comply with recommendations of gypsum board manufacturers for application indicated.

j. Ceiling Suspension Systems. Use one of the following systems:
   1) Metal studs with depth required to handle span.
   2) 1 ½" cold rolled steel channels, 8 gauge annealed hanger wire and furring channels.
   3) Direct-hung system composed of 8 gauge hanger wire, main beams and interlocking cross furring members as manufactured by:
      a) Armstrong World Industries, "Furring Systems/Drywall".
      b) Chicago Metallic Corp. "Drywall Furring 640/Drywall Furring 660".
      c) USG Interiors, Inc. "Drywall Suspension Systems".

E. Accessories:

1. Trim: ASTM C 1047.

   a. Material: Galvanized or aluminum-coated steel sheet, rolled zinc.
   b. Shapes:
      1) Cornerbead.
      2) L-C Bead: J-shaped; exposed long flange receives joint compound.
      3) L-Bead: L-shaped: exposed long flange receives joint compound.
      4) Off-angle or splayed cornerbead.
      5) V-shaped Control Joint protected with plastic tape.

2. Acoustical sealant conforming to ASTM C 919.

3. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

   a. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
   b. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

4. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

   a. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR, 59, Subpart D (EPA Method 24).

5. Joint Treatment Materials:

   a. General: Comply with ASTM C 475/C 475M.
   b. Joint Tape:
      1) Interior Gypsum Wallboard: 2 1/16" wide paper reinforcing tape.
      2) Glass-Mat Gypsum Wallboard: 2" wide self adhering fiberglass tape.
      3) Tile Backing Panels: As recommended by panel manufacturer.
   c. Joint Compound for Interior Gypsum Wallboard: Drying type pre-mixed vinyl base compound and/or drying type pre-mixed vinyl base topping compound.
   d. Joint compound for glass-mat gypsum wallboard: As recommended by wallboard manufacturer.

PART 3: EXECUTION

3.01 EXAMINATION

A. Examine substrates to which gypsum board construction attaches or abuts, installed hollow metal frames, cast-in anchors and structural framing with installer present for compliance with requirements for installation tolerances and other conditions affecting performance of gypsum board assemblies specified in this section.

   1. Do not proceed with installation until satisfactory conditions have been corrected.

3.02 INSTALLATION OF STEEL FRAMING, GENERAL

A. Steel framing installation standard: Comply with ASTM C 754.

B. Metal Stud Schedule

   1. Use 25 gauge metal studs or equivalent on partitions up to 12'-0" high and soffits.
   2. Use 20 gauge or equivalent metal studs on:
      a. Metal stud partitions over 12'-0" high.
      b. Metal stud ceilings.
      c. Double studs at each door and borrowed light jamb and head.

C. Install supplementary framing, blocking and bracing at terminations in work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, door bumpers, furnishings and similar construction to comply with details indicated and with recommendations of gypsum board manufacturer.

D. Isolate steel framing from building structure to prevent transfer of loading imposed by structural movement, at location indicated below to comply with details shown on drawings.

1. Where suspended ceiling assemblies abut building structure horizontally at ceiling perimeters or penetrations of ceiling.

2. Where partitions and wall framing abut overhead structure.
   a. Provide slip or cushioned type joints to attain lateral support and avoid axial loading.

E. Do not bridge building expansion and control joints with steel framing or furring members, independently frame both sides of joints with framing or furring members or as indicated.

3.03 INSTALLATION OF STEEL FRAMING FOR CEILINGS AND SOFFITS

A. Suspend ceiling hangers from building structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum not part of supporting structural or ceiling suspension system.

   a. Splay hangers only where required to miss obstruction s and offset resulting horizontal forces by bracing, counter splaying or other equally effective means.

2. Where widths of ducts and other construction within ceiling plenum produce hanger spacing that interfere with the location of hangers at spacing required to support standard suspension system members, install supplemental suspension system members and hangers in form of trapezes or equivalent devices.

   a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

3. Secure wire hangers to structure, by looping or wire tying, directly to supporting structure, including intermediate framing members. Attach to inserts, eye screws, or other devices appropriate for structure to which hangers are attached as well as for type of hanger involved in manner that will not cause deterioration or failure, due to age, corrosion or elevated temperatures.

4. Do not attach hangers to metal roof deck or metal deck tabs.

5. Do not connect or suspend steel framing from ducts, pipes or conduits.

B. Keep hangers and braces 2 inches clear of ducts, pipes and conduits.

C. Wire-tie or clip furring members to main runners and to other structural supports.

D. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension system abuts vertical surfaces. Mechanically join main beam and cross furring members to each other and butt cut to fit wall track.

3.04 INSTALLATION OF STEEL FRAMING FOR WALLS AND PARTITIONS

A. Install runners (tracks) at floors, ceilings and structural walls and columns where gypsum board stud system abuts other construction.

1. Use proprietary tracks for non-rated and fire rated walls and partitions.
2. Install studs full height for all partitions unless noted otherwise.
3. Where studs are installed directly against masonry or concrete walls, set studs in acoustical sealant.

B. Installation Tolerances: Install each steel framing and furring member so that fastening surface does not vary more than 1/8" from plane of faces of adjacent framing.

C. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at or just above suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.

1. Cut studs ½ inch short of full height to provide perimeter relief.
2. For STC-rated or fire-resistance rated partitions that extend full height, install framing around structural members, as required to support gypsum board closures needed to make partitions continuous from floor to underside of structure above.
3. Install bridging/spacing bar.

D. Brace partition framing, not extending full height to structure above, with studs same size and thickness as partition framing. Provide bracing at:

1. 6'-0" o.c. intervals along length of partitions.
2. Not less than 6'-0" from partition ends and corners.
3. Door and window openings.

E. Terminate partition framing at suspended ceiling where indicated.

F. Install metal studs and furring in sizes and at spacings indicated.

1. Single and Multi Layer Construction: Space studs 16 inches o.c., unless otherwise indicated.

G. Install metal studs with flanges in same direction and leading edge or end of gypsum board panel can be attached to open (unsupported) edges of stud flanges first.

H. Frame door openings to comply with details indicated, with GA-219 and with applicable published recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.

I. Frame openings other than door openings to comply with details indicated, or if none indicated, in same manner as required for door openings; and install framing below sills of openings to match framing required above door heads.

1. Extend vertical jamb studs through suspended ceilings and attach to underside of floor or roof structure above.

J. Install rigid wall insulation vertically and hold in place with Z-furring members spaced at 24 inches.

1. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails or screws designed for masonry attachment, spaced at 24 inches o.c.
2. At exterior corners attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw attach short flange of furring channel to web of attached channel. Start from this furring channel with standard width insulation and continue in regular manner.
3. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.

3.05 APPLICATION OF GYPSUM BOARD

A. Install the following gypsum board types as follows:

1. Regular type: All non-rated areas unless noted differently below.
2. Type X or C: As required to meet fire-resistant rated assemblies.
3. Mold and Moisture Resistant: All gypsum board on the interior face of an insulated stud exterior wall. (Note: Gypsum Board on furred masonry walls can be regular type.)

B. Gypsum Board Application and Finishing Standards: Comply with ASTM C 480 and GA-216.

C. Install sound attenuation insulation blankets where indicated, prior to gypsum board, unless readily installed after board has been installed on one side.

D. Single-Layer Application: Install gypsum wallboard as follows:

1. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 24 inches in alternate courses of board.

2. On partitions/walls apply gypsum board vertically (parallel to framing), unless otherwise indicated or required by fire resistance rated assembly, and provide sheet lengths which will minimize end joints.
   a. On partitions/walls 8'-1" or less in height, apply gypsum board horizontally (perpendicular to framing); use maximum length sheets possible to minimize end joints.
   b. At stairwells and other high walls, install gypsum board horizontal, unless otherwise indicated or required for fire resistance rating.
   c. On Z-furring, apply gypsum panels vertically (parallel to framing). Locate edge joints over furring member.

E. Double-Layer Application: Install gypsum backing board for base layer and exposed gypsum board for face layer.

1. On ceilings apply base layer prior to application of base layer on walls/partitions; apply face layer in same sequence. Offset joints between layers minimum one stud space. Apply base layers at right angles to supports, unless otherwise indicated.

2. On partitions/walls apply base layer and face layer vertically (parallel to framing) with joints of base layer over supports and face layer joints offset minimum one stud space with base layer joints.

F. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for light at edges and ends with not more than 1/16 inch open space between boards. Do not force into place.

G. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints.

1. Position boards so like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends.
2. Do not place tapered edges against cut edges or ends.
3. Gypsum panel product joints shall be located so that no joint will align with the edge of an opening unless control joints are to be installed at these locations.
4. Joints on opposite sides of a partition shall not occur on the same stud.
5. In single layer gypsum panel products systems, end joints parallel to and on the same side of framing members shall be staggered between alternate courses of gypsum panel products and from joints on the opposite side of the framing members.
6. In multi-layer gypsum panel product systems, end joints parallel to and on the same side of framing members shall be staggered between alternate courses of gypsum panel products.
7. Base layer end joints parallel to and on one side of framing shall be staggered from base layer end joints on the opposite side of the framing members.
8. Install ceiling boards across framing in manner to minimize end-butt joints, and avoid end joints in central area of each ceiling. Stagger end joints at least 24 inches.

H. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors and doors over 32 inches wide except where full grout is shown. Apply spot grout at each jamb anchor clip just before inserting board into frame.

I. Form control joints and expansion joints at locations indicated or as recommended, with space between edges of boards, prepared to receive trim accessories.

1. Where a control joints occurs in an acoustical or fire-rated system, blocking shall be provide behind the control joint by using a backing material such as 5/8" type X gypsum panel product, or other tested equivalent.

J. Cover both faces of metal stud partition framing with gypsum board in concealed spaces (above ceiling, etc.), except in chase walls which are braced internally.

1. Except where concealed application is indicated or required for sound, fire, air or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq.ft. area, and may be limited to not less than 75 percent of full coverage.
2. Fit gypsum board around ducts, pipes and conduits.

K. Isolate perimeters of non-load-bearing drywall partitions at structural abutments. Provide ¼ to ½ inch space to accept trim edge.

L. Where STC-rated gypsum board assemblies are indicated or drawings indicate acoustical sealant, seal construction at perimeters, behind control and expansion joints, openings, and other penetrations with a continuous bead of acoustical sealant. Include a bead of sealant at both faces of partitions.

1. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim and closing off sound flanking paths around or through gypsum board assemblies, including partitions extending above ceilings.
2. Where resilient furring channels are used over steel framing, the screws used to attach the gypsum panel product to the furring channels shall not contact the framing.

M. Gypsum panel products applied to walls shall be applied with the bottom edge spaced a minimum of 1/8 inch and maximum of ¼ inch above the floor.

N. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

O. Wall Tile Substrates: For substrates scheduled to receive ceramic or porcelain tile, comply with the following:

1. Install gypsum tile backer board panels to comply with manufacturer's installation instructions at locations scheduled to receive wall tile. Install with ¼" open space where panels abut other construction.

3.07 METHODS OF GYPSUM BOARD FASTENING

A. Fastener lengths shall be at least 1 1/8" long for ½" gypsum panels and 1 ¼" long for 5/8" gypsum panels used for metal framing.

B. Screws shall be spaced not more than 12 in. o.c. for ceilings and 16 in. o.c. for walls where the framing members are 16 in. o.c. Screws shall be spaced not more than 12 in. o.c. for both ceilings and walls where framing members are 24 in. o.c.

C. Fasteners at gypsum panel product edges or ends shall be located not less than 3/8" from the edge or end. Fasteners at edges or ends in a perpendicular application shall be located not more than 1 in. from the edge or end. Perimeter attachment into partition top and bottom plates is neither required nor recommended except where fire ratings, structural performance requirements, or other special conditions require such attachment.

D. While diving fasteners, gypsum panel products shall be held in firm contact with framing members or underlaying support. Application of fasteners shall proceed from the center or field of the gypsum panel product toward the ends and edges, or shall begin along one edge and proceed toward the other edge.

E. To provide a more flat surface at joints, attach gypsum board to steel studs so leading edge or end of each board is attached to open (unsupported) edge of stud flanges first.

F. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.

G. Screws shall be driven so that screw heads are slightly below the gypsum panel product surface without breaking the face paper, fracturing the core, or stripping the framing member around the screw shank.

H. Double-Layer Fastening Methods: Apply base layer of gypsum board and face layer to base layer as follows:

1. Fasten base layer with screws and face layer with adhesive and supplementary fasteners, except where otherwise required for fire-resistance rated assemblies.

3.08 INSTALLATION OF DRYWALL TRIM ACCESSORIES

A. General: Where feasible, use same fasteners to anchor trim accessory flanges as required to fasten gypsum board to supports. Otherwise, fasten flanges to comply with manufacturer's recommendations.

B. Install corner beads at external corners.

C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound except where "U" bead (semi-finishing type) is indicated.

1. Install "J" bead where drywall construction is tightly butted to other construction and back flange can be attached to framing or supporting substrate.
2. Install "L" bead where edge trim can only be installed after gypsum board is installed.

D. Install control joints at locations as follows:

1. At ceilings, 50'-0" o.c. each way maximum and/or where shown on drawings. At corners and at tee intersections of soffits that change directions.
2. At walls, 30'-0" o.c. maximum, and/or where shown on drawings.
3. Full height door frames shall be considered equivalent to a control joint.

E. Install reveals at locations indicated.

3.09 FINISHING OF GYPSUM WALL BOARD

A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim and control joints; penetrations; fastener heads, surface defects and elsewhere as required to prepare work for decoration.

B. Prefill open joints using setting-type joint compound.

C. Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.

D. Glass-Mat Water Resistant Backer Board: Comply with glass mat backer board manufacturer's recommendations.

E. Water or additive shall not be added to joint compound unless recommended by manufacturer. See quality assurance for application temperature and drying times.

F. Levels of Gypsum Board Finishing per Gypsum Association GA-214 and as note herein:

1. Level 1/Fire Taping: All joints and interior angles shall have tape set in joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable. Tape and fasteners need not be covered.

    a. For use in plenum areas above ceilings, gypsum board not scheduled for paint or wallcovering, gypsum board concealed from view in the finished work, except as noted in level 2.

2. Level 2: All joints and interior angles shall have tape embedded in joint compound and wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. Fastener heads and accessories shall be covered with a coat of joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable. Joint compound applied over the body of the tape at the time of tape embedment shall be considered a separate coat of joint compound and shall satisfy the conditions of this level.

    a. For use on areas that are a substrate for tile or wood paneling.

3. Level 3: All joints and interior angles shall have tape embedded in joint compound and one additional coat of joint compound applied over all joints and interior angles. Fastener heads and accessories shall be covered with two separate coats of joint compound. All joint compound shall be smooth and free to tool marks and ridges.

    a. For use on surfaces of mechanical and electrical spaces scheduled to receive paint.

4. Level 4: All joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges. When necessary, sand between coats and following final coat to provide smooth surface ready for decoration.

    a. For use on all walls scheduled for paint or wallcovering except those areas noted under Level 3 and 5.

5. Level 5: All joints and interior angles shall have tape embedded in joint compound and two separate coats for joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. A thin skim coat of joint compound trowel applied, or a material manufactured especially for this purpose and applied in accordance with manufacturer's recommendations, shall be applied to the entire surface. The surface shall be smooth and free of tool marks and ridges. When necessary, sand between coats and following final coat to provide smooth surface ready for decoration.

    a. For use on all ceilings; walls and/or soffits under skylights and clerestories, and as noted on drawings. Note: when Level 5 finish is used, it shall extend to nearest inside or outside corner.

3.10 FINISHING ADJUSTMENT

A. Screw Pop

1. Repair nail pop by driving new screw approximately 1-1/2 inches away and reseat screw.

2. When face paper is punctured drive new screw approximately 1-1/2 inches from defective fastening and remove defective fastening.

3. Fill damaged surface with compound in coats specified by required finish level.

B. Ridging

1. Sand ridges to reinforcing tape without cutting through tape.

2. Fill concave areas on both sides of ridge with topping compound.

3. After fill is dry, blend in topping compound over repaired area.

C. Fill cracks with compound and finish smooth and flush.

3.11 CLEANING AND PROTECTION

A. Promptly remove any residual joint compound from adjacent surfaces.

B. Protect installed products from damage from weather, condensation, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, or mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 21 16

SECTION 09 30 00

TILE

PART 1: GENERAL

1.01 RELATED DOCUMENTS

A. Drawings, Details of Construction and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work specified in this section.

1.02 SUMMARY

A. Section includes:

1. Mortar bed installations in as shown on drawings with floor drains over depressed substrates.
2. Removal of concrete curing compound on tile installations installed directly over concrete substrates.
3. Porcelain tile on walls, floors.
4. Caulking of joints in tile on inside corners of tiled rooms and sealing of joints in tile.

B. Related work specified in other sections:

1. Concrete Substrates - Section 03 30 00.

1.03 SUBMITTALS

A. Submit in accordance to Section 01 33 00:

1. Submit samples for colors on 12" x 12" panels in duplicate for each tile specified for Architect's selection and approval.
2. Submit two (2) samples each for each different trim piece required for this project.
3. Furnish Master Grade Certificates to Architect for all tile, indicating compliance with TCA 137.1-76.
4. Submit product information on grout and samples indicating color range anticipated, texture.
5. Submit samples of sealant that match grout color.
6. Submit installation system manufacturer qualifications, installer qualifications, and laboratory confirmation of installation materials as outlined in Quality Assurance.

1.05 REFERENCE SPECIFICATIONS

A. The latest edition of following specifications and standards are incorporated by reference.

1. Tile Council of North America, Inc., Handbook for Ceramic Tile Installation (TCNA).
2. American National Standard Specifications for the installation of ceramic tile (ANSI).

B. Maintain a copy of publications in the Contractor's office, available for reference.

1.06 QUALITY ASSURANCE

A. Installation System Manufacturer (single source responsibility): Company specializing in adhesives, mortars, grouts and other installation materials with ten (10) years minimum experience and ISO 9001 certification. Obtain installation materials from single source manufacturer to insure consistent quality and full compatibility.

B. Submit laboratory confirmation of adhesives, mortars, grouts and other installation materials:

1. Identify proper usage of specified materials using positive analytical method.
2. Identify compatibility of specified materials using positive analytical method.
3. Identify proper color matching of specified materials using a positive analytical method.

C. Installer qualifications: company specializing in installation of ceramic tile, mosaics, pavers, trim units and thresholds with five (5) years documented experience with installations of similar scope, materials and design.

1.07 MOCK-UPS

A. Provide mock-up of each type/style/finish/size/color of ceramic tile, mosaics, pavers, trim unit and threshold, along with respective installation adhesives, mortars, grouts and other installation materials. Mock may be part of final installation if accepted.

1.08 PRE-INSTALLATION CONFERENCE

A. Pre-installation conference: at least three weeks prior to commencing the work attend a meeting at the jobsite to discuss conformance with requirements of specification and job site conditions. Representatives of Owner, Architect, General Contractor or Construction Manager, Tile Subcontractor, Tile Manufacturer, Installation System Manufacturer and any other parties who are involved in the scope of this installation must attend the meeting.

1.09 WARRANTY

A. The manufacturer of adhesives, mortars, grouts, and other installation materials shall provide a written twenty-five (25) year warranty, which covers materials and labor; reference Manufacturer Warranty Data Sheet for complete details and requirements.

B. For exterior facades over steel or wood framing, the manufacturer of adhesives, mortars, grouts and other installation materials shall provide a written ten (10) year warranty, which covers replacement of Manufacturer products only – reference Warranty Data Sheet for complete details and requirements.

1.10 PRODUCT HANDLING, DELIVERY AND STORAGE

A. Package, handle, deliver and store at the job site in original unbroken containers in a manner that will avoid damage or contamination. All containers shall bear grade seals, manufacturer's name, size, color and quantity.

1.11 JOB CONDITIONS

A. Set and grout tile when ambient temperature is at least 50° F. and rising.

PART 2: PRODUCTS

2.01 APPROVED MANUFACTURERS

A. Manufacturers listed in this specification are approved under the following conditions:

1. A manufacturer listed in both the specification and the Material Finish/Color Schedule, on Architectural Drawings is not required to submit a pre-bid approval.

2. Manufacturers listed in this specification, but not in the Material Finish/Color Schedule, on Architectural Drawings shall submit color samples for pre-bid approval by addendum. Refer to Section 01 25 00.
3. When no colors are listed in the Material Finish/Color Schedule, on Architectural Drawings, any manufacturer listed in this specification are not required to submit a pre-bid approval.

2.02 CERAMIC FLOOR TILE

A. Manufacturers: Products by Dal-Tile are specified. Products by Winburn, Lonestar, American Olean and Florida Tile are acceptable.

B. 100% Ceramic Floor Tile 1" x 1".

1. Colors: See material Finish/Color Schedule, on Architectural Drawings.

2. Patterns: Provide as shown on drawings.

3. Grout joint width: 3/16".

2.03 SETTING MATERIALS

1. Manufacturers: Products and systems by Bostik Construction Products are specified. Equivalent products and systems by Ardex, Mapei, Bonsal, H.B. Fuller, Laticrete, Custom Building Products, and American Olean are acceptable subject to approval of submittals.

2. Tile Setting Systems:

   a. Setting bed for tile on concrete slabs-on-grade or masonry walls: Acrylic latex modified thin set meeting ANSI A118.4, Hydroment "Tile Mate" mixed with Hydroment "Multi-Purpose Acrylic Latex Mortar Admixture".

   b. Setting bed for tile on floors of showers, toilet rooms and locker rooms on above grade locations: Waterproofing membrane and setting adhesive, Hydroment "Ultra-Set", two step application.

   c. Setting bed for tile on gypsum board walls: Hydroment "Ultra-Set".

3. Mortar Bed: Mixture of portland cement and sand, roughly in proportions of 1:5 with latex polymer as the liquid portion of the mixture.

   a. Cleavage Membrane: Asphalt felt, ASTM D 226, Type I (No. 15); or polyethylene sheeting, ASTM D 4397, 4.0 mils thick.

   b. Reinforcing: Galvanized, welded wire fabric, 2 by 2 inches by 0.062 inch diameter; comply with ASTM A 185 and ASTM A82 except for minimum wire size.

4. Grout

   a. For glazed ceramic and mosaic tile: Acrylic latex modified grout meeting ANSI A118.6, Hydroment "Designer Series Ceramic Tile Grout" mixed with Hydroment "Multi-Purpose Acrylic Latex Grout Additive".
      1) Color: See Material Finish/Color Schedule, on Architectural Drawings.

   b. For quarry tile: Epoxy modified sanded floor grout meeting ANSI A118.8, Hydroment "Ceramic Tile Grout" mixed with Hydroment "1900 epoxy-modified grout and mortar admixture".
      1) Color: See Material Finish/Color Schedule, on Architectural Drawings.

2.04 MISCELLANEOUS MATERIALS

A. Sealant: One component silicone, color to match tile grout.

B. Silicone sealer for tile joints: "Grout Sealer" at manufactured by Aqua Mix, Inc.

C. Cleaners: As manufactured by Hillyard Chemical Company or American Olean.

D. Crack/Joint isolation and waterproofing membrane: Laticrete Hydroban. Waterproofing membrane shall be used for tile on floors in toilet rooms, locker rooms and showers in above grade locations.

E. Thresholds: Solid polymer made from homogeneous solid sheets of filled plastic resin complying with material and performance requirements in ANSI Z124.3, for Type 5 or Type 6, without precoated finish. Sizes as detailed on drawings. Colors as selected by Architect to match field color of tile.

F. Metal Trim for Tile: As manufactured by Schluter Systems, LP or equal. Material: Brushed #304 Stainless Steel.

1. CT Corner Trim: (For use at outside corners of tile to tile and terminations of ceramic/porcelain tile to other materials). RONDEC profile RO x tile height x EB.
   a. Provide, splice connectors, end caps, inside and outside corners as warranted by application.

2. CT Transition Strip:
   a. Carpet to Ceramic/Porcelain Tile Transition: RENO-ETK x Tile Height.
   b. Resilient Tile to Ceramic/Porcelain Tile Transition: RENO-EBU x Tile Height.

G. Expansion Control Joint: As manufactured by Schluter Systems, color as selected by Architect.

2.05 EXTRA STOCK

A. Furnish 1% of each type/shape//color of tile used on this project to Owner as maintenance stock.

PART 3: EXECUTION

3.01 EXAMINATION OF SURFACES

A. Inspect surfaces to which tile is to be applied. Commencement of work implies acceptance of surface and assumption of responsibility for satisfactory results.

3.02 MORTAR BEDS

A. Mix and install mortar, cleavage membrane and reinforcing per ANSI A108.B, sloping top of mortar bed with a constant slope from walls to floor drains.

B. Allow mortar bed to fully cure prior to commencing with tile work.

3.03 SETTING BEDS

A. Floor tile over mortar bed: Thin set acrylic latex modified cement mortar (TCNA F111).

3.04 TILE INSTALLATION

A. General

1. Installation and workmanship shall be in accordance with ANSI Specifications and as specified herein. The printed instructions of the tile manufacturer and the manufacturer of proprietary mortars and grouts shall be followed where applicable.

2. Before commencing work, establish field pattern and border line locations and center the work symmetrically so that no tile need be cut to less than half size. Cut tile at base so top of base is level around entire room. Joints in wall tile shall be aligned vertically and horizontally; staggered joints will not be accepted. Rub exposed edges smooth.

B. Movement Joints

1. Install joints to control the effects of substrate movement on tile finishes.
2. Construct joints in tile work according to movement joint details" EJ171" as published in TCNA "Handbook for Ceramic Tile Installation."
3. Locate movement joints at the following locations:

   a. Interior: 20' to 25' maximum in each direction.
   b. Exterior and Interior tile work exposed to direct sunlight or moisture: 8' to 12' maximum in each direction.
   c. Where tile work abuts restraining surfaces including but not limited to perimeter walls, dissimilar floors, curbs, columns, pipes, ceilings, inside corners of abutting walls, and where changes occur in backing materials.
   d. All expansion, control, construction, cold and seismic joints in the structure. Expansion joints in tile work must match width of joint in building structure.

C. Crack isolation membrane: Install over minor cracks and non-structural slab joints to prevent transmission of cracking to tile. Strictly follow membrane and mortar manufacturers' printed instructions.

D. Schluter – DILEX - MOP

1. Description: Protile with serrated rigid, recycled PVC sides sections connected by a Sift PVC central movement zone, which form the 5/16 inch (8 mm) wide visible surface.
2. Height: Min. ½" verify in field and provide as recommended by manufacturer.

E. Waterproofing membrane: Install per manufacturers printed instructions, including two wet on wet applications @ 20-30 mils thick. Full bonding to metal and PVC.

1. Perform 24-hour flood testing. Repeat application as required until flood test passes.

F. Install thresholds at transition from ceramic tile floors to other flooring materials and as shown on drawings.

G. Remove concrete curing compound with shot blasting or other appropriate mechanical means and vacuum floor on installations without mortar bed.

3.05 CLEANING, PATCHING, PROTECTION, SEALING

A. After completion, clean all work, point open joints and replace defective work.

B. Protection

1. Floors: Close off workspaces to traffic during installation and at least 48 hours after completion of work.

2. Finished tile floors: Covered with clean building paper before foot traffic is permitted on them. Place board walkways on floors that are to be continuously used as passageways by workmen. Protect tiled vertical outside corners with board corner strips in areas used as passageways by workmen.

3. Remove protection just prior to substantial completion and re-clean tile as necessary.

END OF SECTION 09 30 00

SECTION 09 51 00

ACOUSTICAL CEILINGS

PART 1: GENERAL

1.01 RELATED DOCUMENTS

A. Drawings, Details of Construction and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work specified in this section.

1.02 SUMMARY

A. Section includes:

1. Lay-in acoustic ceilings.
2. Lay-in vinyl gypsum ceilings.
3. Lay-in cementious acoustical ceilings.

B. Related work specified in other sections:

1. Mechanical penetration of ceilings - Divisions 21-25.
2. Electrical penetration of ceilings - Divisions 26-28.

1.03 SUBMITTALS

A. Submit Shop Drawings indicating installation layouts in accordance with Section 01 33 00.

B. Submit samples of all acoustical and suspension materials to Architect for approval.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original, unopened, protective packaging, with manufacturer's labels indicating brand name, pattern, size, thickness and fire rating as applicable, legible and intact.

B. Store materials in original protective packaging to prevent soiling, physical damage or wetting.

C. Store cartons open at each end to stabilize moisture content and temperature.

D. Do not begin installation until sufficient materials to complete a room are received.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Complete installation of dampening materials before beginning work.

B. Maintain humidity of 65% - 75% in area where acoustical materials are to be installed, 25 hours before, during, and after installation.

C. Maintain a uniform temperature in the range of 55 F. to 70 F. prior to, during, and after installation of materials.

PART 2: PRODUCTS

2.01 ACOUSTICAL MATERIALS

A. Products specified are as follows:

1. Armstrong, www.armstrong.com
2. USG, www.usg.com
3. National Gypsum, www.nationalgypsum.com
4. Tectum, Inc., www.tectum.com

B. ACT 1: Square edge, 5/8" thick, sag resistant, anti-microbial, low VOC, lay-in tile. Provide 24" x 24" or 24" x 48" tiles as shown on drawings.

1. Minimum NRC: 0.50
2. Minimum CAC: 40
3. Minimum LR: 0.82
4. Armstrong "Ceramiguard Fine Fissured-Perforated" #607 or #608.
5. USG "Radar Ceramic ClimaPlus" #56644 or #56645

C. Furnish extra materials equal to 1% of each type of acoustical material supplied. Provide materials in new, unopened cartons labeled as to contents.

2.02 SUSPENSION SYSTEMS

A. Systems specified are by Chicago Metallic. Equivalent systems by USG or Armstrong are acceptable.

B. Suspension System for Non-Rated Lay-In Panels (except locations listed below): 200 Intermediate Duty Snap-Grid System, standard white finish.

C. Systems for use in kitchens, kitchen serving areas, toilets and locker rooms to be 1830 intermediate duty hot dipped galvanized capped with white aluminum capping.

D. Perimeter treatment components for all systems to be 0.020 inch thick hot dipped galvanized steel, 15/16" wide x ¾" high. Edges to be hemmed. Finished identical to main runners and cross tees.

E. Impaction Clips: Manufacturer's standard.

PART 3: EXECUTION

3.01 CONDITION OF SURFACES

A. Examine surfaces scheduled to receive suspended or directly attached acoustical units for unevenness, irregularities, and dampness that would affect quality and execution of work.

B. Mark access provisions as to size and location before beginning installation.

3.02 REQUIREMENTS FOR ALL MECHANICAL SUSPENSION SYSTEMS

A. Grid layout in each space, area located symmetrically in room, space. Coordinate work with other trades so that lighting fixtures, grilles, other ceiling fixtures work to grid layout.

B. Do not use universal splices or other types whose use would obstruct passage of recessed lighting fixtures through grid openings, or make untenable their reposition upon flanges of beams.

C. Support suspension system from structure above, not from ductwork, equipment or piping.

D. Space hangers not more than 6" from ends, not more than 4'-0" o.c. Between ends of main runners, provide extra hangers as required to support other work resting in or on ceiling.

E. Provide additional tee supports, hangers and cut tiles to support and fit to all sides of light fixtures, linear diffusers and other ceiling penetrations. Coordinate with mechanical and electrical drawings.

3.03 ACOUSTICAL MATERIALS

A. Install ceiling panels and tiles using clean gloves, to avoid soiling materials.

B. Install lay-in panels snugly against support system without damaging panels.

C. Field rabbit edges of panels where field-cut to match shadow-line profile.

D. Adjust any sags or twists which develop in the ceiling systems and replace any part which is damaged or faulty.

E. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings and suspension members; comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

F. Replace any damaged tile just prior to substantial completion.

G. Install impaction clips at abuse resistive ceilings.

END OF SECTION 09 51 00

SECTION 09 91 00

PAINTING

PART 1: GENERAL

1.01 RELATED DOCUMENTS

A. Drawings, Details of Construction and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work specified in this section.

1.02 SUMMARY

A. Section includes:

1. Field finish all materials scheduled and/or specified for paint, trim, stain or seal. Including but not limited to:

   a. Concrete block
   b. Gypsum Board
   c. Electrostatic painting of interior and exterior surfaces of existing metal ceiling panels.

B. Related work specified in other sections:

1. Shop finishing - Applicable Sections.

2. Colored sealants – Section 07 92 00

1.03 SUBMITTALS

A. Provide three (3) copies of a schedule detailing each substrate in the same order as the schedules used in Part 2 of this section. Include the following:

1. The specific products to be used for each coat.

2. Documentation that the manufacturer has reviewed and approved each painting system.

3. Data pages for all products listed, highlight the following:

   a. Type of resin.
   b. Dry Film Thickness.
   c. Volume Solids.
   d. Units of Sheen.
   e. VOC content and chemical components.
   f. Other performance or descriptive data required by Part 2 of this section.
   g. If this information is not on the data page provide the information in a letter of certification from the manufacturer. Attach the letter to the appropriate data page.

B. Submit three (3) drawdowns of each product and color combination. Drawdowns shall be applied using a 4 mil WFT drawdown bar on Leneta form WD plain white coated cards size 3-7/8" x 6".

1. Label each card with the following:

   a. Job name.
   b. Date.
   c. Product name.

d. Product number.
e. Color number as stated in the material finish/color schedule.
f. Name, address, and phone number of the supplying facility.
g. Surface material product is to be applied onto.

C. Do not deliver material to site until having received written approval of submitted information and samples.

D. Complete sample area on project as selected by Architect on each type surface and with each type of paint system specified. Do not proceed further with application until receiving acceptance of each sample area by Architect. Accepted areas will serve as standard of quality for entire project.

1.04 EXAMINATION OF DOCUMENTS

A. Examine the specifications for the work of other trade contractors and to become familiar with their work. All surfaces that are left unfinished by the requirements of other specifications to be finished by this section.

1.05 EXISTING CONDITIONS

A. The existing building may contain lead-containing materials, including paint. It is the Contractor's responsibility to meet all governmental regulations when dealing with and disposing of lead containing materials.

1.06 DELIVERY, STORAGE, AND HANDLING

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

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

1.07 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 degrees F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F above the dew point; or to damp or wet surfaces.

C. Do not apply coatings during cold, rainy or frosty weather.

D. Do not apply to surfaces, which are exposed to hot sun.

1.08 QUALITY ASSURANCE

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."

2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

3. Previously Painted Surface Preparation and Workmanship: Comply with requirements in "MPI Maintenance and Repainting Manual" for products and paint system indicated.

PART 2: PRODUCTS

2.01 PAINTING SYSTEMS

A. Painting systems for normal applications are specified using the products of Sherwin-Williams Co. (S-W), Akzo Nobel Paints [Glidden Professional: (GP); DEVOE COATINGS: (DC); (Sika)] and Pittsburgh Paints (PPG) to establish standards of quality, except as noted.

1. Other manufacturers can submit for approval through the pre-bid process defined in Section 01 25 00 Substitutions and Product options.

    a. For approval, submit data sheets for each paint type with volume solids and VOC's highlighted to indicate they meet or exceed products specified in Part 2.

B. Painting systems for specialty applications are specified using the products of Aquarius Coatings, Carboline, Seal-Krete, Rosco, Sika Corporation and manufacturers listed in 2.01A.

C. Use the materials of the same manufacturer for each system.

D. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:

1. Flat Paints, Coatings, and Primers VOC content of not more than 50 g/L.
2. Non-flat Paints, Coatings and Primers: VOC content of not more than 150 g/L.
3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
4. Floor Coatings: VOC not more than 100 g/L.
5. Shellacs, Clear: VOC not more than 730 g/L.
6. Shellacs, Pigmented: VOC not more than 550 g/L.

E. For color selection see Material Finish/Color Schedule, on Architectural Drawings.

2.02 PRIMERS (INTERIOR AND EXTERIOR)

A. Rust Inhibitive, Universal, Metal Primer:

1. Minimum Volume Solids: 37%.
2. Maximum VOC: 250 g/L
    a. S-W Pro-Cryl Universal Primer B66-310 Series.
    b. DC Tru-Glaze-WB 4030 Waterborne Epoxy Primer.
    c. PPG Pitt-Tech Int/Ext Primer DTM, 90-712.

B. 100% Acrylic Interior Primer:

1. Shall be certifiable for use on gypsum drywall or wood, and paint.
2. Minimum Volume Solids: 37%.
3. Maximum VOC: 150 g/L
    a. S-W Multi Purpose Latex Primer / Seal B51W8020
    b. GP Gripper Interior/Exterior Primer Sealer 3210-1200.
    c. PPG Seal Grip Int/Ext. Acrylic Universal Primer/Sealer, 17-921.

C. Rust-inhibitive Waterborne Acrylic Primer:

1. Minimum Volume Solids: 37%.
2. Maximum VOC: 250 g/L
   a. S-W DTM Acrylic Primer/Finish B66W1.
   b. DC Devflex 4020PF Direct to Metal Primer and Flat Finish.
   c. PPG Pitt-Tech Int/Ext Primer DTM, 90-712.

D. High Performance Alkyd Primer:

1 Minimum Volume Solids: 48%.
2. Maximum VOC: 425 g/L
   a. S-W Kem Kromik Universal Metal Primer
   b. DC Devguard 4160 Multi-Purpose Tank and Structural Primer.
   c. PPG Speedhide Zinc Chromate Metal Primer, 6-204.

2.03 BLOCKFILLERS (INTERIOR AND EXTERIOR)

A. Vinyl Acrylic Blockfiller:

1. Minimum Volume Solids: 44%.
2. Maximum VOC: 150 g/L
   a. S-W PrepRite Block Filler B25W25.
   b. GP Concrete Coatings Block Filler Interior/Exterior Primer 3010-1200.
   c. PPG Speedhide Int/Ext Masonry Block Filler, 6-7.

B. High Performance Blockfiller:

1. Minimum Volume Solids: 43%.
2. Wind Driven Rain Resistance: Passes TT-C-555B, 98 MPH wind velocity.
   a. S-W Kem Cati-Coat HS Epoxy filler / sealer B42W400
   b. DC Tru-Glaze-WB 4015 High Performance Waterborne Epoxy Block Filler.
   c. PPG Aquapon-Polyamide Epoxy Block Filler, 97-685/97-686.

2.05 INTERIOR FINISH PAINTS

A. Vinyl Acrylic Interior Eggshell Finish:

1. Minimum Volume Soilds: 35%.
2. Maximum VOC: 0 g/L
   a. S-W ProMar 200 0 VOC Interior Latex Eg-Shel, B20-2600 Series.
   b. GP No VOC Interior Eggshell, 1411.
   c. PPG Pure Performance Interior Eggshell Latex, 9-300 Series.

B. Vinyl Acrylic Interior Flat Finish:

1. Minimum Volume Solids: 32%.
2. Maximum VOC: 0 g/L
3. Sheen: 0-8 units at 85 degrees.
   a. S-W ProMar 200 0 VOC Interior Latex, B30-2600 Series.
   d. GP No VOC Interior Flat 150, 1209
   b. PPG Pure Performance Interior Flat Latex, 9-100 Series.

C. 100% Acrylic, Waterborne Eg-Shel Dryfall:

1. Minimum Volume Solids: 30%.
2. Maximum VOC: 150 g/L
3. Sheen: 0-8 units at 85 degrees.
   a. S-W Waterborne Acrylic Dryfall B42W2.
   b. GP Waterbased Interior Eggshell Dry Fall 1482-1200.
   c. PPG Speedhide Super Tech Flat-Eggshell 0-5 @60&85 Dry Fall, 6-725.

D. Two-component Polyamide Epoxy:

1. Minimum Volume Solids: 50%.
2. Maximum VOC: 450 g/L
3. Sheen: 75-90 units at 60 degrees.
   a. S-W Tile-Clad High Solids Epoxy B62 Series.
   b. DC Tru-Glaze 4508 HIPAC Epoxy Gloss Coating.
   c. PPG Aquapon 35 Polyamide Epoxy Gloss, 95-1.

E. Alykd Gloss Enamel:

1 Minimum Volume Solids: 41%.
2. Maximum VOC: 430 g/L
   a. S-W Industrial Enamel
   b. DC Devguard 4308 Alkyd Industrial Gloss Enamel.
   c. PPG Alkyd Gloss Enamel, 7-282.

2.07 EXTRA STOCK

A. Provide left over paint with Owner for touch-up purposes. At completion of project, provide one complete set of drawdowns in each maintenance manual with a schedule noting the locations each paint color was used. Refer to Section 01 78 39.

PART 3: EXECUTION

3.01 PREPARATION OF SURFACES

A. General

1. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

2. Do not start work until preparation specified in surface Section is completed.

3. Ensure surfaces are dry and adequately protected from dampness.

4. Thoroughly clean surfaces free of loose, rough and foreign substances which will affect adhesion or appearance of applied coats.

5. Remove mildew and neutralize surface.

6. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface applied protection before surface preparation and painting.

    a. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
    b. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

7. Complete repainting or refinishing will be required if coats are applied over improperly prepared surfaces.

B. Wood

1. Hand sandpaper to smooth surface. Sand direction of grain, taking care not to mar character of details and sharp edges. Remove sanding dust.

2. After first coat is dry, thoroughly coat, with shellac (suitably reduced with alcohol for flowing consistency) or known sealer, knots, pitch pockets and resinous sapwood areas.

3. After first coat is dry, fill nail holes, cracks and defects with colored putty tinted to match stain or paint.

4. Previously painted surfaces must be free of dirt, mildew, loose paint, etc. Excessive chalking or dirt must be removed by washing with water. Hard glossy surfaces are to be lightly sanded or dulled with deglosser/cleaner. Openings permitting entrance of water should be caulked prior to painting. Surfaces in poor condition must be prepared for repainting by removing loose paint and blisters by scraping, sanding or burning. Paint in these areas is to be removed at least 12 inches beyond the failing area. Prime before applying finish coats.

C. Gypsum Board:

1. Fill minor irregularities with patching material and sand to smooth level surfaces taking care not to raise nap of paper.

2. Previously painted gypsum wallboards must be completely dry, smooth-sanded, clean and free of dust, dirt, powdery residue, grease, oil, wax or any other contaminants such as flaking or peeling paint before paint application is started. Treat or remove all contaminants and correct defects. Dull glossy old paint by light sanding or with a commercial deglosser/cleaner to assure maximum adhesion of the new coating. Patch holes and cracks with a latex patching compound, sand smooth and spot prime with the paint or enamel to be used as the final coat.

D. Masonry

1. Do not paint until moisture content of surface is 15% or below except as may be required by paint manufacturer.

2. After prime coat is dry, fill remaining small holes, cracks and other defects with Swedish putty made by mixing dry spackle with prime paint.

3. Previously painted masonry surfaces must be dry, clean and free of dust, dirt and any other contaminants. Hard glossy surfaces are to be lightly sanded or dulled with deglosser/cleaner. Surfaces in poor condition must be prepared for repainting by removing loose paint and blisters by scraping, sanding or burning. Paint in these areas are to be removed at least 12 inches beyond the failing area. Patch all holes left after removal of nails, screws, and anchors. Prime before applying finish coats.

E. Aluminum:

1. Remove dirt and grease with mineral spirits or solvent recommended by paint manufacturer and clean cloths.

2. All chipped, peeling or blistered paint must be removed by hand or power tool cleaning. Remove all oil, grease, dirt or other foreign materials. Remove excessive chalking or sanding. Remove any mildew present by scrubbing with detergent and bleach. Thoroughly clean surface with water prior to repainting.

3.02 EXAMINATION

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

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent
1. Masonry: 12 percent
2. Wood: 15 percent
3. Gypsum Board: 12 percent
4. Plaster: 12 percent

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

E. Conditions

1. Do no work when surface, coating product, air temperature, humidity or dewpoint does not meet requirements of PROJECT CONDITIONS in Part 1 of this specification.

2. Do no interior work until building is properly enclosed.

3. Do work under adequate illumination and dust-free conditions.

3.03 APPLICATION

A. Methods: Paint may be applied by brush, roller or spray methods except where particular method will produce unsatisfactory results. Where spray method is used on concrete block, follow with roller to work paint into voids.

B. Materials: Do not open containers until required for use. Stir materials thoroughly and keep at uniform consistency during application.

C. Coats

1. Number specified is minimum. Provide sufficient number of coats to provide even, consistent, opaque coverage of substrate.

2. Touch up suction spots between coats.

3. Refinish surfaces affected by refitting work.

4. Tint prime and under coats of paint approximately 1/2 to 3/4 depth of final color.

5. Touch up suction and "hot" spots in plaster and concrete after application or first coat and before second coat.

6. Do not apply next coat until previous is thoroughly dry.

7. Provide final coat which is solid and even in color; free from runs, laps, sags, brush marks, air bubbles and excessive roller stipple and worked into crevices, joint and similar areas.

8. Do not paint sealant / sealant joints.

3.04 SCHEDULE OF INTERIOR WORK

A. General

1. Paint complete all surfaces noted with a "PT" on Room Finish Schedule.

   a. Existing Areas:

      1. Remodeling work: In rooms with surfaces not scheduled for paint on Room Finish Schedule, paint hollow metal doors and frames, metal stairs and railings as occur.

      2. In unscheduled areas where patching has occurred, paint all walls corner to corner and floor to ceiling. Match adjacent wall color. Paint both sides of doors and frames at locations where replacement or modifications have been made.

3. Provide specified finish on exposed surfaces including, but not limited to the following:

   a. Prime coated mechanical units, piping, pipe covering, sprinkler piping, interior duct surfaces visible behind grilles, tanks without factory finish, radiation covers, cabinet unit heaters, exposed ductwork, louvers and grilles.

   b. Electrical panel box covers and surface raceways (over factory finish), conduits and boxes and all factory primed electrical equipment. (Except in maintenance, service and electrical rooms).

   c. Hollow metal doors and frames, steel stairs, ladders and railings, catwalks and safety mesh grilles, access panels, prime painted hardware, painted astragals and vision lite kits on doors, coiling grilles and doors (unless factory finished), metal supports for counters and exposed miscellaneous metals.

4. Do not paint sealant.

5. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.

6. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

7. Partition Identification

   a. Place identification on all partitions indicated on Code Drawings as having a required fire or smoke rating.
   b. Identification shall be as follows:

      1) Rating (i.e. 2 HR Fire Wall; Smoketight; 2 HR Fire Barrier): Same as indicated on Code Drawing Legend.
      2) Location: 10 feet on center, both sides of partitions, above ceiling line.
         a) Place above panels in hard ceilings.
      3) Style of Lettering: 2 inches high, Helvetica style, painted with aid of stencils.
      4) Color: Red.

B. Concrete Masonry Units and Restored Masonry (not scheduled for epoxy):

1. 1st Coat: Vinyl Acrylic Blockfiller.
   (1st Coat Option due to schedule constraints: 100% Acrylic Exterior Masonry Primer).
   a. Minimum DFT: 8.0 mils (75-125 sq. ft./gal).
2. 2nd and 3rd Coat: Vinyl Acrylic Interior Eggshell Finish.
   a. Minimum DFT: 1.5 per coat.

C. Gypsum Drywall – Wall (not scheduled for epoxy):

1. 1st Coat: 100% Acrylic Interior Primer.
   a. Minimum DFT: 1.5 mils.
2. 2nd and 3rd Coat: Vinyl Acrylic Interior Eggshell Finish.
   a. Minimum DFT: 1.5 per coat.

D. Gypsum Drywall – Ceilings (not scheduled for epoxy):

1. 1st Coat: 100% Acrylic Interior Primer.
   a. Minimum DFT: 1.5 mils.
2. 2nd and 3rd Coat: Vinyl Acrylic Interior Flat Finish.
   a. Minimum DFT: 1.4 per coat.

E. Aluminum – Mill Finish (not scheduled for epoxy):

1. 1st Coat: 100% Modified Acrylic Interior Semi-Gloss Coating.
   a. Minimum DFT: 1.3 mils.
2. 2nd Coat: 100% Modified Acrylic Interior Semi-Gloss Coating.
   a. Minimum DFT: 1.3 mils.

F. Exposed Overhead Work:

1. Touch-up: Rust-inhibitive Waterborne Acrylic Primer.
   a. DFT: 2.0-5.0 mils.
2. 2nd Coat: 100% Acrylic, Waterborne Eg-Shel Dryfall.
   a. DFT: 2.1-4.5 mils.

G. Gypsum Drywall – Walls (scheduled to receive epoxy except showers):

1. 1st Coat: 100% Acrylic Interior Primer.
   a. Minimum DFT: 1.5 mils.
2. 2nd and 3rd Coat: Two-component, Semi-Gloss Waterbased Catalyzed Epoxy.
   a. DFT: 2.0-3.0 mils per coat.

H. Concrete Masonry Units and Restored Masonry (scheduled to receive epoxy except showers):

1. 1st Coat: Vinyl Acrylic Blockfiller.
   (1st Coat Option due to schedule constraints: 100% Acrylic Exterior Masonry Primer).

   a. Minimum DFT: 8.0 mils.
2. 2nd and 3rd Coat: Two-component, Semi-Gloss Waterbased Catalyzed Epoxy.
   a. DFT: 2.0-3.0 mils per coat.

I. Gypsum Drywall – Walls and Ceilings (scheduled to receive epoxy for showers):

1. 1st Coat: 100% Acrylic Interior Primer.
   a. Minimum DFT: 1.5 mils.
2. 2nd and 3rd Coat: Two-component Polyamide Epoxy.
   a. DFT: 2.0-4.0 mils per coat.

J. Concrete Masonry Units and Restored Masonry (schedule to receive epoxy for showers):

1. 1st Coat: High Performance Blockfiller.
   a. Minimum DFT: 9 mils.
2. 2nd and 3rd Coat: Two-component Polyamide Epoxy.
   a. DFT: 2.0-4.0 mils per coat.

K. Aluminum (scheduled to receive epoxy for showers):
1. 1st Coat: Wash Primer.
   a. DFT: 0.7-6 mils.
2. 2nd and 3rd Coat: Two-component Polyamide Epoxy.
   a. DFT: 2.0-4.0 mils per coat.

L. Electrostatic Painting of Existing Metal:
1. Touch-up Primer: High Performance Alykd Primer with MEK additive.
   a. DFT: 1.5-2.5 mils
2. Finish Coat: Alykd Gloss Enamel with MEK additive.
   a. DFT: 2.0-2.5 mils

3.05 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.06 FIELD QUALITY CONTROL

A. Testing and Painting Application: Owner reserves the right to test DFT of painted surfaces.

1. If testing discovers that DFT of installed paint does not meet specification, the Contract or will pay for initial and final testing and recoat surfaces until testing agency confirms specification is met.

END OF SECTION 09 91 00