

Design and Construction Standards

Division 09 – Finishes

General

In general, follow the guidelines below when designing, specifying and installing building finish systems including gypsum, plaster, ceiling grid, acoustical tile, finished flooring, paint or stain, or wall coverings. Unless specifically indicated otherwise, these guidelines are not intended to restrict or replace professional judgment.

1. Finish Selections: All materials, colors, finishes, product specifications, applications and details are to be compiled and submitted by the Professional for approval of the Physical Plant Project Manager prior to the final development of the Construction Documents.
2. All materials shall meet or exceed the Building Code and University use requirements for the area.
3. In remodeled areas, all material patches shall blend as close as possible. Work to existing corners, room edges, or clearly defined transitions.
4. LEED Policies: The University promotes energy efficient green design, construction and building operations. Whenever possible, materials are to be selected and specified following the United States Green Building Council LEED (Leadership in Energy and Environmental Design) Green Building Rating System® consensus-based national standard for developing high-performance, sustainable buildings. Refer to the website: <http://www.usgbc.org/>.
5. The Professional shall specify only finishes that require minimal maintenance and can be easily maintained by the University.

Section 09 06 00 Schedules for Finishes

1. Refer to the Architectural / Engineering Standards for Design and Construction Documents for information regarding room finishes.
2. The Professional shall prepare both Room Finish Schedules, Finish Material Schedules, Room Finish Keys, etc. and submit these for EMU approval prior to completion of the Construction Documents.
3. The Professional shall clearly note all finishes and their extent of coverage on the drawings and specifications using room finish schedules and include notations on elevations and details.
4. The Professional shall prepare a paint, stain, and coatings schedule listing all surfaces in generic terms, all coating or finish operations, the types of finish materials and the number of coats of each material. This schedule shall be included in the Specifications.

Section 09 08 00 Commissioning of Finishes (Final Cleaning)

1. Standard “construction cleaning” is not acceptable for final condition of finish materials. Work areas shall be “final cleaned” and ready for move-in and occupancy. Cleaning shall be completed prior to installation of furniture, furnishings, and equipment:
 - a. Cleaning shall meet the requirements of the Buildings and Grounds Department.
 - b. Dusting and wipe down all flat surfaces, hardware, trim, millwork, etc.
 - c. Cleaning and washing of light fixtures
 - d. Cleaning and washing of all windows and glass surfaces
 - e. Vacuuming of all carpeted floors
 - f. Washing or sealing of all hard surface flooring (per manufacturer requirements)

Section 09 20 00 Plaster and Gypsum Board

1. Use of Plaster: The use of plaster for ceilings and of stucco for exterior finish, including canopy soffits, is prohibited without written permission of the Physical Plant. Use of new plaster at existing plaster surfaces will be allowed for repair or patching, in order to match the existing surface.
2. Gypsum drywall is a common use material and is often the typical interior finish material. In general, use of gypsum drywall shall meet the following characteristics:
 - a. Installation and finishing of gypsum board shall be per the recommendations of the United States Gypsum Association handbook.
 - b. 5/8” gypsum board shall be typical use thickness. Deviations shall be allowed when necessary for specific detailing, fire rated assemblies, or special uses.
 - c. Use type ‘X’ firecode gypsum board, or equivalent, where necessary to comply with all Fire Rated Assemblies.
 - d. Provide control joints as recommended by the United States Gypsum Association handbook. Control joints shall have support framing each side of joint.
 - e. Refer to Division 07 Thermal and Moisture Protection for information regarding gypsum products used in conjunction with EIFS systems.
 - f. Use of gypsum board at exterior applications shall only be performed with the prior approval of the Physical Plant.
 - g. Use of “greenboard” is prohibited. Cement board or equivalent product shall be used as backerboards at wet locations (e.g. showers).
 - h. At walls and ceiling below 10’-0” in height, gypsum board shall be impact resistant type.

Section 09 30 00 Tiling

1. Hard surface floor tiling, specifically ceramic, porcelain, quarry, stone, or similar solid surface tile shall be required in the following locations:
 - a. Restroom Floors (may also be terrazzo)
 - b. Shower Floors and Walls (may also be solid surface panels)
 - c. Commercial Kitchen or Food Preparation Areas (quarry tile or concrete)
 - d. Other locations where significant water may be present
2. Preferred type of tile materials shall be as follows:
 - a. Kitchens Quarry Tile or Concrete
 - b. Food Preparation: Quarry Tile or Concrete
 - c. Showers: Solid Surface Panels or Porcelain Tile
 - d. Common Floors: Terrazzo or Porcelain Tile
 - e. Ceramic Tile is not preferred and shall not be used without authorization of the Physical Plant. Porcelain tile with integral coloring is preferred.
3. All floor tiles shall be non-slip and rated for heavy duty use. Provide slip resistance coefficient as recommended by The Tile Council of North America (TCNA) for EMU review.
4. For designs where floor and wall tile indicate a pattern of colors, details shall be clearly detailed on the Construction Drawings using specific tile sizes, dimensions and details of all surfaces to receive tile.
5. Designs of ceramic or porcelain “mosaics” shall include specific tile sizes and detailed drawings showing extent or complexity of patterns.
6. All floor tile grout shall be sealed. In frequently wet areas such as shower and pools areas, floor and wall grout, and restrooms shall be sealed. Integral sealer in the grout is strongly encouraged. Manufacturers of integral sealer are as follows:
 - a. TEC – XT Grout (except for locations near urinals and water closets)
 - b. Owner Approved Equal.

Section 09 50 00 Ceilings

1. Ceiling systems, regardless of plenum spaces and HVAC requirements, shall be designed with the following requirements:
 - a. All ceilings shall be designed to be easily accessible for maintenance and other access needs such as technology installations. A single type of ceiling tile, tile size and suspension system shall be used throughout a building to minimize maintenance and repair costs. Limited exceptions to this are special feature areas or specialized function areas where no accessibility is required.
 - b. The use of 3-foot tile and other non standard tile sizes is prohibited.
 - c. Fire code gypsum board or fire rated acoustic tile with rated suspension assembly shall be used for fire-rated ceilings.
2. All ceiling support systems shall be suspended from structural members only. Any supports directly to joists shall be at panel points only, intermediate supports are prohibited.

3. Ceiling support systems are for the support of the ceiling finishes only. Suspension of infrastructure, conduit, etc. is prohibited.
4. Acoustic Tile Ceilings shall be designed and installed with the following characteristics:
 - a. Ceiling tiles are not structural items. Support of ceiling mounted objects such as exit lights, light fixtures, speakers, signs, or similar shall have independent supports and shall not be secured to the ceiling tile.
 - b. Tiles / Panels shall be a minimum of 5/8-inch-thick and maximum panel size shall be 2 ft. x 4 ft or 2 ft x 2 ft. A single type and size of acoustic ceiling panel shall be consistent throughout a building for maintenance purposes. Other size panel sizes and materials proposed are subject to review and approval by the Physical Plant.
 - c. Standard use tile shall be a fine fissured white finish, 2'x 4' tile with a 2'x 2' appearance. Other tile styles and finishes are allowed based on the appropriate application.
 - d. Moisture resistant, mildew resistant, and sag-resistant tiles are required for all applications.
5. Ceiling Grid and Suspension systems shall be designed and installed with the following characteristics:
 - a. Typical grids shall be 15/16" wide, white (or painted per specifications).
 - b. Ceiling suspension assemblies shall be supported directly from the building structure and shall be supported at all four corners of fluorescent light fixtures. Ceilings shall not be supported from ductwork, electrical conduit, heating or plumbing lines, and vice versa. Each utility system and the ceiling grid system shall be a separate installation and each shall be independently supported from the building structure. Where interferences occur, provide trapeze type hangers or other suitable supports for each system. Locate hangers and supports where they will not interfere with access to mixing boxes, fire dampers, valves, and other appurtenances requiring servicing. The requirements for independent supports for ceiling grid systems shall be repeated in the applicable sections of the specifications. If patented ceiling suspension systems are required for plaster, gypsum board, and acoustic ceilings, a separate section may be written for the systems; or each separate system may be specified in the section for the particular ceiling material, at the option of the Professional; however, it is preferred that suspension systems for acoustic ceilings be specified with the ceiling materials to avoid divided responsibilities. Stainless steel hanger wires must be specified for canopy suspension systems and for other systems in locations subject to moisture penetration or condensation
 - c. Power-driven anchors are prohibited and shall be noted in the specifications. Ceiling suspension systems shall be secured to the structure with toggle, molly bolts, self-drilling anchors, cast-in inserts, or bolts in expansion shields. The use of wood, lead, or plastic plug anchors is also prohibited.

Section 09 60 00 Flooring (excluding Tiling – refer to 09 30 00)

1. Refer to Section 09 65 00 Resilient Flooring for additional information.
2. The finish flooring selections shall be based on extra heavy duty commercial grade flooring, rated for intended use by the manufacturer. Custom materials and colorations are strictly limited as they increase later costs for repair and renovations, and may only be used in architecturally significant or historic applications, with the written authorization of the Physical Plant. Specify designs for visually impaired where applicable. Specify designs for static dissipation requirements where applicable.
3. All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the Physical Plant prior to the final development of the Construction Documents.
4. In some cases, the University may choose to purchase Flooring for a project. In these cases, the cost of Flooring is moved from Construction funds to Equipment funds for the purchase. Design of spaces, door clearances and scheduling of the work where Flooring is required must provide for these installations, whether Flooring is provided by the Contractor or by the University.
5. The Professional shall provide detailed specifications of at least one selected product and two additional products which are acceptable equals in material construction and color for bidding.
6. The Professional shall specify products that can be obtained and installed by Contractors of an established firm, experienced in the installation of the specified product. The specifications shall request Contractors to have completed at least three projects of equal size, material and complexity to verify experience.
7. The Professional shall specify critical Flooring Substrate Conditions appropriate to the material specified. The Associate shall include standard testing methods for determining relative humidity in concrete flooring, Moisture Vapor Emission Rate of concrete subfloor. The Professional shall outline Contractor responsibility for conducting the tests prior to installation.

Section 09 65 00 Resilient Flooring (base, sheet goods, and tiles)

1. Vinyl, linoleum, or other composite flooring materials, when possible, shall be “no wax” type flooring. All floor finish materials shall be approved by the Physical Plant prior to completing the Construction Documents.
2. Resilient base shall be specified and installed with the following characteristics:
 - a. Base to be 1/8-inch-thick, rounded top edge and 4-inch minimum height.
 - b. Specify coved wall base with toe for resilient flooring and carpeted areas. Straight wall base may be used with written permission of the EMU Physical Plant. Specify that internal and external corners be formed on the job with joints at 18-inches from corners. Terminal ends of base shall be beveled and toes rounded.
 - c. Color to be integrated with the material. Material preference is rubber; however, vinyl may be considered with written permission of the EMU Physical Plant.

3. Resilient Stair Treads and Risers shall be specified and installed with the following characteristics:
 - a. Color integrated treads and risers, vinyl or rubber.
 - b. Slip resistant and easily maintainable.
4. Resilient Sheet Flooring shall be specified and installed with the following characteristics:
 - a. Resilient Sheet Flooring shall be commercial grade, high performance homogeneous sheet flooring. Seams to be heat welded, when possible. Use standard 4-inch-high cove base at wall. A 6-inch-high flash coving may be specified to enhance hygienic qualities. Where applicable, manufacturers to provide stain resistance test data, coefficient of friction ratings (wet and dry), load bearing capacity and other standardized test data as may apply.
 - b. Overall Nominal Thickness: .080 inches
 - c. Reference Specs: Meets or exceeds ASTM F-1913; Type II, Grade 1 Fire Test Data: Meets ASTM E-648 (Critical Radiant Flux) / ASTM E-662 (Smoke Density)
 - d. Static Load Limit: ASTM F-970 250 PSI (Std.), 700 PSI Slip-Retardant Performance: ASTM D-2047 James Test; Exceeds ADA recommendation.
 - e. Traffic Performance: Rated for extra heavy commercial traffic.
 - f. Recycled Vinyl Content to be 10% or greater.
5. Linoleum Flooring shall be specified and installed with the following characteristics:
 - a. Linoleum Sheet Goods: Homogeneous linoleum sheet floor covering made of primarily natural materials consisting of linseed oil, wood flour, rosin binders and dry pigments mixed and calendared using a two-layered process onto a jute backing including a strong, durable primer and a top layer. Seams to be heat welded.
 - i. Reference Specs: Meets or exceeds ASTM F2034 for Linoleum Sheet Flooring.
 - ii. Overall nominal thickness: .100 inches.
 - iii. Static Load Limit: 450 pounds per square inch.
 - iv. Traffic Performance: Rated for extra heavy commercial traffic.
 - v. Recycled content: 45% or greater Post Industrial Recycled Content.
 - b. Linoleum Tile: Homogeneous linoleum tile floor covering shall be made of primarily natural materials consisting of linseed oil wood flour, rosin binders and dry pigments mixed and calendared using a two-layered process) onto a polyester back.
 - i. Standard sizes no customs.
 - ii. Reference Specs: Meets or exceeds ASTM F2195 for Linoleum Tile
 - iii. Static Load Limit 1500 pounds per square inch
 - iv. Traffic Performance: Rated for extra heavy commercial traffic.
 - v. Recycled content: 45% or greater Post Industrial Recycled Content.

6. Resilient Tile Flooring shall be specified and installed with the following characteristics:
 - a. Vinyl Composition Tile shall be 1/8-inch-thick, thru-pattern or thru-chip construction and meets the requirements of the ADA for static coefficient of friction when installed in accordance with manufacturer's guidelines, waxes and coatings. Recycle content (post-consumer and post-industrial waste) minimum 10%. Resilient tile is prohibited next to urinals. Specify standard tile sizes.
 - i. Static load limit: 75 PSI
 - ii. Flooring Radiant Panel Test: Passes
 - iii. Flame Spread: Passes
 - iv. The Associate may propose resilient materials other than vinyl composition tile that are advantageous to the project. Approval of the University Architect is required prior to specifying such materials.
 - v. Acceptable material quality: equal or better than Armstrong Excelon Vinyl Composition Tile.
 - b. Other Resilient Tiles: Other types of tile may be considered depending on location and application, such as Polymer Composite Tile (PCT), cork rubber, rubber, or similar. These tiles shall comply with industry practice and manufacturers recommendations, and shall require approval of the EMU Physical Plant prior to use.
7. All Resilient Flooring Products shall meet or exceed 5 years' material warranty.

Section 09 66 00 Terrazzo Flooring

1. Terrazzo floors separated from the structural slab by a sand cushion are preferred. Approximately 2 3/4" shall be allowed from rough slab to finish floor.
2. When selected for inclusion in a project, RESINOUS MATRIX TERRAZZO FLOORING shall be designed and installed with the following characteristics:
 - a. If design conditions, or budget, dictate thinset method of installation, marble chip or ceramic granule toppings may be installed with chemical matrix or with cement matrix chemically bonded to the substrate, only when such methods and materials are approved by the Physical Plant.

Section 09 68 00 Carpeting

1. Carpeting shall be specified and installed with the following characteristics:
 - a. Acceptable material quality shall be equal to or better than Dupont Antron Legacy nylon and Antron Lumena nylon.
 - b. Yarn: 100% first quality, bulk continuous filament nylon type 6, 6 offering a construction and performance standards testing program by fiber producer. The fiber shape to have a maximum Modification Ratio of 1.5 for soil release capabilities. The fiber identification is to AATCC 20. Static Control: By permanent means (i.e. antistatic filaments) and without chemical treatment, static generation below 3.5 kilovolts under standard conditions of 65 F and

- 20% relative humidity. Electrostatic Propensity (Static delayed signal): AATCC 134.
- c. Construction: tufted or woven, level or multi-level loop pile with maximum height variation of 1/32 inch. Dye Method: Meets or exceeds Stain Resistance specification with greater than 5 years on the floor performance history.
 - d. Pile Weight: minimum 24 oz/yd²
 - i. Carpet Tile may vary from 20 oz/yd² to 24 oz/yd²
 - e. Primary Backing: polypropylene or non-woven
 - f. Secondary Backing: to provide permanent moisture barrier
 - g. Resistance to Delamination: ASTM D3936 minimum 3.0 lbs/inch
 - h. Tuft Bind: ASTM D1335 minimum 20 lbs
 - i. Pile density 36 x face weight/finished pile HEIGHT: minimum 5800
 - j. Flammability – Must pass Methenamine Pill test (DOC FF1-70). Meet Flooring Radiant Panel Test – Class 1. NBS Smoke Chamber – must meet or exceed 350 or less in flaming mode.
 - k. Colorfastness to Light: AATCC 16E, 200 AFU, International Gray Scale for Color Change rating min 3-4.
 - l. Colorfastness to atmospheric contaminants: AATCC 164(ozone) & AATCC 129 (oxides of nitrogen) for 2 cycles, International Gray Scale for Color Change rating min. 3-4.
 - m. Stain Resistance - AATCC 138 for 5 washings to simulate removal of topical treatments by hot water extraction, followed by: AATCC 175, minimum level 8 using AATCC Red Dye 40 Scale with greater than 5 years on the floor performance history.
 - n. Soil Resistance: An average of 3 fluorine analyses (AATCC 189) of a single composite sample to be a minimum of 500 ppm fluorine by weight when new and 400 ppm fluorine by weight after 2 AATCC 171 (HWE) cleanings.
 - o. Coloration: Color hue and values to be in optimum light reflectance rating for soil hiding enhancement.
 - p. Appearance Retention - Vetterman Drum Test ASTM D5417 for 22,000 cycles. This is a minimum rating of 3.0 using CRI TM-101 Reference Scale. Testing without underpad or brushing.
 - q. Indoor Air Quality - maximum 0.5 mg/m²hr total VOC emission, ASTM D5116
 - r. Warranty: Must meet or exceed 10-year warranty.
2. Prepare and provide the following submittals for review and approval of the Physical Plant (both during design phase prior to construction, and during shop drawing phase):
 - a. Specify shop drawing submittals with seam layouts for approval. (Construction Shop Drawing phase only).
 - b. Specify sample materials submittal for approval.
 3. Carpet Installation shall be professional quality workmanship with the following characteristics:
 - a. In normal installations, carpet shall be glued to the substrate with no cushion or pad using premium quality waterproof non-flammable adhesive.

- b. For exceptional instances requiring carpet installation over padding, the cushion or pad shall be factory applied and an integral part of the product. Use high density sponge rubber carpet cushion equal to or better than Tred-Mor flat profile carpet cushion as manufactured by SCI (Sponge-Cushion, Inc.) with minimum specifications for extra heavy commercial and institutional traffic.
4. Carpet Reclamation shall be professional quality workmanship with the following characteristics:
 - a. Designate Reclamation Program or agency firm providing used carpet recycling. Reclamation agency and carpet remover shall certify in writing that used carpet was removed and recycled in accordance with Reclamation Program.
 - b. Adhesive removal Solvents must comply with Carpet and Rug Institute Publication 104.

Section 09 70 00 Wall Finishes

1. Wall finishes other than paint shall be specified and installed with the following characteristics:
 - a. The Professional shall make selections shall be based on extra heavy duty commercial wall finish, rated for intended use by the manufacturer. Custom materials and colorations are prohibited as they increase later costs for repair and renovations.
 - b. All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the Physical Plant prior to the final development of the Construction Documents.
 - c. The Professional shall provide detailed specifications of at least one selected product and two additional products which are acceptable equals in material construction and color for bidding.
 - d. The Professional shall specify products that can be obtained and installed by Contractors of an established firm, experienced in the installation of the specified product. The specifications shall request Contractors to have completed at least three projects of equal size, material and complexity to verify experience.
 - e. Wall Coverings shall be specified and installed with the following characteristics:
 - i. Materials must conform to ASTM E-84 and OBC. Research code carefully to determine class of fire and smoke resistance required for the specific application.
 - ii. Vinyl wall covering must satisfactorily pass Class A physical requirements for Type II wall covering as listed in G.S.A. CCC-W-408A and CFFA Quality Standards for vinyl coated fabric wall covering.

Section 09 90 00 Painting and Coating

1. Back prime all millwork where necessary to prevent moisture infiltration, specifically at exposed edges, or when used with laminates.
2. Paints, stains, and coatings shall be specifically manufactured for the intended use.
3. Interior Painting shall be specified and installed with the following characteristics:
 - a. Top and bottom edges of wood doors shall be sealed after fitting and finished with at least two coats of varnish or paint.
 - b. Tops and bottoms of metal doors shall be painted with the same materials and number of coats as used on the door faces.
 - c. Dry film thicknesses shall be specified for all coats of paint on metals.
 - d. Accent Colors: If it is anticipated 5% or more of the scheduled finishes will be in accent colors, attention should be called to this fact. Estimated percentage of accent colors should be given as an aid to bidders in preparation of bids. A statement should be made to the effect that the information given in no way restricts the Associate in his final selection of colors.
 - e. Color Coding for Piping: Include finish painting of insulated and uninsulated piping in the General Construction Documents and include color banding of finished piping in the appropriate locations. See Divisions in the Facilities Services Subgroup.
 - f. Interior Woodwork: Painted finish -- primer and 2 coats semi-gloss alkyd enamel.
 - g. Metal Doors and Frames: Shop coat, touch up and two coats semi-gloss enamel.
 - h. New Gypsum Wallboard or Plaster: Spackle as required, primer and 2 coats semi-gloss alkyd enamel or 2 coats semi-gloss latex.
 - i. Existing Previously Painted Gypsum Wallboard or Plaster: Primer and 1 coat semi-gloss alkyd enamel or semi-gloss latex. If surface is poor, remove finish to substrate, repair and finish the same as new gypsum wallboard or plaster.
 - j. Interior Concrete or Concrete Block (Unpainted): 1 coat self-sealing heavy filler-type primer and 2 coats semi-gloss alkyd enamel or 2 coats semi-gloss latex. For laboratories requiring chemical resistance, replace the alkyd or latex paint with epoxy two-component finish. For corridors or abuse areas, replace the semi-gloss alkyd or latex paint with high gloss alkyd enamel.
4. Staining or other Transparent type finishing shall be specified and installed with the following characteristics:
 - a. Interior Woodwork: Natural finish -- stain, 2 coats sanding sealer, 2 coats semigloss varnish. If polyurethane varnish is used, delete sanding sealer.
 - b. Top and bottom edges of wood doors shall be sealed after fitting and finished with at least two coats of varnish or paint.
 - c. Exterior Wood Platforms or Benches: Use Behr plus 10 Solid Color Stain or approved equal in accordance with manufacturer's directions.

5. Fire Retardant Coatings shall be specified and installed with the following characteristics:
 - a. Materials shall be applied by applicators franchised and approved by manufacturers of materials approved for use. General Contractor shall furnish the manufacturer's certification that materials delivered to the project meet requirements specified. Certification shall be countersigned by the General Contractor, who shall assume the responsibility of complying with the manufacturer's specifications. Materials and application equipment shall be of type approved by the manufacturer.
6. Elastomeric Coatings shall be specified and installed with the following characteristics:
 - a. If coatings specified can be applied with equipment ordinarily used by painters, these coatings may be specified in the section entitled, PAINTING.

End of Division 09 – Finishes