



Facilities Planning and Construction Design and Construction Standards

Division 9 - Finishes

Preface

The Texas Tech University System's 'Design and Construction Standards,' as administrated by Facilities Planning and Construction, are intended to serve as guidelines to the Design Professional and Construction Management teams for design development and construction administration of Texas Tech University System (TTUS) Capital Projects. They communicate the minimum expectations and requirements relative to specific building systems, design provisions, general specification requirements, and administrative procedures for new facilities being constructed on Texas Tech University System (ASU, MSU, TTU, TTUHSC, and TTUHSC El Paso) campuses. Several, but not all requirements for each component Institution or Agency within the TTU System are covered. Design Professionals, Construction Managers at Risk and/or Design-Build Firms shall also refer to provisions covered in their service Agreements, as well as within the project's Basis of Design (BOD) document.

In addition, the 'Design and Construction Standards' shall also be utilized in conjunction with the approved project specific Program and Schematic Design development. In the event of conflict between this document and specific project requirements, Design Professionals, Construction Managers at Risk and/or Design-Build Firms shall contact Facilities Planning & Construction for clarification.

The guidelines within the 'Design and Construction Standards' are not intended to prohibit the use of alternative design solutions, methods, systems, products or devices not covered in this document. Offered alternatives deviating from or not covered in these standards shall be documented by the Design Professional and/or Construction Management teams and submitted to Facilities Planning & Construction for approval prior to implementation.

Throughout the 'Design and Construction Standards' there are references to manufacturer specific products. These are to be considered the 'Basis of Design' to establish the expected

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minimum quality requirements. Design Professionals are encouraged to identify and include equivalent products and/or manufacturers offering comparable products to facilitate open bidding environments.

General Requirements for Finishes

Reference Division 1 General Requirements for Interior Design (ID) requirements.

A complete interior design package shall be included in the Design Professional's services. The full scope of the Interior Design Services shall be completed within budget and on schedule. The Design Professional's interior designer (DPID) shall be licensed to practice in the State of Texas by the passage of the National Council for Interior Design Qualification (NCIDQ exam). Any exceptions must be reviewed and approved by TTUS FP&C.

Proposed finish selections should be presented to the TTUS FP&C Program Director and TTUS Interiors Project Manager for review at least 2 weeks before presentation to the client. The DPID should work cooperatively with TTUS FP&C to ensure that TTUS finish standards/guidelines are satisfied. Finish selections are critically important to the overall success of a project. Finish options should be high quality, durable, appropriate for higher education application, domestically sourced, easy to maintain, and timeless. The finishes should also represent the client's needs and desires accurately. Color should be used appropriately for the project type. Color combinations that closely resemble those of other universities should be avoided if possible and will not be considered for athletic projects.

A comprehensive finish schedule, material finish samples, and (3) material finish boards shall be provided to TTUS FP&C for all areas within the scope of a project. Material finish boards shall be 20"x30" in size with samples attached by Velcro. Any changes to the finish schedule should be documented and sent to TTUS FP&C for approval.

Submittals for interior finishes shall include all relevant and required product data, shop drawings, and physical material samples. Physical material samples shall be submitted to TTUS FP&C for approval and be accompanied by a signed transmittal. Physical material samples should include a label with the project name, submittal number, manufacturer's name, material

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description, color, pattern, and designation indicated on drawings and in finish schedules.



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09 20 00 Gypsum Board

GENERAL

Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Install mockups for the following:
 - a. Each level of gypsum board finish indicated for use in exposed locations.
 - b. Each texture finish indicated.
2. Apply or install final decoration indicated, including texture, paint and wall coverings, on exposed surfaces for review of mockups.
3. Simulate finished lighting conditions for review of mockups.
4. Subject to compliance with requirements, approved mockups may become part of the completed work if undisturbed at time of Substantial Completion.

Submit a full-size sample in 12-inch- long lengths for each trim accessory indicated. Label each sample with manufacturer's name, material description, color, pattern, and designation indicated on drawings and in finish schedules.

Contractor shall hold pre-install meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the designated subcontractor, and representatives of other trades or subcontractors affected by the installation.

PRODUCTS

For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

Acoustic Ratings: Construct assemblies to achieve acoustic ratings indicated on Drawings,

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tested to ASTM E90 and classified in accordance with ASTM E413 by an independent testing agency.

For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

Specify moisture and mold resistant gypsum board in all bathrooms, mechanical rooms, janitor closets, and all other “wet” areas.

EXECUTION

Store materials inside under cover and keep them dry and protected from weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned. Provide mildew resistant panels if installation occurs prior to enclosing areas.

Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

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

Fire Walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected opening or penetrations shall be effectively and permanently

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identified with signs or stenciling in accordance with the International Building Codes.

Accurately cut panels to fit around openings and projections. Do not tear face paper or break gypsum core.

Apply panels at non fire-rated assemblies in most economical manner, with ends and edges occurring over supports.

Apply panels at fire-rated assemblies as required by design assembly.

Stagger joints on opposite sides of partitions.

Do not locate joints to align with edges of openings unless a control joint is installed.

Gypsum board control joints for walls and ceilings shall meet or exceed ASTM C840.

Treat cut edges and holes in moisture resistant gypsum board with joint sealer.

Extend acoustical partitions past intersecting non-acoustical partitions.

Seal acoustical partitions at perimeter and around penetrations:

1. Apply continuous bead of sealer between gypsum panel edges and adjacent construction.
2. Seal space between gypsum panels at control joints, prior to installing metal control joint.
3. Apply sealer to penetrations through partitions.

Install corner reinforcement at outside corners. Use single lengths where length of corner does not exceed standard length.

Install casings where indicated and where gypsum board abuts dissimilar materials or stops with edge exposed.

Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

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1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for tile and where indicated on drawings.
3. Level 3: Where indicated on Drawings.
4. Level 4: At panel surfaces that will be exposed to view or will received wall covering, unless otherwise indicated.
 - a. Primer and its application to surfaces are specified in other Division 9 Sections.
5. Level 5: Where indicated on Drawings.
 - a. Primer and its application to surfaces are specified in other Division 9 Sections.

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



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09 30 13 – 09 30 33 Ceramic, Glass, and Stone Tiling

GENERAL

Tile shall be designed and specified in accordance with the Tile Council of North America's current publications. Provide sufficient details in the drawings indicating tile locations and extents, patterns, and other necessary installation details. Provide details for setting beds, expansion and control joints, waterproofing, and drain seals.

Contractor shall hold pre-install meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the installer, material manufacturer's representatives, and representatives of other trades or subcontractors affected by the installation.

Furnish extra materials (5% attic stock) that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.

Restrooms: Provide ceramic tile finish at all wet walls, to at least 6'-0" above finish floor level, in whole tile increments.

Shower floor tiles shall not exceed 2"x 2" in size.

PRODUCTS

Submit full size samples for each type, material, color, and pattern of tile and accessory required showing the full range of color, texture, and pattern variations expected. Label each sample with manufacturer's name, material description, color, pattern, and designation indicated on drawings and in finish schedules.

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No ceramic tile may be specified unless approved in advance by TTUS FP&C.

Specify tile that meets ANSI 137.1 for types, compositions, and other characteristics indicated.

All tile specified shall be sourced domestically.

For each type of product indicated submit samples for Verification:

1. Full-size units of each type and composition of tile and for each color and finish required.
3. Full-size units of each type of trim and accessory for each color and finish required.
4. Metal edge strips in 6-inch lengths.

Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

Obtain each of the products specified in this Section from a single manufacturer for each product.

Floor tile shall comply with ANSI A137.1, B101.1, and B101.3 for slip resistance.

Tile products shall be suitable for a commercial environment and for the specific usability requirements of the application. Verify ASTM Porcelain/Ceramic test results for water absorption (ASTM C73-88) Scratch Hardness (MOHS scale rating) Breaking Strength (ASTM 648-04) Chemical Resistance (ASTM C650-04) and Abrasion Resistance (ASTM C1027-99).

All grout specified for floor tile shall be epoxy and meet ANSI A118.3. No white or light-colored grout shall be specified for floor tile.

Specify crack mitigation and waterproofing as required. Waterproofing in wet areas must cover the floor and extend up the walls 8"-12" AFF. Acceptable solutions are:

- Schultex DITRA & KERDI;
- Custom Building Products RedGard;
- Laticrete HYDRO BAN;
- Or approved equal.

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EXECUTION

Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

Construction Manager and Installer are responsible for verifying that all tile, grout, and other related materials is as specified prior to installation.

Joints shall be watertight, without voids, cracks, excess mortar, or excess grout. Align joints in wall and floor of same-sized tile.

Joints shall be no smaller than 1/8" and no larger than 3/8".

Allow tile to set for a minimum of 48 hours before grouting.

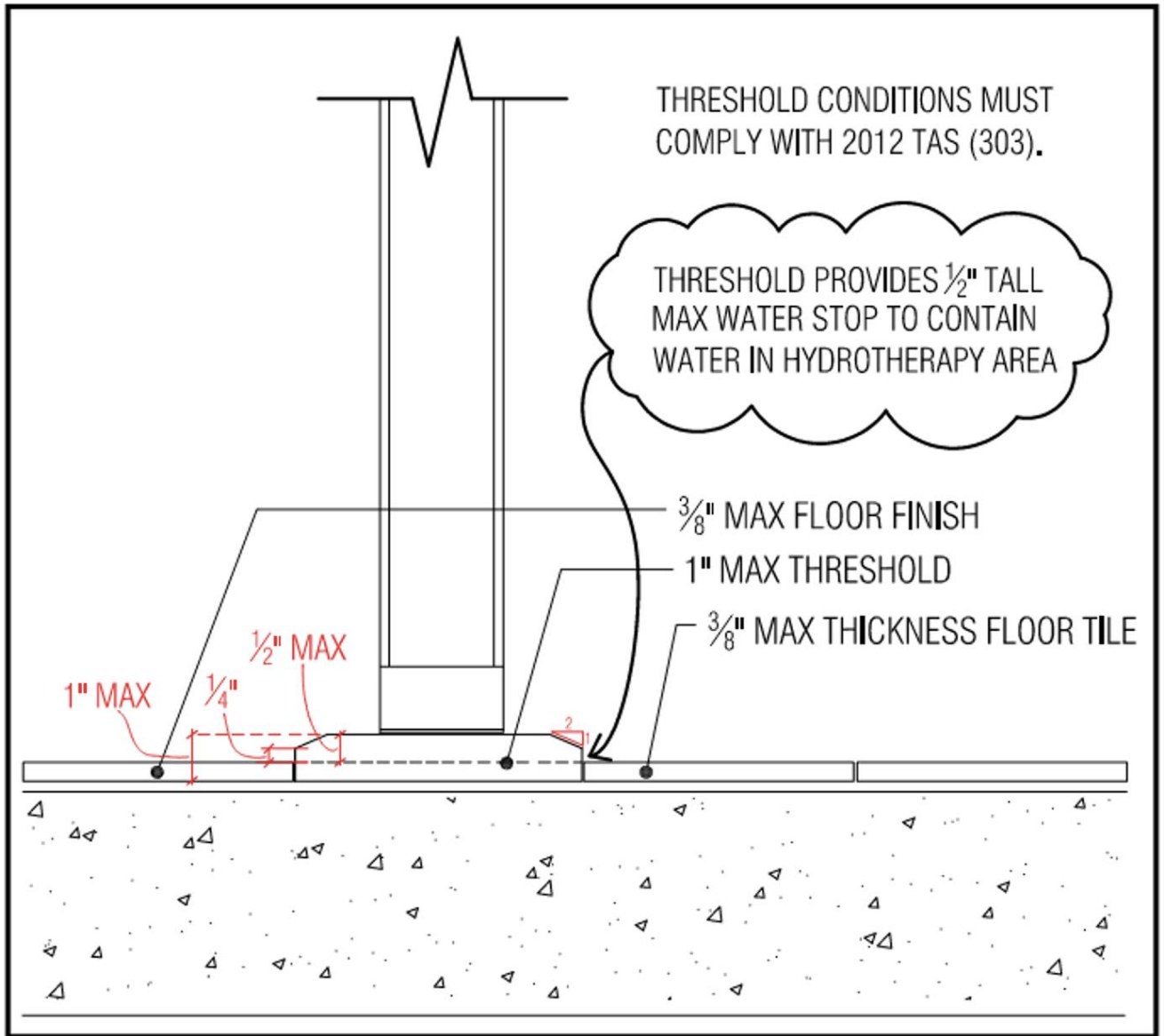
All cuts must be smooth and clean. Minimize pieces less than one half size.

Per ANSI A108.02, lippage must not exceed 1/32" for tile with grout joints between 1/16" and 1/4".

Provide protection for completed work using nonstaining sheet coverings.

Prohibit traffic on tile floors for a minimum of 3 days after installation.

For wet area installations with large format tile conditions, please see the typical threshold detail below.



TYPICAL THRESHOLD DETAIL AT LARGE FORMAT TILE CONDITIONS

SCALE - N.T.S.

(DETAIL INTENT IS TO AVOID SLOPE TO DRAINS GIVEN SCHEDULED LARGE FORMAT TILE FLOOR FINISH.)



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09 51 13 Acoustical Ceilings

GENERAL

Provide ceiling products that provide appropriate acoustical performance and interior finish in accordance with ASTM E 1264. The ceiling products selected should also be easily accessible and easy to maintain after installation.

For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.

1. Acoustical Panel: Set of 6-inch- square Samples of each type, color, pattern, and texture.
2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch- long Samples of each type, finish, and color.

Obtain each type of acoustical ceiling panel and supporting suspension system through one source from a single manufacturer.

Ceiling suspension assemblies shall be supported directly from the building structure. Location of hangers shall not interfere with access to VAV filters, valves, dampers, and other items requiring maintenance.

Contractor shall hold pre-install meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the installer, material manufacturer's representatives, and representatives of other trades or subcontractors affected by the installation.

Furnish extra materials (5% attic stock) that match products installed and that are packaged with protective covering for storage and identified with detailed labels describing contents.

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PRODUCTS

Submit samples for each type, color, texture, and pattern of acoustical panel and accessory required showing the full range of color, texture, and pattern variations expected. Samples must be a minimum of 6" x 6". Label each sample with manufacturer's name, material description, color, pattern, and designation indicated on drawings and in finish schedules.

Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:

1. Surface-Burning Characteristics: Provide acoustical panel ceilings that comply with the following requirements:
 - a. Smoke-Developed Index: 450 or less.

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

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

EXECUTION

Install ceilings in accordance with ASTM C636, Ceilings and Interior Systems Construction Association (CISCA) Handbook, and manufacturer's instructions.

Coordination with mechanical, electrical, and plumbing equipment is required when laying out ceiling grids and supports; no mechanical, electrical, or plumbing access should be blocked.

Specify installation in accordance with manufacturers' specifications and in accordance with ASTM 635, Standard for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings, and ASTM 636, Standard Practice for Installation of Acoustical Tile and Lay-in Panels.

Install in approximately same conditions of temperature and humidity as will prevail after installation.

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Before installing acoustical panels, permit them to reach room temperature and stabilized moisture content.

Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders and comply with layout shown on reflected ceiling plans.

Install molding around perimeters and abutting surfaces. Miter molding at exterior corners; cut flanges and bend web to form interior corners.

Space hanger wires maximum 48 inches on center. Install additional hangers where required to support light fixtures and ceiling supported equipment.

Cut acoustic units to fit irregular grid and perimeter edge trim and around penetrations. Locate cuts to be concealed. Provide finish touch up for exposed cut edges.

10-inches from the suspended ceiling to the bottom of equipment and ductwork is required for ceiling tile removal.

Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.



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09 64 00 Wood Flooring

GENERAL

Wood flooring is prohibited unless approved by TTUS FP&C and the component institution.

If wood flooring is approved and specified, it shall be specified with the appropriate moisture barrier and underfloor sound control.

All flooring must be from a known, established manufacturer/dealer who has been producing or selling the product for a minimum of 5 years.

Flooring must have a static coefficient of friction (COF) that meets Texas Accessibility Standards Section 302.

Provide physical finish samples for approval, approximately 12" x 12", for each color and material selected/specified. Samples should show the full range of normal color and texture variations expected in wood flooring.

Contractor shall hold pre-install meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the installer, material manufacturer's representatives, and representatives of other trades or subcontractors affected by the installation.



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09 64 66 Wood Athletic Flooring

GENERAL

All colors logos, and branding elements specified shall be reviewed and approved by TTUS FP&C and the component institution's Marketing and Communications office.

Provide shop drawings for each type of floor assembly and accessory. Include plans, elevations, sections, details, and attachments to other work. Include the following:

1. Expansion provisions and trim details.
2. Layout, colors, widths, and dimensions of game lines and markers.
3. Locations of floor inserts for athletic equipment installed through flooring assembly.
4. Dimension extent of depressed slab areas as required and indicated on Drawings.

For initial color and finish selection, provide manufacturer's color charts showing colors and glosses available for the following:

1. Floor finish.
2. Game-line and marker paint.

Provide physical finish samples for approval, approximately 12" x 12", for each color and material selected/specified. Samples should show the full range of normal color and texture variations expected in wood flooring. Include samples showing game-line and marker paint applied to the wood flooring.

For each type of wood athletic flooring accessory required, provide samples for approval, at least 12" in length and of the same thickness and material indicated for the work.

Contractor shall hold pre-install meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the installer,

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material manufacturer's representatives, and representatives of other trades or subcontractors affected by the installation.

PRODUCTS

Maple flooring shall comply with Maple Flooring Manufacturers Association (MFMA) grading rules for species, grade, and cut.

Provide flooring that carries MFMA mark on each bundle or piece.

4'x8' mockup is required and may remain as part of the Work if undisturbed at the time of substantial completion. The mockup should show all materials selected, application of field finishes and game line markers, and surface finishes.

EXECUTION

Flooring shall be procured from a qualified manufacturer that is certified for chain-of-custody certification by an FSC-accredited certification body.

Use qualified installers that have been approved by MFMA as an accredited installer. Installers must have previously completed wood athletic flooring installation(s) of similar magnitude successfully.

Protect wood from exposure to moisture. Do not deliver wood components until after concrete, masonry, plaster, ceramic tile, and similar wet work is complete and dry.

Store wood components in a dry, warm, well-ventilated, weathertight location and in a horizontal position.

Conditioning of the installation location shall begin not less than seven days before installation, shall be continuous through installation, and continue not less than seven days after installation.

The ambient temperature shall be between 65-75 degrees Fahrenheit during the conditioning period.

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Relative humidity shall be not less than 35 percent or more than 50 percent, in spaces to receive wood athletic flooring during the conditioning period.

Wood components shall be delivered to the space(s) where they will be installed, no later than the beginning of the conditioning period.

Do not install wood athletic flooring until wood components adjust to relative humidity of, and are at same temperature as, spaces where they are to be installed.

Upon delivery to the installation location(s), open sealed packages to allow wood components to acclimatize.

Do not install wood athletic flooring until other finishing operations, like painting, are completed.

Prior to installation, verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.

Perform moisture tests so that each test area does not exceed limits required by floor manufacturer and perform no fewer than two tests in each installation area and with test areas evenly spaced in installation areas.

Perform anhydrous calcium chloride test per ASTM F 1869.

Proceed with installation only after substrates pass all required testing.

After installation and finishing, protect the wood athletic flooring for the remainder of construction. Floor must be without damage or deterioration at the time of Substantial Completion.

Do not cover flooring after finishing until finish reaches full cure and not before seven days after applying last finish coat.

Do not move heavy and sharp objects directly over flooring. Protect fully cured floor finishes and

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surfaces with plywood or hardboard panels to prevent damage from storing or moving objects over flooring.



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09 65 13 Resilient Base and Accessories

GENERAL

Provide samples of each type of product indicated in the color, texture, and pattern specified.

Furnish extra materials (5% attic stock) that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

All resilient base must meet ASTM F 1861: Classification Type TS- Rubber, Group 1- Solid (homogeneous), Style B- Cove.

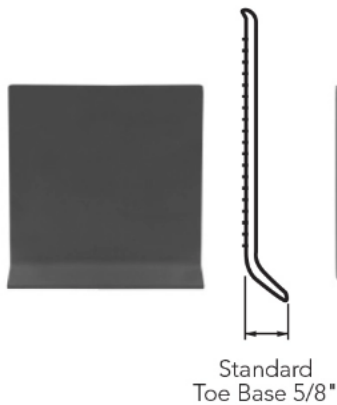
Contractor shall hold pre-install meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the installer, material manufacturer's representatives, and representatives of other trades or subcontractors affected by the installation.

PRODUCTS

Submit samples for each type, color, texture, and pattern of acoustical panel and accessory required showing the full range of color, texture, and pattern variations expected. Sample should be a minimum of 6" long. Label each sample with manufacturer's name, material description, color, pattern, and designation indicated on drawings and in finish schedules.

All resilient base shall be cove base with a 5/8" toe as pictured below. No straight base shall be specified.

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*Image from www.roppe.com

Contoured or profiled rubber base is acceptable and preferred for select, distinguished locations if approved in advance by TTUS FP&C.

EXECUTION

Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following time periods:

- 48 hours before installation.
- During installation.
- 48 hours after installation.

Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

Install resilient products after other finishing operations, including painting, have been completed.

If a TightLock Wall Base System (or similar) is specified, base must be installed before the flooring.

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All resilient base shall have field-formed corners. Inside corners should be mitered and outside corners should be scored for a tight fit. Scoring must be accurately aligned with the corner, and base must be tightly adhered with no visible gaps from above. The bottom of the resilient base should keep in uniform contact with the finished flooring surface.

Installer shall inform the contractor prior to installation if there are any concerns with the finished wall or flooring surface that may affect the quality of the resilient base installation.

No resilient base pieces less than 6" in length shall be installed.



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09 65 16 - 09 65 19 Resilient Flooring

GENERAL

All resilient sheet flooring shall have integral cove 4"-6" high.

Coefficient of Friction for all products specified should meet ASTM D2047 and Texas Accessibility Standards Section 302.

Contractor shall hold pre-install meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the installer, material manufacturer's representatives, and representatives of other trades or subcontractors affected by the installation.

Furnish extra materials (5% attic stock) that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.

PRODUCTS

Submit full size samples for each type, color, texture, and pattern of acoustical panel and accessory required showing the full range of color, texture, and pattern variations expected. Label each sample with manufacturer's name, material description, color, pattern, and designation indicated on drawings and in finish schedules.

Cap strips for integral cove base shall be compatible with the product specified and must match the flooring color.

Specify flooring that meets ASTM F1303 and ASTM F1860.

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All product specified must, at a minimum, have a 30mil wear layer.

EXECUTION

Prepare substrates in accordance with manufacturer's instructions and ASTM F 710.

For resilient sheet products, lay out flooring to minimize seams. When possible, locate seams in low-traffic areas.

Store floor tiles on flat surfaces.

Installation for resilient sheet flooring must meet ASTM F1516 and be completed in accordance with manufacturer's instructions.

All cleaning must be in accordance with manufacturer's instructions.

All resilient sheet flooring seams must be heat welded unless otherwise approved by TTUS FP&C.

Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 85 deg F, in spaces to receive floor coverings during the following time periods:

- 48 hours before installation
- During installation
- 48 hours after installation

Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

Install floor coverings after other finishing operations, including painting, have been completed.

Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

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Lay tiles with grain direction as specified in the finish schedule. Have the design professional's interior designer (DPID) provide this information in writing if it is not indicated in the contract documents.

Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

Maintain uniformity of floor covering direction.

Close spaces to traffic during floor covering installation.

Close spaces to traffic for 48 hours after floor covering installation.

Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, and adequately protect installed flooring from traffic.



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09 66 13 – 09 66 23 Terrazzo Flooring

GENERAL

Comply with NTMA's "Terrazzo Specifications and Design Guide" and with written recommendations for terrazzo type indicated unless more stringent requirements are specified.

Flooring must have a static coefficient of friction (COF) that meets Texas Accessibility Standards Section 302 and ASTM C1028.

4'x8' mockup is required and may remain as part of the Work. The mockup should show the terrazzo mix, surface finish, base and divider strips.

Verify actual dimensions of construction contiguous with precast terrazzo by field measurements before fabrication.

For precast terrazzo units for stair treads, comply with NTMA's written recommendations for fabricating precast terrazzo units in sizes and profiles indicated. Reinforce units as required by unit sizes, profiles, and thicknesses and as recommended by manufacturer.

Contractor shall hold pre-install meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the installer, material manufacturer's representatives, and representatives of other trades or subcontractors affected by the installation.

PRODUCTS

Submit samples for each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected. Samples must a minimum of 6"x6". Label each sample with manufacturer's name, material description, color,

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pattern, and designation indicated on drawings and in finish schedules.

Obtain each color, grade, type, and variety of granular materials from one source with resources to provide materials of consistent quality in appearance and physical properties.

Terrazzo divider strips must be zinc.

EXECUTION

Installer shall be a member of the National Terrazzo & Mosaic Association (NTMA) and comply with NTMA's written recommendations for terrazzo installation.

Installer must be a qualified installer who is acceptable to the terrazzo manufacturer to install the manufacturer's products. Engage an installer who is certified in writing by terrazzo manufacturer as qualified to install manufacturer's products.

Deliver materials to Project site in supplier's original wrappings and containers, labeled with sources or manufacturer's name, material or product brand name, and lot number if any. Store materials in the original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting terrazzo installation.

Close spaces to traffic during terrazzo application and for not less than 24 hours after application unless manufacturer recommends a longer period.

Control and collect dust produced by grinding operations. Protect adjacent construction from detrimental effects of grinding operations.

Clean substrate to ASTM D4258. Clean substrates of substances, including oil, grease, and curing compounds, that might impair terrazzo bond. Provide clean, dry, and neutral substrate for terrazzo application.

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Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with terrazzo.

Test for moisture by anhydrous calcium chloride method according to ASTM E 1907. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

Flooring contractor should notify the owner of any conditions that may cause issues with cracking, etc.

Comply with NTMA's written recommendations for terrazzo and accessory installation.

Place, rough grind, grout, cure grout, fine grind, and finish terrazzo according to manufacturer's written instructions and NTMA's "Terrazzo Specifications and Design Guide."

Install divider strips in pattern indicated by the Design Professional in the Construction Documents.

Clean and seal terrazzo surface in accordance with NTMA's written recommendations.

Provide temporary protection for completed work using nonstaining coverings.



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09 68 13 – 09 68 16 Tile and Sheet Carpeting

GENERAL

Specify adhesives to be water-resistant, mildew-resistant, non-staining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile, and is recommended by carpet tile manufacturer for releasable installation. Adhesive shall allow for removal without damage to carpet or substrate and leave no residue.

Special Warranty for Carpet Tiles: Manufacturer shall repair or replace components of carpet tile installation that fails in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, more than 10 percent edge raveling, snags, runs, dimensional stability, loss of tuft bind strength, loss of face fiber, and delamination.
3. Warranty Period: as specified beginning from date of Substantial Completion.

Shop drawings shall be submitted for review and shall show the following:

1. Existing floor materials to be removed.
2. Existing floor materials to remain.
3. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
4. Carpet tile type, color, and dye lot.
5. Type of subfloor.
6. Type of installation.
7. Pattern of installation, direction, and starting points per floor.
8. Pattern type and location.

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9. Type, color, and location of insets and borders.
10. Type, color, and location of edge, transition, and other accessory strips.
11. Pile direction.
12. Transition and other accessory strips.
13. Transition details to other flooring materials.

Contractor shall hold a flooring pre-installation meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the installer, material manufacturer's representatives, and representatives of other trades or subcontractors affected by the installation.

Furnish extra materials (5% attic stock) that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.

PRODUCTS

For each type of product, submit manufacturer's written data on physical characteristics, durability, fade resistance, and installation recommendations for each type of substrate.

Full-size samples of all carpet tiles and 12"x12" (minimum) samples of all sheet carpeting should be submitted to TTUS FP&C for review and approval. Label each sample with manufacturer's name, material description, color, pattern, and designation indicated on drawings and in finish schedules.

Furnish extra materials from the same product run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

Where indicated, provide carpet tile identical to those of assemblies tested for fire response according to NFPA 253 by a qualified testing agency.

EXECUTION

Do not deliver or install carpet until wet work in spaces is complete and dry, painting and finishing work has been completed, and ambient temperature and humidity conditions are

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maintained at occupancy levels during remainder of construction.

Comply with Carpet and Rug Institute (CRI) 104 Installation Guidelines for delivery, storage, handling, temperature, humidity, and ventilation limitations.

Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile to validate type, color, pattern, and identify potential defects prior to installation.

Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.

Comply with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.

Carpet tile installations shall be 100% glue-down. Interface's TacTile method and other similar installation methods are prohibited unless an exception is approved by TTUS FP&C.

Maintain dye lot integrity. Do not mix carpet from different dye lots in same area.

Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by manufacturer.

Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

Locate change of color or pattern between rooms under door centerline.

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Protect installed carpet tile to comply with CRI 104, Section 16, "Protecting Indoor Installations."



Facilities Planning and Construction Design and Construction Standards

Division 9 - Finishes

09 22 00 Wall Coverings

GENERAL

Wall coverings should be used sparingly and shall be appropriate and durable for the application.

Avoid the use of wallcoverings in high traffic areas or locations where people may regularly come into contact with the surface.

All wood paneling and acoustical wallcovering shall be Class "A" fire-rated for vertical surfaces. The flame spread ratings of walls and ceilings shall comply with NFPA 101.

Contractor shall hold a flooring pre-installation meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the installer, material manufacturer's representatives, and representatives of other trades or subcontractors affected by the installation.

Furnish extra materials (5% attic stock, but not less than one roll) that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.

For all walls that are to receive wall coverings, specify the appropriate finish level for the substrate that the wall covering will be applied to.

PRODUCTS

Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates according to test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

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1. Surface-Burning Characteristics: As follows:

- a. NFPA 101 Life Safety Code – Class A.
- b. ASTM – E84/NFPA 286 Corner Burn Test compliant for flame spread, smoke developed, and flashover.

All wall coverings must be from the same print-run or dye-lot.

Adhesive shall be mildew-resistant, nonstaining adhesive, for use with specific wall covering and substrate application indicated and as recommended in writing by wall-covering manufacturer.

Submit samples, minimum of 24"x24" in size, of each wall covering specified for review and approval. Label each sample with manufacturer's name, material description, color, pattern, and designation indicated on drawings and in finish schedules.

EXECUTION

Do not deliver or install wall coverings until spaces are enclosed and weather-tight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

- Wood-Veneer Wall Coverings: Condition spaces for not less than 48 hours before Installation.

Lighting: Do not install wall covering until a permanent level of lighting is provided on the surfaces to receive wall covering.

Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

Installer(s), owner, architect, and construction manager shall examine substrates and conditions, with for compliance with requirements for levelness, wall plumbness, maximum moisture content, and other conditions affecting installation. Proceed with installation only after unsatisfactory conditions have been corrected.

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Clean substrates of substances that could impair bond of wall covering, including dirt, oil, grease, mold, mildew, and incompatible primers.

Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.

1. Gypsum Board: Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.

Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

Cut wall-covering strips in roll number sequence. Change roll numbers at partition breaks and corners.

Install strips in same order as recommended by manufacturer.

Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.

Wall coverings shall have no gaps or overlaps, no lifted or curling edges, and no visible shrinkage.

Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without any overlay or spacing between strips.

Remove excess adhesive at seams, perimeter edges, and adjacent surfaces.

Use cleaning methods recommended in writing by wall-covering manufacturer.

Protect installed products from damage for the remainder of the construction period.



Facilities Planning and Construction Design and Construction Standards

Division 9 - Finishes

09 77 23 Fabric-Wrapped Panels

GENERAL

Provide samples for approval, minimum of 12"x12" in size, of each fabric wrapped panel specified. Samples must show the full panel assembly, including the specified fabric, substrate, and mounting hardware.

Panels shall have a hard frame perimeter to protect edges and corners from dents and damage.

Contractor shall hold a flooring pre-installation meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the installer, material manufacturer's representatives, and representatives of other trades or subcontractors affected by the installation.

PRODUCTS

Fire-Test-Response Characteristics: Provide fabric-wrapped panels with the following surface-burning characteristics as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Flame-Spread Index: 25 or less
2. Smoke-Developed Index: 450 or less

Acoustical Performance Requirements: Acoustical panels must have sound absorption properties equal or greater than Noise Reduction Coefficient (NRC) of 0.90.

EXECUTION

Verify locations of fabric-wrapped panels by field measurements before fabrication and indicate measurements on Shop Drawings. Show intersections with adjacent work.

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Mounting devices shall be concealed on the back side of the panel.

Panels should be easily removed without causing significant damage to the wall.

Following installation, clip loose threads, remove pills, and extraneous materials.

At the conclusion of construction, clean all panels in accordance with manufacturer's written instructions to remove dirt and other debris.



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09 84 33 Sound-Absorbing Wall Units

GENERAL

Sound absorbing wall units must meet ASTM C423.

Provide samples for approval, minimum of 12"x12" in size, of each sound-absorbing wall unit specified. Samples must show the full panel assembly, including the specified finish, substrate, and mounting hardware.

Specifications and drawings must accurately detail acceptable manufacturers, panel shape, mounting method, core material, edge construction, edge profile, corner detail, acoustical performance, and panel dimensions (thickness, width, and length).

Contractor shall hold a flooring pre-installation meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the installer, material manufacturer's representatives, and representatives of other trades or subcontractors affected by the installation.

PRODUCTS

System must be Class A Fire Rated and meet ASTM E84.

Edges of wall panels shall be fully covered and wrapped neatly at the corners.

EXECUTION

For full height panels, field measure panels for custom fit flush to ceiling and tolerance at floor to within 1/8" at top of base.

Mounting devices shall be concealed on the back side of the panel.

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Panels should be easily removed without causing significant damage to the wall.

Do not install panels until all wet work is complete, the building is enclosed, and the temperature and relative humidity are stabilized at 60-80 degrees F.

Do not install panels until substrate conditions meet manufacturer's requirements.

Measure each area and establish layout of panels and joints of uniform size with balanced borders at opposite edges within a given area.

Following installation, clip loose threads, remove pills, and extraneous materials.

At the conclusion of construction, clean all panels in accordance with manufacturer's written instructions to remove dirt and other debris.

Furnish extra materials (5%), from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.



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09 84 36 Sound-Absorbing Ceiling Units

GENERAL

Sound absorbing ceiling units must meet ASTM C423.

Specifications and drawings must accurately detail acceptable manufacturers, panel shape, mounting method, core material, edge construction, edge profile, corner detail, acoustical performance, and panel dimensions (thickness, width, and length).

Provide samples for approval, minimum of 12"x12" in size, of each sound-absorbing wall unit specified. Samples must show the full panel assembly, including the specified finish, substrate, and mounting hardware.

Provide reflected ceiling plans and other details in order to coordinate the following:

- Electrical outlets
- Suspended ceiling components above ceiling units
- Structural members to which suspension devices will be attached
- Items penetrating or covered by units
- Lighting fixtures
- Air outlets and inlets
- Speakers
- Alarms
- Sprinklers
- Access Panels

Contractor shall hold a flooring pre-installation meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the installer, material manufacturer's representatives, and representatives of other trades or

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subcontractors affected by the installation.

PRODUCTS

System must be Class A Fire Rated and meet ASTM E84.

Edges of ceiling panels shall be fully covered and wrapped neatly at the corners.

EXECUTION

Mounting devices shall be concealed on the back side of the panel.

Panels should be easily removed without causing significant damage to the ceiling.

Do not install panels until all wet work is complete, the building is enclosed, and the temperature and relative humidity are stabilized at 60-80 degrees F.

Do not install panels until substrate conditions meet manufacturer's requirements.

Measure each area and establish layout of panels and joints of uniform size with balanced borders at opposite edges within a given area.

Following installation, clip loose threads, remove pills, and extraneous materials.

At the conclusion of construction, clean all panels in accordance with manufacturer's written instructions to remove dirt and other debris.

Furnish extra materials (5%), from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.



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Division 9 - Finishes

09 91 23 Interior Painting

GENERAL

Interior paint quality should be consistent with the use of the facility. If high performance paints are specified, they must be justified. Paints should be selected for maximum durability and minimum environmental and human impact for the given application. Consider ventilation, exposure to physical damage, vandalism potential, liquids, likely maintenance frequency, etc.

Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents (minimum of 1 gallon for each paint color applied).

Contractor shall hold a painting pre-installation meeting prior to commencement of preparation work and installation. The meeting shall include the Owner, Architect, the Contractor, the painting contractor, and representatives of other trades or subcontractors affected by the installation.

Required sample submittals:

- Draw-downs: provide product draw downs for each color and sheen specified in the project finish schedule.

Provide mockups, 100 sq. ft. minimum, of each paint system indicated and each color and finish selected to demonstrate aesthetic effects and set quality standards for materials and execution. Mockups must be approved by the Architect and FP&C Interiors Project Manager prior to commencement of the work.

Paint submittal(s) shall include material safety data sheets (MSDS) for each paint specified.

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Submit samples for each type of interior paint specified showing their respective color and finishes. Samples must be a minimum of 8.5" x 11". Label each sample with manufacturer's name, material description, color, and designation indicated on drawings and in finish schedules.

PRODUCTS

Acceptable sheens for various applications are listed below. All sheens shall meet Master Painters Institute's (MPI) gloss standards.

- Public Spaces and Trim: Semi-gloss finish
- Private Spaces: Eggshell finish
- High Humidity Areas & Custodial Closets: Epoxy paint

Color matches are only acceptable if approved in advance by FP&C and the Architect. If a color match is accepted, it must be documented in the project finish schedule.

For field applications that are inside the weatherproofing system, paints and coatings shall comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:

1. Flat Paints and Coatings: VOC content of not more than 50 g/L.
2. Nonflat Paints and Coatings: VOC content of not more than 100 g/L.
3. Dry Fog Coatings: VOC content not more than 150 g/L.
4. Primers, Sealers, and Undercoaters: VOC content not more than 100 g/L.
5. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC content not more than 250 g/L.
6. Zinc-Rich Industrial Maintenance Primers: VOC content not more than 340 g/L.
7. Pre-Treatment Wash Primers: VOC content not more than 420 g/L. Floor Coatings: VOC content not more than 100 g/L.
8. Shellacs, Clear: VOC content not more than 730 g/L.
9. Shellacs, Pigmented: VOC content not more than 550 g/L.

EXECUTION

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

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

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

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

Examine substrates, areas, and conditions, with Applicator present, for compliance with manufacturer's requirements for paint application. Comply with procedures specified in PDCA P4.

1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.

Remove hardware and hardware accessories, cover plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible, provide surface-applied protection before surface preparation and painting.

Before applying paint or other surface treatments, clean substrates of substances that could impair bond of paints. Remove oil and grease before cleaning.

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified. Provide barrier coats over incompatible primers or remove and reprime.

For gypsum wallboard substrates, repair all surface in gypsum wallboard with wallboard joint finishing compound or spackling compound, filled out flush and sanded smooth. Clean all surfaces and taped joints of dust, dirt, and other contaminants and be sure they are thoroughly dry before applying paint.

For concrete substrates, remove release agents, curing compounds, efflorescence, and chalk.

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Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

For masonry substrates, remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

For steel substrates, remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.

For shop-primed steel substrates, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

For galvanized-metal substrates, remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

For wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, or other surface imperfections. Cut in sharp lines and color breaks.

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

Paint front and back sides of access panels, removable or hinged covers, and similar hinged

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items to match exposed surfaces. Paint access panels, electrical panels, air diffusing outlets, supply and exhaust grilles, louvers, exposed conduit, primed hardware items, primed outlet covers, primed wall and ceiling cover plates and other items in painted areas to match the areas in which they occur unless otherwise directed by the Architect.

When painting over a level 5 finish, spray equipment shall be used.

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.

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

All paint off-gassing must be complete prior to substantial completion.