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SECTION 09 0100 - Division 09 Designer Guidelines

All materials, colors, finishes, product specifications, accessory items, applications and details are to be reviewed and approved by the University Project Manager prior to the final development of the Construction Documents.

All materials shall be appropriate for the function and use frequency of the rooms for which they are intended.

In renovations, all material patches shall blend as closely as possible. Complementary colors and patterns are to match the existing materials so they do not appear patched.

In renovations and additions, the building's paint palette should be utilized as closely as possible. New paint colors should be introduced only if absolutely necessary.

Avoid extravagant, costly, custom or high-maintenance finishes.

The Design Professional shall specify only finishes that require limited maintenance and can be easily maintained and replaced by the University.

Western Michigan University’s Visual Identity Program shall be followed to consistently communicate the University brand: https://wmich.edu/visualidentity. The Design Professional shall consider this when developing interior and exterior color palettes for on-campus projects.

In general, the number of different finishes used throughout a building should be thoughtfully considered, keeping long-term maintenance and repair in mind.

Detailed specifications of at least one selected product and two additional products which are acceptable equals in material construction and color shall be specified for bidding.

Products shall be specified that can be obtained and installed by Contractors of an established firm, experienced in the installation of the specified product.

Western Michigan University is a member of several purchasing consortiums. Each consortium is made up of a different member base of independent organizations that join together for the purpose of combining individual requirements for the purchase of goods and services. Participating in these consortiums allows the University to leverage the purchasing power of a group of organizations and obtain preferential contract pricing and terms. The Design Professional shall utilize said companies as they specify products for University projects. Western Michigan University has access to the following consortium contracts:

- Educational & Institutional Cooperative (E&I): https://www.eandi.org
- U.S. Communities Government Purchasing Alliance: http://www.uscommunities.org
- State of Michigan MiDeal: https://www.michigan.gov/dtmb/0,5552,7-358-82550_85753_64866---,00.html

Ceramic floor and full-height wall tile or other suitable solid surface material approved by the University Project Manager is required for all restrooms, shower rooms, food preparation, food serving and other common areas where food and water is present.
Corner protection should be incorporated into heavily used areas (such as food service preparation spaces), and on all 90-degree corners in corridors finished with gypsum board. The Design Professional shall discuss this with WMU during the design stages of the project.

All ceilings shall be designed to be easily accessible for maintenance and other access needs such as technology installations.

Mechanical, electrical, telecommunications and custodial rooms shall be designed without finish ceilings.

Acoustical ceiling tiles specified for food preparation areas and other spaces with potential for water or steam penetration shall be of humidity-resistant composition. Toilet room ceilings should be finished with gypsum board.

As a rule, sprinkler heads, lights and other ceiling-mounted devices shall be centered within ceiling tiles. Design Professional to include language around install in the drawings and/or project specifications.

Materials specified for ceilings shall contribute to the acoustic requirements of the space.

Flooring selections shall be based on heavy duty commercial grade flooring rated for intended use by the manufacturer. Custom materials and colorations are prohibited as they increase later costs for repair and renovations.

Flooring material shall be compatible with the furniture selected for the space and the function of the room.

Avoid use of flooring that is not UV stable in spaces that receive concentrated UV rays.

WMU prefers carpet tile over broadloom for carpeted areas. The Architect must discuss the use of broadloom with the University's Project Manager prior to its specification.

Wall surfaces behind permanently fixed equipment shall be finish painted.

Custodial closets with mop sinks require paint finishes that will not deteriorate from water splashes and sink overruns. Wall protection is preferred over paint and should be specified as project budget permits.

Telecommunications, electrical, mechanical and building storage room floors shall be sealed concrete.

Specify paint finishes with appropriate properties for the spaces indicated. Durable paint finishes are required for corridors, hallways, loading docks, custodial rooms and door and window frames.

Specialty paint products (multi-speck, textured, metallic) that are difficult to repair/patch shall be discussed with the University's Project Manager prior to their specification.

WMU may require a complete set of interior and exterior finishes to be supplied at the end of the design phases of a project for final review by all stakeholders. These finish samples will be kept by the University as record samples. The Design Professional shall discuss this with the University during the design stages of the project to determine the scope of this requirement.

END OF SECTION 09 0100
WMU Design Guidelines Instructions: These guidelines are to be used by the Design Professional to inform the design process and outline WMU-specific desires for University projects. Text appearing in blue indicates a WMU design guideline which must be met for all campus projects unless approved in writing by the University. Blue text that is struck out indicates products or practices that are not acceptable, and shall not be included unless similarly approved. Any text remaining in black is to be edited by the Design Professional as part of the normal specifications-writing process. Guidelines language shall be included in the project specifications and their intent incorporated into the drawings.

SECTION 09 3013 - CERAMIC TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Ceramic mosaic tile.
2. Quarry tile.
3. Pressed floor tile.
4. Porcelain tile.
5. Glazed wall tile.
7. Tile backing panels.
8. Waterproof membrane [for thinset applications].
10. Metal edge strips.

1.2 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.


C. Module Size: Actual tile size plus joint width indicated.

D. Face Size: Actual tile size, excluding spacer lugs.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at [Project site] <Insert location>.

1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.
1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

**Designer Note:** For projects seeking LEED certification, include sustainable design submittals as required.

B. Sustainable Design Submittals:

1. [Double click to insert sustainable design text for adhesives.]
2. [Double click to insert sustainable design text for low-emitting sealers.]

C. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

1. Provide detailed drawings of all tile patterns on floors and walls. Include pattern, tile type, tile sizes and dimensions.

D. Samples for Initial Selection: For tile, grout, and accessories involving color selection.

E. Samples for Verification: Full-size units of each type and composition of tile and for each color and finish required.

1. For ceramic mosaic tile in color blend patterns, provide full sheets of each color blend.
2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least [12 inches square] [36 inches square] <Insert size>, but not fewer than four tiles. Use grout of type and in color or colors approved for completed Work.
3. Full-size units of each type of trim and accessory [for each color and finish required].
4. Stone thresholds in 6-inch lengths.
5. Metal edge strips in 6-inch lengths.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

C. Product Certificates: For each type of product.

D. Product Test Reports: For tile-setting and grouting products [and certified porcelain tile].

1.6 MAINTENANCE MATERIAL SUBMITTALS

**Designer Note:** The amount of attic stock is determined on a project-by-project basis. This needs to be discussed with WMU during the design phases of the project, including where the extra materials will be stored.
A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

   a. <Insert, in separate subparagraphs, tile-type designation or description and quantity required for each category of tile for which extra material is required>.

2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.7 QUALITY ASSURANCE

A. Installer Qualifications:

   1. Installer is [a five-star member of the National Tile Contractors Association] [or] [a Trowel of Excellence member of the Tile Contractors’ Association of America].
   2. Installer's supervisor for Project holds the International Masonry Institute’s Foreman Certification.
   3. Installer employs [Ceramic Tile Education Foundation Certified Installers] [or] [installers recognized by the U.S. Department of Labor as Journeyman Tile Layers].

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

   1. Build mockup of [each type of] floor tile installation.
   2. Build mockup of [each type of] wall tile installation.
   3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

1.9 FIELD CONDITIONS

A. Environmental Limitations: 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.
PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Tile: Obtain [tile of each type and color or finish] [tile of each type] [tile of each color or finish] [tile] from single source or producer.

1. 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.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.

1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
2. Obtain [waterproof membrane] [and] [crack isolation membrane], except for sheet products, from manufacturer of setting and grouting materials.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:

1. Stone thresholds.
2. Waterproof membrane.
3. Crack isolation membrane.
4. Cementitious backer units.
5. Metal edge strips.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

1. Provide tile complying with Standard grade requirements [unless otherwise indicated].

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

1. Where tile is indicated for installation [in swimming pools] [on exteriors] [or] [in wet areas], do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.
2.3 TILE PRODUCTS

A. Ceramic Tile Type \([\text{CT-}\#]\): Factory-mounted [unglazed] [glazed] ceramic mosaic tile.

1. [Double click here to find, evaluate, and insert list of manufacturers and products.]
2. Composition: [Porcelain] [Impervious natural clay or porcelain] [Vitreous or impervious natural clay or porcelain].
3. Certification: Porcelain tile certified by the Porcelain Tile Certification Agency.
4. Module Size: \([1 \text{ by } 1 \text{ inch}][1 \text{ by } 2 \text{ inches}][2 \text{ by } 2 \text{ inches}]<\text{Insert dimensions}>\).
5. Thickness: 1/4 inch.
6. Face: [Plain] [Pattern of design indicated,] with cushion edges.
7. Surface: [Smooth, without] [Slip resistant, with] abrasive admixture.
8. Dynamic Coefficient of Friction: Not less than 0.42.
9. Finish: [Bright, opaque] [Bright, clear] [Mat, opaque] [Mat, clear] [Semimatt, opaque] [Semimatt, clear] [Vellum, opaque] [Vellum, clear] [Crystalline]<Insert description> glaze.
10. Tile Color and Pattern: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range]<Insert color and pattern>.
11. Grout Color: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range]<Insert color>.
12. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable [and matching characteristics of adjoining flat tile]. Provide shapes as follows, selected from manufacturer's standard shapes:
   a. Base Cove: Cove, module size \([1 \text{ by } 1 \text{ inch}][2 \text{ by } 1 \text{ inch}]<\text{Insert dimensions}>\).
   b. Base Cap for Portland Cement Mortar Installations: Bead (bullnose), module size \([1 \text{ by } 1 \text{ inch}][2 \text{ by } 1 \text{ inch}]<\text{Insert dimensions}>\).
   c. Base Cap for Thinset Mortar Installations: Surface bullnose, module size \([1 \text{ by } 1 \text{ inch}][2 \text{ by } 2 \text{ inches}]<\text{Insert dimensions}>\).
   d. Wainscot Cap for Portland Cement Mortar Installations: Bead (bullnose), module size \([1 \text{ by } 1 \text{ inch}][2 \text{ by } 1 \text{ inch}]<\text{Insert dimensions}>\).
   e. Wainscot Cap for Thinset Mortar Installations: Surface bullnose, module size \([1 \text{ by } 1 \text{ inch}][2 \text{ by } 2 \text{ inches}]<\text{Insert dimensions}>\).
   f. Wainscot Cap for Flush Conditions: Regular flat tile for conditions where tile wainscot is shown flush with wall surface above it, same size as adjoining flat tile.
   g. External Corners for Portland Cement Mortar Installations: Bead (bullnose), module size \([1 \text{ by } 1 \text{ inch}][2 \text{ by } 1 \text{ inch}]<\text{Insert dimensions}>\).
   h. External Corners for Thinset Mortar Installations: Surface bullnose, module size \([1 \text{ by } 1 \text{ inch}][2 \text{ by } 2 \text{ inches}]<\text{Insert dimensions}>\).
   i. Internal Corners: Cove, module size \([1 \text{ by } 1 \text{ inch}][2 \text{ by } 1 \text{ inch}]<\text{Insert dimensions}>\).
   j. Internal Corners: Field-butted square corners. For coved base and cap, use angle pieces designed to fit with stretcher shapes.
   k. Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide reduction in thickness from 1/2 to 1/4 inch across nominal 4-inch dimension.

B. Ceramic Tile Type \([\text{CT-}\#]\): [Unglazed] [Glazed] square-edged quarry tile.

1. [Double click here to find, evaluate, and insert list of manufacturers and products.]
2. Face Size: \([3 \text{ by } 3 \text{ inches}][4 \text{ by } 4 \text{ inches}][6 \text{ by } 3 \text{ inches}][6 \text{ by } 6 \text{ inches}][8 \text{ by } 3-7/8 \text{ inches}][8 \text{ by } 8 \text{ inches}]<\text{Insert dimensions}>\).
3. Thickness: [3/8 inch] [1/2 inch] [3/4 inch].
4. Wearing Surface: [Nonabrasive, smooth] [Abrasive aggregate embedded in surface] <Insert description>.
5. Dynamic Coefficient of Friction: Not less than 0.42.
6. Finish: [Bright, opaque] [Bright, clear] [Mat, opaque] [Mat, clear] [Semimat, opaque] [Semimat, clear] [Vellum, opaque] [Vellum, clear] [Crystalline] <Insert description> glaze.
7. Tile Color and Pattern: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range] <Insert color and pattern>.
8. Grout Color: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range] <Insert color>.
9. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable [and matching characteristics of adjoining flat tile]. Provide shapes as follows, selected from manufacturer's standard shapes:
   a. Base: Coved [with surface bullnose top edge], face size [6 by 6 inches] [8 by 3-7/8 inches] <Insert dimensions>.
   b. Wainscot Cap: Surface bullnose, face size [6 by 6 inches] [8 by 3-7/8 inches] <Insert dimensions>.
   c. Wainscot Cap for Flush Conditions: Regular flat tile for conditions where tile wainscot is shown flush with wall surface above it, same size as adjoining flat tile.

C. Ceramic Tile Type [CT-#]: [Unglazed] [Glazed] pressed floor tile.
1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
2. Composition: [Impervious natural clay or porcelain] [Vitreous or impervious natural clay or porcelain] [Natural clay or porcelain].
3. Face Size: [3 by 3 inches] [4 by 4 inches] [6 by 6 inches] [7-3/4 by 3-7/8 inches] [7-7/8 by 7-7/8 inches] [11-13/16 by 11-13/16 inches] [165 by 333 mm] [200 by 250 mm] [250 by 250 mm] [333 by 333 mm] [400 by 400 mm] <Insert dimensions>.
4. Face Size Variation: [Calibrated or rectified] [Rectified].
5. Thickness: [1/4 inch] [3/8 inch] [1/2 inch].
6. Face: [Plain with square or cushion edges] [Plain with square edges] [Plain with cushion edges] [Pattern of design indicated, with square or cushion edges] [As indicated].
7. Dynamic Coefficient of Friction: Not less than 0.42.
8. Glaze: [Bright, opaque] [Bright, clear] [Mat, opaque] [Mat, clear] [Semimat, opaque] [Semimat, clear] [Vellum, opaque] [Vellum, clear] [Crystalline] <Insert description>.
9. Tile Color and Pattern: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range] <Insert color and pattern>.
10. Grout Color: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range] <Insert color>.
11. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable [and matching characteristics of adjoining flat tile]. Provide shapes as follows, selected from manufacturer's standard shapes:
   a. Base Cove: Cove, module size [same as adjoining flat tile] <Insert size>.
   b. Base Cap for Portland Cement Mortar Installations: Bead (bullnose), module size [same as adjoining flat tile] <Insert size>.
   c. Base Cap for Thinset Mortar Installations: Surface bullnose, module size [same as adjoining flat tile] <Insert size>.
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d. Wainscot Cap for Portland Cement Mortar Installations: Bead (bullnose), module size [same as adjoining flat tile] <Insert size>.

e. Wainscot Cap for Thinset Mortar Installations: Surface bullnose, module size [same as adjoining flat tile] <Insert size>.

f. Wainscot Cap for Flush Conditions: Regular flat tile for conditions where tile wainscot is shown flush with wall surface above it, same size as adjoining flat tile.

g. External Corners for Portland Cement Mortar Installations: Bead (bullnose), module size [same as adjoining flat tile] <Insert size>.

h. External Corners for Thinset Mortar Installations: Surface bullnose, module size [same as adjoining flat tile] <Insert size>.

i. Internal Corners: Cove, module size [same as adjoining flat tile] <Insert size>.

j. Internal Corners: Field-butted square corners. For coved base and cap, use angle pieces designed to fit with stretcher shapes.

k. Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide reduction in thickness from 1/2 to 1/4 inch across nominal 4-inch dimension.

D. Ceramic Tile Type [CT-#]: [Unglazed] [Glazed] porcelain tile.

1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
2. Certification: Tile certified by the Porcelain Tile Certification Agency.
3. Face Size: [3 by 3 inches] [4 by 4 inches] [6 by 6 inches] [7-3/4 by 3-7/8 inches] [7-7/8 by 7-7/8 inches] [11-13/16 by 11-13/16 inches] [165 by 333 mm] [200 by 250 mm] [250 by 250 mm] [333 by 333 mm] [400 by 400 mm] <Insert dimensions>.

4. Face Size Variation: Rectified.
5. Thickness: [1/4 inch] [3/8 inch] [1/2 inch].
6. Face: [Plain with square or cushion edges] [Plain with square edges] [Plain with cushion edges] [Polished with square edges] [As indicated].
7. Dynamic Coefficient of Friction: Not less than 0.42.
8. Tile Color, Glaze, and Pattern: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range] <Insert color, glaze, and pattern>.

9. Grout Color: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range] <Insert color>.

10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable [and matching characteristics of adjoining flat tile]. Provide shapes as follows, selected from manufacturer's standard shapes:

a. Base Cap: Surface bullnose, module size [same as adjoining flat tile] <Insert size>.

b. Wainscot Cap: Surface bullnose, module size [same as adjoining flat tile] <Insert size>.

c. Wainscot Cap for Flush Conditions: Regular flat tile for conditions where tile wainscot is shown flush with wall surface above it, same size as adjoining flat tile.

d. External Corners: Surface bullnose, module size [same as adjoining flat tile] <Insert size>.

e. Internal Corners: Field-butted square corners.

f. Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide reduction in thickness from 1/2 to 1/4 inch across nominal 4-inch dimension.
E. Ceramic Tile Type [CT-<#>]: Glazed wall tile.

1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
2. Module Size: [4-1/4 by 4-1/4 inches] [6 by 4-1/4 inches] [6 by 6 inches] [200 by 200 mm] [250 by 250 mm] [200 by 300 mm] <Insert dimensions>.
3. Face Size Variation: Rectified.
5. Face: [Plain with modified square edges or cushion edges] [Plain with modified square edges] [Plain with cushion edges] [Pattern of design indicated, with manufacturer's standard edges].
6. Finish: [Bright, opaque] [Bright, clear] [Mat, opaque] [Mat, clear] [Semimat, opaque] [Semimat, clear] [Vellum, opaque] [Vellum, clear] [Crystalline] <Insert description> glaze.
7. Tile Color and Pattern: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range] <Insert color and pattern>.
8. Grout Color: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range] <Insert color>.
10. Mounting: Pregrunted sheets of tiles are factory assembled and grouted with manufacturer's standard white silicone rubber.
11. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable [and matching characteristics of adjoining flat tile]. Provide shapes as follows, selected from manufacturer's standard shapes:
   a. Base for Portland Cement Mortar Installations: Coved, module size [4-1/4 by 4-1/4 inches] [6 by 6 inches] [6 by 3-3/4 inches] <Insert dimensions>.
   b. Base for Thinset Mortar Installations: Straight, module size [4-1/4 by 4-1/4 inches] [6 by 6 inches] [6 by 2 inches] <Insert dimensions>.
   c. Wainscot Cap for Portland Cement Mortar Installations: Bullnose cap, module size [4-1/4 by 4-1/4 inches] [6 by 6 inches] [6 by 2 inches] <Insert dimensions>.
   d. Wainscot Cap for Thinset Mortar Installations: Surface bullnose, module size [4-1/4 by 4-1/4 inches] [6 by 6 inches] [6 by 2 inches] <Insert dimensions>.
   e. Wainscot Cap for Flush Conditions: Regular flat tile for conditions where tile wainscot is shown flush with wall surface above it, same size as adjoining flat tile.
   f. External Corners for Portland Cement Mortar Installations: Bullnose shape with radius of at least 3/4 inch unless otherwise indicated.
   g. External Corners for Thinset Mortar Installations: Surface bullnose, same size as adjoining flat tile.
   h. Internal Corners: Field-butted square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

F. Accessories: Provide vitreous china accessories of type and size indicated, suitable for installing by same method as used for adjoining wall tile.

1. One soap holder [with grab handle] for each shower and tub indicated.
2. One paper holder at each water closet.
3. Color and Finish: [Match adjoining glazed wall tile] [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range] [White, bright glaze] <Insert color and finish>.  

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2.4 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/4 inch or less above adjacent floor surface.

B. Granite Thresholds: ASTM C615/C615M, with [polished] [honied] <Insert finish> finish.

1. Description: Uniform, [fine] [medium]-grained, [white] [gray] [black] <Insert color> stone without veining.
2. Description: Match Architect's sample.
3. Description: Provide [one of] the following:
   a. <Insert, in separate subparagraphs, name of variety and producer, distributor, or importer>.


1. Description: Uniform, fine- to medium-grained white stone with gray veining.
2. Description: Match Architect's sample.
3. Description: Provide [one of] the following:
   a. <Insert, in separate subparagraphs, name of variety and producer, distributor, or importer>.

D. Slate Thresholds: ASTM C629/C629M, Classification [I Exterior] [II Interior], with fine, even grain and honed finish.

1. Description: Uniform, [black] [blue-black] [gray] [blue-gray] [green] <Insert color> stone[ and unfading].
2. Description: Match Architect's sample.
3. Description: Provide [one of] the following:
   a. <Insert, in separate subparagraphs, name of variety and producer, distributor, or importer>.

2.5 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 or ASTM C1325, Type A, in maximum lengths available to minimize end-to-end butt joints.

1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
2. Thickness: [1/4 inch] [1/2 inch] [5/8 inch] [As indicated].

B. Fiber-Cement Backer Board: ASTM C1288, in maximum lengths available to minimize end-to-end butt joints.

1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
2. Thickness: \([\frac{1}{4} \text{ inch}] [\frac{1}{2} \text{ inch}] \text{ [As indicated]}\).

2.6 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product, \textbf{[selected from the following,]} that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
   2. Nominal Thickness: 0.030 inch.
   3. Nominal Thickness: 0.040 inch.

C. PVC Sheet: PVC heat-fused on both sides to facings of nonwoven polyester.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
   2. Nominal Thickness: 0.025 inch.
   3. Nominal Thickness: 0.040 inch.

D. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

E. Fabric-Reinforced, Modified-Bituminous Sheet: Self-adhering, SBS-modified-bituminous sheet with fabric reinforcement facing; 0.040-inch nominal thickness.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

G. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

I. Waterproofing and Tile-Setting Adhesive: One-part, fluid-applied product intended for use as both waterproofing and tile-setting adhesive in a two-step process.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
   2. <Double click to insert sustainable design text for VOC content of adhesive.>
   3. <Double click to insert sustainable design text for adhesives.>
2.7 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product, [selected from the following], that complies with ANSI A118.12 for [standard performance] [high performance] and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 0.030-inch nominal thickness.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

C. PVC Sheet: PVC heat-fused on both sides to facings of nonwoven polyester; 0.040-inch nominal thickness.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

D. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

E. Corrugated Polyethylene: Corrugated polyethylene with dovetail-shaped corrugations and with anchoring webbing on the underside; 3/16-inch nominal thickness.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

F. Fabric-Reinforced, Modified-Bituminous Sheet: Self-adhering, modified-bituminous sheet with fabric reinforcement facing; 0.040-inch nominal thickness.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

H. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

I. Latex-Portland Cement Crack-Resistant Mortar: Flexible mortar consisting of cement-based mix and latex additive.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

J. Crack Isolation Membrane and Tile-Setting Adhesive: One-part, fluid-applied product intended for use as both a crack isolation membrane and tile-setting adhesive in a two-step process.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
   2. <Double click to insert sustainable design text for VOC content of adhesive.>
   3. <Double click to insert sustainable design text for adhesives.>
2.8 SETTING MATERIALS


1. Cleavage Membrane: Asphalt felt, ASTM D226/D226M, Type I (No. 15); or polyethylene sheeting, ASTM D4397, 4.0 mils thick.
2. Reinforcing Wire Fabric: Galvanized, welded-wire fabric, 2 by 2 inches by 0.062-inch diameter; comply with ASTM A185/A185M and ASTM A82/A82M, except for minimum wire size.
   a. Base Metal and Finish for Interior Applications: Uncoated or zinc-coated (galvanized) steel sheet, with uncoated steel sheet painted after fabrication into lath.
   c. Configuration over Studs and Furring: Flat.
   e. Weight: [2.5 lb/sq. yd.] [3.4 lb/sq. yd.].
4. Latex Additive: [Manufacturer's standard] [acrylic resin] [or] [styrene-butadiene-rubber] water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.

B. Standard Dry-Set Mortar (Thinset): ANSI A118.1.

1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.1.

C. Modified Dry-Set Mortar (Thinset): ANSI A118.4.

1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
3. Provide prepackaged, dry-mortar mix combined with [acrylic resin] [or] [styrene-butadiene-rubber] liquid-latex additive at Project site.
4. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

D. Medium-Bed, Modified Dry-Set Mortar: Comply with requirements in ANSI A118.4. Provide product that is approved by manufacturer for application thickness of [5/8 inch] <Insert thickness>.

1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
3. Provide prepackaged, dry-mortar mix combined with [acrylic resin] [or] [styrene-butadiene-rubber] liquid-latex additive at Project site.
E. Improved Modified Dry-Set Mortar (Thinset): ANSI A118.15.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
   2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
   3. Provide prepackaged, dry-mortar mix combined with [acrylic resin] [or] [styrene-butadiene-rubber] liquid-latex additive at Project site.
   4. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.15.

F. EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar (Thinset): ANSI A118.11.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
   2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
   3. Provide prepackaged, dry-mortar mix combined with [acrylic resin] [or] [styrene-butadiene-rubber] liquid-latex additive at Project site.

G. Water-Cleanable, Tile-Setting Epoxy: ANSI A118.3.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
   2. <Double click to insert sustainable design text for VOC content of adhesive.>
   3. <Double click to insert sustainable design text for adhesives.>
   4. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F, respectively, and certified by manufacturer for intended use.

H. Organic Adhesive: ANSI A136.1, Type I.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
   2. <Double click to insert sustainable design text for VOC content of adhesive.>
   3. <Double click to insert sustainable design text for adhesives.>

2.9 GROUT MATERIALS

**Designer Note:** Use of epoxy grout is preferred in all campus applications unless tile type prohibits use. Use of white or near white grouts are not acceptable.

A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.

   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

C. High-Performance Tile Grout: ANSI A118.7.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
   2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.
   3. Polymer Type: [Acrylic resin] [or] [styrene-butadiene rubber] in liquid-latex form for addition to prepackaged dry-grout mix.
D. Water-Cleanable Epoxy Grout: ANSI A118.3, [with a VOC content of 65 g/L or less].
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
   2. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F, respectively, and certified by manufacturer for intended use.

E. Grout for Pregouted Tile Sheets: Same product used in factory to pregrout tile sheets.

2.10 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Vapor-Retarder Membrane: Polyethylene sheeting, ASTM D4397, 4.0 mils thick.

Designer Note: WMU prefers Schluter Systems metal edge strips at all tile transitions (including vertical-to-vertical, horizontal-to-vertical and end-of-tile applications). Rubber transition strips are not favored.

C. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; [half-hard brass] [white zinc alloy] [nickel silver] [stainless-steel, ASTM A666, 300 Series] exposed-edge material.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

E. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
   1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
   2. <Double click to insert sustainable design text for floor treatment products.>

2.11 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.
PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

2. Verify that concrete substrates for tile floors installed with [adhesives] [bonded mortar bed] [or] [thinset mortar] comply with surface finish requirements in ANSI A108.01 for installations indicated.
   a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
   b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.

4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with [adhesives] [or] [thinset mortar] with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.

C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 CERAMIC TILE INSTALLATION

A. Comply with TCNA’s "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
   a. Exterior tile floors.
   b. Tile floors in wet areas.
   c. Tile swimming pool decks.
   d. Tile floors in laundries.
   e. Tile floors consisting of tiles 8 by 8 inches or larger.
   f. Tile floors consisting of rib-backed tiles.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer’s standard trim shapes where necessary to eliminate exposed tile edges.

E. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.

F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
   1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
   2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
   3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
   1. Ceramic Mosaic Tile: \[\frac{1}{16}\text{ inch}\] [\(\frac{1}{8}\text{ inch}\)]
   2. Quarry Tile: \[\frac{1}{4}\text{ inch}\] [\(\frac{3}{8}\text{ inch}\)]
   3. Pressed Floor Tile: \[\frac{1}{4}\text{ inch}\] [\(\frac{3}{8}\text{ inch}\)]
   4. Glazed Wall Tile: \[\frac{1}{16}\text{ inch}\] [\(\frac{1}{8}\text{ inch}\)]
   5. Porcelain Tile: \[\frac{1}{4}\text{ inch}\] [\(\frac{3}{8}\text{ inch}\)]

H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
   1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
2. Do not bridge expansion joints with flooring materials.

J. For seams that occur at doorways, seam shall be centered under the door in its closed position.

K. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
   1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in [modified dry-set] [improved modified dry-set] mortar (thinset).
   2. Do not extend [cleavage membrane] [waterproofing] [or] [crack isolation membrane] under thresholds set in [standard dry-set] [modified dry-set] [or] [improved modified dry-set] mortar. Fill joints between such thresholds and adjoining tile set on [cleavage membrane] [waterproofing] [or] [crack isolation membrane] with elastomeric sealant.

L. Metal Edge Strips: Install [at locations indicated] [where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile] [where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated].

M. Comply with manufacturer's recommended instructions for finishing the floor.

N. Floor Sealer: Apply floor sealer to [cementitious] grout joints [in tile floors] according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 TILE BACKING PANEL INSTALLATION

A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. [Use modified dry-set mortar for bonding material unless otherwise directed in manufacturer's written instructions.]

3.5 WATERPROOFING INSTALLATION

A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.

B. Allow waterproofing to cure and verify by testing that it is watertight before installing tile or setting materials over it.

3.6 CRACK ISOLATION MEMBRANE INSTALLATION

A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

B. Allow crack isolation membrane to cure before installing tile or setting materials over it.
3.7 ADJUSTING AND CLEANING

A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.

B. Cleaning, General: Comply with manufacturer's written instructions for cleaning floor tile.

C. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
   1. Remove grout residue from tile as soon as possible.
   2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.8 PROTECTION

A. Protection, General: Comply with manufacturer’s written instructions for protecting floor tile.

B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.9 EXTERIOR CERAMIC TILE INSTALLATION SCHEDULE (not included in WMU Design Standards)

3.10 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE (not included in WMU Design Standards)

END OF SECTION 09 3013
WMU Design Guidelines Instructions: These guidelines are to be used by the Design Professional to inform the design process and outline WMU-specific desires for University projects. Text appearing in blue indicates a WMU design guideline which must be met for all campus projects unless approved in writing by the University. Blue text that is struck out indicates products or practices that are not acceptable, and shall not be included unless similarly approved. Any text remaining in black is to be edited by the Design Professional as part of the normal specifications-writing process. Guidelines language shall be included in the project specifications and their intent incorporated into the drawings.

SECTION 09 5113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY
A. Section includes acoustical panels and exposed suspension systems for interior ceilings.
B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.2 PREINSTALLATION MEETINGS
A. Preinstallation Conference: Conduct conference at [Project site] <Insert location>.

1.3 ACTION SUBMITTALS
A. Product Data: For each type of product.
B. Sustainable Design Submittals:
   1. <Double click to insert sustainable design text for recycled content.>
   2. <Double click to insert sustainable design text for ceilings.>
C. Samples: For each exposed product and for each color and texture specified, 6 inches in size.
D. Samples for Initial Selection: For components with factory-applied finishes.
E. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:
   1. Acoustical Panels: Set of [full-size] [6-inch-square] <Insert size> Samples of each type, color, pattern, and texture.
   2. Exposed Suspension-System Members, Moldings, and Trim: Set of [6-inch-] <Insert dimension> long Samples of each type, finish, and color.
   3. Clips: Full-size [hold-down] [impact] [and] [seismic] clips.
F. Delegated-Design Submittal: For seismic restraints for ceiling systems.

1. Include design calculations for seismic restraints including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Ceiling suspension-system members.
2. Structural members to which suspension systems will be attached.
3. Method of attaching hangers to building structure.
   a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.
4. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
5. Size and location of initial access modules for acoustical panels.
6. Items penetrating finished ceiling and ceiling-mounted items including the following:
   a. Lighting fixtures.
   b. Diffusers.
   c. Grilles.
   d. Speakers.
   e. Sprinklers.
   f. Access panels.
   g. Perimeter moldings.
   h. <Insert item>.
7. Show operation of hinged and sliding components covered by or adjacent to acoustical panels.
8. Minimum Drawing Scale: [1/4 inch = 1 foot] [1/8 inch = 1 foot] [1:50] [1:100] <Insert scale>.

B. Qualification Data: For testing agency.

C. Product Test Reports: For each acoustical panel ceiling, for tests performed by [manufacturer and witnessed by a qualified testing agency] [a qualified testing agency].

D. Evaluation Reports: For each acoustical panel ceiling suspension system [and anchor and fastener type], from ICC-ES.

E. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.
1.6 MAINTENANCE MATERIAL SUBMITTALS

**Designer Note:** The amount of attic stock is determined on a project-by-project basis. This needs to be discussed with WMU during the design phases of the project, including where the extra materials will be stored.

A. 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.

1. Acoustical Ceiling Units: Full-size panels equal to \[2\] \(<\text{Insert number}\>\) percent of quantity installed.
2. Suspension-System Components: Quantity of each exposed component equal to \[2\] \(<\text{Insert number}\>\) percent of quantity installed.
3. Hold-Down Clips: Equal to \[2\] \(<\text{Insert number}\>\) percent of quantity installed.
4. Impact Clips: Equal to \[2\] \(<\text{Insert number}\>\) percent of quantity installed.

1.7 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockup of typical ceiling area as shown on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

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

1.9 FIELD CONDITIONS

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

1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.
PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 "Quality Requirements," to design seismic restraints for ceiling systems.

B. Seismic Performance: Suspended ceilings shall withstand the effects of earthquake motions determined according to [ASCE/SEI 7] <Insert requirement>.

D. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Class [A] [B] [C] according to ASTM E1264.
2. Smoke-Developed Index: [50] [450] <Insert value> or less.

E. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL or from the listings of another qualified testing agency.

2.3 ACOUSTICAL PANELS <Insert drawing designation>

**Designer Note:** WMU prefers Armstrong World Industries, Inc. 2 x 2 Lay-in Optima (fine texture) and Calla (smooth texture) ceiling tiles for standard applications.

A. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

B. Classification: Provide [fire-resistance-rated] panels as follows:

1. Type and Form: Type III, mineral base with painted finish; [Form 1, nodular] [Form 2, water felted] [Form 4, cast or molded].
2. Type and Form: Type IV, mineral base with membrane-faced overlay; Form 1, nodular; with [glass-fiber cloth] [washable vinyl-film] overlay.
3. Type and Form: Type IV, mineral base with membrane-faced overlay; Form 2, water felted; with [vinyl overlay on face] [vinyl overlay on face and back] [vinyl overlay on face, back, and sealed edges] [fiberglass-fabric overlay on face].

4. Type and Form: Type XII, glass-fiber base with membrane-faced overlay; [Form 1, plastic] [Form 2, cloth] [Form 3, other]. Binder shall not contain urea formaldehyde.

5. Type and Form: Type XX, high-density, ceramic- and mineral-base panels with scrubbable finish, resistant to heat, moisture, and corrosive fumes.

6. Type and Form: <Insert type and form>.

7. Pattern: [C (perforated, small holes)] [CD (perforated, small holes and fissured)] [CE (perforated, small holes and lightly textured)] [D (fissured)] [E (lightly textured)] [F (heavily textured)] [G (smooth)] [GH (smooth and printed)] [I (embossed)] [J (embossed-in-register)] [K (surface scored)] [Z (other patterns as described)] [and] [as indicated by manufacturer's designation] <Insert pattern>.

E. Color: [White] [As selected from manufacturer's full range] [Match Architect's sample] [As indicated by manufacturer's designation] [As indicated on Drawings] [As indicated in a schedule] <Insert color>.

F. Light Reflectance (LR): Not less than [LR indicated in a schedule] [0.65] [0.70] [0.75] [0.80] [0.85] [0.90] <Insert LR>.

Designer Note: Coordinate acoustical properties of ceiling tiles with function of space within which it is to be installed.

G. Ceiling Attenuation Class (CAC): Not less than [CAC indicated in a schedule] [20] [25] [30] [35] [40] <Insert CAC>.

H. Noise Reduction Coefficient (NRC): Not less than [NRC indicated in a schedule] [0.40] [0.50] [0.55] [0.60] [0.65] [0.70] [0.75] [0.80] [0.85] [0.90] [0.95] [1.00] <Insert NRC>.

I. Articulation Class (AC): Not less than [AC indicated in a schedule] [170] [180] [190] [200] [210] <Insert AC>.

J. Edge/Joint Detail: [Square] [Reveal sized to fit flange of exposed suspension-system members] [Flush reveal sized to fit flange of exposed suspension-system members] [Beveled, kerfed, and rabbeted long edges and square, butt-on short edges] [As indicated by manufacturer's designation] <Insert requirement>.

K. Thickness: [5/8 inch] [3/4 inch] [7/8 inch] [As indicated on Drawings] [As indicated in a schedule] <Insert thickness>.

L. Thickness: [1/8 inch] [7/16 inch] [9/16 inch] [5/8 inch] [3/4 inch] [7/8 inch] [1 inch] [1-1/2 inches] [2 inches] [3 inches] [As indicated on Drawings] [As indicated in a schedule] <Insert dimension>.

M. Modular Size: [24 by 24 inches] [24 by 48 inches] [24 by 72 inches] [24 by 96 inches] [48 by 48 inches] [600 by 600 mm] [600 by 1200 mm] [As indicated on Drawings] [As indicated in a schedule] <Insert size>.

N. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D3273, ASTM D3274, or ASTM G21 and evaluated according to ASTM D3274 or ASTM G21.
2.4 METAL SUSPENSION SYSTEM <Insert drawing designation>

**Designer Note:** WMU prefers that ceiling panels and suspension system be from the same manufacturer. If separate manufacturers are specified, the systems must be compatible.

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M and designated by type, structural classification, and finish indicated.

1. High-Humidity Finish: Where indicated, provide coating tested and classified for "severe environment performance" according to ASTM C635/C635M.

C. <Double click to insert sustainable design text for recycled content.>

D. Wide-Face, Capped, Double-Web, [Fire-Rated,] Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 15/16-inch-wide metal caps on flanges.

1. Structural Classification: [Intermediate] [Heavy]-duty system.
2. End Condition of Cross Runners: [Override (stepped)] [or] [butt-edge] type.
3. Face Design: Flat, flush.
4. Cap Material: [Cold-rolled steel] [or] [aluminum].
5. Cap Finish: [Painted white] [Painted in color as selected from manufacturer's full range] [Painted to match color indicated by manufacturer's designation] [Painted to match color of acoustical unit] [Plated with metallic finish as selected from manufacturer's full range] [Plated with metallic finish indicated by manufacturer's designation] [Natural finish for aluminum].

E. Narrow-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 9/16-inch-wide metal caps on flanges.

1. Structural Classification: [Intermediate] [Heavy]-duty system.
2. End Condition of Cross Runners: [Override (stepped)] [or] [butt-edge] type.
3. Face Design: [Flat, flush] [Flanges formed with an integral center reveal].
4. Cap Material: [Cold-rolled steel] [or] [aluminum].
5. Cap Finish: [Painted white] [Painted in color as selected from manufacturer's full range] [Painted to match color indicated by manufacturer's designation] [Painted to match color of acoustical unit] [Plated with metallic finish as selected from manufacturer's full range] [Plated with metallic finish indicated by manufacturer's designation] [Natural finish for aluminum].

F. Narrow-Face, Steel-Capped, Double-Web, Fire-Rated Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished, cold-rolled, 9/16-inch-wide metal caps on flanges.

2. Face Design: Flat, flush.
3. Cap Finish: [Painted white] [Painted in color as selected from manufacturer's full range] [Painted to match color indicated by manufacturer's designation] [Painted to match color of acoustical unit] [Plated with metallic finish as selected from manufacturer's full range] [Plated with metallic finish indicated by manufacturer's designation].

G. Narrow-Face, Uncapped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; to produce structural members with 9/16-inch-wide faces.

1. Structural Classification: [Intermediate] [Heavy]-duty system.
2. Face Design: [With 1/8-inch-wide, slotted, box-shaped flange] [With 1/4-inch-wide, slotted, box-shaped flange] [Flanges formed in stepped design with a center protrusion projecting 19/64 inch below flange surfaces supporting panel faces and forming 3/16-inch-wide reveals between edges of protrusion and those of panels].
3. Face Finish: Painted [white] [in color as selected from manufacturer's full range] [to match color indicated by manufacturer's designation] [to match color of acoustical unit].
4. Reveal Finish: Painted [to match flange color] [white] [black] [in color other than flange color as selected from manufacturer's full range of contrasting reveal colors].

H. Wide-Face, Aluminum-Capped, Double-Web,[Fire-Rated.] Hot-Dip Galvanized, G60, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; hot-dip galvanized, G60 coating designation; with prefinished, 15/16-inch-wide aluminum caps on flanges.

1. Structural Classification: [Intermediate] [Heavy]-duty system.
2. Face Design: Flat, flush.
3. Cap Finish: [Painted white] [Painted to match color indicated by manufacturer's designation] [Painted to match color of acoustical unit] [Natural finish].

I. Wide-Face, Single-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet electrolytically zinc coated, with prefinished flanges of width indicated.

1. Structural Classification: Heavy-duty system.
2. Face Finish: Painted [white] [black].

J. Wide-Face, Capped, Double-Web, Stainless-Steel Suspension System: Main and cross runners roll formed from Type 304 or 316 stainless-steel sheet, with prefinished 15/16-inch-wide, stainless-steel caps on flanges.

2. Face Design: Flat, flush.

K. Narrow-Face, Single-Web, Extruded-Aluminum Suspension System: Main and cross runners formed from extruded aluminum to produce structural members with 9/16-inch-wide faces.

1. Structural Classification: [Intermediate] [Heavy]-duty system.
2. Face Design: Screw-slot profile.
3. Face Finish: [Painted white] [Satin anodized according to AAMA 611, AA-M12C22A31].
4. Reveal Finish: [Match face finish] [Painted white] [Painted black].
L. Extra-Wide-Face, [Double] [Single]-Web, Metal Suspension System: Main and cross runners formed from [extruded aluminum] [aluminum-capped steel] [steel-capped steel] <Insert description> to produce structural members with [1-1/2-inch-] [2-inch-] wide flanges.

1. Structural Classification: [Intermediate] [Heavy]-duty system.
2. Face Design: Flat, flush.
3. Face Finish: [Painted white] [Satin anodized according to AAMA 611, AA-M12C22A31].

2.5 ACCESSORIES

A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to [five] <Insert safety factor> times that imposed by ceiling construction, as determined by testing according to ASTM E488/E488M or ASTM E1512 as applicable, conducted by a qualified testing and inspecting agency.
   a. Type: [Cast-in-place] [Postinstalled expansion] [Postinstalled bonded] anchors.
   b. Corrosion Protection: Carbon-steel components zinc plated according to ASTM B633, Class SC 1 (mild) service condition.
   c. Corrosion Protection: Stainless-steel components complying with ASTM F593 and ASTM F594, Group 1 Alloy 304 or 316.

2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to [10] <Insert safety factor> times that imposed by ceiling construction, as determined by testing according to ASTM E1190, conducted by a qualified testing and inspecting agency.

B. Wire Hangers, Braces, and Ties: Provide wires as follows:

2. Stainless-Steel Wire: ASTM A580/A580M, Type 304, nonmagnetic.
4. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than [0.106-inch-] [0.135-inch-] <Insert dimension> diameter wire.

C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
E. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch-thick, galvanized-steel sheet complying with ASTM A653/A653M, G90 coating designation; with bolted connections and 5/16-inch-diameter bolts.

F. Hold-Down Clips: Manufacturer's standard hold-down.

G. Impact Clips: Manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.

H. Seismic Clips: Manufacturer's standard seismic clips designed to secure acoustical panels in place during a seismic event.

I. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.

J. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.

K. Clean-Room Gasket System: Where indicated, provide manufacturer's standard system, including [manufacturer's standard] [closed-cell PVC] [neoprene] [antimicrobial] gasket and related adhesives, tapes, seals, and retention clips, designed to seal out foreign material from and maintain positive pressure in clean room.

2.6 METAL EDGE MOLDINGS AND TRIM <Insert drawing designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.

2. For lay-in panels with reveal edge details, provide [stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member] <Insert description>.

3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

C. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements.

1. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

2. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils. Comply with ASTM C635/C635M and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
2.7 ACOUSTICAL SEALANT

A. Acoustical Sealant: As specified in Section 07 9219 "Acoustical Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

A. Install acoustical panel ceilings according to ASTM C636/C636M, [seismic design requirements], and manufacturer's written instructions.

1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.

B. Suspend ceiling hangers from building's structural members and as follows:

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

2. Splay hangers only where required [and, if permitted with fire-resistance-rated ceilings] to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.

4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye
screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.

5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.

6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.

7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.

8. Do not attach hangers to steel deck tabs.

9. Do not attach hangers to steel roof deck. Attach hangers to structural members.

10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.

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

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building’s structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends. Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.

1. Arrange directionally patterned acoustical panels as follows:
   a. As indicated on reflected ceiling plans.
   b. Install panels with pattern running in one direction parallel to [long] [short] axis of space.
   c. Install panels in a basket-weave pattern.

2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
3. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
4. For reveal-edged panels on suspension-system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension-system surfaces and panel faces flush with bottom face of runners.

5. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

6. Install [hold-down] [impact] [and] [seismic] clips in areas indicated; space according to panel manufacturer's written instructions unless otherwise indicated.
   a. Hold-Down Clips: Space [24 inches] <Insert dimension> o.c. on all cross runners.

7. Install clean-room gasket system in areas indicated, sealing each panel and fixture as recommended by panel manufacturer's written instructions.

8. Protect lighting fixtures and air ducts according to requirements indicated for fire-resistance-rated assembly.

3.4 ERECTION TOLERANCES

A. Suspended Ceilings: Install main and cross runners level to a tolerance of [1/8 inch in 12 feet] <Insert dimensions>, non-cumulative.

B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of [1/8 inch in 12 feet] <Insert dimensions>, non-cumulative.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: [Owner will engage] [Engage] a qualified special inspector to perform the following special inspections:
   1. Periodic inspection during the installation of suspended ceiling grids according to ASCE/SEI 7.

B. Testing Agency: [Owner will engage] [Engage] a qualified testing agency to perform tests and inspections.

C. Perform the following tests and inspections of completed installations of acoustical panel ceiling hangers and anchors and fasteners in successive stages and when installation of ceiling suspension systems on each floor has reached 20 percent completion, but no panels have been installed. Do not proceed with installations of acoustical panel ceiling hangers for the next area until test results for previously completed installations of acoustical panel ceiling hangers show compliance with requirements.
   1. Within each test area, testing agency will select one of every 10 power-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf of tension; it will also select one of every two postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf of tension.
   2. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.
D. Acoustical panel ceiling hangers, anchors, and fasteners will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

3.6 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 5113
WMU Design Guidelines Instructions: These guidelines are to be used by the Design Professional to inform the design process and outline WMU-specific desires for University projects. Text appearing in blue indicates a WMU design guideline which must be met for all campus projects unless approved in writing by the University. Blue text that is struck out indicates products or practices that are not acceptable, and shall not be included unless similarly approved. Any text remaining in black is to be edited by the Design Professional as part of the normal specifications-writing process. Guidelines language shall be included in the project specifications and their intent incorporated into the drawings.

SECTION 09 6513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Thermoset-rubber base.
2. Thermoplastic-rubber base.
3. Vinyl base.
4. Rubber stair accessories.
5. Vinyl stair accessories.
6. Rubber molding accessories.
7. Vinyl molding accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

Designer Note: For projects seeking LEED certification, include sustainable design submittals as required.

B. Sustainable Design Submittals:

1. <Double click to insert sustainable design text for adhesives.>
2. <Double click to insert sustainable design text for sealants.>
3. <Double click to insert sustainable design text for resilient base and stair products laboratory reports.>
4. <Double click to insert sustainable design text for environmental product declarations.>

C. Samples: For each exposed product and for each color and texture specified, not less than 12 inches long.

D. Samples for Initial Selection: For each type of product indicated.

E. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.

F. Product Schedule: For resilient base and accessory products. [Use same designations indicated on Drawings.]
1.3 MAINTENANCE MATERIAL SUBMITTALS

**Designer Note:** The amount of attic stock is determined on a project-by-project basis. This needs to be discussed with WMU during the design stages of the project, including where the extra materials will be stored.

A. 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.

1. Furnish not less than [10 linear feet] <Insert dimension> for every [500 linear feet] <Insert dimension> or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.4 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Coordinate mockups in this Section with mockups specified in other Sections.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. 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.

1.6 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than [70 deg F] <Insert temperature> or more than [95 deg F] <Insert temperature>, in spaces to receive resilient products during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than [55 deg F] <Insert temperature> or more than [95 deg F] <Insert temperature>.

C. Install resilient products after other finishing operations, including painting, have been completed.
PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. <Double click to insert sustainable design text for floor finishes.>

2.2 THERMOSET-RUBBER BASE <Insert drawing designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Product Standard: ASTM F1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).
   1. Style and Location:
      a. Style A, Straight: [Provide in areas with carpet] <Insert requirements.>
      b. Style B, Cove: Provide in areas with carpet or resilient floor coverings.
      c. Style C, Butt to: [Provide in areas indicated] <Insert requirements.>

C. Thickness: 0.125 inch.

D. Height: [2-1/2 inches] 4 inches minimum [6 inches] [As indicated on Drawings].
   1. Top Edge: Rounded.

E. Lengths: [Cut lengths 48 inches long] Coils in manufacturer's standard length [Cut lengths 48 inches long or coils in manufacturer's standard length].

F. Outside Corners: Job formed [Preformed] [Job formed or preformed].

G. Inside Corners: Job formed [Preformed] [Job formed or preformed].

H. Colors: [As indicated by manufacturer's designations] [Match Architect's sample] <Insert colors.>

2.3 THERMOPLASTIC-RUBBER BASE <Insert drawing designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Product Standard: ASTM F1861, Type TP (rubber, thermoplastic).
   1. Group: [I (solid, homogeneous)] [II (layered)].
   2. Style and Location:
      a. Style A, Straight: [Provide in areas with carpet] <Insert requirements.>
      b. Style B, Cove: Provide in areas with carpet or resilient floor coverings.
      c. Style C, Butt to: [Provide in areas indicated] <Insert requirements.>
      d. Style D, Sculptured: [Provide in areas indicated] <Insert requirements.>
      1) Profile: [As indicated] <Insert requirement.>
C. Thickness: 0.125 inch.

D. Height: [2-1/2 inches] 4 inches minimum [6 inches] [As indicated on Drawings].
   1. Top Edge: Rounded.

E. Lengths: [Cut lengths 48 inches long] Coils in manufacturer's standard length [Cut lengths 48 inches long or coils in manufacturer's standard length].

F. Outside Corners: Job formed [Preformed] [Job formed or preformed].

G. Inside Corners: Job formed [Preformed] [Job formed or preformed].

H. Colors: [As indicated by manufacturer's designations] [Match Architect's sample] <Insert colors>.

2.4 VINYL BASE <Insert drawing designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Product Standard: ASTM F1861, Type TV (vinyl, thermoplastic).
   1. Group: [I (solid, homogeneous)] [or] [II (layered)].
   2. Style and Location:
      a. Style A, Straight: [Provide in areas with carpet] <Insert requirements>.
      b. Style B, Cove: Provide in areas with carpet or resilient floor coverings.

C. Minimum Thickness: 0.125 inch [0.080 inch] <Insert dimension>.

D. Height: [2-1/2 inches] 4 inches minimum [6 inches] [As indicated on Drawings].
   1. Top Edge: Rounded.

E. Lengths: [Cut lengths 48 inches long] Coils in manufacturer's standard length [Cut lengths 48 inches long or coils in manufacturer's standard length].

F. Outside Corners: Job formed [Preformed] [Job formed or preformed].

G. Inside Corners: Job formed [Preformed] [Job formed or preformed].

H. Colors and Patterns: [As indicated by manufacturer's designations] [Match Architect's sample] <Insert colors and patterns>.

2.5 RUBBER STAIR ACCESSORIES <Insert drawing designation>

A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
   1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.
B. <Double click here to find, evaluate, and insert list of manufacturers and products.>

C. Stair Treads: ASTM F2169.

1. Type: [TS (rubber, Vulcanized thermoset)] [or] [TP (rubber, thermoplastic)].
2. Class: [1 (smooth, flat)] [2 (pattern; embossed, grooved, or ribbed)].
3. Group: [1 (embedded abrasive strips)] [2 (with contrasting color for the visually impaired)].
4. Nosing Style: [Square, adjustable to cover angles between 60 and 90 degrees] [Square] [Round].
6. Thickness: [1/4 inch and tapered to back edge] <Insert thickness>.
7. Size: Lengths and depths to fit each stair tread in [one piece] [one piece or, for treads exceeding maximum lengths manufactured, in equal-length units].
8. Integral Risers: Smooth, flat; in height that fully covers substrate.

D. Separate Risers: Smooth, flat; in height that fully covers substrate; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.

1. Style: [Coved toe, 7 inches high by length matching treads] [Toeless, by length matching treads].
2. Thickness: [0.125 inch] [Manufacturer’s standard] <Insert thickness>.

E. Stringers: Height and length after cutting to fit risers and treads and to cover stair stringers, produced by same manufacturer as treads, and recommended by manufacturer for installation with treads.

1. Thickness: [0.125 inch] [0.080 inch] [Manufacturer’s standard] <Insert thickness>.

F. Landing Tile: [Matching treads; produced by same manufacturer as treads and recommended by manufacturer for installation with treads] <Insert requirements>.

G. Locations: [Provide rubber stair accessories in areas indicated] <Insert requirements>.

H. Colors and Patterns: [As indicated by manufacturer’s designations] [Match Architect’s sample] <Insert colors and patterns>.

2.6 VINYL STAIR ACCESSORIES <Insert drawing designation>

A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

B. <Double click here to find, evaluate, and insert list of manufacturers and products.>

C. Stair Treads: ASTM F2169, Type TV (vinyl, thermoplastic).

1. Class: [1 (smooth, flat)] [2 (pattern; embossed, grooved, or ribbed)].
2. Group: [1 (embedded abrasive strips)] [2 (with contrasting color for the visually impaired)].
3. Nosing Style: [Square, adjustable to cover angles between 60 and 90 degrees] [Square] [Round].


5. Thickness: [1/4 inch and tapered to back edge] <Insert thickness>.

6. Size: Lengths and depths to fit each stair tread in [one piece] [one piece or, for treads exceeding maximum lengths manufactured, in equal-length units].

7. Integral Risers: Smooth, flat; in height that fully covers substrate.

D. Separate Risers: Smooth, flat; in height that fully covers substrate; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.

1. Style: [Coved toe, 7 inches high by length matching treads] [Toeless, by length matching treads].

2. Thickness: [0.125 inch] [0.080 inch] [Manufacturer's standard] <Insert thickness>.

E. Stringers: Height and length after cutting to fit risers and treads and to cover stair stringers, produced by same manufacturer as treads, and recommended by manufacturer for installation with treads.

1. Thickness: [0.125 inch] [0.080 inch] [Manufacturer's standard] <Insert thickness>.

F. Landing Tile: [Matching treads; produced by same manufacturer as treads and recommended by manufacturer for installation with treads] <Insert requirements>.

G. Locations: [Provide vinyl stair accessories in areas indicated] <Insert requirements>.

H. Colors and Patterns: [As indicated by manufacturer's designations] [Match Architect's sample] <Insert colors and patterns>.

2.7 RUBBER MOLDING ACCESSORY <Insert drawing designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Description: Rubber [stair-tread nosing] [cap for cove carpet] [cap for cove resilient floor covering] [carpet bar for tackless installations] [carpet edge for glue-down applications] [nosing for carpet] [nosing for resilient floor covering] [reducer strip for resilient floor covering] [joiner for tile and carpet] [transition strips] <Insert description>.

C. Profile and Dimensions: [As indicated] <Insert profile and dimensions>.

D. Locations: [Provide rubber molding accessories in areas indicated] <Insert requirements>.

E. Colors and Patterns: [As indicated by manufacturer's designations] [Match Architect's sample] <Insert colors and patterns>.

2.8 VINYL MOLDING ACCESSORY <Insert drawing designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>
B. Description: Vinyl [stair-tread nosing] [cap for cove carpet] [cap for cove resilient floor covering] [carpet bar for tackless installations] [carpet edge for glue-down applications] [nosing for carpet] [nosing for resilient floor covering] [reducer strip for resilient floor covering] [joiner for tile and carpet] [transition strips] <Insert description>.

C. Profile and Dimensions: [As indicated] <Insert profile and dimensions>.

D. Locations: [Provide vinyl molding accessories in areas indicated] <Insert requirements>.

E. Colors and Patterns: [As indicated by manufacturer's designations] [Match Architect's sample] <Insert colors and patterns>.

2.9 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

1. <Double click to insert sustainable design text for VOC content for adhesives.>

C. Stair-Tread Nose Filler: Two-part epoxy compound recommended by resilient stair-tread manufacturer to fill nosing substrates that do not conform to tread contours.

D. Metal Edge Strips: [Extruded aluminum with mill finish] <Insert requirements>, nominal 2 inches wide, of height required to protect exposed edges of flooring, and in maximum available lengths to minimize running joints.

E. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient stair-tread manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Installation of resilient products indicates acceptance of surfaces and conditions.
3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates for Resilient Stair Accessories: Prepare horizontal surfaces according to ASTM F710.
   1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
   2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
   3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than \[9\] <Insert number> pH.

   Designer Note: WMU requires moisture testing per product manufacturer's recommendations.

4. Moisture Testing: Perform tests so that each test area does not exceed [200 sq. ft.] <Insert area>, and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
   a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of [3 lb of water/1000 sq. ft.] <Insert rate> in 24 hours.
   b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum [75] <Insert number> percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient products until materials are the same temperature as space where they are to be installed.
   1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Terminal ends of base shall be beveled where appropriate for specified product.

H. Preformed Corners: Install preformed corners before installing straight pieces.

I. Job-Formed Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than [3 inches] 18 inches in length.
   a. Form without producing discoloration (whitening) at bends.

2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than [3 inches] 18 inches in length.

Designer Note: WMU prefers mitered corners where appropriate for specified product.

   a. [Miter] [Cope] [Miter or cope] corners to minimize open joints.

3.4 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Stair Accessories:

1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
2. Tightly adhere to substrates throughout length of each piece.
3. For treads installed as separate, equal-length units, install to produce a flush joint between units.

C. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.
2. Sweep and vacuum horizontal surfaces thoroughly.
3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
D. Floor Polish: Remove soil, adhesive, and blemishes from resilient stair treads before applying liquid floor polish.

1. Apply [one] [two] [three] <Insert requirement> coat(s).

E. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 09 6513
WMU Design Guidelines Instructions: These guidelines are to be used by the Design Professional to inform the design process and outline WMU-specific desires for University projects. Text appearing in blue indicates a WMU design guideline which must be met for all campus projects unless approved in writing by the University. Blue text that is struck out indicates products or practices that are not acceptable, and shall not be included unless similarly approved. Any text remaining in black is to be edited by the Design Professional as part of the normal specifications-writing process. Guidelines language shall be included in the project specifications and their intent incorporated into the drawings.

SECTION 09 6516 - RESILIENT SHEET FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Unbacked vinyl sheet flooring.
   2. Vinyl sheet flooring with backing.
   3. Unbacked rubber sheet flooring.
   4. Rubber sheet flooring with backing.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

   Designer Note: For projects seeking LEED certification, include sustainable design submittals as required.

B. Sustainable Design Submittals:
   1. <Double click to insert sustainable design text for floor covering products>
   2. <Double click to insert sustainable design text for adhesives.>
   3. <Double click to insert sustainable design text for chemical bonding compound.>
   4. <Double click to insert sustainable design text for sealants.>
   5. <Double click to insert sustainable design text for environmental product declarations.>

C. Shop Drawings: For each type of resilient sheet flooring.
   1. Include sheet flooring layouts, locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
   2. Show details of special patterns.

D. Samples: For each exposed product and for each color, texture, and pattern specified, in manufacturer's standard size, but not less than [6-by-9-inch] <Insert dimensions> sections.
   1. For heat-welding bead, manufacturer's standard-size Samples, but not less than [9 inches] <Insert dimension> long, of each color required.

E. Samples for Initial Selection: For each type of resilient sheet flooring indicated.
F. Samples for Verification: For each type of resilient sheet flooring, in manufacturer's standard size, but not less than [6-by-9-inch] <Insert dimensions> sections of each color, texture, and pattern required.

   1. For heat-welding bead, manufacturer's standard-size Samples, but not less than [9 inches] <Insert dimension> long, of each color required.

G. Welded-Seam Samples: For seamless-installation technique indicated and for each resilient sheet flooring product, color, and pattern required; with seam running lengthwise and in center of [6-by-9-inch] <Insert dimensions> Sample applied to a rigid backing and prepared by Installer for this Project.

H. Product Schedule: For resilient sheet flooring. [Use same designations indicated on Drawings.]

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of resilient sheet flooring to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

Designer Note: The amount of attic stock is determined on a project-by-project basis. This needs to be discussed with WMU during the design phases of the project, including where the extra materials will be stored.

A. 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.

   1. Resilient Sheet Flooring: Furnish not less than [10 linear feet] <Insert dimension> for every [500 linear feet] <Insert dimension> or fraction thereof, in roll form and in full roll width for each type, color, and pattern of flooring installed.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for resilient sheet flooring installation and seaming method indicated.

   1. Engage an installer who employs workers for this Project who are trained or certified by resilient sheet flooring manufacturer for installation techniques required.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

   1. Coordinate mockups in this Section with mockups specified in other Sections.
a. Size: Minimum 100 sq. ft. for each type, color, and pattern [in locations indicated] [in locations directed by Architect] <Insert locations>.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store resilient sheet flooring 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. Store rolls upright.

1.8 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than [70 deg F] <Insert temperature> or more than [85 deg F] <Insert temperature>, in spaces to receive resilient sheet flooring during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than [55 deg F] <Insert temperature> or more than [95 deg F] <Insert temperature>.

C. Close spaces to traffic during resilient sheet flooring installation.

D. Close spaces to traffic for 48 hours after resilient sheet flooring installation.

E. Install resilient sheet flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient sheet flooring, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

B. <Double click to insert sustainable design text for flooring>
2.2 UNBACKED VINYL SHEET FLOORING

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>


C. Thickness: [0.080 inch] <Insert dimension>.

D. Wearing Surface: [Smooth] [Embossed].

E. Sheet Width: [As standard with manufacturer] [6 feet] [6.6 feet] <Insert width>.


G. Colors and Patterns: [As indicated by manufacturer's designations] [Match Architect's samples] <Insert colors and patterns>.

2.3 VINYL SHEET FLOORING WITH BACKING

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>


1. Type (Binder Content): [Type I, minimum binder content of 90 percent] [Type II, minimum binder content of 34 percent].

2. Wear-Layer Thickness: Grade 1.

3. Overall Thickness: [As standard with manufacturer] <Insert thickness>.

4. Interlayer Material: [Foamed plastic] [None].

5. Backing Class: [Class A (fibrous)] [Class B (nonfoamed plastic)] [Class C (foamed plastic)].

C. Wearing Surface: [Smooth] [Embossed] [Smooth with embedded abrasives] [Embossed with embedded abrasives].

D. Sheet Width: [As standard with manufacturer] [5 feet] [6 feet] [6.6 feet] [12 feet] <Insert width>.


F. Colors and Patterns: [As indicated by manufacturer's designations] [Match Architect's samples] <Insert colors and patterns>.

2.4 UNBACKED RUBBER SHEET FLOORING

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>


1. Type: [Type I, homogeneous rubber sheet floor covering] [Type II, heterogeneous (layered) rubber sheet floor covering].

2. Thickness: [As standard with manufacturer] <Insert thickness>.
3. Hardness: [Not less than required by ASTM F1859] [Manufacturer’s standard hardness, measured using Shore, Type A durometer per ASTM D2240].

C. Wearing Surface: [Smooth] [Textured] [Molded pattern].

1. Molded-Pattern Figure: [Raised discs] [Raised squares] <Insert pattern>.

D. Sheet Width: [As standard with manufacturer] [3.0 feet] [3.3 feet] [4.0 feet] [5 feet] [6.3 feet] <Insert width>.


F. Colors and Patterns: [As indicated by manufacturer’s designations] [Match Architect’s samples] <Insert colors and patterns>.

2.5 RUBBER SHEET FLOORING WITH BACKING <Insert drawing designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>


1. Type: [Type I, homogeneous rubber sheet floor covering with backing] [Type II, layered rubber sheet floor covering with backing].

2. Wear-Layer Thickness: [As standard with manufacturer] <Insert thickness>.

3. Overall Thickness: [As standard with manufacturer] <Insert thickness>.

4. Interlayer Material: [As standard with manufacturer] [None].

5. Backing: [Fibrous] [Foamed rubber].

6. Hardness: [Not less than required by ASTM F1860] [Manufacturer’s standard hardness, measured using Shore, Type A durometer per ASTM D2240].

C. Wearing Surface: [Smooth] <Insert description>.

D. Sheet Width: [As standard with manufacturer] [3.3 feet] <Insert width>.


F. Colors and Patterns: [As indicated by manufacturer’s designations] [Match Architect’s samples] <Insert colors and patterns>.

2.6 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient sheet flooring manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit resilient sheet flooring and substrate conditions indicated.

1. <Double click to insert sustainable design text for flooring adhesive.>

2. <Double click to insert sustainable design text for adhesives.>
C. Seamless-Installation Accessories:

   
a. Colors: [As selected by Architect from manufacturer's full range to contrast with flooring] [Match flooring] <Insert colors>.

2. Chemical-Bonding Compound: Manufacturer's product for chemically bonding seams.

3. <Double click to insert sustainable design text for VOC content of chemical bonding compound.>

4. <Double click to insert sustainable design text for low-emitting chemical bonding compound.>

D. Integral-Flash-Cove-Base Accessories:

1. Cove Strip: 1-inch radius provided or approved by resilient sheet flooring manufacturer.

2. Cap Strip: [Square metal, vinyl, or rubber cap] [Tapered vinyl cap] <Insert requirements> provided or approved by resilient sheet flooring manufacturer.

3. Corners: Metal inside and outside corners and end stops provided or approved by resilient sheet flooring manufacturer.

E. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient sheet flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient sheet flooring.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to resilient sheet flooring manufacturer's written instructions to ensure adhesion of resilient sheet flooring.

B. Concrete Substrates: Prepare according to ASTM F710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by resilient sheet flooring manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by resilient sheet flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than [9] [10] \(<\text{Insert number}\>\) pH.

| Designer Note: WMU requires moisture testing per product manufacturer’s recommendations. |

4. Moisture Testing: Perform tests so that each test area does not exceed [200 sq. ft.] [1000 sq. ft.] \(<\text{Insert area}\>\), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

   a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of [3 lb of water/1000 sq. ft.] \(<\text{Insert rate}\>\) in 24 hours.

   b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum [75] \(<\text{Insert number}\>\) percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient sheet flooring until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient sheet flooring.

3.3 RESILIENT SHEET FLOORING INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient sheet flooring.

B. Unroll resilient sheet flooring and allow it to stabilize before cutting and fitting.

C. Lay out resilient sheet flooring as follows:

1. Maintain uniformity of flooring direction.
2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in flooring substrates.
3. Match edges of flooring for color shading at seams.
4. Avoid cross seams.

D. Scribe and cut resilient sheet flooring to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend resilient sheet flooring into toe spaces, door reveals, closets, and similar openings.

F. Do not bridge expansion joints with flooring material.

G. For seams that occur at doorways, seam shall be centered under the door in its closed position.
H. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on resilient sheet flooring as marked on substrates. Use chalk or other nonpermanent marking device.

I. Install resilient sheet flooring on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of flooring installed on covers and adjoining flooring. Tightly adhere flooring edges to substrates that abut covers and to cover perimeters.

J. Adhere resilient sheet flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

K. Seamless Installation:
   1. Heat-Welded Seams: Comply with ASTM F1516. Rout joints and heat weld with welding bead to fuse sections permanently into a seamless flooring installation. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.
   2. Chemically Bonded Seams: Bond seams with chemical-bonding compound to fuse sections permanently into a seamless flooring installation. Prepare seams and apply compound to produce tightly fitted seams without gaps, overlays, or excess bonding compound on flooring surfaces.

   1. Install metal corners at inside and outside corners.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient sheet flooring.

B. Perform the following operations immediately after completing resilient sheet flooring installation:
   1. Remove adhesive and other blemishes from surfaces.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil.

C. Protect resilient sheet flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Comply with manufacturer’s recommended instructions for finishing the floor.

E. Floor Polish: Remove soil, adhesive, and blemishes from flooring surfaces before applying liquid floor polish.
   1. Apply [one] [two] [three] <insert requirements> coat(s).
F. Cover resilient sheet flooring until Substantial Completion.

END OF SECTION 09 6516
WMU Design Guidelines Instructions: These guidelines are to be used by the Design Professional to inform the design process and outline WMU-specific desires for University projects. Text appearing in blue indicates a WMU design guideline which must be met for all campus projects unless approved in writing by the University. Blue text that is struck out indicates products or practices that are not acceptable, and shall not be included unless similarly approved. Any text remaining in black is to be edited by the Design Professional as part of the normal specifications-writing process. Guidelines language shall be included in the project specifications and their intent incorporated into the drawings.

SECTION 09 6519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Solid vinyl floor tile.
   2. Rubber floor tile.
   3. Vinyl composition floor tile.
   4. Resilient terrazzo floor tile.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.
   Designer Note: For projects seeking LEED certification, include sustainable design submittals as required.

B. Sustainable Design Submittals:

1. <Double click to insert sustainable design text for adhesives.>
2. <Double click to insert sustainable design text for chemical bonding compound.>
3. <Double click to insert sustainable design text for sealants.>
4. <Double click to insert sustainable design text for flooring.>
5. <Double click to insert sustainable design text for environmental product declarations.>

C. Shop Drawings: For each type of resilient floor tile.

1. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
2. Show details of special patterns.

D. Samples: Full-size units of each color, texture, and pattern of floor tile required.

1. For heat-welding bead, manufacturer's standard-size Samples, but not less than [9 inches] <Insert dimension> long, of each color required.

E. Samples for Initial Selection: For each type of floor tile indicated.
F. Samples for Verification: Full-size units of each color and pattern of floor tile required.
   1. For heat-welding bead, manufacturer's standard-size Samples, but not less than [9 inches] <Insert dimension> long, of each color required.

G. Welded-Seam Samples: For seamless-installation technique indicated and for each floor covering product, color, and pattern required; with seam running lengthwise and in center of [6-by-9-inch] <Insert dimensions> Sample applied to a rigid backing and prepared by Installer for this Project.

H. Product Schedule: For floor tile. [Use same designations indicated on Drawings.]

1.3 INFORMATIONAL SUBMITTALS
   A. Qualification Data: For Installer.

1.4 CLOSEOUT SUBMITTALS
   A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS
   Designer Note: The amount of attic stock is determined on a project-by-project basis. This needs to be discussed with WMU during the design phases of the project, including where the extra materials will be stored.

   A. 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.
      1. Floor Tile: Furnish one box for every [50] <Insert number> boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.6 QUALITY ASSURANCE
   A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.
      1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

   B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
      1. Coordinate mockups in this Section with mockups specified in other Sections.
         a. Size: Minimum 100 sq. ft. for each type, color, and pattern [in locations indicated] [in locations directed by Architect] <Insert locations>. 
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store floor tile 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. Store floor tiles on flat surfaces.

1.8 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than [70 deg F] <Insert temperature> or more than [95 deg F] <Insert temperature>, in spaces to receive floor tile during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than [55 deg F] <Insert temperature> or more than [95 deg F] <Insert temperature>.

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

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

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

B. <Double click to insert sustainable design text for flooring.>

2.2 SOLID VINYL FLOOR TILE <Insert drawing designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>
B. Tile Standard: ASTM F1700.

1. Class: [As indicated by product designations] Class I, Monolithic Vinyl Tile [Class II, Surface Decorated Vinyl Tile] [Class III, Printed Film Vinyl Tile].

Designer Note: WMU prefers a smooth surface tile for ease of maintenance where appropriate.

2. Type: [A, Smooth Surface] [B, Embossed Surface].

C. Thickness: [0.080 inch] [0.100 inch] [0.120 inch] 0.125 inch.

D. Size: [12 by 12 inches] [18 by 18 inches] [24 by 24 inches] [36 by 36 inches] [3 by 36 inches] <Insert dimensions>.

E. Seamless-Installation Method: [Heat welded] [Chemically bonded] <Insert requirements>.

F. Colors and Patterns: [As indicated by manufacturer's designations] [Match Architect's samples] <Insert colors and patterns>.

2.3 RUBBER FLOOR TILE <Insert drawing designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Tile Standard: ASTM F1344, Class I-A, Homogeneous Rubber Tile, solid color [Class I-B, Homogeneous Rubber Tile, through mottled] [Class II-A, Laminated Rubber Tile, solid-color wear layer] [Class II-B, Laminated Rubber Tile, mottled wear layer].

C. Hardness: [Grade 1, minimum hardness of 85] [Grade 2, minimum hardness of 70] Manufacturer's standard hardness, measured using Shore, Type A durometer according to ASTM D2240.

Designer Note: WMU prefers a smooth wearing surface for ease of maintenance where appropriate.

D. Wearing Surface: [Smooth] [Textured] [Molded pattern].

1. Molded-Pattern Figure: [Raised discs] [Raised squares] <Insert pattern>.

E. Thickness: 0.125 inch.

F. Size: [12 by 12 inches] [24 by 24 inches] <Insert dimensions>.

G. Seamless-Installation Method: [Heat welded] [Chemically bonded] <Insert requirements>.

H. Colors and Patterns: [As indicated by manufacturer's designations] [Match Architect's samples] <Insert colors and patterns>.

2.4 VINYL COMPOSITION FLOOR TILE <Insert drawing designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Tile Standard: ASTM F1066, Class 1, solid color or Class 2, through pattern [Class 3, surface pattern].
Designer Note: WMU prefers a smooth wearing surface for ease of maintenance where appropriate.

C. Wearing Surface: [Smooth] [Embossed].

D. Thickness: 0.125 inch.

E. Size: 12 by 12 inches.

F. Colors and Patterns: [As indicated by manufacturer's designations] [Match Architect's samples] <Insert colors and patterns>.

2.5 RESILIENT TERRAZZO FLOOR TILE <Insert drawing designation>

A. Resilient Terrazzo Floor Tile: Marble or granite chips embedded in flexible, thermoset-polyester-resin matrix; electrically nonconductive and chemical, oil, and corrosion resistive, with smooth wearing surface and manufacturer's standard factory-applied, protective coating.

1. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Thickness: [1/8 inch] [3/16 inch].

C. Size: [12 by 12 inches] [24 by 24 inches] [24 by 48 inches].

D. Seamless-Installation Method: Chemically bonded.

E. Accessories:
   1. Base: [3 inches] [4 inches] [6 inches] tall.
      a. Type: [Sanitary, coved] [Straight].
   2. Divider strips.
   3. <Insert accessory>.

F. Colors and Patterns: [As indicated by manufacturer's designations] [Match Architect's samples] <Insert colors and patterns>.

2.6 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

1. <Double click to insert sustainable design text for flooring adhesive.> 
2. <Double click to insert sustainable design text for adhesives.>
C. Seamless-Installation Accessories:
      a. Colors: [As selected by Architect from manufacturer's full range to contrast with floor tile] [Match floor tile] <Insert colors>.
   2. Chemical-Bonding Compound: Manufacturer's product for chemically bonding seams.
   3. <Double click to insert sustainable design text for VOC content of chemical bonding compound.>
   4. <Double click to insert sustainable design text for low-emitting chemical bonding compound.>

D. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

E. Joint Sealant for Resilient Terrazzo Floor Tile: Silicone sealant of type and grade recommended in writing by floor tile manufacturer to suit resilient terrazzo floor tile.
   1. <Double click to insert sustainable design text for sealants.>
   2. <Double click to insert sustainable design text for sealants.>
   3. Joint-Sealant Color: [White] [As selected by Architect from manufacturer's full range to match floor tile] [Match floor tile] <Insert color>.

F. Sealers and Finish Coats for Resilient Terrazzo Floor Tile: Products recommended by floor tile manufacturer for resilient terrazzo floor tile.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
   1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F710.
   1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.

3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than [9] [10] Insert number pH.

**Designer Note:** WMU requires moisture testing per product manufacturer's recommendations.

4. Moisture Testing: Perform tests so that each test area does not exceed [200 sq. ft.] [1000 sq. ft.] Insert area, and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

   a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of [3 lb of water/1000 sq. ft.] Insert rate in 24 hours.

   b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum [75] Insert number percent relative humidity level measurement.

C. Access Flooring Panels: Remove protective film of oil or other coating using method recommended by access flooring manufacturer.

D. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

E. Do not install floor tiles until materials are the same temperature as space where they are to be installed.

   1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.

F. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.3 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. 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.

   1. Lay tiles square with room axis [at a 45-degree angle with room axis] [in pattern indicated] Insert requirements.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

   1. Lay tiles with grain running in one direction [with grain direction alternating in adjacent tiles (basket-weave pattern)] [in pattern of colors and sizes indicated].
D. 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.

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

F. Do not bridge expansion joints with flooring material.

G. For seams that occur at doorways, seam shall be centered under the door in its closed position.

H. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.

I. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

J. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

K. Seamless Installation:
   1. Heat-Welded Seams: Comply with ASTM F1516. Rout joints and heat weld with welding bead to fuse sections permanently into a seamless flooring installation. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.
   2. Chemically Bonded Seams: Bond seams with chemical-bonding compound to fuse sections permanently into a seamless flooring installation. Prepare seams and apply compound to produce tightly fitted seams without gaps, overlays, or excess bonding compound on flooring surfaces.

L. Resilient Terrazzo Accessories: Install according to manufacturer's written instructions.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer’s written instructions for cleaning and protecting floor tile.

B. Perform the following operations immediately after completing floor tile installation:
   1. Remove adhesive and other blemishes from surfaces.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil.

C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Comply with manufacturer’s recommended instructions for finishing the floor.

E. Floor Polish: Remove soil, adhesive, and blemishes from floor tile surfaces before applying liquid floor polish.
1. Apply [one] [two] [three] <Insert requirements> coat(s).

F. Joint Sealant: Apply sealant to resilient terrazzo floor tile perimeter and around columns, at door frames, and at other joints and penetrations.

G. Sealers and Finish Coats: Remove soil, visible adhesive, and surface blemishes from resilient terrazzo floor tile surfaces before applying liquid cleaners, sealers, and finish products.
   1. Sealer: Apply two base coats of liquid sealer.
   2. Finish: Apply [two] [three] <Insert requirements> coats of liquid floor finish.

H. Cover floor tile until Substantial Completion.

END OF SECTION 09 6519
WMU Design Guidelines Instructions: These guidelines are to be used by the Design Professional to inform the design process and outline WMU-specific desires for University projects. Text appearing in blue indicates a WMU design guideline which must be met for all campus projects unless approved in writing by the University. Blue text that is struck out indicates products or practices that are not acceptable, and shall not be included unless similarly approved. Any text remaining in black is to be edited by the Design Professional as part of the normal specifications-writing process. Guidelines language shall be included in the project specifications and their intent incorporated into the drawings.

SECTION 09 6813 - TILE CARPETING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes modular carpet tile.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at [Project site] <Insert location>.

1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:
   a. Review delivery, storage, and handling procedures.
   b. Review ambient conditions and ventilation procedures.
   c. Review subfloor preparation procedures.
   d. <Insert agenda items>.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
2. Include manufacturer's written installation recommendations for each type of substrate.

Designer Note: For projects seeking LEED certification, include sustainable design submittals as required.

B. Sustainable Design Submittals:

1. <Double click to insert sustainable design text for adhesives.>
2. <Double click to insert sustainable design text for carpeting products.>
3. <Double click to insert sustainable design text for flooring.>
C. Shop Drawings: For carpet tile installation, plans showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
2. Carpet tile type, color, and dye lot.
3. Type of subfloor.
4. Type of installation.
5. Pattern of installation.
6. Pattern type, location, and direction.
7. Pile direction.
8. Type, color, and location of insets and borders.
9. Type, color, and location of edge, transition, and other accessory strips.
10. Transition details to other flooring materials.

D. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch-long Samples.

E. Samples for Initial Selection: For each type of carpet tile.

1. Include Samples of exposed edge, transition, and other accessory stripping involving color or finish selection.

F. Samples for Verification: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch-long Samples.

G. Product Schedule: For carpet tile. Use same designations indicated on Drawings.


1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

C. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.6 MAINTENANCE MATERIAL SUBMITTALS

**Designer Note:** The amount of attic stock is determined on a project-by-project basis. This needs to be discussed with WMU during the design phases of the project, including where the extra materials will be stored.

A. 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.

1. Carpet Tile: Full-size units equal to [5] \(<\text{Insert number}\>\) percent of amount installed for each type indicated, but not less than 10 sq. yd..

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the [Commercial II] [Master II] \(<\text{Insert description}\>\) certification level.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockups at locations and in sizes shown on Drawings.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI's "CRI Carpet Installation Standard."

1.9 FIELD CONDITIONS

A. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.
1.10 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail 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, the following:
   a. More than 10 percent edge raveling, snags, and runs.
   b. Dimensional instability.
   c. Excess static discharge.
   d. Loss of tuft-bind strength.
   e. Loss of face fiber.
   f. Delamination.
   g. <Insert failure characteristic>.

3. Warranty Period: [10] <Insert number> years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE <Insert drawing designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Color: [As indicated by manufacturer's designations] [Match Architect's samples] [As selected by Architect from manufacturer's full range] <Insert color>.

C. Pattern: [Match Architect's samples] <Insert pattern>.

D. Fiber Content: 100 percent nylon 6, 6 or 100 percent nylon 6 [100 percent polypropylene] [100 percent wool] [80 percent wool; 20 percent nylon 6, 6] [80 percent wool; 20 percent nylon 6] <Insert percentage>.

E. Fiber Type: <Insert proprietary fiber type>.

F. Pile Characteristic: Level-loop or cut-and-loop [Cut] <Insert construction> pile.

G. Yarn Twist: <Insert TPI>.

H. Yarn Count: <Insert count>.

I. Density: <Insert oz./cu. yd.>.

J. Pile Thickness: <Insert inches> for finished carpet tile [according to ASTM D6859].

K. Stitches: <Insert stitches per inch>.

L. Gage: <Insert ends per inch>.

M. Surface Pile Weight: <Insert oz./sq. yd.>.
N. Total Weight: <Insert oz./sq. yd.> for finished carpet tile.

O. Primary Backing/Backcoating: [Manufacturer's standard composite materials] [PVC] [Fiberglass-reinforced PVC] [Fiberglass-reinforced amorphous resin] [Reinforced polyurethane composite cushion] [Reinforced polyurethane composite] [Reinforced thermoplastic copolymer] <Insert specific primary backing materials; consult manufacturers>.

P. Secondary Backing: [Manufacturer's standard material] <Insert specific secondary backing material>.

Q. Backing System: <Insert proprietary name>.

R. Size: [18 by 18 inches] [24 by 24 inches] [18 by 36 inches] [36 by 36 inches] <Insert dimensions>.

S. Applied Treatments:
   2. Antimicrobial Treatment: [Manufacturer's standard treatment] <Insert treatment> that protects carpet tiles as follows:
      a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.

T. Sustainable Design Requirements:
   1. Sustainable Product Certification: [Silver] [Gold] [Platinum] level certification according to ANSI/NSF 140.
   2. <Double click to insert sustainable design text for carpet and cushion.>

U. Performance Characteristics:
   1. Appearance Retention Rating: [Moderate traffic, 2.5] [Heavy traffic, 3.0] [Severe traffic, 3.5] <Insert number> minimum according to ASTM D7330.
   2. Critical Radiant Flux Classification: Not less than [0.45 W/sq. cm] [0.22 W/sq. cm] according to NFPA 253.
   3. Dry Breaking Strength: Not less than 100 lbf according to ASTM D2646.
   4. Tuft Bind: Not less than [3 lbf] [5 lbf] [6.2 lbf] [8 lbf] [10 lbf] <Insert value> according to ASTM D1335.
   5. Delamination: Not less than [3.5 lbf/in.] [4 lbf/in.] <Insert value> according to ASTM D3936.
   6. Dimensional Tolerance: Within 1/32 inch of specified size dimensions, as determined by physical measurement.
   7. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
   8. Noise Reduction Coefficient (NRC): <Insert NRC> according to ASTM C423.
   9. Colorfastness to Crocking: Not less than 4, wet and dry, according to AATCC 165.
   10. Colorfastness to Light: Not less than 4 after [40] [60] <Insert number> AFU (AATCC fading units) according to AATCC 16, Option E.
   11. Electrostatic Propensity: Less than [3.5] [2] <Insert number> kV according to AATCC 134.
2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

1. <Double click to insert sustainable design text for VOC content of adhesive.>
2. <Double click to insert sustainable design text for adhesives.>

C. Metal Edge/Transition Strips: Extruded aluminum with [mill] <Insert finish> finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. 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.

B. Examine carpet tile for type, color, pattern, and potential defects.

C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 03 3000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.

Designer Note: WMU requires moisture testing per product manufacturer’s recommendations.

1. Moisture Testing: Perform tests so that each test area does not exceed [200 sq. ft.] [1000 sq. ft.] <Insert area>, and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

   a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of [3 lb of water/1000 sq. ft.] <Insert emission> in 24 hours.

   b. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum [75] <Insert number> percent relative humidity level measurement.

   c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.

D. Wood Subfloors: Verify the following:

1. Underlayment over subfloor complies with requirements specified in Section 06 1600 "Sheathing."

2. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.
E. Metal Subfloors: Verify the following:

1. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.

F. Painted Subfloors: Perform bond test recommended in writing by adhesive manufacturer.

1. Access Flooring Systems: Verify the following:
2. Access floor substrate is compatible with carpet tile and adhesive if any.
3. Underlayment surface is flat, smooth, evenly planed, tightly jointed, and free of irregularities, gaps greater than [1/8 inch] <Insert dimension>, protrusions more than 1/32 inch, and substances that may interfere with adhesive bond or show through surface.

G. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with CRI's "Carpet Installation Standards" and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.

D. Metal Substrates: Clean grease, oil, soil and rust, and prime if recommended in writing by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.

E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

A. General: Comply with CRI's "CRI Carpet Installation Standard," Section 18, "Modular Carpet" and with carpet tile manufacturer's written installation instructions.

B. Installation Method: As recommended in writing by carpet tile manufacturer AND/OR glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive [Partial glue down; install periodic tiles with releasable, pressure-sensitive adhesive] [Free lay; install carpet tiles without-adhesive].

C. Maintain dye-lot integrity. Do not mix dyes lots in same area.

D. Maintain pile-direction patterns [indicated on Drawings] [recommended in writing by carpet tile manufacturer].
E. Cut and fit carpet tile 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 carpet tile manufacturer.

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

G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.

H. Install pattern parallel to walls and borders.

I. Do not bridge expansion joints with flooring material.

J. For seams that occur at doorways, seam shall be centered under the door in its closed position.

K. Access Flooring: Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet tile:

1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
2. Remove yarns that protrude from carpet tile surface.

B. Protect installed carpet tile to comply with CRI's "Carpet Installation Standard," Section 20, "Protecting Indoor Installations."

C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

D. Vacuum all carpeted areas immediately prior to FF&E installation.

END OF SECTION 09 6813
WMU Design Guidelines Instructions: These guidelines are to be used by the Design Professional to inform the design process and outline WMU-specific desires for University projects. Text appearing in blue indicates a WMU design guideline which must be met for all campus projects unless approved in writing by the University. Blue text that is struck out indicates products or practices that are not acceptable, and shall not be included unless similarly approved. Any text remaining in black is to be edited by the Design Professional as part of the normal specifications-writing process. Guidelines language shall be included in the project specifications and their intent incorporated into the drawings.

SECTION 09 6816 - SHEET CARPETING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Tufted carpet.
   2. Woven carpet.
   3. Carpet cushion.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at [Project site] <Insert location>.
   1. Review methods and procedures related to carpet installation including, but not limited to, the following:
      a. Review delivery, storage, and handling procedures.
      b. Review ambient conditions and ventilation procedures.
      c. Review subfloor preparation procedures.
      d. <Insert agenda items>.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include manufacturer's written data on physical characteristics and durability.
   2. Include manufacturer's written installation recommendations for each type of substrate.

Designer Note: For projects seeking LEED certification, include sustainable design submittals as required.

B. Sustainable Design Submittals:
   1. <Double click to insert sustainable design text for adhesives.>
   2. <Double click to insert sustainable design text for carpeting products.>
   3. <Double click to insert sustainable design text for flooring.>

1 SHEET CARPETING 09 6816
rev. March 2019
C. Shop Drawings: For carpet installation, showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet.
2. Carpet type, color, and dye lot.
3. Locations where dye lot changes occur.
4. Seam locations, types, and methods.
5. Type of subfloor.
6. Type of installation.
7. Pattern type, repeat size, location, direction, and starting point.
8. Pile direction.
9. Types, colors, and locations of insets and borders.
10. Types, colors, and locations of edge, transition, and other accessory strips.
11. Transition details to other flooring materials.
12. Type of carpet cushion.

D. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

**Designer Note:** Carpet samples should be large enough to see the pattern in its entirety.

1. Carpet: Minimum 12-inch-square Sample.
2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch-long Samples.
3. Carpet Cushion: 6-inch-square Sample.

E. Samples for Initial Selection: For each type of product.

1. Include Samples of exposed edge, transition, and other accessory stripping involving color or finish selection.

F. Samples for Verification: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet: 12-inch-square Sample.
2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch-long Samples.
3. Carpet Cushion: 6-inch-square Sample.

G. Product Schedule: For carpet [and carpet cushion]. Use same designations indicated on Drawings.


1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.
B. Product Test Reports: For carpet [and carpet cushion], for tests performed by a qualified testing agency.

C. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet to include in maintenance manuals. Include the following:
   1. Methods for maintaining carpet, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
   2. Precautions for cleaning materials and methods that could be detrimental to carpet [and carpet cushion].

1.6 MAINTENANCE MATERIAL SUBMITTALS

**Designer Note:** The amount of attic stock is determined on a project-by-project basis. This needs to be discussed with WMU during the design phases of the project, including where the extra materials will be stored.

A. 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.
   1. Carpet: Full-width rolls equal to [5] <Insert number> percent of amount installed for each type indicated, but not less than 10 sq. yd..

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the [Commercial II] [Master II] <Insert description> certification level.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
   1. Build mockups at locations and in sizes shown on Drawings.
   2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI's "CRI Carpet Installation Standard."

B. Deliver carpet in original mill protective covering with mill register numbers and tags attached.
1.9 FIELD CONDITIONS

A. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet and carpet cushion until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

C. Do not install carpet and carpet cushion over concrete slabs until slabs have cured, are sufficiently dry to bond with adhesive, and have pH range recommended by carpet manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet, install carpet before installing these items.

1.10 WARRANTY

A. Special Warranty for Carpet: Manufacturer agrees to repair or replace components of carpet installation that fail in materials or workmanship within specified warranty period.

   1. Warranty does not include deterioration or failure of carpet due to unusual traffic, failure of substrate, vandalism, or abuse.
   2. Failures include, but are not limited to, the following:
      a. More than 10 percent loss of face fiber, edge raveling, snags, and runs.
      b. Loss of tuft bind strength.
      c. Excess static discharge.
      d. Delamination.
      e. <Insert failure characteristic>.

   3. Warranty Period: [10] <Insert number> years from date of Substantial Completion.

B. Special Warranty for Carpet Cushion: Manufacturer agrees to repair or replace components of carpet cushion installation that fail in materials or workmanship within specified warranty period.

   1. Warranty includes removal and replacement of carpet and accessories required by replacement of carpet cushion.
   2. Warranty does not include deterioration or failure of carpet cushion due to unusual traffic, failure of substrate, vandalism, or abuse.
   3. Failure includes, but is not limited to, permanent indentation or compression.
   4. Warranty Period: [10] <Insert number> years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 TUFTED CARPET <Insert designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>
B. Color: [As indicated by manufacturer's designations] [Match Architect's samples] [As selected by Architect from manufacturer's full range] <Insert color>.

C. Pattern: [Match Architect's samples] <Insert pattern>.

D. Fiber Content: 100 percent nylon 6, 6 or 100 percent nylon 6 [100 percent polypropylene] <Insert fiber and content by percentage>.

E. Fiber Type: <Insert proprietary fiber type>.

F. Pile Characteristic: [Level-loop] [Cut-and-loop] [Cut] [Multilevel-loop] [Level tip shear] [Random shear] [Frieze] [Sculptured] <Insert characteristic> pile.

G. Yarn Twist: <Insert twist in TPI>.

H. Yarn Count: <Insert yarn count>.

I. Density: <Insert oz./cu. yd.>.

J. Pile Thickness: <Insert inches> for finished carpet [according to ASTM D6859].

K. Stitches: <Insert stitches per inch>.

L. Gage: <Insert gage in ends per inch>.

M. Face Weight: <Insert oz./sq. yd.>.

N. Total Weight: <Insert oz./sq. yd.> for finished carpet.

O. Primary Backing: [Manufacturer's standard material] [Woven polypropylene] [Nonwoven, polypropylene or polyester] <Insert specific primary backing material>.

P. Secondary Backing: [Manufacturer's standard material] [Woven polypropylene] [Nonwoven, polypropylene or polyester] [Woven jute] [Fiberglass] <Insert specific secondary backing material>.

Q. Backcoating: [Manufacturer's standard material] [SBR latex] [PVC] [Thermoplastic copolymer] <Insert backcoating; consult manufacturers>.

R. Backing System: <Insert proprietary name>.

S. Roll Width: [12 feet] [6 feet] [13.5 feet] [15 feet] <Insert dimension>.

T. Applied Treatments:
      a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.
WMU Design Guidelines

U. Sustainable Design Requirements:

1. Sustainable Product Certification: [Silver] [Gold] [Platinum] level certification according to ANSI/NSF 140.
2. <Double click to insert sustainable design text for carpet and cushion.>

V. Performance Characteristics:

1. Appearance Retention Rating: [Moderate traffic, 2.5] [Heavy traffic, 3.0] [Severe traffic, 3.5] <Insert number> minimum according to ASTM D7330.
2. Critical Radiant Flux Classification: Not less than [0.45 W/sq. cm] [0.22 W/sq. cm] according to NFPA 253.
3. Dry Breaking Strength: Not less than 100 lbf according to ASTM D2646.
4. Tuft Bind: Not less than [3 lbf] [5 lbf] [6.2 lbf] [8 lbf] [10 lbf] <Insert value> according to ASTM D1335.
5. Delamination: Not less than [2.5 lbf/in.] [3.5 lbf/in.] [4 lbf/in.] <Insert value> according to ASTM D3936.
7. Colorfastness to Crocking: Not less than 4, wet and dry, according to AATCC 165.
8. Colorfastness to Light: Not less than 4 after [40] [60] <Insert number> AFU (AATCC fading units) according to AATCC 16, Option E.

2.2 WOVEN CARPET <Insert designation>

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Color: [As indicated by manufacturer's designations] [Match Architect's samples] [As selected by Architect from manufacturer's full range] <Insert color>.

C. Pattern: [Match Architect's samples] <Insert pattern>.

D. Fiber Content: [100 percent wool] [80 percent wool; 20 percent nylon 6, 6] [80 percent wool; 20 percent nylon 6] <Insert fiber and content by percentage>.

E. Face Construction: [Axminster] [Wilton] [Velvet] <Insert construction>.

F. Pile Characteristic: [Level-loop] [Cut] [Cut-and-loop] pile.

G. Yarn Twist: <Insert twist in TPI>.

H. Yarn Count: <Insert yarn count>.

I. Density: <Insert oz./cu. yd.>.

J. Pile Thickness: <Insert inches> for finished carpet [according to ASTM D6859].

K. Rows: <Insert number of lengthwise tufts per inch>.

L. Pitch: <Insert number of rows in 27 inches>.
M. Face Weight: <Insert oz./sq. yd.>.

N. Total Weight: <Insert oz./sq. yd.> for finished carpet.

O. Backing: [Manufacturer's standard.] [As follows:]
   1. Chain Warp: <Insert material>.
   2. Stuffer Warp: <Insert material>.
   3. Shot or Fill Weft: <Insert material>.

P. Applied Treatments:
      a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.

Q. Sustainable Design Requirements:
   1. Sustainable Product Certification: [Silver] [Gold] [Platinum] level certification according to ANSI/NSF 140.
   2. <Double click to insert sustainable design text for carpet and cushion.>

R. Performance Characteristics:
   1. Appearance Retention Rating: [Moderate traffic, 2.5] [Heavy traffic, 3.0] [Severe traffic, 3.5] <Insert number> minimum according to ASTM D7330.
   2. Critical Radiant Flux Classification: Not less than [0.45 W/sq. cm] [0.22 W/sq. cm] according to NFPA 253.
   3. Dry Breaking Strength: Not less than 100 lbf according to ASTM D2646.
   5. Colorfastness to Crocking: Not less than 4, wet and dry, according to AATCC 165.
   6. Colorfastness to Light: Not less than 4 after [40] [60] <Insert number> AFU (AATCC fading units) according to AATCC 16, Option E.
   7. Electrostatic Propensity: Less than [3.5] [2] <Insert number> kV according to AATCC 134.

2.3 CARPET CUSHION <Insert designation>

**Designer Note:** Carpet cushion to be compatible with carpet. Follow manufacturer’s recommendations.

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Traffic Classification: CCC [Class I, moderate] [Class II, heavy] [Class III, extra-heavy] traffic.

C. Fiber Cushion: [Rubberized hair, mothproofed and sterilized] [Rubberized jute, mothproofed and sterilized] [Synthetic] [Resinated, recycled textile].
   1. Weight: <Insert oz./sq. yd.>. 

7 SHEET CARPETING 09 6816

rev. March 2019
2. Thickness: <Insert inches> plus 5 percent maximum.

D. Rubber Cushion: [Flat] [Rippled waffle] [Textured flat] [Reinforced].
1. Weight: <Insert oz./sq. yd.> plus 5 percent maximum.
2. Thickness: <Insert inches> plus 5 percent maximum.
3. Compression Resistance: <Insert lb/sq. in.> at [25] [65] percent according to ASTM D3676.

E. Polyurethane-Foam Cushion: [Grafted prime] [Densified] [Bonded] [Mechanically frothed].
1. Compression Force Deflection at 65 Percent: <Insert lb/sq. in. of polymer density> according to ASTM D3574.
2. Thickness: <Insert inches>.

F. Performance Characteristics:
1. Critical Radiant Flux Classification: Not less than [0.45 W/sq. cm] [0.22 W/sq. cm] according to NFPA 253.
2. Noise Reduction Coefficient (NRC): <Insert NRC> according to ASTM C423.
3. <Double click to insert sustainable design text for carpet and cushion.>

2.4 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by [carpet] [carpet cushion] manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet and is recommended or provided by [carpet manufacturer] [carpet and carpet cushion manufacturers].
1. <Double click to insert sustainable design text for VOC content of adhesive.>
2. <Double click to insert sustainable design text for adhesives.>

C. Tackless Carpet Stripping: Water-resistant plywood, in strips as required to match cushion thickness and that comply with CRI's "CRI Carpet Installation Standard."

D. Seam Adhesive: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for sealing and taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.

E. Metal Edge/Transition Strips: Extruded aluminum with [mill] <Insert finish> finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.
PART 3 - EXECUTION

3.1 EXAMINATION

A. 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 performance.

B. Examine carpet for type, color, pattern, and potential defects.

[Designer Note: WMU requires moisture testing per product manufacturer’s recommendations.]

C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 03 3000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.

1. Moisture Testing: Perform tests so that each test area does not exceed [200 sq. ft.] [1000 sq. ft.] <Insert area>, and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
   
   a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of [3 lb of water/1000 sq. ft.] <Insert emission> in 24 hours.
   b. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum [75] <Insert number> percent relative humidity level measurement.
   c. Perform additional moisture tests recommended in writing by [adhesive and carpet] [adhesive, carpet cushion, and carpet] manufacturers. Proceed with installation only after substrates pass testing.

D. Wood Subfloors: Verify the following:

1. Underlayment over subfloor complies with requirements specified in Section 06 1600 "Sheathing."
2. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with CRI’s "CRI Carpet Installation Standard" and with carpet manufacturer's written installation instructions for preparing substrates.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider, and protrusions more than 1/32 inch, unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using
solvents. Use mechanical methods recommended in writing by [adhesive and carpet] [adhesive, carpet, and carpet cushion] manufacturers.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet.

3.3 CARPET INSTALLATION

A. Comply with CRI's "CRI Carpet Installation Standard" and [carpet manufacturer's] [carpet and carpet cushion manufacturers'] written installation instructions for the following:

1. Direct-glue-down installation.
2. Double-glue-down installation.
3. Carpet with attached-cushion installation.
7. Stair installation.

B. Comply with carpet manufacturer's written instructions and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.


C. Install [pattern parallel to walls and borders] [as indicated on Drawings] <Insert requirements>.

D. Install borders with mitered corner seams.

E. Do not bridge building expansion joints with carpet.

F. 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 carpet manufacturer.

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

H. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet as marked on subfloor. Use nonpermanent, nonstaining marking device.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet:

1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.
2. Remove yarns that protrude from carpet surface.
B. Protect installed carpet to comply with CRI's "CRI Carpet Installation Standard."

C. Protect carpet against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods recommended in writing by carpet manufacturer [and carpet cushion manufacturer] [and carpet adhesive manufacturer] [and carpet cushion and adhesive manufacturers].

D. Vacuum all carpeted areas immediately prior to FF&E installation.

END OF SECTION 09 6816
WMU Design Guidelines

WMU Design Guidelines Instructions: These guidelines are to be used by the Design Professional to inform the design process and outline WMU-specific desires for University projects. Text appearing in blue indicates a WMU design guideline which must be met for all campus projects unless approved in writing by the University. Blue text that is struck out indicates products or practices that are not acceptable, and shall not be included unless similarly approved. Any text remaining in black is to be edited by the Design Professional as part of the normal specifications-writing process. Guidelines language shall be included in the project specifications and their intent incorporated into the drawings.

SECTION 09 9123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on [interior substrates.] [the following interior substrates:]

1. Concrete.
2. Cement board.
3. Clay masonry.
4. Concrete masonry units (CMUs).
5. Steel and iron.
7. Aluminum (not anodized or otherwise coated).
8. Copper.
10. Wood.
11. Fiberglass.
15. Acoustic panels and tiles.
17. Cotton or canvas insulation covering.
18. ASJ insulation covering.

1.2 DEFINITIONS

A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D523.

B. MPI Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.

C. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.
D. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D523.

E. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.

F. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.

G. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
2. Indicate VOC content.
3. MSDS sheets.

**Designer Note:** For projects seeking LEED certification, include sustainable design submittals as required.

B. Sustainable Design Submittals:

1. <Double click to insert sustainable design text for paints and coatings.>

C. Samples for Initial Selection: For each type of topcoat product.

D. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

E. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.4 MAINTENANCE MATERIAL SUBMITTALS

**Designer Note:** The amount of attic stock is determined on a project-by-project basis. This is to be discussed with WMU during the design phases of the project, including where the extra materials will be stored.

A. 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.

1. Paint: [5] <Insert number> percent, but not less than [1 gal.] <Insert number> of each material and color applied.
1.5 CLOSEOUT SUBMITTALS

A. Paint Finish Palette: Design Professional to provide a Paint Finish Palette depicting the basic paint types, colors and applications within the project. A sample is provided at the end of this section, and an editable template is provided on WMU’s Facilities Management Website.

1.6 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.
   a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
   b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.
   a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. 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.

1.8 FIELD CONDITIONS

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

B. 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.
PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Benjamin Moore & Co.
2. Pratt & Lambert.

B. Source Limitations: All paint specified for a single building or project shall be from the same manufacturer.

C. Products: Subject to compliance with requirements, provide one of the available products that may be incorporated into the Work include, but are not limited to products listed in the Interior Painting Schedule for the paint category indicated.

2.2 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. <Double click to insert sustainable design text for paints.>

D. Colors: [As selected by Architect from manufacturer's full range] [Match Architect's samples] [As indicated in a color schedule] <Insert requirements>.

1. [Ten] [Twenty] [Thirty] <Insert number> percent of surface area will be painted with deep tones.

2.3 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
   1. Concrete: 12 percent.
   2. Fiber-Cement Board: 12 percent.
   3. Masonry (Clay and CMUs): 12 percent.
   5. Gypsum Board: 12 percent.
   6. Plaster: 12 percent.

C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Plaster Substrates: Verify that plaster is fully cured.

E. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.

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

G. Proceed with coating application only after unsatisfactory conditions have been corrected.
   1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer’s written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and 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.
   1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
   1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. 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.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer, but not less than the following:
   1. SSPC-SP 2.
   2. SSPC-SP 3.
   3. SSPC-SP 7/NACE No. 4.
   4. SSPC-SP 11.

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

I. Aluminum Substrates: Remove loose surface oxidation.

J. 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.

K. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
   1. Use applicators and techniques suited for paint and substrate indicated.
   2. 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.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

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

E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed in equipment rooms:
   
   a. Equipment, including panelboards[ and switch gear].
   b. Uninsulated metal piping.
   c. Uninsulated plastic piping.
   d. Pipe hangers and supports.
   e. Metal conduit.
   f. Plastic conduit.
   g. Tanks that do not have factory-applied final finishes.
   h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
   i. <Insert mechanical items to be painted>.

2. Paint the following work where exposed in occupied spaces:
   
   a. Equipment, including panelboards.
   b. Uninsulated metal piping.
   c. Uninsulated plastic piping.
   d. Pipe hangers and supports.
   e. Metal conduit.
   f. Plastic conduit.
   g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
   h. Other items as directed by Architect.
   i. <Insert mechanical items to be painted>.

3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.
3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 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.

3.6 INTERIOR PAINTING SCHEDULE (not included in WMU Design Standards)  

**Designer Note:** Paint sheen to be appropriate for the application and space within which the paint is applied.
3.7 PAINT FINISH PALETTE EXAMPLE

(BUILDING NAME and BUILDING NUMBER)

PAINT FINISH PALETTE

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>MANUFACTURER/COLOR</th>
<th>SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASIC WALL</td>
<td>SHERWIN WILLIAMS #SW7008 ALABASTER (WHITE)</td>
<td></td>
</tr>
<tr>
<td>METAL DOORS</td>
<td>SHERWIN WILLIAMS #SW7008 ALABASTER (WHITE)</td>
<td></td>
</tr>
<tr>
<td>DOOR FRAMES</td>
<td>SHERWIN WILLIAMS #SW7008 ALABASTER (WHITE)</td>
<td></td>
</tr>
<tr>
<td>ACCENT PAINT</td>
<td>SHERWIN WILLIAMS #SW6684 BRITTLEBUSH (YELLOW)</td>
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<tr>
<td>ACCENT PAINT</td>
<td>SHERWIN WILLIAMS #SW6271 EXPRESSIVE PLUM (GREY/PURPLE)</td>
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</tr>
<tr>
<td>ACCENT PAINT</td>
<td>SHERWIN WILLIAMS #SW6615 PEPPERY (RED)</td>
<td></td>
</tr>
<tr>
<td>ACCENT PAINT</td>
<td>SHERWIN WILLIAMS #SW6416 SASSY GREEN (GREEN)</td>
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<tr>
<td>ACCENT PAINT</td>
<td>SHERWIN WILLIAMS #SW7044 AMAZING GRAY (GRAY)</td>
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END OF SECTION 09 9123