



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.



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- 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.>



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2.2 UNBACKED VINYL SHEET FLOORING <Insert drawing designation>

- A. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
- B. Product Standard: ASTM F1913.
- 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>.
- F. [Seamless-Installation Method: Heat welded \[~~Chemically bonded~~\] <Insert requirements>.](#)
- 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 <Insert drawing designation>

- A. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
- B. Product Standard: ASTM F1303.
 - 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>.
- 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>.

2.4 UNBACKED RUBBER SHEET FLOORING <Insert drawing designation>

- A. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
- B. Product Standard: ASTM F1859.
 - 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>.**
 - 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>.**
- 2.5 RUBBER SHEET FLOORING WITH BACKING <Insert drawing designation>
- A. <Double click here to find, evaluate, and insert list of manufacturers and products.>
 - B. Product Standard: ASTM F1860.
 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>.**
 - 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>.**
- 2.6 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.>



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C. Seamless-Installation Accessories:

1. Heat-Welding Bead: Manufacturer's solid-strand product for heat welding seams.
 - 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.



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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] <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. 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.



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- 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.~~
- L. Integral-Flash-Cove Base: Cove resilient sheet flooring [**6 inches**] [**to dimension indicated**] **<Insert dimension>** up vertical surfaces. Support flooring at horizontal and vertical junction with cove strip. Butt at top against cap strip.
 - 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