

**SECTION 09 65 16
RESILIENT SHEET FLOORING**

SPEC WRITER NOTES:

1. Use this section only for NCA projects.
2. Delete between // ---- // if not applicable to project. Also delete any other items or paragraphs not applicable in section and renumber the paragraphs.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This Section includes resilient sheet flooring.
- B. Installation of //vinyl // linoleum // sheet flooring including following:
 1. Heat welded seams.
 2. Integral Cove Base: Installed at intersection of floor and vertical surfaces.
- C. Installation of rubber sheet flooring //with heat welded seams//.

1.2 RELATED WORK

- A. Concrete Floors: Section 03 30 00, CAST-IN-PLACE CONCRETE.
- B. Color, Pattern and Texture: Section 09 06 00, SCHEDULE FOR FINISHES.
- C. Resilient Base: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

1.3. PERFORMANCE REQUIREMENTS

- A. VOC Emissions:
 1. Provide low VOC products with Green Seal Certification to GS-36 and description of the basis for certification //; or // . //

SPEC WRITER NOTES:

1. Select the paragraph 1 or 2 or both.
 2. //Submit manufacturer's certification that products comply with SCAQMD Rule 1168. //
- B. Finish Flooring: Provide FloorScore certification.

SPEC WRITER NOTES:

1. Review USDA Biopreferred Categories for listed materials within the scope of the following paragraph and include additional requirements, unless justification for non-use exists.
- C. Flooring Bio-based Content: Minimum // ___ // percent biobased materials.

1.4 QUALITY CONTROL AND QUALIFICATIONS

- A. The Contracting Officer will approve products or service of proposed manufacturer, suppliers, and installers
- B. Submit certification that:
 - 1. Heat welded seaming is manufacturers prescribed method of installation.
 - 2. Installer is approved by manufacturer of materials and has technical qualifications, experience, trained personnel, and facilities to install specified items.
 - 3. Manufacturer's product submitted has been in satisfactory operation, on three installations similar and equivalent in size to this project for three years. Submit list of installations.
- B. The sheet floor coverings must meet fire performance characteristics as determined by testing products, per ASTM test method, indicated below by Underwriters Laboratories, Inc. (UL) or another recognized testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Critical Radiant Flux: 0.45 watts per sq. cm or more, Class I, per ASTM E648.
 - 2. Smoke Density: Less than 450 per ASTM E662.
- C. The floor covering manufacturer must certify that products supplied for installation comply with local regulations controlling use of volatile organic compounds (VOC's).

1.5 SUSTAINABILITY REQUIREMENTS

- A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 81 11, SUSTAINABLE DESIGN REQUIREMENTS, for project // local/regional materials, // low-emitting materials, // recycled content, // certified wood // _____// requirements.
- B. Biobased Material: For products designated by the USDA's BioPreferred® program, provide products that meet or exceed USDA recommendations for biobased content, subject to the products compliance with performance requirements in this Section. For more information regarding the product categories covered by the BioPreferred® program, visit <http://www.biopreferred.gov>.

1.6 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

- B. Provide documentation of conformance with performance requirements of this section.
- C. Manufacturer's Literature and Data:
 - 1. Description of resilient material and accessories to be provided.
 - 2. Resilient material manufacturer's recommendations for adhesives, weld rods, sealants, and underlayment.
 - 3. Application and installation instructions.
- D. Samples:
 - 1. Sheet material, 38 mm by 300 mm (1-1/2 inch by 12 inch), of each color and pattern // with a welded seam using proposed welding rod 300 mm (12 inches) square for each type, pattern and color//.
 - 2. //Cap strip and fillet strip, 300 mm (12 inches) for integral base.//
 - 3. Shop Drawings and Certificates: Layout of joints showing patterns where joints are expressed, and type and location of obscure type joints. Indicate orientation of directional patterns.
 - 4. Certificates: Quality Control Certificate Submittals and lists specified in paragraph, QUALIFICATIONS.
 - 5. Edge strips: 150 mm (6 inches) long each type.
 - 6. Adhesive, underlayment and primer: Pint container, each type.

1.7 PROJECT CONDITIONS

- A. Maintain temperature of floor materials and room, where work occurs, above 18° C (65° F) and below 38°C (100° F) for 48 hours before, during and for 48 hours after installation. Maintain room temperature above 13°C (55° F), after previous period.
- B. Construction in or near areas to receive flooring work must be complete, dry and cured. Do not install resilient flooring over slabs until they have been cured and are sufficiently dry to achieve a bond with adhesive. Follow flooring manufacturer's recommendations for bond and moisture testing.
- C. Building must be permanently enclosed. Schedule construction so that floor receives no construction traffic after completed.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Follow manufacturer's instructions for storage and protection from damage by handling and construction operations
- B. Move sheet floor coverings and installation accessories into spaces where they will be installed at least 48 hours in advance of installation.

1.9 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

SPEC WRITER NOTES:

1. Remove reference citations that do not remain in Part 2 or Part 3 of edited specification.
2. Verify and make dates indicated for remaining citations the most current at date of submittal; determine changes from date indicated on the TIL download of the section and modify requirements impacted by the changes.

B. American Society for Testing Materials (ASTM):

E648-10e1	Critical Radiant Flux of Floor-Covering Systems Using a Radiant Energy Source
E662-13b	Specific Optical Density of Smoke Generated by Solid Materials
F710-11	Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring
F1303-04(2009)	Sheet Vinyl Floor Covering with Backing
F1859-12	Rubber Sheet Floor Covering without Backing
F1869-11	Moisture Vapor Emission Rate of Concrete Subfloor using Anhydrous Calcium Chloride
F2034-08	Sheet Linoleum Floor Covering
F2170-11	Determining Relative Humidity in Concrete Floor Slabs using In-situ Probes

C. South Coast Air Quality Management District (SCAQMD)

D. Resilient Floor Covering Institute (RFCI):

Recommended Work Practices for Removal of Resilient Floor Coverings

1.10 SCHEDULING

A. Interior finish work such as plastering, drywall finishing, concrete, terrazzo, ceiling work, and painting work must be complete and dry before installation. Complete mechanical, electrical, and other work above ceiling line prior to work of this section. Heating, ventilating, and air conditioning systems must be installed and operating in order to maintain temperature and humidity requirements.

1.11 WARRANTY

- A. Submit written warranty, in accordance with FAR clause 52.246-21, Warranty of Construction requirements except that warranty period to be extended to include two (2) years.

PART 2 - PRODUCTS

SPEC WRITER NOTES:

1. Make material requirements agree with applicable requirements specified in the referenced Applicable Publications. Update and specify only that which applies to the project.
2. Review USDA BiopREFERRED Categories for listed materials within the scope of the following paragraph and include additional requirements, unless justification for non-use exists.

2.1 SHEET VINYL FLOORING

- A. ASTM F1303, Type II, Grade 1, non-asbestos formulated without backing; foam backed sheet flooring is not acceptable.
- B. Minimum nominal thickness 2 mm (0.08 inch); 1800 mm (6 ft) minimum width.
- C. Color and pattern of sheet flooring of the same production run.

2.2 SHEET RUBBER FLOORING

- A. ASTM F1859, Type // I (homogeneous rubber sheet) // II (layered rubber sheet) // .
- B. Minimum nominal thickness 2 mm (0.08 inch); standard width of manufacturer.
- C. Wearing Surface: // Smooth // Textured // Raised discs // Raised squares // .
- D. Color and pattern of sheet flooring of the same production line.

2.3 SHEET LINOLEUM FLOORING

- A. ASTM F2034.
- B. Minimum nominal thickness // 2 mm (0.08 inch) // 2.5 mm (0.10 inch) // 3.2 mm (0.13 inch)//; standard width of manufacturer.
- C. Color and pattern of sheet flooring of the same production line.

2.4 WELDING ROD

- A. Product of floor covering manufacturer in color matching field color of sheet covering.

2.5 APPLICATION MATERIALS AND ACCESSORIES

- A. Floor and Base Adhesive: Type recommended by sheet flooring material manufacturer for conditions of use.

- B. Mastic Underlayment (for concrete floors): Provide products with latex or polyvinyl acetate resins in mix, with condition to be corrected determining type of underlayment selected for use.
- C. //Base Accessories://
 - 1. //Fillet Strip: 19 mm (3/4 inch) radius fillet strip compatible with resilient sheet material.//
 - 2. //Cap Strip: Extruded flanged zero edge vinyl reducer strip approximately 25 mm (one inch) exposed height with 13 mm (1/2 inch) flange.//
- D. //Chemical Bonding Compound: Manufacturer's product for chemically bonding seams.//

2.6 ADHESIVES

- A. Water resistant type recommended by the sheet flooring manufacturer for the conditions of use.

2.7 BASE CAP STRIP AND COVE STRIP

- A. Extruded vinyl compatible with the sheet flooring.
- B. Cap strip "J" shape with feathered edge flange approximately 25 mm (one inch) wide; top designed to receive sheet flooring with 13 mm (1/2 inch) flange lapping top of flooring
- C. Cove strip 70 mm (2-3/4 inch) radius.

2.8 LEVELING COMPOUND (FOR CONCRETE FLOORS)

- A. Provide cementitious products with latex or polyvinyl acetate resins in the mix.

2.9 PRIMER (FOR CONCRETE SUBFLOORS)

- A. As recommended by the adhesive or sheet flooring manufacturer.

2.10 EDGE STRIPS

- A. Extruded aluminum, mill finish, mechanically cleaned.
- B. 28 mm (1-1/8 inch) wide, 6 mm (1/4 inch) thick, bevel one edge to 3 mm (1/8 inch) thick.
- C. Drill and counter sink edge strips for flat head screws. Space holes near ends and approximately 225 mm (9 inches) on center in between.

2.11 SEALANT

- A. As specified in Section 07 92 00, JOINT SEALANTS.
- B. Compatible with sheet flooring.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

- A. Maintain temperature of sheet flooring above 36 °C (65 °F), for 48 hours before installation.

- B. Maintain temperature of rooms where sheet flooring work occurs above 36°C (65°F), for 48 hours, before installation and during installation.
- C. After installation, maintain temperature at or above 36°C (65°F.)
- D. Building must be permanently enclosed.
- E. Wet construction in or near areas to receive sheet flooring must be complete, dry and cured.

3.2 SUBFLOOR PREPARATION

- A. Concrete Subfloors: Verify that concrete slabs comply with ASTM F710.
 - 1. Examine surfaces to receive resilient sheet flooring with installer and identify areas which are unacceptable for installation of flooring material. Installer to advise Contractor which methods are to be used to correct conditions that will impair proper installation. Installation cannot proceed until unsatisfactory conditions have been corrected.
 - 2. Slab substrates dry, free of curing compounds, sealers, hardeners, and other materials which would interfere with bonding of adhesive. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by Resilient Floor Covering Institute recommendations in manual RFCI-MRP.
- B. Broom or vacuum clean substrates to be covered by sheet floor coverings immediately before installation. Following cleaning, examine substrates to determine if there is visually any evidence of moisture, alkaline salts, carbonation, or dust.
- C. Primer: If recommended by flooring manufacturer, prior to application of adhesive, apply concrete slab primer in accordance with manufacturer's directions.
- D. Correct conditions which will impair proper installation, including trowel marks, pits, dents, protrusions, cracks or joints.
- E. Fill cracks, joints, depressions, and other irregularities in concrete with leveling compound.
 - 1. Do not use adhesive for filling or leveling purposes.
 - 2. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.
 - 3. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joint lines.
- F. Clean floor of oil, paint, dust and deleterious substances. Leave floor dry and cured free of residue from existing curing or cleaning agents.

- G. Moisture Testing: Perform moisture and pH test as recommended by the flooring and adhesive manufacturers. Perform test locations starting on the deepest part of the concrete structure. Proceed with installation only after concrete substrates meet or exceed the manufacturer's requirements. In the absence of specific guidance from the flooring or adhesive manufacturer the following requirements are to be met:
1. Perform moisture vapor emission tests in accordance with ASTM F1869. Proceed with installation only after substrates have a maximum moisture-vapor-emission rate of 1.36 kg of water/92.9 sq. m (3lb of water/1000 sq. ft.) in 24 hours.
 2. Perform concrete internal relative humidity testing using situ probes in accordance with ASTM F2170. Proceed with installation only after concrete reaches maximum 75 percent relative humidity level measurement.
- //H. Preparation includes the removal of existing resilient floor and existing adhesive. Do not use solvents to remove adhesives. Coordinate with Asbestos Abatement Section if asbestos abatement procedures will be involved. //

SPEC WRITER NOTES:

1. Delete Article below if this is a new project installation and not a renovation project.

- //I. Remove existing resilient flooring and adhesive completely in accordance with Resilient Floor Covering Institute recommendations in manual RFCI-WP. Do not use solvents//.

3.3 INSTALLATION OF FLOORING

- A. Install work in strict compliance with manufacturer's instructions and approved layout drawings.
- B. Maintain uniformity of sheet floor covering direction and avoid cross seams.
- C. Arrange for a minimum number of seams and place them in inconspicuous and low traffic areas, but in no case less than 150 mm (6 inches) away from parallel joints in flooring substrates.
- D. Match edges of resilient floor coverings for color shading and pattern at seams.
- E. Finish resilient sheet flooring level with other abutting flooring material floors.
- F. Extend sheet floor coverings into toe spaces, door reveals, closets, and similar openings.

- G. Inform the RE/COR of conflicts between this section and the manufacturer's instructions or recommendations for auxiliary materials, or installation methods, before proceeding.
- H. Install sheet in full coverage adhesives.
 - 1. Air pockets or loose edges will not be accepted.
 - 2. Trim sheet materials to touch in the length of intersection at pipes and vertical projections; seal joints at pipe with waterproof cement or sealant.
- I. Keep joints to a minimum; avoid small filler pieces or strips.
- J. Follow manufacturer's recommendations for seams at butt joints. Do not leave any open joints that would be readily visible from a standing position.
- K. Follow manufacturer's recommendations regarding pattern match, if applicable.
- L. Installation of Edge Strips:
 - 1. Locate edge strips under center lines of doors unless otherwise indicated.
 - 2. Set aluminum strips in adhesive, anchor with lead anchors and stainless steel Phillips screws.
- M. // Chemically Bonded Seams: Bond seams with chemical-bonding compound to permanently fuse sections into a seamless flooring. Prepare seams and apply compound to produce tightly fitted seams without gaps, overlays, or excess bonding compound on flooring surfaces.//

3.4 INSTALLATION OF INTEGRAL COVED BASE

- A. Set preformed cove to receive base.
- B. Install base material with adhesive and terminate exposed edge with cap strip.
- C. Integral base to be // 100 mm (4 inches) // 150 mm (6 inches) // high.
- D. Form internal and external corners to the geometric shape generated by the cove at straight or radius corners.
- E. Weld joints as specified for the flooring.
- F. Seal cap strip to wall with an adhesive type sealant.
- G. Unless otherwise specified or shown where sheet flooring is scheduled, provide integral base at intersection of floor and vertical surfaces.
- H. Provide sheet flooring and base scheduled for room on floors and walls under and behind areas where casework, and other equipment occurs, except where mounted in wall recesses.

3.5 WELDING

- A. Heat weld all joints of flooring and base using equipment and procedures recommended by flooring manufacturer.
- B. Welding includes routing joint, inserting a welding rod into routed space, and terminally fusing into a homogeneous joint.
- C. Provide finished flush surface across joint, free from voids, recessed or raised areas, on completion of welding.
- D. Fusion of Material: Joint fused a minimum of 65 percent through thickness of material and meeting specified characteristics for flooring.

3.6 CLEANING

- A. Clean small adhesive marks during application of sheet flooring and base before adhesive sets, excessive adhesive smearing will not be accepted.
- B. Remove visible adhesive and other surface blemishes using methods and cleaner recommended by floor covering manufacturers.
- C. Clean and seal materials per flooring manufacturer's written recommendations.
- D. Vacuum floor thoroughly.
- E. Do not wash floor until after period recommended by floor covering manufacturer and then prepare in accordance with manufacturer's recommendations.
- F. Upon completion, RE/COR will inspect floor and base to ascertain that work was done in accordance with manufacturer's printed instructions.
- G. Perform initial maintenance according to flooring manufacturer's written recommendations.

3.7 PROTECTION

- A. Protect installed flooring as recommended by flooring manufacturer against damage from rolling loads, other trades, or placement of fixtures and furnishings.
- B. Keep traffic off sheet flooring for 24 hours after installation.
- C. Where construction traffic is anticipated, cover sheet flooring with reinforced kraft paper properly secured and maintained until removal is authorized by the RE/COR.
- D. Where protective materials are removed and immediately prior to acceptance, repair any damage, re-clean sheet flooring, lightly re-apply polish and buff floor.

- - - E N D - - -