

SECTION 09 65 19
RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies the installation of solid vinyl tile flooring and accessories.

1.2 RELATED WORK

A. Resilient Base: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

1.3 SUBMITTALS

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

B. Manufacturer's Literature and Data:

1. Description of each product.
2. Resilient material manufacturer's recommendations for adhesives, underlayment, and primers.
3. Application and installation instructions.

C. Samples:

1. Tile: One full size sample for each type, pattern and color.

D. Shop Drawings:

1. Layout of tile patterns and colors shown on the drawings.

E. Maintenance Data:

1. Submit maintenance information for all products proposed and/or installed.

F. Warranty Documents:

1. Submit warranty documents specified herein.

1.4 DELIVERY

A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number and date of manufacture.

B. Materials from containers which have been distorted, damaged or opened prior to installation will be rejected.

1.5 STORAGE

A. Store materials in weather tight and dry storage facility.

B. Store materials flat and control temperature and humidity within manufacturer's standards.

C. Protect from damage from handling, water, and temperature.

1.6 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. ASTM International:

1. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
2. ASTM E648 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
3. ASTM E662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
4. ASTM E1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
5. ASTM E1745 Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
6. ASTM F137 Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus.
7. ASTM F386 Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces.
8. ASTM F536 Test Method for Size of Resilient Floor Coverings.
9. ASTM F540 Test Method for Squareness of Resilient Floor Tile by Dial Gage Method.
10. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
11. ASTM F925 Standard Test Method for Resistance to Chemicals of Resilient Flooring.
12. ASTM F970 Standard Test Method for Static Load Limit.
13. ASTM F1514 Standard Test Method for Measuring Heat Stability of Resilient Vinyl Flooring by Color Change.
14. ASTM F1515 Standard Test Method for Measuring Light Stability of Resilient Vinyl Flooring by Color Change.
15. ASTM F1700 Standard Specification for Solid Vinyl Floor Tile.
16. ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
17. ASTM F1914 Standard Test Method for Short-Term Indentation and Residual Indentation of Resilient Floor Covering.
18. ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

C. Americans with Disabilities Act (ADA) of 1990.

D. Federal Specifications (FS):

1. Federal Standard Number 501a (Notice 1) Federal Test Method Standard for Floor Covering, Resilient, Non-Textile, Sampling and Testing Method 6211 Dimensional Stability.

E. International Organization for Standardization (ISO):

1. ISO 9001 Quality Systems - Model Quality Assurance in Production, Installation, and Servicing.

2. ISO 14001 Environmental Management Systems - Specification with Guidance for Use.

F. National Fire Protection Association (NFPA):

1. NFPA 253 Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Heat Energy Source.
2. NFPA 258 Recommended Practice for Determining Smoke Generation of Solid Materials.

1.7 QUALITY ASSURANCE

- A. Manufacturer: The manufacturer of the flooring product must be accredited to both ISO 9001 (Quality Management System) and ISO 14001 (Environmental Management System).
- B. Flooring Contractor Qualifications:
 1. The contractor a all be an established firm with experience in the installation of the specified product and have access to all manufacturers' required technical, maintenance, specifications and related documents.
 2. The flooring contractor shall have completed at least 3 projects of similar scope, material and complexity, and must provide project reference details including contact names and telephone numbers.
- C. Installer Qualifications: An experienced installer, as determined by contractor, who has specialized in the installation of work similar to that required for this project is to perform the work of this section.
- D. Installation procedures shall be in strict accordance with flooring manufacturer's published technical documentation and shall not begin until the work of all other trades has been completed.

1.8 WARRANTY

- A. All work performed under this contract is subject to the 1 year general warranty provisions of the contract.
- B. Provide copy of manufacturer's standard commercial wear warranty. Manufacturer's warranty shall be in addition to, and not a limitation of, the general warranty provisions of the contract. Manufacturer's wear warranty shall be for a period of at least 10 years.

1.9 MAINTENANCE

- A. Extra Materials: Deliver extra materials (bench stock) for each tile size, type, and color from same production run as products installed to owner. Package products with protective covering and identify with descriptive labels. Deliver to on-site storage area as designated by the Government.
- B. Quantity: Furnish quantity of extra materials in full size units, equal to a minimum of 5% of amount installed. Additional feature items (logos and motifs) are not required to be furnished.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Furnish product type, materials of the same production run and meeting following criteria.
- B. Use adhesives, underlayment, and primers recommended by the floor resilient material manufacturer.

2.2 RESILIENT TILE FLOORING

A. Luxury Solid Vinyl Tile:

1. Product Testing (Minimum): Provide manufacturer's products which have been tested to meet the following minimum test standards:

- a. Comply with ASTM F1700, including the following:

- 1) Classification (ASTM F1700): Class III (Printed Film) Types A & B.
 - 2) Flexibility (ASTM F137): 1 inch (25.4 mm) mandrel, no crack or break; pass.
 - 3) Total Thickness (ASTM F386): 0.100 inch (2.5 mm) +/- 0.005 inch (0.127 mm), satisfies requirement.
 - 4) Chemical Resistance (ASTM F925): Excellent resistance.
 - 5) Heat Resistance (ASTM F1514): AE < 8 average; satisfies requirement.
 - 6) Light Stability (ASTM F1515): AE < 8 average; satisfies requirement.
 - 7) Short-Term Residual Indentation (ASTM F1914): < 8%, satisfies requirement.
 - 8) Tile Size (ASTM F536): +/- 0.016 inch/lineal foot (0.4 mm/305 mm); satisfies requirement.
 - 9) Tile Squareness (ASTM F540): Maximum 0.010 inch (0.25 mm); satisfies requirement.
 - 10) Dimensional Stability (Fed. Std. No. 501a Method 6211): Maximum 0.020 inch/lineal foot (0.51 mm/305 mm); satisfies requirement.

- b. Wearlayer Thickness (EN 429): Minimum 40 mils (1.0 mm).

- c. Weight (EN 430): Minimum 29 lb/45 ft² (0.7 lb/ft²).

- d. Static Load Limit/Long-Term Indentation (ASTM F970) Armstrong Modified 1000 psi: Pass.

- e. Fire Performance:

- 1) Critical Radiant Flux (ASTM E648 and NFPA 253): > 0.45 W/cm, Class 1.
 - 2) Optical Smoke Density (ASTM E662 and NFPA 258) Non-Flaming DM Corrected: < 450; pass.

- f. Slip Resistance (Dry Static Coefficient of Friction) (ASTM D2047 James Test): 0.6, ADA compliant.

- g. Abrasion Resistance:

- 1) Taber Test (H22 wheels, 1 kg load, 1000. cycles): 0.14 g.
 - 2) Thickness Loss (EN 660 Group T): 0.077 mm.

- h. Caster Chair Test (EN 425): Pass.
- i. Thermal Conductivity (DIN 52612): 3.0 to 4.5 Btu/in²/degree F (0.4 - 0.65 W/mK); suitable for radiant heating.

2.3 ADHESIVES

- A. Comply with applicable regulations regarding toxic and hazardous materials Green Seal (GS-36) for commercial adhesive.
- B. Use low-VOC adhesive during installation. Water based is preferred over solvent based adhesives.
- C. Adhesives shall be as recommended by tile manufacturer, and appropriate for the application. Use 2-part adhesives where necessary or appropriate due to field conditions or to meet scheduling needs.

2.4 PRIMER (FOR CONCRETE SUBFLOORS)

As recommended by the adhesive and tile manufacturer.

2.5 LEVELING COMPOUND (FOR CONCRETE FLOORS)

- A. Provide cementitious products with latex or polyvinyl acetate resins in the mix.
- B. Determine the type of underlayment selected for use by the condition to be corrected.

2.7 SPEC/AL FEATURES

- A. Use same material as floor tile.
- B. Sizes and shapes as shown on plans.
- C. Motifs and Logos to be factory fabricated for one-piece installation.
See detail plans provided.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

- A. Maintain temperature of materials a minimum of 22 (70 °F,) for 48 hours before installation.

B. Maintain temperature of rooms where work occurs between 21 °C and 27 °C (70 °F and 80 °F), for at least 48 hours, before, during and after installation.

C. Do not install flooring until area to receive tile materials is complete, dry and cured.

3.2 SUBFLOOR PREPARATION

A. Verify that concrete slabs comply with ASTM F710. At existing slabs, determine levelness by F-number method in accordance with ASTM E1155. Overall value shall not exceed as follows:

FF30/FL20

B. Correct conditions which will impair proper installation.

C. Fill cracks, joints 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 joints.

D. Clean floor of oil, paint, dust, and deleterious substances: Leave floor dry and cured free of residue from existing curing or cleaning agents.

E. Concrete Subfloor Testing:•

Determine Adhesion and dryness of the floor by bond and moisture tests as recommended by RFCI manual MRP.

F. Perform additional subfloor preparation to obtain satisfactory adherence of flooring if subfloor test patches allows easy removal of tile.

G. Prime the concrete subfloor if the primer will seal slab conditions that would inhibit bonding, or if priming is recommended by the tile or adhesive manufacturers.

H. Preparation of existing installation shall include the removal of existing resilient floor and existing adhesive. Do not use solvents to remove adhesives.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions for application and installation unless specified otherwise. •

B. Mix tile from at least two containers. An apparent line either of shades or pattern variance will not be accepted.

C. Tile Layout:

B. If layout is not shown on drawings, lay tile symmetrically about

center of room or space with joints aligned. Maintain temperature of rooms where work occurs between 21 °C and 27 °C (70 °F and 80 °F), for at least 48 hours, before, during and after installation.

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- D. Clean floor of oil, paint, dust, and deleterious substances: Leave floor dry and cured free of residue from existing curing or cleaning agents.
- E. Concrete Subfloor Testing:

Determine Adhesion and dryness of the floor by bond and moisture tests as recommended by RFCI manual MRP.
- F. Perform additional subfloor preparation to obtain satisfactory adherence of flooring if subfloor test patches allows easy removal of tile.
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3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions for application and installation unless specified otherwise.
- B. Mix tile from at least two containers. An apparent line either of shades or pattern variance will not be accepted.
- C. Tile Layout:
 - 1. If layout is not shown on drawings, lay tile symmetrically about center of room or space with joints aligned.

2. No cut tile shall be less than M tile width, and of equal width at walls.
 3. Place tile pattern in the same direction, unless otherwise shown on plans.
- D. Trim tiles to touch for the length of intersections at pipes and vertical projections, seal joints at pipes with waterproof cement.

E. Application:

1. Apply adhesive uniformly with no bare spots.
 - a. Conform to RFC1-TM-6 for joint tightness and for corner intersection unless layout pattern shows random corner intersection.
 - b. More than 5 percent of the joints not touching will not be accepted.
2. Roll tile floor with a minimum 45 kg (100 pound) roller. No exceptions.
3. The Resident Engineer may have test tiles removed to check, for non-uniform adhesion, spotty adhesive coverage, and ease of removal. Install new tile for broken removed tile.

F Installation of Edge Strips:

1. Provide suitable resilient or metal edge strips wherever required to separate new work from existing flooring. Locate edge strips under center line of doors unless otherwise shown.
2. Set resilient edge strips in adhesive. Anchor metal edge strips with anchors and screws specified.
3. Where tile edge is exposed, butt edge strip to touch along tile edge.
4. Where thin set ceramic tile abuts resilient tile, set edge strip against floor file and against the ceramic tile edge.

3.4 CLEANING AND PROTECTION

- A. Clean adhesive marks on exposed surfaces during the application of resilient materials before the adhesive sets. Exposed adhesive is not acceptable.
- B. Keep traffic off resilient material for a minimum of 48 hours after installation; or provide suitable protection to protect new tile until adhesive has sufficiently cured.
- C. Clean materials as follows:
 1. For the first two days, dry sweep only.
 2. After 48 hours, scrub resilient materials with a minimum amount of water and a mild detergent (as recommended by manufacturer). Leave surface clean and free of detergent residue.
- D. When traffic must occur over newly laid tile due, cover resilient materials with reinforced kraft paper properly secured and maintained

until removal is directed by Resident Engineer. At entrances and where wheeled vehicles or carts are used, cover tile with plywood, hardboard, or particle board over paper, secured and maintained until removal is directed by Resident Engineer.

E. When protective materials are removed and immediately prior to acceptance, replace any damage tile, and re-clean resilient materials.

3.5 LOCATION

A. Extend tile flooring into adjacent closets and alcoves as shown on plans.

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