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This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) Manual of Practice®, including MasterFormat™, SectionFormat™, and PageFormat™. A MANU-SPEC® is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text indicated by brackets [ ]; delete optional text in final copy of specification.

This MANU-SPEC® specifies resilient linoleum sheet flooring, marketed under the Marmoleum® Fresco, Marmoleum® Graphic, Marmoleum® Piano, Marmoleum® Real, Marmoleum® Striato, Marmoleum® Unexpected Nature of Linoleum, Marmoleum® Vivace, Marmoleum® Decibel, Marmoleum® Composition Sheet (MCS), Marmoleum® Sport, Linoflex®, Walton and Corklinoleum brand names, as manufactured by Forbo Flooring. Revise the MANU-SPEC® section number and title below to suit project requirements, specification practices, and section content. Refer to CSI MasterFormat™ for other section numbers and titles, including 096000 Flooring; 096500 Resilient Flooring.

SECTION 09 65 00

RESILIENT LINOLEUM SHEET FLOORING

1. **GENERAL**
   1. **SUMMARY**
      1. Section Includes: Resilient Linoleum Sheet Flooring
         1. Marmoleum® [Fresco] [Graphic] [Piano] [Real] [Striato] [Vivace] [Decibel] [Composition Sheet (MCS)] [Sport] [Linoflex®] [Walton] [Corklinoleum] Flooring, Adhesive Installation, Topshield2™ Finish
         2. Marmoleum® [Fresco] [Graphic] [Piano] [Real] [Striato] [Vivace] [Decibel] [Composition Sheet (MCS)] [Sport] [Linoflex®] [Walton] [Corklinoleum] Flooring, Adhesive Installation, Heat Welded Seamless Installation, Topshield2™ Finish
         3. Marmoleum® [Fresco] [Graphic] [Piano] [Real] [Striato] [Vivace] [Decibel] [Composition Sheet (MCS)] [Sport] [Linoflex®] [Walton] [Corklinoleum] Flooring, Adhesive Installation, Flash Cove Installation, Topshield2™ Finish
         4. Forbo Flooring Systems Resilient Base
         5. Forbo Flooring Systems Resilient Transition Accessories

*Specifier Note: Revise paragraph below to suit project requirements. Add section numbers and titles per CSI MasterFormat™ and specifier's practice.*

* + 1. Related Sections: Section(s) related to this section include:
       1. Concrete: Refer to Division 3 Concrete Sections for cast‑in‑place concrete, concrete toppings, and cementitious underlayments.
       2. Wood Subflooring: Refer to Division 6 Carpentry Section for wood subflooring and wood underlayment.
       3. Resilient Flooring Accessories: Refer to Division 9 Finishes Sections for resilient wall bases, reducer strips, metal edge strips and other resilient flooring accessories.
       4. Expansion Joint Covers: Refer to Division 10 Specialties Section for expansion joint covers to be used with resilient flooring.

*Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. "Conditions of the Contract" or Division 1 References Section may establish the edition date of standards. This article does not require compliance with standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section.*

* 1. **REFERENCES**
     1. Forbo Installation Guide
     2. Forbo Floor Care Guide
     3. American Society for Testing and Materials (ASTM):
  2. ASTM F 2034 Standard Specification for Linoleum Sheet Floor Covering
  3. ASTM F 1869 Standard Test Method for Measuring Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
  4. ASTM F 2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
  5. ASTM F 1861 Standard Specification for Resilient Wall Base
  6. ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
  7. ASTM F 1482 Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
  8. ASTM E 648 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
  9. ASTM E 662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
  10. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
  11. ASTM E 492 Standard Test Method for Laboratory Measurement of lmpact Sound Transmission through Floor-Ceiling Assemblies Using the Tapping Machine
  12. ASTM E 989 Standard Classification for Determination of lmpact lnsulation Class (llC)
      1. National Fire Protection Association (NFPA):
         1. NFPA 253 Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
         2. NFPA 258 Test Method for Specific Optical Density of Smoke Generated by Solid Materials
      2. Standards Council of Canada
         1. CAN/ULC S102 Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies

*Specifier Note: Article below should be restricted to statements describing design or performance requirements and functional (not dimensional) tolerances of a complete system. Limit descriptions to composite and operational properties to extent necessary to link multiple components of a system, and to interface with other systems.*

* 1. **SYSTEM DESCRIPTION**
     1. Performance Requirements: Provide flooring which has been manufactured, fabricated and installed to performance criteria certified by manufacturer without defects, damage, or failure.

*Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during, or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in "Conditions of the Contract" and Division 1 Submittal Procedures Section.*

* 1. **SUBMITTALS**
     1. General: Submit listed submittals in accordance with "Conditions of the Contract" and Division 1 Submittal Procedures Section.
     2. Product Data: Submit product data, including manufacturer's SPEC-DATA product sheet, for specified products.
     3. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage, accessories, finish colors, patterns and textures.
     4. Samples: Submit selection and verification samples for finishes, colors, and textures.
     5. Quality Assurance Submittals: Submit the following:
        1. Manufacturers Technical Data: Manufacturers document specifying performance characteristics and criteria, and physical requirements.
        2. Manufacturer's Instructions: Manufacturer's installation instructions.

*Specifier Note: Coordinate paragraph below with Part 3 Field Quality Requirements Article herein. Retain or delete as applicable.*

* + - 1. Manufacturer's Field Reports: Manufacturer's field reports specified herein.
    1. [Sustainable Submittals for LEED v2009 Projects:
       1. Product data for MR Credit 4 Options 1 & 2 for products having recycled content, including documentation indicating percentages by weight of post-consumer and pre-consumer recycled content.
          1. Include statement indicating costs for each product having recycled content.
       2. Product data for EQ Credit 4.3 for low emitting materials.
          1. Confirm that that each product complies with the testing and product requirements of the California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small Scale Environmental Chambers, including 2004 Addenda. If a product specified has not been tested as noted, provide a substitution to the Architect for review and approval of an equal product meeting noted California Department of Health standard.
       3. Product data for EQ Credit 4.1 for low emitting adhesives and sealants.
       4. Confirm that each product complies with the testing and product requirements of the South Coast Air Quality Management District Rule #1168.
       5. Product data for EQ Credit 5 for indoor chemical & pollutant source control.
       6. Product data for MR Credit 2 for construction waste management.
       7. Product data for MR Credit 5 for regional manufacturing and extraction locations.
       8. Product data for Sustainable Attributes.
          1. Confirm any bio-based materials.
       9. Product data for Innovation & Design Credit
          1. SMaRT Sustainable Product Certification]
    2. [Sustainable Submittals for LEED v4 Projects:
       1. Product data for MR Credit 4 Option 1 for products having regional manufacturing and extraction locations.
       2. Product data for MR Credit 4 Option 2 for products having recycled content, including documentation indicating percentages by weight of post-consumer and pre-consumer recycled content and sustainable attributes.
          1. Include statement indicating costs for each product having recycled content.
          2. Include product data for bio-based content and certification of SMART sustainable product certification.
       3. Product data for MR Policy 2 for construction and demolition waste management.
       4. Product data for EQ Credit 2 for low emitting adhesives and sealants, including printed statement of VOC content as required by Division 01.
       5. Confirm that each product complies with the testing and product requirements of the California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small Scale Environmental Chambers, including 2004 Addenda. If a product specified has not been tested as noted, provide a substitution to the Architect for review and approval of an equal product meeting noted California Department of Health standard.]
    3. Closeout Submittals: Submit the following:
       1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance.
       2. Warranty: Warranty documents specified herein.

*Specifier Note: Article below should include prerequisites, standards, limitations, and criteria which establish an overall level of quality for products and workmanship for this section. Coordinate below article with Division 1 Quality Assurance Section.*

* 1. **QUALITY ASSURANCE**
     1. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
        1. Must be a Forbo Certified Installer.
        2. Proof of valid certification must be submitted to the GC and verified by Forbo Flooring Systems prior to the start of the project.
        3. The Forbo Certified Installer must manage and be on site during installation at all times.

*Specifier Note: Retain paragraph below to suit project requirements; otherwise delete paragraph below.*

* + - 1. Certificate: Submit certificate indicating installer qualifications for project. This project requires a [Forbo Associate Mechanic for standard installations] [Forbo Master Mechanic for complex installations].

*Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General statements to comply with a particular code are typically addressed in "Conditions of the Contract" and Division 1 Regulatory Requirements Section. Repetitive statements should be avoided.*

* + 1. Regulatory Requirements:
       1. Fire Performance Characteristics: Provide resilient linoleum sheet flooring with the following fire performance characteristics as determined by testing products in accordance with the latest version of ASTM method indicated below by a certified testing laboratory or another testing and inspecting agency acceptable to authorities having jurisdiction:
          1. Critical Radiant Flux: Class 1 Rating per NFPA 253 (ASTM E 648) (0.45 watts/cm² or greater).
          2. Smoke Density: Less than 450 per NFPA 258 (ASTM E 662).

*Specifier Note: Retain paragraph below for erected assemblies (either on-site or off-site) required for review of construction, coordination of work of several sections, testing, or observation of operation. Mock-ups, when accepted or approved, establish standards by which work will be judged. Coordinate below with Division 1 Quality Control (Mock-Up Requirements) Section.*

* + 1. Mock-Ups: Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color, texture and pattern, and workmanship standard. Comply with Division 1 Quality Control (Mock-Up Requirements) Section.

*Specifier Note: Edit paragraph below to specify mock-up requirements.*

* + - 1. Mock-Up Size: [Specify mock-up size.]
      2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
      3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.

*Specifier Note: Coordinate paragraph below with Division 1 Project Management and Coordination (Project Meetings) Section.*

* + 1. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.
    2. Pre-Installation Testing: Conduct pre-installation testing as follows: [Specify testing (bond testing, pH testing, calcium chloride testing, relative humidity testing, etc.)]

*Specifier Note: Article below should include special and unique requirements. Coordinate article below with Division 1 Product Requirements Section.*

* 1. **DELIVERY, STORAGE, AND HANDLING**
     1. General: Comply with Division 1 Product Requirements Sections.
     2. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
     3. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
     4. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.
        1. Material should be stored in areas that are fully enclosed and weathertight. The permanent HVAC should be fully operational, controlled and set at a minimum of 68º F (20º C) for at least 48 hours prior to the installation.
  2. **PROJECT CONDITIONS**
     1. Environmental Requirements/Conditions: In accordance with manufacturer's recommendations, areas to receive flooring should be clean, fully enclosed and weathertight. The permanent HVAC must be fully operational, controlled and set at a minimum of 68o F (20o C) for a minimum of seven days prior to, during, and seven days after the installation. The flooring material should be conditioned in the same manner for at least 48 hours prior to the installation. Areas to receive flooring shall be adequately lighted to allow for proper inspection of the substrate, installation and seaming of the flooring, and for final inspection.
     2. Temperature Requirements: Maintain air temperature in spaces where products will be installed for time period before, during, and after installation as recommended by manufacturer.
        1. Temperature Conditions: 68o F (20o C) for a minimum of seven days prior to, during, and seven days after the installation.
     3. Existing Conditions: [Specify existing conditions affecting product use and installation.]
     4. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

*Specifier Note: Article below is a combination of two CSI SectionFormat article titles.*

* 1. **SEQUENCING AND SCHEDULING**
     1. Finishing Operations: Install flooring after finishing operations, including painting and ceiling operations, have been completed.
     2. Concrete Curing: Do not install flooring over concrete substrates until substrates have cured and are dry to bond with adhesive as determined by resilient flooring manufacturer's recommended bond testing, moisture testing, and pH testing.
        1. [Owner assigned responsibility.]
        2. [Flooring Contractor assigned to report responsibility back to owner/architect.]

*Specifier Note: Coordinate article below with "Conditions of the Contract" and with Division 1 Closeout Submittals (Warranty) Section. Below warranty article assumes the use of The American Institute of Architects document A201 "Conditions of the Contract for Construction." If other "Conditions" are used for the project, revise article below accordingly.*

* 1. **WARRANTY**
     1. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
     2. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

*Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements.*

* + - 1. Warranty Period: Five (5) year limited warranty commencing on Date of Substantial Completion.

*Specifier Note: Coordinate article below with Division 1 Closeout Submittals (Maintenance Materials) Section.*

* 1. **MAINTENANCE**
     1. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals (Maintenance Materials) Section.

*Specifier Note: Revise paragraph below specifying size and percentage as required for project.*

* + - 1. Quantity: Furnish quantity of flooring units equal to 5% of amount installed.
      2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

1. **PRODUCTS**

*Specifier Note: Retain article below for proprietary method specification. Add product attributes performance characteristics, material standards, and descriptions as applicable. Use of such phrases as "Equal" or "Approved Equal," or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal, and regulatory) and assignment of responsibility for determining "Equal" products.*

* 1. **RESILIENT LINOLEUM SHEET FLOORING [PRODUCT TYPE]**
     1. Manufacturer: Forbo Flooring, Inc.

*Specifier Note: Paragraph below is an addition to CSI SectionFormat and a supplement to MANU-SPEC®. Retain or delete paragraph below per project requirements and specifier's practice.*

* + - 1. Contact: Forbo Flooring, Inc.  
         P.O. Box 667  
         Hazleton, PA 18202  
         Telephone +800 842 7839 or +570 459 0771  
         Fax + 570 450 0258

*Specifier Note: Paragraph below is an addition to CSI SectionFormat and a supplement to MANU-SPEC®. Retain or delete paragraph below per project requirements and specifier's practice.*

* + - 1. Representative Contact: [Specify representative contact information.]
    1. Proprietary Product(s): Marmoleum® [Fresco] [Graphic] [Piano] [Real] [Striato] [Vivace] [Walton] [Unexpected Nature of Linoleum] [Linoflex®] Linoleum Sheet and Adhesive.
       1. Description: Heterogeneous linoleum sheet made primarily of natural materials consisting of linseed oil, wood flour, and rosin binders, mixed and calendared onto natural jute backing. Pattern and color shall extend throughout total thickness of material.
       2. Width: 2 Meters (79")
       3. Length: 32 Meters (105 Linear Feet)
       4. Gauge: 2.5mm (1/10”)
       5. Backing: Jute
       6. Pattern and Color: [As selected by Architect from manufacturer's standard patterns and colors.]
       7. Adhesive: [Forbo L 885 Adhesive] [Forbo Sustain 885m Adhesive] [Forbo Sustain 1195 Adhesive]
       8. Net Fit Seams: All Marmoleum sheet products shall be installed utilizing net fit seams.
          1. [Welding Rod: Forbo Marmoweld® color-matched [solid color] [multi-color] welding rod as selected by Architect from manufacturer’s standard patterns and colors.]
       9. Topshield 2™ Finish: Applied during the manufacturing process.
    2. Proprietary Product(s): Marmoleum® Decibel Linoleum Sheet and Adhesive.
       1. Description: Heterogeneous linoleum sheet made primarily of natural materials consisting of linseed oil, wood flour, and rosin binders, mixed and calendared onto natural jute backing with an applied polyolefin comfort layer. Pattern and color shall extend throughout total thickness of material.
       2. Width: 2 Meters (79")
       3. Length: 27 Meters (89 Linear Feet)
       4. Gauge: 3.5mm (0.137”)
       5. Backing: Jute/Polyolefin Foam
       6. Pattern and Color: [As selected by Architect from manufacturer's standard patterns and colors.]
       7. Adhesive: [Forbo L 885 Adhesive] [Forbo Sustain 885m] [Forbo Sustain 1195]
       8. Net Fit Seams: All Marmoleum sheet products shall be installed utilizing net fit seams.
          1. [Welding Rod: Forbo Marmoweld® color-matched [solid color] [multi-color] welding rod as selected by Architect from manufacturer’s standard patterns and colors.]
       9. Topshield 2™ Finish: Applied during the manufacturing process.
    3. Proprietary Product(s): Marmoleum® Composition Sheet (MCS) Linoleum Sheet and Adhesive.
       1. Description: Heterogeneous linoleum sheet made primarily of natural materials consisting of linseed oil, wood flour, and rosin binders, mixed and calendared onto natural jute backing. Pattern and color shall extend throughout total thickness of material.
       2. Width: 2 Meters (79")
       3. Length: 32 Meters (105 Linear Feet)
       4. Gauge: 2.0mm (0.080”)
       5. Backing: Jute
       6. Pattern and Color: [As selected by Architect from manufacturer's standard patterns and colors.]
       7. Adhesive: [Forbo L 885 Adhesive] [Forbo Sustain 885m] [Forbo Sustain 1195]
       8. Net Fit Seams: All Marmoleum sheet products shall be installed utilizing net fit seams.
          1. [Welding Rod: Forbo Marmoweld® color-matched [solid color] [multi-color] welding rod as selected by Architect from manufacturer’s standard patterns and colors.]
       9. Topshield 2™ Finish: Applied during the manufacturing process.
    4. Proprietary Product(s): Marmoleum® Sport Linoleum Sheet and Adhesive.
       1. Description: Heterogeneous linoleum sheet made primarily of natural materials consisting of linseed oil, wood flour, and rosin binders, mixed and calendared onto natural jute backing. Pattern and color shall extend throughout total thickness of material.
       2. Width: 2 Meters (79")
       3. Length: 28 Meters (92 Linear Feet)
       4. Gauge: 3.2mm (1/8”)
       5. Backing: Jute
       6. Pattern and Color: [As selected by Architect from manufacturer's standard patterns and colors.]
       7. Adhesive: [Forbo L 885 Adhesive] [Forbo Sustain 885m] [Forbo Sustain 1195]
       8. Net Fit Seams: All Marmoleum sheet products shall be installed utilizing net fit seams.
          1. [Welding Rod: Forbo Marmoweld® color-matched [solid color] [multi-color] welding rod as selected by Architect from manufacturer’s standard patterns and colors.]
       9. Topshield 2™ Finish: Applied during the manufacturing process.
    5. Proprietary Product(s): Corklinoleum Sheet and Adhesive.
       1. Description: Specially formulated, highly elastic type of uni‑colored linoleum, consisting of oxidized linseed oil and rosins, mixed with ground cork, and calendared onto a jute fabric. Pattern and color shall extend throughout total thickness of material.
       2. Width: 2 Meters (79")
       3. Length: 32 Meters (105 Linear Feet)
       4. Gauge: 2.5mm (1/10”)
       5. Backing: Jute
       6. Pattern and Color: [As selected by Architect from manufacturer's standard patterns and colors.]
       7. Adhesive: [Forbo L 885 Adhesive] [Forbo Sustain 885m] [Forbo Sustain 1195]
       8. Net Fit Seams: All Marmoleum sheet products shall be installed utilizing net fit seams.
          1. [Welding Rod: Forbo Marmoweld® color-matched [solid color] [multi-color] welding rod as selected by Architect from manufacturer’s standard patterns and colors.]

*Specifier Note: Paragraph below is an addition to CSI SectionFormat and a supplement to MANU-SPEC®. Retain or delete paragraph below per project requirements and specifier's practice.*

* + 1. Product Criteria Forms: Refer to Product Criteria Forms as an attachment to this section.
       1. Product Forms: Subject to compliance with specified requirements, provide products specified in each Technical Data Sheet.

*Specifier Note: Edit article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section.*

* 1. **PRODUCT SUBSTITUTIONS**
     1. Substitutions: No substitutions permitted.

*Specifier Note: Add article below for alternates required for project; state work covered. Coordinate with Part 1 General Summary Article herein, applicable Division 1 Sections, and other Bid and Contract Documents.*

* 1. **RELATED MATERIALS**
     1. Related Materials: Refer to other sections for related materials as follows:
        1. Underlayment and Patching Compound: Refer to Division 3 Concrete Sections for Portland cement based underlayments and patching compounds.
        2. Resilient Flooring Accessories: Refer to Division 9 Finishes Sections for resilient flooring accessories.
        3. Expansion Joint Covers: Refer to other specification section for expansion joint covers to be used with resilient flooring.
  2. **SOURCE QUALITY**
     1. Source Quality: Obtain flooring product materials from a single manufacturer.

1. **EXECUTION**

*Specifier Note: Article below is an addition to the CSI SectionFormat and a supplement to MANU-SPEC®. Revise article below to suit project requirements and specifier's practice.*

* 1. **MANUFACTURER'S INSTRUCTIONS**
     1. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions, and product carton instructions for installation.
  2. **EXAMINATION**
     1. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions (bond testing, pH testing, calcium chloride testing, relative humidity testing, etc.).
     2. Material Inspection: In accordance with manufacturer's installation requirements, visually inspect materials prior to installation. Material with visual defects shall not be installed and shall not be considered as a legitimate claim.
  3. **PREPARATION**
     1. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.
     2. Surface Preparation:
        1. General: Prepare floor substrate in accordance with manufacturer's instructions.
        2. Floor Substrate: Floors shall be sound, smooth, flat, permanently dry, clean, and free of all foreign materials including, but not limited to, dust, paint, grease, oils, solvents, curing and hardening compounds, sealers, asphalt and old adhesive residue.
        3. Concrete Floor Substrate: Concrete floor substrate shall have a minimum compressive strength of 3,000 psi. Refer to Division 3 Concrete sections for patching and repairing crack materials and leveling compounds with Portland cement based compounds.
           1. Reference Standard: Comply with the latest version of ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
     3. Concrete Moisture Testing: Conduct moisture tests on all concrete floors regardless of the age, grade level or the presence of existing flooring. Conduct calcium chloride tests in accordance with the latest version of ASTM F 1869. Measure the internal relative humidity of the concrete slab in accordance with the latest version of ASTM F 2170. One test of each type should be conducted for every 1,000 square feet of flooring (minimum of 3). The tests should be conducted around the perimeter of the room, at columns, and anywhere moisture may be evident. Concrete moisture vapor emissions must not exceed 8.0 lbs. per 1,000 square feet in 24 hours when using Forbo V 885 adhesive. Concrete internal relative humidity must not exceed 85% when using Forbo V 885 adhesive. A diagram of the area showing the location and results of each test should be submitted to the Architect, General Contractor or End User. If the test results exceed these limitations, the installation must not proceed until the problem has been corrected.
     4. Concrete pH Test: Perform pH tests on concrete floors regardless of the age or grade level. The surface pH of concrete slabs must not exceed a pH of 10 for Forbo L 885 or Sustain 885m adhesives. The surface pH of concrete slabs must not exceed a pH of 11 for Forbo Sustain 1195 adhesive. Concrete substrates with pH readings less than 7.0 or above 10.0 will require remediation prior to installation.
     5. Wood Subfloors: Wood floors should be double construction with a minimum total thickness of 1 inch. Wood floors must be rigid, free from movement and have at least 18" of well-ventilated air space below. Forbo floor coverings should not be installed over wooden subfloors built on sleepers over on or below grade concrete floors without first making sure that adequate precautions have been taken to ensure the structural integrity of the system, and to prevent moisture migration from the concrete slab.
        1. Refer to Division 6 Carpentry sections for wood subfloor construction.
        2. Reference Standard: Comply with the latest version of ASTM F 1482 Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring.

*Specifier Note: Coordinate article below with manufacturer's recommended installation details and requirements.*

* 1. **INSTALLATION**
     1. Material Installation: Measure the area to be installed and determine the direction in which the material will be installed and seam placement. Seams must be a minimum of 6” away from underlayment and concrete joints, saw cuts, etc. Cut the required length for the first sheet, adding 3” - 6” for trimming. Fit the first sheet along the main wall and at the ends using standard fitting methods. The factory edge must be trimmed in order to produce a clean edge suitable for seaming. Immediately after installation, roll the tile with a 100 pound three-section roller in both directions and repeat as necessary to ensure adequate transfer of adhesive to the backing. Repeat the same procedure on the other half of the sheet. DO NOT REVERSE THE SHEETS. INSTALL ALL MARMOLEUM® AND LINOLEUM SHEETS IN THE SAME DIRECTION.
     2. Adhesive Flooring Installation: Use trowel recommended by flooring manufacturer for specific adhesive (1/16” x 1/16” x 1/16” Square notch trowel). Spread rate is approximately 125 ft2/gallon.
     3. Seaming: After the material has been laid into the adhesive, the material should be trimmed to produce a net fit at the seam. The seam edges should just meet, with no pressure or fullness and should be cut with a slight bevel. This will compensate for any slight expansion that may occur.

*Specifier Note: Add or delete article below to suit project requirements. Heat welding is not required for all applications. It should only be used in areas that require hygienic or seamless installations.*

* + 1. [Heat Welded Seamless Flooring Installation: Groove out seams and heat weld together with complementary colored heat welding rod of complimentary composition in accordance with resilient flooring manufacturer's recommendations.]
    2. [Flash Cove Installation: Extend the flooring up the wall in a flash‑coved method to a height of [4] [6] inches ([102] [152] mm), as indicated.]
    3. Installation Techniques:
       1. Where demountable partitions and other items are indicated for installation on top of finished flooring, install flooring before these items are installed.
       2. Scribe, cut, fit flooring to butt tightly to vertical surfaces, permanent fixtures and built‑in furniture, including pipes, outlets, edgings, thresholds, nosings, and cabinets.
       3. Extend flooring into toe spaces, door reveals, closets, and similar openings.
       4. Install flooring on covers for telephone and electrical ducts, and similar items occurring within finish floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers.
       5. Do not install resilient flooring over expansion joints. Use expansion joint covers manufactured for use with resilient flooring. Refer to other specification sections for expansion joint covers.
       6. Adhere resilient flooring to substrate without producing open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections in completed installation.
          1. Use adhesive applied to substrate in compliance with manufacturer’s recommendations, including those for mixing, trowel notch, and adhesive open and working times.
       7. Roll resilient flooring as required by resilient flooring manufacturer.
    4. Finish Flooring Patterns: [As selected by Architect.]

*Specifier Note: Coordinate article below with Division 1 Quality Assurance and Quality Control Sections.*

* 1. **FIELD QUALITY REQUIREMENTS**

*Specifier Note: Edit paragraph below. Establish number and duration of periodic site visits with Owner and manufacturer, and specify below. Consult with manufacturer for services required. Coordinate paragraph below with Division 1 Quality Assurance Section and Part 1 Quality Assurance Submittals herein. Delete if manufacturer's field service not required.*

* + 1. Manufacturer's Field Services: Upon Owner's request and with at least 72 hours’ notice, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.
       1. Site Visits: [Specify number and duration of periodic site visits.]

*Specifier Note: Coordinate article below with Division 1 Execution Requirements (Cleaning) Section.*

* 1. **CLEANING**
     1. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.
        1. Remove visible adhesive and other surface blemishes using cleaning methods recommended by floor manufacturer.
        2. Sweep and vacuum floor after installation.
        3. Do not wash floor until after time period recommended by flooring manufacturer.
        4. Damp mop flooring to remove black marks and soil.
        5. Marmoleum® with Topshield 2 ™ is pre-sealed and pre-finished. It is occupancy ready- no additional finish is required at the time of installation. See manufacturers’ recommendations for further information.

*Specifier Note: Coordinate article below with Division 1 Execution Requirements Section.*

* 1. **PROTECTION**
     1. Protection: Protect installed product and finish surfaces from damage during construction. Remove and legally dispose of protective covering at time of Substantial Completion.

*Specifier Note: Add or delete article below to suit project requirements.*

* 1. **INITIAL MAINTENANCE PROCEDURES**
     1. General: Include in Contract Sum Amount cost for initial maintenance procedures, and execute procedures after flooring installation as recommended by flooring manufacturer.
     2. Initial maintenance to be conducted by awarded Flooring Contractor using a Certified Forbo Floor Care Technician.
     3. Drying Room Yellowing/Ambering: While Marmoleum® and linoleum products are maturing in the drying stoves, a yellow cast, called “drying room yellowing” or “ambering” may appear on the surface. This yellow cast is caused by the oxidation of linseed oil and is TEMPORARY. It occurs intermittently and with varying intensity. It is most noticeable on blue and grey shades of material. When the material is exposed to light, the drying room yellowing will disappear. The process may take as little as a few hours in bright sunlight or longer with artificial light. Because this is a natural occurrence in the product, there is no set time frame for the yellowing to disappear. This is not a material defect. In regards to floor care, applying finish to the material before the drying room yellowing disappears will make no difference; it will still disappear with exposure to light.

*Specifier Note: Retain article below to suit project requirements. CSI PageFormat allows for Schedules, Forms, and Tables to be located at the end of a section. Article may be used to describe specific criteria requirements of similar products or equipment.*

* 1. **SCHEDULES AND (PRODUCT CRITERIA) FORMS**

*Specifier Note: Retain paragraph below to suit project requirements. Reference a schedule or include a schedule as an attachment which indicates where to locate products and equipment.*

* + 1. Schedules: [Specify reference to applicable schedules.]

*Specifier Note: Retain paragraph below to suit project requirements. Include forms as an attachment which indicates product criteria.*

* + 1. Product Criteria Forms Attachments: Refer to Product Criteria Form(s) [No.] of [No.], dated [specify date], attached herewith.

**END OF SECTION**

Manufacturer's Obligatory Disclaimer Statement (For Electronic Media; Not Print Media)