**DIVISION 09 – FINISHES**

**SECTION 09 65 19 – TUFLEX FORCE RUBBER FLOORING**

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BEGINNING OF SECTION 09 65 19

**PART 1 – GENERAL**

1. GENERAL PROVISIONS
   1. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.
2. DESCRIPTION OF WORK
   1. **Work Included:** Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
      1. Rubber Tile Flooring
      2. Substrate Preparation
   2. **Related Work:** The following items are not included in this Section and are specified under the designated Sections:
      1. Section 03 30 00 CAST-IN-PLACE CONCRETE for concrete substrate; slab surface tolerances
      2. Section 06 10 00 ROUGH CARPENTRY for plywood substrate and surface tolerances
      3. Section 09 69 00 ACCESS FLOORING for resilient floor covering for access panels
   3. **References (Industry Standards):**
      1. ASTM International (ASTM):
         1. ASTM D2047, Standard Test Method for Static Coefficient of Friction 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 ASTM D2240, Standard Test Method for Rubber Property – Durometer Hardness
         3. ASTM E662; Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
         4. ASTM F970, Standard Test Method for Static Load Limit
         5. ASTM F970 (Modified), Modified Test Method for Max weight Limit
         6. ASTM F1515, Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change
         7. ASTM F2772, Specification for Athletic Performance Properties of Indoor Sports Floor Systems
         8. ASTM F2569, Standard Test Method for Evaluating the Force Reduction Properties of Surfaces for Athletic Use
         9. ASTM F2117, Standard Test Method for Vertical Rebound Characteristics of Sports Surface/Ball Systems; Acoustical Measurement
         10. ASTM F2157, Standard Specification for Synthetic Surfaced Running Tracks, Vertical Deformation
         11. ASTM E303, Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester
         12. ASTM E90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
         13. ASTM E492, Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine
         14. ASTM E2179, Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors
         15. ASTM F710, Standard Practice for Preparing Concrete to Receive Resilient Flooring
         16. ASTM F1482, Standard Guide to Wood Underlayments products Available for Use Under Resilient Flooring
         17. ASTM F1869, Standard Test Method for Measuring Moisture Vapor Emissions Rate of Concrete Subfloor using Anhydrous Calcium Chloride
         18. ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs using in situ Probes
      2. **National Fire Protection Association (NFPA):**
         1. NFPA 253, Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source
         2. NFPA 258, Test Method for Specific Density of Smoke Generated by Solid Materials
3. SUBMITTALS
   1. **General:** Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures.
   2. **Product Data:** Submit manufacturer's installation instructions & technical data, care & maintenance document, submittal and/or warranty for each material and accessory proposed for use.
   3. **Samples:** Submit representative samples of each product specified for verification, in manufacturer’s standard size samples of each resilient product color, texture and pattern required.
4. QUALITY ASSURANCE
   1. **Manufacturer Qualifications:** Provide resilient flooring materials manufactured in the United States of America by a firm with a minimum of 10 years’ experience with resilient flooring materials of type equivalent to those specified.
      1. Provide resilient flooring products, including wall base, accessories and subfloor preparation products from one manufacturer to ensure color matching and compatibility.
      2. Manufacturer shall be capable of providing technical training and technical field service representation.
   2. **Installer Qualifications:** Installer must be professional, licensed, insured and familiar with the resilient flooring material to be installed. Project Managers or Field Supervisors must be INSTALL (International Standards & Training Alliance) certified CFI (Certified Floorcovering Installers) Certified and/or an FCICA (The Flooring Contractors Association) CIM (Certified Installation Manager) for the requirements of the project.
   3. **Sustainable Design Requirements:**
      1. Rubber Tile and accessories that are easily cleaned and do not require coatings and stripping, or use chemicals that may be hazardous to human health.
      2. Rubber Tile is SCS FloorScore® Certified and meets California Specifications Section 01350.
      3. Rubber Tile manufactured in a Facility that is ISO 14001 Certified.
      4. Rubber Tile free of materials known to be teratogenic, mutagenic or carcinogenic including halogens, asbestos and chlorines.
      5. Rubber Tile that contributes credits to LEED projects.
      6. Rubber Tile should have a documented EPD.
      7. Rubber Tile should have a documented HPD.
5. DELIVERY, STORAGE, AND HANDLING
   1. Deliver materials in labeled packages. Store and handle in strict compliance with manufacturer's recommendations. Protect from damage due to weather, excessive temperatures, and construction operations.
   2. Deliver materials sufficiently in advance of installation to condition materials to the required temperature for 48-hours prior to installation.
6. PROJECT CONDITIONS
   1. Install Rubber Tile after other finishing operations, including painting, have been completed.
   2. Maintain temperature at service levels and/or the ambient temperature must remain steady (± 10° F) between 65° F and 85° F for at least 48-hours prior to, during and until substantial completion.
   3. Maintain relative humidity at service levels, or between 40% and 65% RH.
   4. Avoid conditions in which dew point causes condensation on the installation surface.
7. WARRANTY
   1. Provide manufacturer’s standard limited commercial warranty to cover manufacturing defects.

**PART 2 - PRODUCTS**

*Note To specifier: remove and amend sections as necessary.*

1. MANUFACTURER
   1. Basis-of-Design: Flexco Corporation | 1401 East 6th Street | Tuscumbia, AL 35674 | P: (800) 633-3451
   2. Substitutions: No substitutions permitted.
2. PRODUCTS
   1. TUFLEX FORCE RUBBER TILE FLOORING
      1. Flexco Tuflex Force Rubber Tile Flooring is available in 13 colors *(remove all but the color you are selecting)*: [Black Dahlia w/Medium Gray, Fjord 01] [Charcoal w/Black Dahlia, Doe 03] [Light Gray w/Delft Pansy, Medium Gray 025] [Doe w/Milk Chocolate, Beige 033] [Delft Pansy w/Winsor, Doe 035] [Vizcaya Palm w/Polo Green, Cappuccino 047] [Berry w/Black Dahlia, Medium Gray 048] [Winsor w/Delft Pansy, Fjord 049] [Polo Green w/Vizcaya Palm, Milk Chocolate 052] [Milk Chocolate w/Bark, Doe 056] [Blue Shadow w/Delft Pansy, Doe 058] [Plum Pudding w/Delft Pansy, Medium Gray 059] [Onyx 111]
      2. Flexco Tuflex Force Rubber Tile Flooring, Specify Dimensions: [Square Edge: 27” x 27” x 3/8” (9mm)] [Interlocking: 25 ¾” x 25 ¾” x 3/8” (9mm)]
      3. Thickness: 3/8” (9 mm)
      4. Surface Finish: Smooth
      5. ASTM D2047, Static Coefficient of Friction; > 0.8
      6. ASTM F648/NFPA 253, Critical Radiant Flux; Class 1, > 0.45 W/cm2
      7. ASTM E662/NFPA 258, Smoke Density; Passes, < 450
      8. ASTM F970, Static Load Limit; Passes 250 PSI
      9. ASTM F970, Modified Static Load Limit; Passes 1,000 PSI
      10. ASTM F1515, Light Stability: Passes ∆E < 8
      11. ASTM F2772, Athletic Performance Properties of Indoor Sports Floor Systems: Passes
      12. ASTM F2569, Shock Absorption: Passes Class 1
      13. ASTM F2117 – Vertical Ball Rebound: Passes
      14. ASTM F2157 – Vertical Deformation: Passes
      15. ASTM E303 – Surface Friction, Dry: Passes
      16. ASTM E492, Acoustical (Impact Insulation Class) Impact; IIC 52 (6” concrete, no drop ceiling), 67 IIC (6” concrete, with drop ceiling).
      17. ASTM E90, Acoustical (Sound Transmission Class) STC 52 (6” concrete, no drop ceiling), STC 63 (6” concrete, with drop ceiling)
      18. ASTM E2179, Effectiveness of Floor Covering; ΔIIC 22
      19. Tuflex Force Rubber Tile is free of PVC.
      20. Tuflex Force Rubber Tile is Phthalate-free.
      21. Tuflex Force Rubber Tile has a documented EPD (Environmental Product Declaration).
      22. Tuflex Force Rubber Tile has a documented HPD (Health Product Declaration v2.1).
      23. Tuflex Force Rubber Tile can be viewed on mindfulMaterials website.
      24. Tuflex Force Rubber Tile is manufactured in a facility that is ISO 14001:2015 Compliant.
      25. Tuflex Force Rubber Tile is FloorScore Certified.
      26. Tuflex Force Rubber Tile contains no crumb rubber.
      27. Tuflex Force Rubber Tile is Red List Chemical free.
      28. Tuflex Force Rubber Tile is made in the USA.
      29. Tuflex Force Rubber Tile is 100% Recyclable using the Flexco Impact Program.
      30. Tuflex Force Rubber Tile is designed for a ‘Circular Economy’.
      31. Tuflex Force Rubber Tile carries a 10 year Limited Warranty when installed following the manufacturer’s installation instructions and adhesive recommendations.
3. INSTALLATION AND MAINTENANCE MATERIALS
   1. **Moisture Mitigation:** Moisture testing is required for all Tuflex Force Rubber Tile installations. Mitigation should be performed if results indicate high levels of moisture. Recommended Moisture Mitigation Product:
      1. Excelsior MM-100, Moisture Mitigation provided by Flexco
         1. Unit Size: 2.5 Gallons
         2. Coverage: 1000 square feet per unit with one coat
         3. MM-100 is a water, solvent and VOC free, polyurethane-based moisture mitigation product used to treat concrete slabs with excessive moisture levels beyond what flooring adhesives allow.
         4. MM-100 can block moisture up to 20 lbs. MVER or 99% RH.
         5. MM-100 is a single component product, eliminating extensive mix times and concerns regarding pot life.
         6. MM-100 does not require aggressive concrete preparation, such as shotblasting or diamond grinding.
         7. MM-100 is not recommended as a moisture mitigation system over a non-porous substrate. The substrate must be porous as per ASTM F3191 with 90% of the original substrate exposed.
         8. MM-100 is a two coat system that is incredibly easy to apply and does not require any specialized equipment, its excellent coverage rates also make it incredibly cost effective.
         9. Despite being a two coat system, MM-100 is incredibly fast drying.
         10. Flooring or subsequent coatings can be installed in less than two hours.
         11. Backed by a 10 year material and labor warranty, MM-100 is a fast and easy solution for the moisture issues that commonly plague flooring installations.
   2. **Substrate Preparation Products:** Substrates should be prepared to properly receive the resilient flooring products being specified. Trowelable leveling and patching compounds that are latex-modified, Portland cement based or blended hydraulic cement based formulation. Recommended Substrate Preparation Products:
      1. Excelsior NP-230, Non-Porous Substrate Primer provided by Flexco
         1. Unit Size: 2.5 Gallons
         2. Coverage: 1000 Square Feet per unit with one coat
         3. Used over MM-100 to promote adhesion of cementitious materials
         4. Single component and fast drying to allow for quick and easy installation
         5. Contains an aggregate to provide mechanical bond for cementitious materials
      2. Excelsior CP-300, Cementitious Patch provided by Flexco
         1. Unit Size: 10 lb. Unit
         2. Coverage: 33 Square Feet per unit @ 1/8”
         3. Doesn’t require primer over porous substrates
         4. Install flooring in as little as 30 minutes
      3. Excelsior SU-310, Self-Leveling Underlayment provided by Flexco
         1. Unit Size: 50 lb. Bag
         2. 5500 PSI Compressive Strength after 28 days
         3. Install flooring within 12 hours
         4. Pumpable
   3. **Adhesives:** Adhesives should be selected based on the site conditions and use of the space being installed. Recommended Adhesive Products:
      1. Excelsior MS-700, Modified Silane Wet-Set Adhesive provided by Flexco
         1. Unit Size: 3 Gallon
         2. Coverage: 405-480 Square Feet per unit
         3. Standard installations over porous and non-porous substrates
         4. Excellent green grab
         5. Hard set adhesive adding to dimensionally stable materials
         6. Excellent sheer strength
         7. Approved for Hill-Rom Beds
         8. Superior bond strength
         9. Great for environments with topical moisture
         10. Great for exterior applications
         11. Installation Limits, Indoor Installations only
             1. 95% RH, ASTM F2170
             2. 10 lbs. MVER, ASTM F1869
      2. Excelsior U-705, Urethane Wet-Set Adhesive
         1. Unit Size: 3 Gallon
         2. Coverage: 405-480 Square Feet per unit
         3. Standard installations over porous and non-porous substrates
         4. Excellent green grab
         5. Hard set adhesive adding to dimensionally stable materials
         6. Excellent sheer strength
         7. Approved for Hill-Rom Beds
         8. Superior bond strength
         9. Great for environments with topical moisture
         10. Great for exterior applications
         11. Installation Limits, Indoor Installations only
         12. No Moisture testing Required
      3. Excelsior EW-710, Epoxy Wet-Set Adhesive provided by Flexco
         1. Unit Size: 1 Gallon
         2. Coverage: 120 – 135 Square Feet per unit
         3. Standard installations over porous and non-porous substrates
         4. Excellent green grab
         5. Hard set adhesive adding to dimensionally stable materials
         6. Excellent sheer strength
         7. Approved for Hill-Rom Beds
         8. Superior bond strength
         9. Great for environments with topical moisture
         10. Great for exterior applications
         11. Installation Limits, Indoor Installations only
             1. 90% RH, ASTM F2170
             2. 6 lbs. MVER, ASTM F1869
             3. 7-10 pH
   4. **Maintenance Materials:** Proper maintenance of the installation is critical to the long term performance of the flooring products being specified. Using the appropriate chemicals to maintain the product according to the environment in which it is specified is critical. Recommend maintenance products:
      1. Excelsior NC-900, All Purpose Neutral Cleaner provided by Flexco
         1. For initial maintenance
      2. Excelsior CM-910, Cleaner / Maintainer provided by Flexco
         1. For initial and routine maintenance
      3. Excelsior PF-960, Performance Finish provided by Flexco
         1. For initial maintenance
      4. Excelsior PF-930, Performance Finish Remover provided by Flexco
         1. For heavy cleaning and restorative maintenance

**PART 3 – EXECUTION**

1. GENERAL
   1. **General Contractor Responsibilities:**
      1. Supply a safe, climate controlled building and subfloor as detailed in Flexco Technical Data Sheets.
      2. Ensure substrate meets the requirements of ASTM F710, Flexco Technical Data Sheets and Excelsior Technical Data Sheets.
      3. Provide a secure storage area that is maintained permanently or temporarily at normal operating temperature and humidity conditions between 65° F and 85° F and between 40% and 65% relative humidity, for at least 48-hours prior to and during the application of the flooring, so the flooring contractor can acclimate the flooring materials per manufacturer’s instructions.
      4. Provide an installation area that is weather tight and maintained either permanently or temporarily at ambient service temperature and humidity. Normal operating temperature and humidity conditions are between 65° F and 85° F and between 40% and 65% relative humidity, for at least 48-hours prior to and during the application of the flooring per the manufacturer’s instructions.
      5. Ensure areas with direct prolonged exposure to sunlight are protected with protective UVA/UVB restrictive coatings or films.
      6. Areas of the flooring that are subject to direct sunlight through doors or windows should have them covered using blinds, curtains, cardboard or similar for the time of the installation and 72-hours after the installation to allow the adhesive to cure. Note: These areas should be installed using wet adhesives only.
      7. Conduct initial maintenance prior to final usage per the Flexco Care & Maintenance Documents. Do not conduct initial maintenance until adhesive has cured per the adhesive technical data.
   2. **Flooring Contractor Responsibilities**:
      1. Provide trained installers that are professional, licensed, insured and familiar with the resilient flooring material to be installed.
      2. Ensure installers or installation teams meet one of the following requirements:
         1. Have completed INSTALL (International Standards & Training Alliance) or CFI (Certified Floorcovering Installers) training programs and/or are certified by INSTALL or CFI.
         2. Are being supervised by Project Managers or Field Supervisors that are INSTALL (International Standards & Training Alliance) certified.
         3. CFI (Certified Floorcovering Installers) Certified and/or an FCICA (The Flooring Contractors Association) CIM (Certified Installation Manager).
      3. Follow all requirements in the appropriate Flexco and/or Excelsior Technical Data Sheets, Care & Maintenance Documents, Warranties and other technical documents or instructions.
2. EXAMINATION
   1. **General**: Follow guidelines laid out in Division 01, Section 01 71 00 – Examination and Preparation, as well as Section 01 43 00 – Quality Assurance.
   2. **Verification of Conditions:** Inspect all substrates to ensure they are clean, smooth, permanently dry, flat, and structurally sound. Confirm all areas are properly sealed and acclimated per manufacturer’s requirements.
   3. **Verification of Products:** In accordance with manufacturer’s installation requirements, visually inspect material for size, color or visual defects prior to installing. Any material that is incorrect or visually defective shall not be installed.
3. SUBSTRATE PREPARATION
   1. **General**: Follow guidelines laid out in Division 01, Section 01 71 00 – Examination and preparation. All work required, ensuring substrate or subfloor meets manufacturers’ guidelines are the responsibility of the general contractor.
   2. **Preparation**: Ensure substrate meets the requirements of ASTM F710 for concrete substrates and ASTM F1482 for wood substrates and/or Flexco Technical Data Sheets and Excelsior Technical Data Sheets.
      1. Substrates must be free of visible water or moisture, dust, sealers, paint, sweeping compounds, curing compounds, residual adhesives and adhesive removers, concrete hardeners or densifiers, solvents, wax, oil, grease, asphalt, visible alkaline salts or excessive efflorescence, mold, mildew and any other extraneous coating, film, material or foreign matter.
      2. It is recommended that all substrates have a floor flatness of FF32 and/or flatness tolerance of 1/8” in 6’ or 3/16” in 10’.
      3. Acclimate all products to be used during the installation and the installation environment prior to installation according to the manufacturers written instructions
   3. **Concrete Substrates:**
      1. **Moisture Testing:** Perform moisture testing per the manufacturer’s recommendations to determine conditions, it is recommended to treat new and existing slabs a little bit different to ensure adequate conditions exist for installation.
         1. New Slabs on all grade levels: it is recommended to perform ASTM F2170 Relative Humidity testing no more than a week prior to installation too determine the levels present and when to proceed with the installation.
         2. Existing Slabs on all grade levels: in addition to ASTM F2170 testing, existing slabs that have previously had floor covering installed, must be tested to ASTM F1869 Calcium Chloride test kits to determine the MVER of the concrete.
      2. Mechanically remove contamination on the substrate that may cause damage to the flooring material, this includes paint, permanent and non-permanent markers, pens, crayons, etc. Leaving these on the substrate or marking with them on the back of the material could cause bleed through and damage the flooring.
      3. Fill cracks, holes, depressions and irregularities in the substrate to prevent transferring through to the surface of the resilient flooring. Use a high-quality Portland cement based product such as Excelsior installation products provided by Flexco.
      4. Do not install material over expansion/cold joints.
   4. **Wood Substrates:** wood substrates must have a minimum 18” (45.7 cm) of cross ventilated space beneath the joist.
      1. Wood substrates must be a minimum 1” thick with a double layer construction.
      2. Wood substrates must be rigid and free of movement
      3. Wood substrates must not be OSB (Oriented Strand Board), particle board, chipboard, lauan or composite type underlayments
      4. Wood substrates that are Single Wood or Tongue & Groove subfloors must be covered with the appropriate APA approved underlayment plywood:
         1. Boards with a face width of 3” (7.62 cm) or less and is tongue-and-groove and with a smooth surface, use minimum 1/4” (6.4 mm) underlayment panels.
         2. Boards with a face width greater than 3” (7.62 cm) or not tongue-and-groove, or with a rough surface, use minimum 1/2” (12.7 mm) underlayment panels.
4. INSTALLATION
   1. **General**: Follow all relevant guidelines detailed in Division 01, as well as flooring and adhesive manufacturer’s installation instructions and technical data.
   2. **Rubber Tile:** Install material in accordance with manufacturer’s recommendations:
      1. Select the appropriate adhesive for the application and job site conditions.
      2. Install material according to directional arrows on the back of the material and do not reverse tiles.
      3. Ensure material is rolled appropriately into the adhesive using a 100 lb. three section roller.
5. CLEANING & MAINTENANCE
   1. **General**: Clean up installation area and sweep, dust or wipe material to remove any dirt, dust or debris.
   2. **Initial Maintenance**: Conduct required initial maintenance per the manufacturer’s recommended procedures stated in the Maintenance Documents. All documentation is available upon request or from the Flexco website: [www.flexcofloors.com](http://www.flexcofloors.com/) Excelsior Cleaning and Maintenance products are the recommended products for use. All can be found linked to the product on the Flexco website or at [www.excelsiorproducts.net](http://www.excelsiorproducts.net/).
   3. **Regular Maintenance**: Conduct maintenance on regular intervals as needed. Insufficient cleaning will reduce the wear life of the flooring. The amount of maintenance depends directly upon the amount of dirt and particulates the floor is subjected to.
6. CLOSEOUT ACTIVITIES
   1. **General**: Follow all federal, state and local requirements and Division 01 Section 01 76 00 – Protecting Installed Construction and Section 01 78 00 – Closeout Submittal requirements for these activities.
   2. **Protection**: Protect newly installed material with construction grade paper or protective boards, such as Masonite or Ram Board, to protect material from damage by other trades. Be sure all construction debris is swept up and removed prior to the protective material being installed and does not get trapped underneath. Limit usage and foot traffic according to the adhesive's requirements. When moving appliances or heavy furniture, protect wall base from scuffing and tearing using temporary floor protection as well.

END OF SECTION 09 65 19