SECTION 09650

RESILIENT FLOORING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:
   1. Rubber floor tile.
   2. Vinyl composition tile (VCT).
   3. Resilient stair treads, risers and stringers.
   4. Resilient wall base, reducer strips, and other accessories.

B. Related Sections include the following:
   1. Division 2 Section "Selective Demolition and Alterations" for removing existing finishes.
   2. Division 9 Section "Resilient Sports Floor Coverings" for resilient floor tile for use in athletic-activity or support areas.
   3. Division 9 Section " Wood Athletic-Flooring" for vented resilient base installed with gymnasium floor.

1.03 SUBMITTALS

A. General: Submit in accordance with Section 01300.

B. Product Data: For each type of product indicated.

C. Moisture Tests: Provide results of specified moisture tests and manufacturer's written moisture requirements for each resilient flooring type specified.

D. Product Certifications: Signed by resilient flooring manufacturer of products supplied that products comply with specifications and local regulations controlling use of volatile organic compounds (VOC's).

E. Maintenance Data: For resilient products to include in maintenance manuals.

1.04 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide products identical to those tested for fire-exposure behavior per test method indicated by a testing and inspecting agency acceptable to authorities having jurisdiction.
   1. Smoke Density: Less than 450 per ASTM E 662.
   2. Critical Radiant flux: 0.45 watts per sq. cm or more per ASTM C 648.

B. Source Limitations for Floor Tile: Obtain each type, color, and pattern of tile from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver resilient flooring materials and installation accessories to Project site in original manufacturer's unopened cartons and containers each bearing name of product and manufacturer, Project identification, and shipping and handling instructions.

B. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32.2 deg C). Store tiles on flat surfaces and rolls upright.

C. Move flooring materials and accessories and installation products into spaces where they will be installed at least 48 hours in advance of installation. Do not install flooring materials until they are at same temperature as space where they are to be installed.

1.06 PROJECT CONDITIONS

A. Maintain ambient and substrates temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 85 deg F (29 deg C), in spaces to receive floor tile during the following time periods:
1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

C. Close spaces to traffic during floor covering installation.

D. Close spaces to traffic for 48 hours after floor covering installation.

1.07 SEQUENCING AND SCHEDULING

A. Install resilient products after other finishing operations, including painting, have been completed.

B. Do not install flooring over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive as determined by manufacturer's recommended bond and moisture test.

1.08 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.
2. Resilient Wall Base and Accessories: Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.02 RUBBER FLOOR TILE (RB-3)

A. Rubber Floor Tile: ASTM F 1344.
1. Product: Johnsonite; Roundel RT.

B. Class: I-A (homo geneous rubber tile, solid color).

C. Hardness: Manufacturer's standard hardness, measured using Shore, Type A durometer per ASTM D 2240.

D. Wearing Surface: Molded pattern.
1. Molded-Pattern Figure: Raised discs.

E. Thickness: 0.125 inch.

F. Size: 12 by 12 inches.

G. Color: As indicated in Materials Legend.

H. Fire-Test-Response Characteristics:
1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm per ASTM E 648.

2.03 VINYL COMPOSITION TILE

A. Vinyl Composition Tile, VCT-1, 2 & 3: ASTM F 1066.
1. Product: Cortina Colors; Azrock Commercial Flooring.

B. Class: 2 (through-pattern tile).

C. Wearing Surface: Smooth.

D. Thickness: 0.125 inch.

E. Size: 12 by 12 inches.

F. Colors: As indicated in Materials Legend.

G. Fire-Test-Response Characteristics:
1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm per ASTM E 648.

2.04 RESILIENT WALL BASE

A. Wall Base, RB-1: ASTM F 1861.
1. Product: Johnsonite; Rubber Wall Base.

B. Type (Material Requirement): TP (rubber, thermoplastic).

C. Group (Manufacturing Method): I (solid).

D. Style: Cove (with top-set toe).

E. Minimum Thickness: 0.125 inch.

F. Height: 6 inches.

G. Lengths: Coils in manufacturer's standard length.

H. Outside Corners: Job formed.

I. Inside Corners: Job formed.

J. Surface: Smooth.

K. Color: As indicated in Materials Legend.

2.05 RESILIENT STAIR ACCESSORIES

A. Treads, RB-2: FS RR-T-650.
1. Products: Johnsonite; Roundel Rubber, RH.

B. Material: Rubber, Composition A.

C. Surface Design: Type 2 design (designed).
1. Type 2 Design: Raised-disc pattern.
2. Color: As indicated in Materials Legend.

D. Treads for Concrete Filled Pan Stairs:
1. Nosing Style: Square, adjustable to cover angles between 60 and 90 degrees.
2. Nosing Height: 2 inches.
3. Tread Thickness: 1/4 inch tapering to 7/32 inch at back edge.
4. Size: Lengths and depths to fit each stair tread in one piece.

E. Treads with Integral Riser for Cast-In-Place Stairs:
1. Tread Thickness: 1/4 inch tapering to 7/32 inch at back edge.
2. Size: Lengths and depths to fit each stair tread in one piece.
3. Verify tread and riser dimensions for existing cast-in-place concrete stair.

F. Stringers: Of same thickness as risers, height and length after cutting to fit risers and treads and to cover stair stringers; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.
1. Provide for cast-in-place concrete stairs.

G. Fire-Test-Response Characteristics:
1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm per ASTM E 648.

2.06 RESILIENT MOLDING ACCESSORY

A. Manufacturer: Johnsonite.

B. Material: Vinyl.

C. Transition Strips: The following product identification numbers are for products manufactured by Johnsonite. Provide listed products or equal from one of listed manufacturers.
1. Resilient to Concrete: No. RRS-XX-C.

2.07 INSTALLATION MATERIALS

A. Concrete Slab Primer: Nonstaining type as recommended by flooring manufacturer.

B. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturer for applications indicated.

C. Adhesives: Premium grade, water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
1. Provide spray adhesive for VCT.

D. Rubber Floor Tile Adhesive: Type recommended by rubber floor tile manufacturer.

E. Stair-Tread-Nose Filler: Two-part epoxy compound recommended by resilient tread manufacturer to fill nosing substrates that do not conform to tread contours.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.
   1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. If conditions detrimental to work are encountered, prepare written report, signed by Installer, documenting unsatisfactory conditions and send to Architect.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.

B. Concrete Substrates: Verify that concrete slabs comply with ASTM F 710 and the following:
   1. Verify that substrates are dry and free of curing compounds, sealers, hardeners, and other materials whose presence would interfere with bonding of adhesive. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by flooring manufacturer, and with the specified requirements.
   2. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
   3. Moisture Testing: Perform tests in accordance with anhydrous calcium chloride test, ASTM F 1869, recommendation of flooring manufacturer, and the following specified requirements:
      a. Calcium chloride moisture tests shall be conducted by an independent testing agency.
      b. Maintain a minimum temperature of 70 deg F (21 deg C) in spaces to receive flooring for at least 72 hours prior to and during the tests.
      c. Perform calcium chloride moisture tests on concrete slabs receiving resilient flooring in accordance with ASTM F 1869-92; tests shall not deduct the area of $CaCl^2$ dish. Perform the tests at rate of not less than 1 test/1000 sq. ft. of floor area for slabs-on-grade and 1 test/ 2000 sq. ft. of floor area for elevated slabs.
   4. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours and meet manufacturer's requirements for alkalinity and adhesion.

C. New Floor Slabs: Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

D. Existing Floor Slabs: Scrape and remove adhesive from floor where existing floor coverings are removed. Trowel apply underlayment compound over entire floor to smooth substrate surface and prevent telegraphing of surface irregularities. Level and smooth over trench cut areas to prevent telegraphing of trench cut and patching through finish flooring.

E. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.

F. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
   1. Do not install resilient products until they are same temperature as space where they are to be installed.

G. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 RESILIENT FLOOR COVERING INSTALLATION, GENERAL

A. Install in accordance with floor covering manufacturer's written instructions and requirements of this Section.

B. Scribe, cut, and fit floor covering to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

C. Extend floor covering into toe spaces, door reveals, closets, and similar openings.

D. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor covering as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.

E. Install floor covering on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern with pieces of floor covering installed on covers. Tightly adhere floor covering edges to substrates that abut covers and to cover perimeters.

F. Adhere floor coverings to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.04 TILE INSTALLATION

A. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter. Install tiles square with room axis, unless otherwise indicated.

B. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
1. Verify pattern and grain direction with Architect prior to installation.

C. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

D. Hand roll tiles where required by tile manufacturer.

3.05 RESILIENT WALL BASE INSTALLATION

A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required. Provide on fronts and exposed sides and backs of floor-mounted casework. Where toe space is less than 6 inches, cut down base to proper height.

B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

D. Do not stretch wall base during installation.

E. On masonry surfaces or other similar irregular substrates, fill voids along top edge of wall base with manufacturer's recommended adhesive filler material.

F. Job-Formed Corners:
   1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.
   2. Inside Corners: Use straight pieces of maximum lengths possible. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.
   3. Adhere base to substrate with contact adhesive 12 inches each side of outside corner to properly hold base in permanent proper position in tight contact with wall. Base shall run continuous around corners with butt joints 12 inches minimum for corner

3.06 RESILIENT ACCESSORY INSTALLATION

A. Resilient Stair Accessories:
   1. Apply stair treads to stairs as indicated and according to manufacturer's installation instructions.
   2. Clean backs of tread and lightly sand to ensure proper adhesion.
   3. At stairs, use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
   4. Install treads with epoxy adhesive and roll until a firm bond has been obtained.
   5. Tightly adhere to substrates throughout length of each piece.
   6. For treads installed as separate, equal-length units, install to produce a flush joint between units.

B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor coverings that would otherwise be exposed.

3.07 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing installation of resilient floor coverings and accessories:
   1. Remove adhesive and other blemishes from exposed surfaces using cleaner recommended by resilient floor coverings manufacturers.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil.
      a. Do not wash surfaces until after time period recommended by manufacturer.
   4. Not more than 7 days after completion of installation, apply 1 coat of sealer/wax to a clean, dry VCT floor covering per manufacturer's requirements, protecting surface with uniform coating and gloss. Work shall be done by a floor care subcontractor.

B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
   1. Apply protective floor polish to horizontal surfaces that are free from soil, visible adhesive, and surface blemishes if recommended in writing by manufacturers.
      a. Coordinate selection of floor polish with Owner's maintenance service.
   2. Cover products installed on horizontal surfaces with undyed, untreated building paper until Substantial Completion.
   3. Do not move heavy and sharp objects directly over surfaces. Place hardboard or plywood panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

C. Final cleaning and buffing specified in Division 1 Section "Cleaning."

END OF SECTION