SECTION 09 67 23

RESINOUS FLOORING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Provision of resinous flooring [with cove bases where noted].

B. Related Sections:
   1. [_____].

1.02 REFERENCE STANDARDS

A. ASTM International:
   1. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating.
   2. ASTM D4259 - Standard Practice for Abrading Concrete.
   3. ASTM D638 – Tensile Strength
   4. ASTM D790 – Flexural Strength
   5. ASTM D2240 – Hardness
   6. ASTM D648 – Water Absorption
   7. ASTM D4226 – Impact Resistance

B. International Concrete Repair Institute:
   1. ICRI Guideline 03732P - Guideline for Selecting and Specifying Concrete Surface Preparation for Sealers, Coati

1.03 ADMINISTRATIVE REQUIREMENTS

A. [Coordination:]

B. Preinstallation Meeting:
   1. Contractor shall arrange meeting to be attended by University's Representative, Contractor and Contractor's installer, and agents of manufacturers, all of whom shall have had at least one week's advance notice.
   2. Convene meeting minimum one week prior to commencing work of this Section.
   3. Conference shall be held at the job site.
   4. Review requirements of related work, preparation, storage and handling, materials, specification requirements, coordination with related or adjoining work, surface preparation, work sequence, application, curing, and protection

C. Sequencing: Where possible, install flooring prior to installation of finished wall surfaces or other building materials which may be damaged by contact with water or slurry.

D. [Scheduling:]

1.04 [SUSTAINABLE CHARACTERISTICS]

A. Section 01 35 63 - Sustainability Project Requirements: Requirements for sustainable design compliance.

B. Materials and Resources Characteristics:

1. [Recycled Content Materials: Furnish materials with maximum available recycled content including:

SPEC NOTE ***List materials specified in this section required to have recycled content.***

   a. [Sealants shall be water based and no VOC.]
   b. [Concrete shall have XX% recycled content]

2. [Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project site.]

SPEC NOTE ***List materials specified in this section required to be regional materials.***

   a. [Concrete shall come from local sources (50 mile radius).]

C. Indoor Environmental Quality Characteristics:
   1. [Interior] Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedures.

B. Product Data including manufacturer's printed chemical resistance tables.

C. Certifications: Submit the following certifications indicating that:
   1. Installer meets qualifications specified in this Section.

D. Samples: 8-1/2 by 11 inches, for color and texture review; other Samples only as requested.

E. Maintenance Instructions:
   1. Submit manufacturer's recommended maintenance instructions for each type of flooring installed, including maintenance procedures, maintenance materials, and suggested schedule for cleaning, stripping, and waxing.
   2. Include precautions to be taken against materials and methods that may be detrimental to resilient tile flooring finish.
   3. Submit copy of receipt for maintenance materials.
   4. Maintenance data to be included in the Maintenance Manual specified in Section 01 78 00 - Closeout Submittals.

F. Manufacturer's statement of proper installation.

1.06 [SUSTAINABLE DESIGN SUBMITTALS]

A. Section 01 35 63 - Sustainability Project Requirements: Requirements for sustainable design submittals.

B. Manufacturer's Certificate: Certify products meet or exceed specified sustainable design requirements.
   1. Materials Resources Certificates:
      a. Certify recycled material content for recycled content products.
      b. Certify source for regional materials and distance from Project site.
   2. Indoor Air Quality Certificates:
      a. Certify volatile organic compound content for each interior [adhesive][and][sealant] and related primer.

C. Product Cost Data: Submit cost of products to verify compliance with Project sustainable design requirements. Exclude cost of labor and equipment to install products.
   1. Provide cost data for the following products:

a. Products with recycled material content.
b. Regional products.

1.07 QUALITY ASSURANCE

A. Installer's Qualifications:
1. Installer of resinous flooring shall be licensed or otherwise certified by resinous flooring manufacturer and shall have been regularly providing installations of the types required for no less than five years and proving a background of not less than three years of installations of comparable size to that herein specified.
2. Provide list of completed projects including project name and location, name of architect, name of material manufacturer, and approximate quantity of materials applied.
3. Installer's Personnel: Employ persons trained for application of specified materials.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged products in original unopened containers clearly marked with manufacturer's name, product name, batch or lot number, and date of manufacture.

B. Storage:
1. Store delivered products in clean, safe, dry area in accordance with manufacturer's instructions.
2. Keep containers sealed until ready for use.
3. Do not subject material to freezing; do not apply material that has been subjected to freezing. Material subjected to freezing shall be separated from inventory and destroyed by mixing all three components. The solid reacted product shall be disposed of in environmentally sound and regulatory compliant manner.

C. Handling: Protect materials during handling and application to prevent damage or contamination.

1.09 SITE CONDITIONS

A. Do not apply materials if floor or air temperature is below 65 degrees Fahrenheit or above 85 degrees Fahrenheit.

B. Do not apply materials if relative humidity is above 85 percent or within 5 degrees of dew point at time of application

C. Maintain room temperature between 65 and 85 degrees Fahrenheit for 48 hours before, during and 48 hours after installation, or until cured.

D. At the time of application ensure the minimum substrate temperature is above 65 degrees Fahrenheit and the substrate temperature is 5 degrees Fahrenheit above the measured dew point.

E. Provide ventilation, lighting and clean, drinkable water supply.

F. Floors shall be kept free of traffic and no trades shall be permitted in rooms during the application and curing of the coating.

PART 2 PRODUCTS

2.01 FLOORING SYSTEMS

1. Basis of Design: Stonhard Stontec UTF, total minimum thickness of 2mm or equal.

2.02 COMPONENTS

1. Epoxy Primer and Broadcast Aggregate (Standard Primer and Stonshield Aggregate) [Exclude if waterproof membrane, moisture vapor control membrane and/or trowel-applied epoxy mortar is applied, see F, G and H below]:

    a. Formulation: Two-component, moisture tolerant, amine-cured epoxy with Stonshield Aggregate

    b. Application Method: Rubber squeegee and medium nap roller broadcast with Stonshield Aggregate.

    c. Application Thickness: 4-6 mils

2. Undercoat (Stontec UTF Undercoat)

    a. Formulation: Three-component, free flowing polyurethane formulation consisting of resin, curing agent and fine aggregate.

    b. Application Method: Squeegee and medium nap roller

    c. Application Thickness:

3. Broadcast Flakes (Stontec Flakes)

    a. Formulation: Multi-Colored, PVA Flake

    b. Application Method: Broadcast

    c. Number of Applications: 1

4. Finish Sealer (Stonseal CA7)

    a. Formulation: Two-component, clear, gloss finish, UV light resistant, aliphatic polyurethane coating.

    b. Application Method: Medium nap roller

    c. Application Thickness: 2-3 mils

    d. Number of Applications: 2

2.03 PHYSICAL CHARACTERISTICS

1. Tensile Strength: 2,200 psi (ASTM D638)

2. Flexural Strength: 2,000 psi (ASTM D790)

3. Hardness: 60 (ASTM D2240/Shore D)

4. Water Absorption: 0.2% (ASTM D648)

5. Impact Resistance: Exceeds 160 in.-lbs. (ASTM D4226)

2.04 OTHER MATERIALS

1. Expansion/Isolation Joint Sealant Materials:

   a. Stonflex MP7: Two-component, pourable polyurethane sealant with a minimum 400% percent elongation per ASTM D-638.

   b. Backer Rod: Polyurethane foam rod or polyethylene backer rod one grade larger than the joint width.

2. Waterproof Membrane (if required):

   a. Stonchem 441: Two-component, elastomeric, polyurethane, membrane applied at 25-30 mils with manufacturer's recommended primer.

3. Moisture-vapor Control Membrane (if required):

   a. Stondri MVT: Two-component, high-solids, epoxy system designed to suppress excess moisture in concrete prior to resinous flooring, applied at 15 mils minimum.

4. Trowel-Applied Mortar Base (if required):

   a. Stonclad GS: Three-component, epoxy mortar with manufacturer's recommended primer, applied at 1/8” - 1/4” thickness to smooth rough concrete substrates.

PART 3 EXECUTION

3.01 EXAMINATION

A. General: Examine substrate to receive resinous flooring; give written notification of deficiencies. Do not proceed until unsatisfactory conditions are corrected.

   1. Substrate must be dry and free of all wax, grease, oils, fats, soil, loose or foreign materials and laitance.

      a. Laitance and unbonded cement particles must be removed by abrasive blasting, scarifying.

      b. Other contaminants may be removed by scrubbing with a heavy-duty industrial detergent, “Stonkleen DG9”, or equal; and rinsing with clean water.

      c. The surface must show open pores throughout and have a sandpaper texture.

B. Moisture Testing: Test horizontal substrates to determine acceptable dryness. Test method as recommended by resinous flooring manufacturer.

   1. Perform in situ probe test, ASTM F 2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity of 80 percent.

2. Perform anhydrous calcium chloride test, ASTM F1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of 3 lb per 1,000 sq. ft. per 24 hours.

3. Perform additional moisture tests recommended by manufacturer. Proceed with application only after substrates pass testing.

3.02 PREPARATION

A. Surface Preparation: Concrete preparation shall be by mechanical means and include use of a scabbler, scarifier or shot blast machine for removal of bond inhibiting materials such as curing compounds or laitance.

3.03 MIXING

A. General: Mix components only in amounts that can be applied within recommended application life.

1. Discard materials not used within application life.

3.04 INSTALLATION

A. General: Apply each component of resinous flooring system in compliance with manufacturer's written directions to produce a uniform monolithic wearing surface of thickness indicated, uninterrupted except at divider strips, sawn joints or other types of joints (if any), indicated or required.

B. Resinous Flooring:

1. Primer: Mix and apply primer over properly prepared substrate with strict adherence to manufacturer's installation procedures and coverage rates.

2. Under Coat: Remove any surface irregularities by lightly abrading and vacuuming the floor surface. Mix and apply undercoat with strict adherence to manufacturer's installation procedures and coverage rates.

3. Mid-Coat: Remove excess unbonded granules by lightly brushing and vacuuming the floor surface. Mix and apply coating with strict adherence to manufacturer's installation procedures to both floor and coved base surfaces.

4. First Sealer: Mix and apply finish sealer with strict adherence to manufacturer's installation procedures to both floor and coved base surfaces.

5. Second Sealer: After first sealer has cured, lightly sand surface. Vacuum and apply second sealer.

C. Trowel-applied Epoxy Mortar (If required):

1. Mix and apply epoxy mortar of resinous flooring as needed to smooth concrete substrate.

D. Expansion/Isolation Joints:

1. Stonflex MP7 Sealant: Mix and apply sealant to properly prepared cut joints (if any). The use of a polyethylene backer rod should be used in expansion and/or isolation joints. Sealant shall be applied at a depth of half the width of the joint.

E. Waterproof Membrane (If required):

1. Stonproof ME7: Mix and apply membrane over previously primed/coated substrate with strict adherence to manufacturer's installation procedures and coverage rates.

F. Moisture-vapor Control Membrane (If required):

1. Stondri MVT: Mix and apply membrane over mechanically prepared substrate with strict adherence to manufacturer's installation procedures and coverage rates.

3.05 FIELD QUALITY CONTROL

A. The right is reserved to invoke the following material testing procedure at any time, and any number of times during period of flooring application.

1. The Owner will engage service of an independent testing laboratory to sample materials being used on the job site. Samples of material will be taken, identified and sealed, and certified in presence of Contractor.

2. Testing laboratory will perform tests for any of characteristics specified, using applicable testing procedures referenced herein, or if none referenced, in manufacturer's product data.

3. If test results show materials being used do not comply with specified requirements, Contractor may be directed by the Owner to stop work; remove non-complying materials; pay for testing; reapply flooring materials to properly prepared surfaces which had previously been coated with unacceptable materials.

3.06 PROTECTION OF ADJACENT WORK

A. General: Resinous floor system will be installed in locations where other adjacent finish materials, including ornamental metal, lath and plaster, and other finish assemblies may already be in place. Protect all adjacent surfaces during installation and finishing.

1. Installed adjacent finishes shall be completely isolated from epoxy coating system installation. Provide Plastic ("Visqueen") wrap and mask all edges.

2. Provide constant supervision and immediate clean up throughout resinous floor system installation.

3. After resinous floor system has fully cured, remove protection from adjacent surfaces and wipe down surfaces using clean, cotton towels.

3.07 CURING AND PROTECTION OF INSTALLED WORK

A. Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process.

1. Close area of application for a minimum of 24 hours.

B. Protect resinous flooring materials from damage and wear during construction operation.

1. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application.

2. General Contractor is responsible for protection and cleaning of surfaces after final coats.

3.08 CLEANING

A. Remove temporary covering and clean resinous flooring just prior to final inspection.

B. Use cleaning materials and procedures recommended by resinous flooring manufacturer.

END OF SECTION