

# Urethane Flake Flooring System

## SECTION 096723

### 1. PART 1 – GENERAL

#### 1.1. SUMMARY

- A This Section includes a complete decorative urethane flake resinous flooring system. The work includes the following:
  - 1. Surface preparation and joint and crack treatment.
  - 2. Treatment of the concrete joints.
  - 3. Application of a urethane flake flooring system.
- B Related Sections include the following:
  - 1. Division 03 Section "Cast-in-Place Concrete" for concrete substrates to receive resinous flooring.
  - 2. Division 03 Section "Concrete Toppings" for concrete toppings applied over base concrete slabs to receive resinous.
  - 3. Division 07 Section "Joint Sealants" for joint-sealant materials and installation of sealant materials at joints in resinous flooring systems.
  - 4. Division 09 Section "Resinous Flooring" for decorative interior floor finishes.

#### 1.2. SYSTEM DESCRIPTION

- 1. General: The resinous flooring system with decorative flakes incorporated into the urethane resin shall have excellent abrasion, impact and UV resistance.
- 2. Appearance: The finished resinous flooring system shall be uniform in color, texture, and appearance.
- 3. Edge Termination: Edges that terminate at walls, floor discontinuities and other embedded items shall be uniform with no thick or ragged edges. Exterior corners shall be rounded.
- 4. Performance of Finished Flooring System:
  - a. Compressive strength: 12,900 psi minimum in accordance with ASTM C 579.
  - b. Tensile Strength: 5,300 psi minimum in accordance with ASTM C 307.
  - c. Flexural Strength: 4,000 psi in accordance with ASTM C 580.
  - d. Hardness Shore D: 85-90 in accordance with ASTM D 2240.
  - e. Bond Strength: 425 psi in accordance with ASTM D 4541.
  - f. Abrasion Resistance: 18 mg in accordance with ASTM D 4060.
  - g. Vinyl Decorative Chips to be non fading UV resistant type.
  - h. All products are to be LEED qualified for credit EQ 4.2 voc.
  - i. Material shall have a chemically resistant urethane finish with resistance to a wide range of acids, alkalis, salts, fats, soda, beer, urine, acidic foods and oils.
- A Slip Resistance: Provide finished surfaces with a verifiable slip resistance as recommended in the Americans with Disabilities Act (ADA) of .60 or greater and as determined by the Owner.

#### 1.3. SUBMITTALS

- A Product Data: Include all product data sheets, MSDS, and application instructions on each component used in the resinous flooring system.
- B LEED Submittal: Product Data for Credit EQ 4.2: For resinous flooring systems, documentation including printed statement of VOC content and chemical components.
- C Documentation listed under Quality Assurance.
- D Samples: Six samples of 5" by 5" of specified resinous flooring matching customers color and texture applied to backer board. .
- E Independent Laboratory Testing: Provide third party laboratory testing reports, performed within the past three years, for all resinous components included in the resinous flooring system.
- F Installer Qualifications: Provide in writing;
  - 1. Provide a certified applicator letter signed by the manufacturer.
  - 2. Provide five projects totaling 500,000 square feet greater installed in the last five years.
  - 3. Provide 250,000 of urethane flake flooring installed in the last five years.
  - 4. Provide proof of 5 years installation experience.
  - 5. Provide references from at least two projects of similar or greater size to this project.
- G Care & Maintenance: Provide care and maintenance instructions including cleaning instructions and recoat procedures for resinous flooring system.

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## 1.4. QUALITY ASSURANCE

- A Manufacturer Qualifications: Manufacturer with a minimum of 10 years experience producing resinous flooring in sporting venues.
- B All materials to be tested prior to shipping, with retains kept for a minimum of two years.
- C Source Limitations: Obtain all resinous flooring materials, including moisture control products, primers, resins, hardening agents, and topcoats, through one source from a single manufacturer. Provide secondary materials, including vinyl flake, and joint sealant from source recommended by the resinous flooring manufacturer.
- D Applicator Qualifications: Engage an experienced applicator for this project that shall be prequalified and approved by the material manufacturer at the time of project initiation. The manufacturer shall not permit the application of any of its materials by untrained, non-approved personnel.
  - 1. The approved applicator shall have been trained by the Manufacturer in all phases of surface preparation and application of the specified flooring system.
  - 2. The approved applicator shall have five years' experience installing resinous flooring systems.
  - 3. Provide resumes from designated project superintendent, demonstrating a minimum of five years experience as a superintendent of resinous flooring projects of this size complexity and magnitude.
  - 4. The approved applicator shall submit a list of five project references totaling 500,000 in the last five years.
  - 5. Provide project references totaling 250,000 square feet or greater in the last five years with a broadcast flake system as is specified for this project. Architect reserves the option to personally inspect the project references to accept or reject any of the Contractors.
- E Field Sample: Apply 200 square feet of urethane flake flooring system to an area selected by the Architect on the first floor, to demonstrate surface preparation, moisture control, joint and crack treatment, thickness, texture, color, and standards of workmanship.
  - 1. If Architect determines that field sample does not meet requirements, reapply topping until the field sample is accepted.
  - 2. Keep the accepted field sample undisturbed during construction as a standard for judging completed work. The undamaged field sample may be incorporated into the work.
  - 3. The Owner shall determine from field samples the size and amount of slip resistant aggregate required to provide the slip resistance by the owner.
  - 4. Bond Testing: Surface preparation may be evaluated by conducting bond tests at the site prior to application of the topping system. Bond testing shall be performed in the presence of the architect and or owner. At least two bond tests shall be performed. Locations of bond tests shall be documented on the record drawings and cross-referenced to the actual bond test specimen. Maintain test specimens at project office until completion of work.
- F Preconstruction Conference: Prior to commencement of work representatives of the Owner, Contractor, Construction Manager, Applicator, and Architect shall meet at the project site to review the testing, surface preparation, and application requirements of the work of this specification section.
  - 1. Provide results of moisture test of the concrete prior to resinous flooring installation.

## 1.5. DELIVERY, STORAGE AND HANDLING

- A Deliver materials in original manufacturer's sealed containers with all pertinent labels intact and legible.
- B Store materials in dry protected area between 65° to 90° F. Keep out of direct sunlight. Protect from open flame: Keep all containers grounded.
- C Follow all manufacturers' specific label instructions and prudent safety practices for storage and handling.

## 1.6. PROJECT CONDITIONS

- A Environmental Limitations:
  - 1. Material, air and surface temperatures shall be in the range of 65° to 90° F during application and cure, unless a special formulation is being used and Manufacturer has been consulted. For temperatures below 65° F consult manufacturer for cold weather temperature additives.
  - 2. Relative humidity in the specific location of the application shall be less than 85 percent and the surface temperature shall be at least 5°F above the dew point.

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- B Lighting: Owner to provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C Close area to traffic during resinous flooring application and for not less than 48 hours after application is complete, unless manufacturer recommends a longer period.:
  - 1. The concrete shall be reach substantial cure for a minimum of 28 days prior to application of the coating system pending moisture testing. Surface contaminants such as silicates, membranes, or other bond breakers should not be used.

### 1.7. WARRANTY

- A General: Warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and are in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.
- B Warranty: Submit written warranty signed by floor topping manufacturer and applicator agreeing to repair or replace resinous flooring system that do not meet requirements or that deteriorate within the warranty period of 5 years. Warranty does not include deterioration or failure of the resinous flooring system due to unusual weather phenomena, failure of prepared and treated substrate, formation of new joints and cracks in excess of 1/16 inch wide, fire, vandalism, or damage caused by truck traffic or maintenance equipment.

### 1.8. TOUCH UP MATERIAL

- A General: Include enough material for Owner's personnel to perform minor repairs on an area equal to 200 square foot.

## 2. PART 2 – PRODUCTS

### 2.1. MATERIALS

- A Manufacturers: DiamondStone is sole specified. No substitution will be granted.
- B System: DiamondCast Flake Chip System as manufactured by DiamondStone.
- C The system includes, but is not limited to, the following:
  - 1. Joint material: Saw-cut and fill non-moving joints with Diamond-EJF.
  - 2. Primer: Diamond-Eprime.
  - 3. Waterproof membrane: Diamond-Epoxy LM.
  - 4. Base Coat: Diamond-Epoxy AP.
  - 5. Decorative Vinyl Flakes: UV Resistant vinyl flakes in desired size and color. .
  - 6. Topcoat: Polyaspartic Urethane 100, solvent free urethane.

## 3. PART 3 – EXECUTION

### 3.1. INSPECTION

- A General: Examine areas where installation of resinous flooring will occur, to verify that substrates and conditions are satisfactory for installation and comply with manufacturer's requirements and those specified in this Section.
- B Do not proceed with installation until unsatisfactory conditions have been corrected.
- C Protect adjacent surfaces. Owner's equipment shall be protected from dust, cleaning solutions, and flooring materials.

### 3.2. EXAMINATION

- A General: Prepare and clean substrates per manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral Ph substrate for resinous flooring application.
- B Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
  - 1. Profile concrete substrates as follows:
    - a. Shot blast floor to a CSP 3 to 4, as found on the ICRI profile chart.
  - 2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
  - 3. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
    - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of 3lb of moisture over 1000 sq. ft. in a 24 hour period.
- C Do not proceed with installation until unsatisfactory conditions have been corrected.

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- D Mask off adjoining surfaces not receiving resinous flooring
- E Bond Testing: Evaluate completed surface preparation by conducting material bond tests in accordance with the manufacturer's written instruction.
- F Prep floor to remove shot media and all contaminants prior to installation.
- G Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- H Saw cut joints to clean.

### 3.3. APPLICATION

- A General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
- B Shot blast floor to produce a concrete profile of CSP 3 or 4.
- C Saw-cut and fill non-moving joints with Diamond-EJF. Joints are to be filled twice as deep as they are wide.
- D Apply Diamond-Eprime at 6 mills dry film thickness.
- E Apply Diamond-Epoxy LM waterproofing membrane at 20 mils in thickness to above grade substrate.
- F Apply Diamond-Epoxy AP at 10 mils thickness.
- G Broadcast colored flakes to saturation into the wet Diamond-Epoxy AP.
- H Scrape floor to remove loose flake.
- I Sweep excess flake from the floor.
- J Apply a topcoat of Polyaspartic Urethane 100, solvent free urethane at 16 mils dry film thickness.
- K Coordinate application of components to provide optimum adhesion of coating system to substrate, and optimum inter-coat adhesion.
- L Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.

### 3.4. FIELD QUALITY CONTROL/INSPECTION

- A Manufacturer's Installation Specialist shall be present during substrate preparation and evaluation and installation of the resinous flooring system.
- B Work not acceptable to the Architect shall be corrected before consideration of final acceptance.

### 3.5. CLEANING

- A Remove all material splatters and other access material that on surfaces not to be coated. Remove masking and protective covers.
- B Perform final cleaning to leave the jobsite free of any debris.

**END OF SECTION**