SECTION 09 67 23-RESINOUS FLOORING

PROFLAKE PF200 (1/8") Decorative Flake, single broadcast resurfacing system with high performance top coat

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This section includes the following:
1. Resinous flooring system as shown on the drawings and in schedules.

B. Related sections include the following:
1. Cast-in-Place Concrete, section 03 30 00
2. Concrete Curing, section 03 39 00

1.3 SYSTEM DESCRIPTION

A. The work shall consist of preparation of the substrate, the furnishing and application of (1) 100% solids Epoxy Primer, (2) a 100% Solids Epoxy Base coat broadcasted to rejection with blended polymer flake, (3) a second 100% Solids Epoxy Base coat broadcasted to rejection with blended polymer flake (4) a grout coat of 100% solids Epoxy, (5) and a final coat of High Performance Urethane.

B. The system shall have the color and texture as specified by the Owner with a nominal thickness of nominal 1/8". It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.

C. Cove base (if required) to be applied where noted on plans and per manufacturers standard details unless otherwise noted.

1.4 SUBMITTALS

A. Product Data: Latest edition of Manufacturer's literature including performance data and installation procedures.

B. Manufacturer's Safety Data Sheet (SDS) for each product being used.

C. Samples: A 6-inch square sample of the proposed system. Color, texture, and thickness shall be representative of overall appearance of finished system.

D. LEED Submittals:
1. Product data for Credit EQ 4.2: For flooring system, documentation including VOC content and chemical composition.
2. MR Credit 2.1, 2.2: Construction waste management, packaging can be recycled.

1.5 QUALITY ASSURANCE

A. The Manufacturer shall have a minimum of 5 years' experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.

B. The Applicator shall have been approved by the flooring system manufacturer in all phases of surface preparation and application of the product specified.
C. No requests for substitutions shall be considered that would change the generic type of the specified System.
D. System shall be in compliance with requirements of United States Department of Agriculture (USDA), Food, Drug Administration (FDA), and local Health Department.
E. A pre-installation conference shall be held between Applicator, General Contractor and the Owner to review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Packaging and Shipping

1. All components of the system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the product type and batch number.

B. Storage and Protection

1. The Applicator shall be provided with a storage area for all components. The area shall be between 60ºF and 85ºF, dry, out of direct sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.
2. Copies of Safety Data Sheets (SDS) for all components shall be kept on site for review by the Engineer or other personnel.

C. Waste Disposal

1. The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the system.

1.7 PROJECT CONDITIONS

A. Site Requirements

1. Application may proceed while air, material and substrate temperatures are between 60ºF and 85ºF providing the substrate temperature is above the dew point. Outside of this range, the Manufacturer shall be consulted.
2. The relative humidity in the specific location of the application shall be less than 85% but no less than 30% and the surface temperature shall be at least 5ºF above the dew point.
3. The Applicator shall ensure that adequate ventilation is available for the work area.
4. The Applicator shall be supplied with adequate lighting equal to the final lighting level during the preparation and installation of the system.

B. Conditions of new concrete to be coated with epoxy material.

1. Concrete shall be moisture cured for a minimum of 7 days and have fully cured a minimum of twenty eight days in accordance with ACI-308 prior to the application of the coating system pending moisture tests.

2. Concrete shall have a flat rubbed finish, float or light steel trowel finish (a hard steel trowel finish is neither necessary nor desirable).
3. Sealers and curing agents should not to be used.
4. Concrete surfaces on grade shall have been constructed with a vapor barrier to protect against the effects of vapor transmission and possible delamination of the system.

C. Safety Requirements

1. All open flames and spark-producing equipment shall be removed from the work area prior to commencement of application.
2. "No Smoking" signs shall be posted at the entrances to the work area.
3. The Owner shall be responsible for the removal of foodstuffs from the work area.
4. Non-related personnel in the work area shall be kept to a minimum.

1.8 WARRANTY

A. ProREZ Performance Resins & Coatings warrants that material shipped to buyers at the time of shipment substantially free from material defects and will perform substantially to ProREZ Performance Resins & Coatings. published literature if used in accordance with the latest prescribed procedures and prior to the expiration date.
B. ProREZ Performance Resins & Coatings liability with respect to this warranty is strictly limited to the value of the material purchase.
C. ProREZ Performance Resins & Coatings has no responsibility for the application and processing of products and is under no circumstances liable to any third party whatsoever.

PART 2 – PRODUCTS

2.1 FLOORING- ProREZ Performance Resins & Coatings: 1/16" Decorative Flake Seamless Flooring System

1. System Materials:
   a. Primer (Pigmented): ProREZ Performance Resins & Coatings, ProPoxy S-Resin and Hardener and ProColor Colorant. In the event of elevated moisture levels exceeding 5lbs/24-hours/1,000s.f. (calcium chloride) or 82% RH (Insitu Probe) then replace ProPoxy S system with ProPoxy MB (S or F) moisture mitigating primer. See data sheet.
   b. Broadcast Coat: ProREZ Performance Resins & Coatings, ProPoxy S-Resin (Clear) and Standard or Fast Hardener. Blended Polymer Flakes (Micro 1/16" or Macro ¼")
   c. 2nd Broadcast Coat: ProREZ Performance Resins & Coatings, ProPoxy S-Resin (Clear) and Standard or Fast Hardener. Blended Polymer Flakes (Micro 1/16" or Macro ¼")
   d. Grout Coat: P ProREZ Performance Resins & Coatings, ProPoxy S-Resin (Clear) and Standard or Fast Hardener, or ProREZ Performance Resins & Coatings, ProSpartic S-Resin (Clear) & Hardener, or replace ProSpartic S-Resin with F-Resin (Clear) for *Fastrack* cure.
   e. Topcoat: ProREZ Performance Resins & Coatings, ProThane Resin (Clear) and Hardener

2. Patch Materials
   a. Shallow /Deep Fill and Patching: Use ProPoxy S-Resin & Hardener with clean dry silica sand suitable for troweling.

2.2 MANUFACTURER

A. ProREZ Performance Resins & Coatings P.O.Box 153, Cromwell, CT06416-0153
B. Manufacturer of Approved System shall be single source and made in the USA.

2.3 PRODUCT REQUIREMENTS

A.	Primer	ProPoxy S or ProPoxy MB
B.	Base Coat/2nd Broadcast	ProPoxy S
1.	Percent Solids	100 %
2.	VOC	0 g/L
3.	Tensile Strength, ASTM D 638	5,780 psi
4.	Abrasion Resistance, ASTM D 4060 C 17 Wheel, 1,000 gm load, 1,000 cycles	30mg weight loss
5.	Flammability, ASTM D 684, NFPA 101, Type 1	Class 1
6.	Hardness, Shore D ASTM 2240	70-80
7.	Potlife @ 70 F	20-40 minutes
C.	Grout Coat	ProPoxy S or Prospartic S or F
D.	Top Coat	ProThane
1.	Tensile Strength ASTM D-2370	6,500 psi
2.	Adhesion ASTM D-4541	400 psi, concrete failure (applied over epoxy)
3.	Impact Resistance ASTM D-2794	>160 in./lb
4.	Abrasion Resistance CS17 Wheel 1000 GM Load 1000 Cycles ASTM D-4060	10-15 mg loss

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas and conditions, with Applicator present, for compliance with requirements for maximum moisture content, installation tolerances and other conditions affecting flooring performance.

1. Verify that substrates and conditions are satisfactory for flooring installation and comply with requirements specified.

3.2 PREPARATION

General

1. New and existing concrete surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, and bituminous products.

2. Moisture Testing: Perform anhydrous calcium chloride test ASTM F 1869-98.
   a. Perform three tests for the first 1,000 sf and then one test per 1,000 sf after that.
   b. Application will proceed only when the vapor/moisture emission rates from the slab is less than and not higher than 5 lbs/1,000 sf/24 hrs.
   c. If the vapor drive exceeds 5 lbs/1,000 sf/24 hrs then the Owner and/or Engineer shall be notified and advised of additional cost for the possible installation of a vapor mitigation system that has been approved by the manufacturer or other means to lower the value to the acceptable limit.
3. There shall be no visible moisture present on the surface at the time of application of the system. Compressed oil-free air and/or a light passing of a propane torch may be used to dry the substrate.
4. Mechanical surface preparation
   a. Shot blast all surfaces to receive flooring system with a mobile steel shot, dust recycling machine (Blastrac or equal). All surface and embedded acumulations of paint, toppings hardened concrete layers, laitance, power trowel finishes and other similar surface characteristics shall be completely removed leaving a bare concrete surface having a minimum profile of CSP 3-4 as described by the International Concrete Repair Institute.
   b. Floor areas inaccessible to the mobile blast machines shall be mechanically abraded to the same degree of cleanliness, soundness and profile using diamond grinders, needle guns, bush hammers, or other suitable equipment.
   c. Terminations at drains and doorways (doorway terminations should be planned ahead of time on exact termination, usually directly under the door), and shall be key cut using a suitable diamond saw to properly seat the system, providing a smooth transition between areas. The detail cut shall also apply to drain perimeters and expansion joint edges. Depth of cut shall be relevant to finish floor thickness. ProFlake PF200 system should be cut 1/8" deep.
   d. Cracks and joints (non-moving) greater than 1/8 inch wide are to be chiseled or chipped-out and repaired per manufacturer's recommendations.
5. Patching
   a. At spalled or worn areas, mechanically remove loose or delaminated concrete to a sound concrete and patch per manufactures recommendations.

3.3 APPLICATION

A. General

1. The system shall be applied in five distinct steps as listed below:
   a. Substrate preparation
   b. Priming
   c. Broadcast coat application
   d. 2nd Broadcast coat application
   e. Grout coat application
   f. Topcoat application
2. Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.
3. The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.

4. The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.
5. A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.

B. Primer

1. The primer shall comprise of 3 components, resin and hardener as supplied by the Manufacturer. (mix ratio = 3 parts resin to 1 part hardener) and Colorant (8-10 oz per mixed gal)
2. In the event of elevated moisture levels the primer shall comprise of 2 components, resin and hardener as supplied by the Manufacturer. (mix ratio = 2 parts resin to 1 part hardener)
3. The hardener shall be added to the resin and thoroughly mixed by suitably approved low speed drill mixer.
4. The primer shall be applied over horizontal surfaces using flat or 1/8" V-notched squeegee and 3/8" roller nap as approved by the Manufacturer- (average coverage rate = 100-200 sf/per gal or 100 sf/per gal when using MB, Moisture◊BLOK primer)
5. Allow material to fully cure.

C. 1st Broadcast Coat

1. The Broadcast coat shall be applied as a single application as specified by the Architect.
2. The Broadcast coat shall be comprised of a resin and hardener as supplied by the Manufacturer and mixed in the ratio of 3 parts resin to 1 part hardener. The Blended Polymer Flake shall be either Macro ¼" or Micro 1/16" in size.
3. The resin shall be added to the hardener and thoroughly mixed by suitably approved mechanical means for 60 seconds. Use a slower speed mixer (up to 650RPM) to reduce the risk of air entrapment during mixing.
4. An even bead of material should then be poured over the horizontal surfaces and levelled using a "v"-notched squeegee (3/16" notch size for 100 sq ft per gal or 1/8" notch size for 200 sq ft per gal). Use a "non shed" 3/8" Roller as approved by the manufacturer to roll and cross role to a consistently even finish (average coverage rate = 100-200 sf/per gal).
5. Broadcast Flake at a rate of 0.2 lbs per sq ft.
6. Allow material to fully cure.

D. 2nd Broadcast Coat

1. Sweep and vac loose flake and repeat steps 1-6 replacing notched squeegee with flat blade squeegee. Average coverage rate is 90 -110 sq ft per gal.

E. Grout Coat

1. The Grout coat shall be applied as a single application as specified by the Architect.
2. The Grout coat shall be comprised of a resin, hardener as supplied by the Manufacturer and mixed in the ratio of 3 parts resin to 1 part hardener.

3. The resin shall be added to the hardener and thoroughly mixed by suitably approved mechanical means for 60 seconds.Use a slower speed mixer (up to 650RPM) to reduce the risk of air entrapment during mixing.
4. An even bead of material should then be poured over the open broadcast floor and evenly spread using a flat squeegee. A "non-shed" 3/8" Roller as approved by the manufacturer to roll and cross-roll the floor- (average coverage rate of 90-110 sf/gal.
5. Allow material to fully cure.

F. Topcoat

1. The topcoat shall be roller applied at the rate of 450-500 sf/gal to yield a dry film thickness of 4-5 mils.
2. The topcoat shall be comprised of a liquid resin and hardener that is mixed at the ratio of 1 part resin to 2 parts hardener per the manufacturer's instructions. Optional high wear grit ProWear can be added at 1 quart per 1.5 gal mix and enhanced skid resistance can be created by adding ProGrip at 4-6 ounces per 1.5 gal mix.
3. The finish floor will have a nominal thickness of 1/8 inch.

3.4 FIELD QUALITY CONTROL

A. Tests, Inspection

1. The following tests shall be conducted by the Applicator:
   a. Temperature
      1. Air, substrate temperatures and, if applicable, dew point.
   b. Coverage Rates
      1. Rates for all layers shall be monitored by checking quantity of material used against the area covered.

3.5 CLEANING AND PROTECTION

A. Cure flooring material in compliance with manufacturer's directions, taking care to prevent their contamination during stages of application and prior to completion of the curing process.
B. Remove masking. Perform detail cleaning at floor termination, to leave cleanable surface for subsequent work of other sections.