3/16” Self-Leveling Urethane Cement System

SECTION 096723 RESINOUS FLOORING

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 033000
   2. Concrete Curing section 033900

1.3 SYSTEM DESCRIPTION

A. The work shall consist of preparation of the substrate, the furnishing and application of Urethane Cement flooring system. The system shall have the color and texture as specified by the Owner with a nominal thickness of 187 mils (3/16”). It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer’s recommendations.
B. 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 3 x 3 inch square sample of the proposed system. Color, texture, and thickness shall be representative of overall appearance of finished system subject to normal tolerances.

1.5 QUALITY ASSURANCE

A. The Manufacturer shall have a minimum of 10 years experience in the production, sales, and technical support of industrial floor coatings and related materials.
B. The Applicator shall have experience in installation of the flooring system as confirmed by the 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. System shall be in compliance with the Indoor Air Quality requirements of California section 01350 as verified by a qualified independent testing laboratory.
F. 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. Packing 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 50°F and 90°F, 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 50°F and 90°F providing the substrate temperature is a minimum of 5°F 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 80 % and the surface temperature shall be at least 5°F 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 material.
   1. Concrete shall be moisture cured for a minimum of 7 days and have fully cured a minimum of 28 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.
   3. Sealers and curing agents should not 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 food and drinks from the work area.
   4. Non-related personnel in the work area shall be kept to a minimum.

1.8 WARRANTY

A. Crown Polymers warrants that material shipped to buyers at the time of shipment substantially free from material defects and will perform substantially to Crown Polymers published literature if used in accordance with the latest prescribed procedures and prior to the expiration date.
B. Crown Polymers liability with respect to this warranty is strictly limited to the value of the material purchase.

PART 2 PRODUCTS

2.1 FLOORING

A. Crown Polymers 3/16" Self-Leveling Urethane Cement flooring system
   1. System Materials:
      a. Basecoat: 818 CrownCrete-U SL Urethane Cement
      b. Broadcast: Natural Quartz
      c. Topcoat: 810 CrownCrete-U Skim Coat
   2. Repair Materials:
      a. Shallow Fill and Patching: Use 120 CrownCrack Sealer or 7300 CrownCrack Polyurethane-Alloy.

2.2 MANUFACTURER

A. Crown Polymers
B. Manufacturer of Approved System shall be single source and made in the USA.

2.3 PRODUCT REQUIREMENTS

A. Basecoat: 818 CrownCrete-U SL Urethane Cement
   1. Percent Solids: 100 %
   2. VOC: <5 g/L
   3. Compressive Strength: 8,800 psi per ASTM C 579
   4. Flexural Strength: 5,000 psi per ASTM C 580
   5. Tensile Strength: 1,450 psi per ASTM C 307
   6. Shrinkage: 0.30% per ASTM C 531
   7. Flame Spread/NFPA: Class 1 per ASTM E 648
   8. Impact Resistance: >160 in/lbs per ASTM D 2794
   9. Shore D Hardness: 78D-80D per ASTM D 2240
   10. Adhesion to Concrete: >400 psi per ASTM D 7234

B. Topcoat: 810 CrownCrete-U Skim Coat
   1. Percent Solids: 100 %
   2. VOC: <5 g/L
   3. Compressive Strength: 7,560 psi per ASTM C 579
   4. Flexural Strength: 4,250 psi per ASTM C 580
   5. Tensile Strength: 1,280 psi per ASTM C 307
   6. Shrinkage: 0.10% per ASTM C 531
   7. Flame Spread/NFPA: Class 1 per ASTM E 648
   8. Impact Resistance: >160 in/lbs per ASTM D 2794
   9. Shore D Hardness: 78D-80D per ASTM D 2240
   10. Adhesion to Concrete: >400 psi per ASTM D 7234

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.

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

3.2 PREPARATION

A. General
   1. New and existing concrete surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, dirt, and bituminous products.
   2. Moisture Testing: Perform tests recommended by manufacturer and as follows.
      a. Perform relative humidity test using is situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 80% relative humidity level measurement.
      b. Perform moisture transmission test using calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have a maximum 3lbs/1000 ft2 measurement.
      c. If the relative humidity exceeds 80% but less than 99% and moisture vapor transmission exceeds 3 lbs but less than 25 lbs, then 8303 CrownShield™ Moisture Mitigation Primer must be installed prior to resinous flooring installation. Slab-on grade substrates without a vapor barrier may also require the moisture mitigation system.
   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. Diamond grind all surfaces to receive flooring system with a dustless grinding setup. All surface and embedded accumulations 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 2-4 as described by the International Concrete Repair Institute (ICRI).
      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. Where the perimeter of the substrate to be coated is not adjacent to a wall or curb, a minimum 1/4" key way cut shall be made to properly seat the system, providing a smooth transition between areas. The detail cut shall also apply to drain perimeters and dynamic joint edges.
      d. Cracks and static joints (non-moving) greater than 1/8 inch wide are to be profiled and repaired per manufacturer's recommendations.
   5. At spalled or worn areas, mechanically remove loose or delaminated concrete to a sound concrete and repair per manufactures recommendations.

3.3 APPLICATION

A. General
   1. The system shall be applied in six distinct steps as listed below:
      a. Substrate preparation
      b. Basecoat application
      c. Broadcast application
      d. 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. Basecoat Application
   1. 818 CrownCrete-U shall be squeegee applied at the rate of 45 sf/ kit to yield a wet film thickness of 1/8".

C. Broadcast Application
   1. Color Quartz shall be broadcasted to rejection at a rate of 0.7 lbs/ sf.
   2. Once dry, reclaim loose quartz and vacuum residual

D. Grout Coat Application
   1. 81o CrownCrete-U Skim Coat shall be squeegee applied and backrolled at the rate of 160 sf/kit to yield a wet film thickness of 10 mils

E. Topcoat Application
   1. 8175 CrownPro Polyaspartic shall be squeegee and roller applied at the rate of 160 sf/gal to yield a wet film thickness of 15 mils.
   2. The finish floor will have a nominal thickness of 187 mils (3/16").

3.4 FIELD QUALITY CONTROL

A. Testing and Inspection
   1. The following tests shall be conducted by the applicator:
      a. Temperature
         i. Air, substrate temperatures and, if applicable, dew point.
      b. Coverage Rates
         i. 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.