

(Specification writer shall choose the most appropriate section that applies to a given scope of work, including but not limited to, the following listed sections)

**SECTION 07 18 16
VEHICULAR TRAFFIC COATINGS**

PART 1 – GENERAL

1.1 SUMMARY

- A. Provide all labor, materials, equipment and supervision as necessary to install a fluid-applied, two-component, polymer-modified, cementitious vehicular traffic coating system over **(new and/or existing)** horizontal concrete surfaces, as shown on the project drawings and as outlined in this specification.
- B. Following all applicable manufacturer's guidelines and application instructions for each product used in the system shall be considered a requirement of this specification.
- C. Related Sections: **(Specification writer shall add, delete or amend, as deemed necessary)**
 - 1. Section 03 30 00 – Cast-in-Place Concrete
 - 2. Section 03 35 00 – Concrete Finishing
 - 3. Section 03 39 00 – Concrete Curing
 - 4. Section 07 92 00 – Joint Sealants

1.2 REFERENCES (Specification writer shall add, delete or amend, as deemed necessary)

- A. ASTM C109: Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
- B. ASTM C190: Method of Test for Tensile Strength of Hydraulic Cement Mortars..
- C. ASTM C580: Standard Test Method for Flexural and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
- D. ASTM D4263: Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Test Method.
- E. ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Sub-floor Using Anhydrous Calcium Chloride.
- F. ICRI Technical Guideline No.03732: Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.

1.3 SUBMITTALS (Specification writer shall add, delete or amend, as deemed necessary)

- A. General: Submit () number of copies each of the following items in accordance with the requirements of the Conditions of Contract and in Division 1 Specification Sections.
- B. Product Data: Submit manufacturer's technical data sheets, any applicable installation guidelines or recommendations, and material safety data sheets for each product included in this specification.
- C. Samples: For **initial selection**, submit manufacturer's standard color charts for review by the specification authority and owner's representative. For **final selection**, submit sample boards (**specification writer shall**

specify sample size as deemed necessary) to exhibit color and texture of the finished vehicular deck coating system. If a clear (**specification writer shall specify either penetrating sealer or film forming sealer**) sealer finish is desired, submitted sample boards shall also include same.

- D. Material certificates signed by the manufacturer certifying that the two-component, polymer-modified, cementitious vehicular traffic coating system complies with all requirements of the material specified herein.
- E. Warranty: Submit a sample of the manufacturer's standard material warranty.
- F. Contractor Project Reference List: Contractor shall submit a minimum of 5 recently completed projects of a similar nature and include total contract value of completed work.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: The manufacturer of the products specified in this section shall have a minimum of 5 years experience in the production of these types of products.
- B. Contractor Qualifications: The contractor installing the products specified in this section shall have a minimum of 3 years experience and have successfully completed no less than 5 projects similar in scope and complexity, and is acceptable to and has received formal training by the manufacturer.
- C. Substitutions: Requests for the approval of any product other than those specified in this section must be submitted to the specifying authority two weeks prior to the bid, and shall include complete application specifications and physical characteristics. Any request after this date will not be accepted. Failure of performance requires immediate removal and replacement of unapproved substituted material with those originally specified at no cost to the owner, Architect, construction manager, or general contractor.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original packages and containers with seals unbroken and bearing manufacturer's labels containing brand name, batch or lot numbers, and directions for storage and mixing with other components.
- B. Store materials to comply with manufacturer's directions to prevent from damage and/or deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.

1.6 PROJECT CONDITIONS

- A. Environmental Conditions: Comply with all the manufacturer's directions for maintenance of ambient and substrate temperature, moisture, humidity, ventilation, and other conditions required to execute and protect completed work. In hot and cold weather conditions or when high evaporation rates or adverse conditions may be expected, the contractor will be responsible for the quality of the completed installation. Follow all recommendations and guidelines of the American Concrete Institute, as published in ACI Committee 305 for Hot-Weather Concreting and ACI Committee 306 for Cold-Weather Concreting.
- B. Lighting: Permanent lighting will be in place and working before installing the two-component, polymer-modified cementitious vehicular traffic coating system.
- C. Protection: Protect newly installed cementitious traffic coating system from rain or other potentially harmful climatic conditions for a minimum of 24 hours, from any potential damages due foot or vehicular traffic, and/or from the work of other trades.

PART 2 – PRODUCTS

2.1 MANUFACTURER

- A. Approved Manufacturer: Miracote Division of Crossfield Products Corp., 3000 E. Harcourt Street, Rancho Dominguez, CA 90221, (310) 886-9100; also 140 Valley Road, Roselle Park, NJ 07204, (908) 245-2800, www.miracote.com.

2.2 MATERIALS

- A. Primer: No primers are necessary for application over concrete or metal. For application over existing polyurethane coatings Miracote MiraPrime 500 is required.
- B. Vehicular Traffic Coating: Miracote MPC Park Deck Coating applied as a 3 coat system having a minimum thickness of 90 mils. Each unit consists of one (1) five gallon pail of Miracote MPC Liquid Catalyst and two (2) 55# bags of dry powder available in natural gray cement and white cement when color pigmentation is desired. Dry powder component is available in two aggregate blends of regular (standard duty) and hard (extreme duty) when enhanced abrasion resistance is required.
- C. Waterproofing Crack Treatment Layer: Miracote MiraFlex Membrane A for the treatment and detailing of cracks and cold joints. An elastomeric, single component, water-based, fluid-applied waterproofing layer, MiraPrime Membrane A is applied in 2 coats at a minimum thickness of 25 mils.
- D. Reinforcing Mesh: Miracote Poly Fabric reinforcement mesh for embedment into MiraFlex Membrane A or MPC Park Deck Coating as an optional treatment and detailing for cracks and cold joints.
- E. Integral Color Pigmentation: Miracote ColorPax LIP for pigmenting Miracote MPC white dry powder blends to achieve vehicular traffic coating colors other than natural gray.
- F. Sealers and Water Repellents: Miracote provides a wide range of clear penetrating and film-forming sealers for use depending on job site and exposure conditions, and to enhance stain resistance from tire marking, dirt, oils and other contaminants. **(Specification writer should consult with Miracote representative or technical service for appropriate recommendation and product selection)**

2.3 PROPERTIES

- A. Physical Properties: Miracote MPC Park Deck Coating
Provide a two-component only, polymer-modified, cementitious resurfacing system that meets or exceeds the listed minimum physical property requirements when tested in accordance with the referenced standard test method.

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| Two Component System | Liquid Polymer and Bagged Powder |
| Compressive Strength (ASTM C 109): | 2,440 psi |
| Tensile Strength (ASTM C 190): | 450 psi |
| Flexural Strength (ASTM C 580) | 2,415 psi |
| Adhesion (MIL-D-3134, Para.4.7.14): | 515 psi |
| Water Absorption (ASTM C 642) | 1.61% volume of permeable voids 5.07% |
| Water Vapor Permeability (ASTM E 96) | 1.96 perms/inch |
| Impact Resistance: (MIL-D-3134) Para. 4.7.3 (2# steel ball dropped from 8' height onto coated steel plate) | No cracking or detachment |
| Freeze-Thaw Resistance (ASTM C 672) | Thirty-two cycles, "O" Scaling |

- B. Physical Properties: Miracote MiraFlex Membrane A
Provide a single-component SBR, flexible, fluid-applied waterproofing material that meets or exceeds the listed minimum physical property requirements when tested in accordance with the referenced standard test method.

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| Elongation (ASTM D 638): | 562% |
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| Tensile Strength (ASTM D 638): 7 days dry / 21 days wet | 560 psi |
| Bacteria & Fungus Resistance (ASTM G 22) | No Growth |
| Adhesion in Peel to Concrete | 8.3 lbs/in width |
| Moisture Vapor Transmission (ASTM E 96) 9 Grams/sq. meter/24 hrs | 2.04 grams |
| Permeability (ASTM E 96) | 0.013 perms/inch |
| Crack Bridging (ASTM E 836) 1/8" opening @ 77 F | Pass (no rupture) |

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine all concrete or other substrates and conditions where the architectural cementitious resurfacing system is to be installed. Notify the Specifying Authority of any unsatisfactory conditions that may be detrimental to the proper and timely completion of the work.
- B. Do not proceed with the work until all such deficiencies have been corrected by the Contractor in an acceptable manner, and as approved by the Specifying Authority.

3.2 PREPARATION

- A. Protect all surrounding areas, walls, window glass, landscaping and other adjacent surfaces from the execution of each item of work including, but not limited to, surface preparation and all application steps of the cementitious resurfacing installation.
- B. Perform surface and crack repairs as necessary to re-profile, re-level or to restore the integrity of the concrete substrate in general, as directed by the specifying authority. Concrete surface repair products shall be from the same manufacturer, or as approved by the manufacturer of the vehicular traffic coating system specified herein. Provide letter from the manufacturer of the surface repair materials verifying compatibility with all specified components of the system.
- C. Crack Treatment: Rout all cracks >1/16" and seal with polyurethane sealant, tooled flush, as per manufacturer's recommendations and details. Broadcast fine grade oven-dried sand into wet sealant to promote adhesion of subsequent waterproofing membrane layer over sealed crack interface. Detail all cracks <1/16" with waterproofing membrane layer, as per manufacturer's recommendations and details.
- D. Fluid-applied, cementitious vehicular traffic coating system must be applied to a clean, sound and mechanically prepared concrete substrate to a minimum (**Specification writer shall choose between CSP-3 to CSP-5**) surface profile, in accordance with the International Concrete Repair Institutes (ICRI) Technical Guideline 03732, **Selecting and Specifying Concrete surface Preparation for Sealers, Coatings and Polymer Overlays.**
- D. (**As an optional requirement for this project document the specification writer can include the following when deemed necessary**) Contractor shall perform tensile bond tests, as directed by the Specification Authority, in accordance with International Concrete Repair Institutes (ICRI) Technical Guideline 03739, **Guide to Using In-Situ Tensile Pull-Off Tests to Evaluate Bond of Concrete Surface Materials.**

3.3 APPLICATION

- A. General: Follow all manufacturers' directions, as published in their product technical data sheets, available installation guidelines and detail drawings regarding the application of the MPC Park Deck Coating System, as specified herein.
- B. Substrate Conditioning: Prime substrate with potable water only. Maintain substrate at saturated surface dry (SSD) condition with no standing water or puddles during the placement of the MPC Park Deck Coating base coat layer.
- C. Base Coat: Apply the base coat of the MPC Park Deck Coating over a saturated surface dry (SSD) concrete substrate with notched squeegees followed by a back roll. Base coat mix ratio per unit shall be 2 bags of powder to 5 gallons of liquid catalyst. For a more fluid material consistency, it is acceptable to withhold no more than one half bag of powder when encountering high evaporation rates. Apply the base coat at a rate of 500 SF per unit of mixed material. Use of Miracote MPC Retarder is mandatory during application of the MPC Park Deck Coating in "Hot Weather Conditions".
- D. Intermediate Coat: Apply the intermediate coat of the MPC Park Deck Coating over the base coat when completely dry and can be walked on without damage. Intermediate coat shall have a mix ratio of 2 bags of powder to 5 gallons of liquid catalyst. Apply at a rate of 500 SF per unit of mixed material. Use of Miracote MPC Retarder is mandatory during application of the MPC Park Deck Coating in "Hot Weather Conditions".
- E. Wear Coat: Apply wear coat of the MPC Park Deck Coating over the intermediate coat when completely dry and can be walked on without damage. Wear coat shall have a mix ratio of 2 bags of powder to 5 gallons of liquid catalyst. Apply at a rate of 500 SF per unit of mixed material. Use of Miracote MPC Retarder is mandatory during application of the MPC Park Deck Coating in "Hot Weather Conditions". The finished vehicular traffic coating shall have a uniform thickness of approximately 3/32" or a minimum 90 mils.
- F. Sealer: **(Specification writer should consult with Miracote representative or technical service for appropriate recommendation regarding product selection and application requirements).**

3.4 CLEANING

- A. Clean work area and remove/discard all debris resulting from the application of the cementitious vehicular traffic coating system to the acceptance of the specifying authority or the owner.

3.5 PROTECTION

- A. Protect all completed work of the application during the specified cure time of the material from vehicular or pedestrian traffic, or any exposure to solid or liquid spillage or any other form of contamination.

END OF SECTION