

SECTION 071616 - CRYSTALLINE WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Crystalline waterproofing.

B. Related Requirements:

1. Section 033713 "Shotcrete" for preparation and application of wet-mix concrete to receive waterproofing.

1.2 DEFINITIONS

- A. Compatible: Material that will not adversely affect adjacent materials, is chemically compatible with adjacent materials, and where required for bond, achieves adhesive compatibility with adjacent materials.
- B. Chemically Compatible: Material that will not break down, deteriorate, degrade, or prematurely fail when in contact with another material. Material that will not cause chemical breakdown, deterioration, degradation, staining, or premature failure of another material.
- C. Adhesive Compatibility: Material that will develop bond strength or provide a suitable surface for another material to develop bond strength, complying with specified performance requirements when in contact with another material.

1.3 COORDINATION

- A. Coordinate Work under this Section with adjacent concrete foundation Work, including other waterproofing systems.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site concurrent with conferences scheduled for Sections 033712 "Exhibit Rockwork" and 033713 "Shotcrete."
1. Review waterproofing requirements including, but not limited to, the following:
 - a. Minimum concrete curing period.
 - b. Forecasted weather conditions.
 - c. Repairs.
 - d. Field quality control.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Statement: For Applicator.
- B. Product Test Reports: For each product formulation, for tests performed by manufacturer and witnessed by a qualified testing agency.
- C. Sample warranties.

1.7 QUALITY ASSURANCE

- A. Applicator Qualifications: Entity that employs applicators and supervisors who are trained and approved by waterproofing manufacturer in applying crystalline waterproofing similar in material, design, and extent to that indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver packaged waterproofing materials in original undamaged containers, with manufacturer's labels and seals intact.
- B. Store materials in dry environment at a temperature above 45 degrees F.
- C. Do not use materials stored for more than 24 months from date of manufacture.

1.9 FIELD CONDITIONS

- A. Weather Limitations: Proceed with application only when existing and forecasted weather conditions permit crystalline waterproofing to be applied in accordance with manufacturer's written instructions and warranty requirements.
- B. Proceed with waterproofing work only after installation of pipe sleeves, vents, curbs, inserts, drains, and other projections through the substrate to be waterproofed have been completed. Proceed only after substrate defects, including honeycombs, voids, and cracks, have been repaired to provide a sound substrate free of forming materials, including reveal inserts.

1.10 WARRANTY

- A. Manufacturer's Material Warranty: Manufacturer agrees to replace waterproofing that fails to remain watertight within specified warranty period.
 - 1. Warranty includes replacement of waterproofing system.
 - 2. Warranty Period: Ten years from date of Substantial Completion.

- B. Applicator's Special Warranty: Submit warranty signed by Applicator, to replace waterproofing that fails to remain watertight within specified warranty period covering Work of this Section.
 - 1. Warranty includes leak remediation, and coverage for failure to meet specified requirements, including defects caused by faulty workmanship.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 WATERPROOFING MATERIALS

- A. Crystalline Waterproofing: Prepackaged, gray-colored proprietary blend of portland cement, specially treated sand, and active chemicals that, when mixed with water and applied, penetrates into exhibit rockwork shotcrete and reacts chemically with the byproducts of cement hydration in the presence of water to develop crystalline growth within substrate capillaries to produce an impervious, dense, waterproof substrate; with properties complying with or exceeding the criteria specified below.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ChemMasters, Inc
 - b. Euclid Chemical Company (The); a subsidiary of RPM International, Inc.
 - c. Sika Corporation
 - d. Tremco Incorporated
 - 2. Water Permeability: Maximum zero for water at 30 ft. when tested in accordance with COE CRD-C 48.
 - 3. Compressive Strength: Minimum 4000 psi at 28 days when tested in accordance with ASTM C109/C109M.
 - 4. Self-Sealing: Autogenous crack sealing of treated concrete for cracks with width of 0.02 inch or greater when subjected to hydrostatic pressure of 65 psi.
 - 5. Sulfate Resistance: The waterproofing treatment must improve concrete resistance to sulfates by reducing permeability without affecting compressive strength; performance to be verified by independent testing.
 - 6. Potable Water Containment: Products of this Section must be certified to NSF 61 for use with potable water.

2.2 ACCESSORY MATERIALS

- A. General: Accessory materials as recommended in writing by waterproofing manufacturer for intended use.
- B. Patching Compound: Factory-premixed cementitious repair mortar, crack filler, or sealant recommended in writing by waterproofing manufacturer for filling and patching tie holes, honeycombs, reveals, and other imperfections; and compatible with substrate and other materials indicated.
- C. Plugging Compound: Factory-premixed cementitious compound with hydrophobic

properties and recommended in writing by waterproofing manufacturer; resistant to water and moisture but vapor permeable for all standard applications (vertical, overhead, and horizontal surfaces not exposed to vehicular traffic); and compatible with substrate and other materials indicated.

- D. Water: Potable.

2.3 MIXES

- A. Crystalline Waterproofing: Add prepackaged dry ingredients to water in accordance with manufacturer's written instructions. Blend together with mechanical mixer or by hand to required consistency.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for suitable conditions where waterproofing is to be applied.
- B. Proceed with application only after unsatisfactory conditions have been corrected.
- C. Notify Architect in writing of active leaks or defects that would affect system performance.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions.
- B. Protect other work from damage caused by cleaning, preparation, and application of waterproofing. Provide temporary enclosure to confine spraying operation and to ensure adequate ambient temperatures and ventilation conditions for application.
- C. Do not allow waterproofing, patching, and plugging materials to enter reveals or annular spaces intended for resilient sealants or gaskets, such as joint spaces between pipes and pipe sleeves.
- D. Stop active water leaks with plugging compound.
- E. Repair damaged or unsatisfactory substrate with patching compound.
 - 1. At holes and cracks 1/16 inch wide or larger in substrate, remove loosened chips and cut reveal with sides perpendicular to surface, not tapered, and minimum 1 inch deep. Fill reveal with patching compound flush with surface.
- F. Surface Preparation: Remove efflorescence, chalk, dust, dirt, mortar spatter, grease, oils, paint, curing compounds, and form-release agents to ensure that waterproofing bonds to surfaces.

1. Clean shotcrete surfaces in accordance with ASTM D4258.

3.3 APPLICATION OF CRYSTALLINE WATERPROOFING

- A. General: Comply with waterproofing manufacturer's written instructions for application and curing.
 1. Saturate surface with water for several hours and maintain damp condition until applying waterproofing. Remove standing water.
 2. Apply waterproofing to surfaces, and extend waterproofing onto adjacent surfaces as follows:
 - a. Onto every substrate in areas indicated for treatment, including pits, sumps and similar offsets and features.
 3. Number of Coats: Number required for specified water permeability.
 4. Application Method: Apply to ensure that each coat fills voids and is in full contact with substrate or previous coat.
 5. Dampen surface between coats.
- B. Final Coat Finish: Spray textured.
- C. Curing: Moist-cure waterproofing for three days immediately after final coat has set, followed by air drying, unless otherwise recommended in writing by manufacturer.

END OF SECTION 071616