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CRYSTALLINE WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Crystalline waterproofing.

1.2 ACTION SUBMITTALS

A. Product Data: Technical data include construction details, material descriptions, and installation instructions.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: Submit data for Applicator.

B. Product Certificates: Submit certificates for each type of waterproofing, patching, and plugging material.

C. Product Test Reports: For each product formulation, for tests performed by manufacturer and witnessed by a qualified testing agency.

D. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Entity having minimum 5 years documented experienced in applying crystalline waterproofing similar in material, design, and extent to that indicated, whose work has resulted in applications with a record of successful in-service performance, and that employs workers trained and approved by manufacturer.

B. Source Limitations: Obtain waterproofing materials from single source from single manufacturer.

C. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Build mockup of typical vertical and horizontal surfaces 10 sq. ft. (0.9 sq. m) in size.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

D. Preinstallation Conference: Conduct conference at project site.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Proceed with application only when existing and forecasted weather conditions permit crystalline waterproofing to be performed according to manufacturer's written instructions.

B. Proceed with waterproofing work only after 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.

C. Ambient Conditions: Proceed with waterproofing work only if temperature is maintained at 40 degrees F (4.4 degrees C) or above during work and cure period, and space is well ventilated and kept free of water.

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 concrete and concrete unit masonry 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, provide products by one of the following:
   a. BASF Building Systems; MasterSeal 500.
   b. Kryton Group of Companies (The); Krystol T1 & T2 Waterproofing System.
   c. Vandex USA LLC; Vandex Super/Super White.
   d. Xypex Chemical Corporation; Xypex Concrete Waterproofing.
2. Water Permeability: Maximum zero for water at 30 feet (9 m) when tested according to COE CRD-C 48.
3. Compressive Strength: Minimum 3500 psi (24.1 MPa) at 28 days when tested according to ASTM C109/C109M.

B. Patching Compound: Factory premixed cementitious repair mortar, crack filler, or sealant recommended by waterproofing manufacturer for filling and patching tie holes, honeycombs, reveals, and imperfections; and compatible with substrate and materials indicated.

C. Plugging Compound: Factory premixed cementitious compound with hydrophobic properties and recommended by waterproofing manufacturer; resistant to water and moisture but vapor permeable for standard applications (vertical, overhead, and

horizontal surfaces not exposed to vehicular traffic); and compatible with substrate and other materials indicated.

D. Portland Cement: ASTM C 150, Type I.

E. Sand: ASTM C 144.

F. Polymer Admixture for Protective Topping: Polymer bonding agent and admixture designed to improve adhesion to prepared substrates and not to create a vapor barrier.

G. Water: Potable.

2.2 MIXES

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

B. Protective Topping: Measure, batch, and mix portland cement and sand in the proportion of 1:3 and water gaged with a polymer admixture. Blend together with mechanical mixer to required consistency.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions for suitable conditions where waterproofing is to be applied.

B. Notify Architect in writing of active leaks or defects that would affect system performance.

C. Proceed with application after correcting unsatisfactory conditions.

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 according to waterproofing manufacturer's written instructions.

E. Repair damaged or unsatisfactory substrate with patching compound.

1. At holes and cracks 1/16 inch (1.6 mm) wide or larger in substrate, remove loosened chips and cut reveal with sides perpendicular to surface, not tapered, and minimum 1 inch (25 mm) 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 concrete surfaces according to ASTM D4258.
   a. Scratch and Float Finished Concrete: Etch with 10 percent muriatic acid solution according to ASTM D4260.
   b. Smooth Formed and Trowel Finished Concrete: Prepare by mechanical abrading or abrasive blast cleaning according to ASTM D4259.
2. Clean concrete unit masonry surfaces according to ASTM D4261.
   a. Lightweight Concrete Unit Masonry: Etch with 10 percent muriatic acid solution or abrade surface by wire brushing. Remove acid residue until pH readings of water after rinse are not more than 1.0 pH lower or 2.0 pH higher than pH of water before rinse.
   b. Medium and Normal Weight Concrete Unit Masonry: Sandblast or bushhammer to a depth of 1/16 inch (1.6 mm).
3. Concrete Joints: Clean reveals.

3.3 INSTALLATION

A. 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 columns integral with treated walls.
   b. Onto interior nontreated walls intersecting exterior treated walls, for a distance of 24 inches (600 mm) for cast in place concrete and 48 inches (1200 mm) for masonry.
   c. Onto exterior walls and onto both exterior and interior columns, for a height of 12 inches (300 mm), where floors, but not walls, are treated.
   d. Onto every substrate in areas indicated for treatment, including trenches pits sumps and similar offsets and features as noted.
3. Number of Coats: Number required for specified water permeability Two coats minimum.
4. Application Method: Brush or spray apply; 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: Smooth.

C. Curing: Moist cure waterproofing for minimum three days immediately after final coat has set, followed by air drying, unless otherwise recommended in writing by manufacturer.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory authorized service representative to test and inspect completed application of waterproofing.

B. Prepare test and inspection reports.

END OF SECTION

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