

SECTION 07 16 16 - CRYSTALLINE WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provision of Contract, including General Conditions and Division 01 Specifications Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes crystalline waterproofing for negative-side application to concrete and concrete unit masonry.
- B. Related Requirements:
  - 1. Section 03 "Cast-in-Place Concrete" for concrete slabs serving as protective topping for waterproofing and the finishing of concrete walls and slabs to receive waterproofing.
  - 2. Division 04 Section "Unit Masonry" for construction cleaning of concrete unit masonry walls to receive waterproofing.
  - 3. Division 07 Section "Joint Sealants" for elastomeric and preformed sealants in concrete and concrete unit masonry walls and floors.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, and installation instructions.
- B. Shop Drawings: Show locations and extent of waterproofing and details of substrate joints and cracks, penetrations, tie-ins with adjoining waterproofing, and other termination conditions.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Applicator including manufacturer's certification.
- B. Product 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.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm experienced 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, and that employs workers trained and approved by manufacturer.

- B. Mockups: Build mockups to verify selections made under Sample submittals, 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. in size.
  - 2. Approve 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.

## 1.6 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review specification requirements.
  - 2. Review installation procedures.
  - 3. Inspect project conditions.
- B. Preinstallation Conference shall be held in conjunction with the Preinstallation Conferences for other building envelope materials and systems to coordinate the transitions of each material and system to ensure continuity and compatibility of the entire application. Contractor shall review the requirements of the International Energy Conservation Code Section C402.5 during the meeting.

## 1.7 FIELD CONDITIONS

- A. Weather 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 deg F 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 or white-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. Basis-of-Design Product: Subject to compliance with requirements, provide Xypex Chemical Corporation; Xypex Concentrate or a comparable product by one of the following:
    - a. Conproco Corporation.
    - b. Master Builders Solutions, brand of MBCC Group, a Sika company.
  - 2. Water Permeability: Maximum zero for water at 30 feet 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.

## 2.2 ACCESSORY MATERIALS

- A. Patching Compound: Factory-premixed cementitious repair mortar, crack filler, or sealant recommended by waterproofing manufacturer for filling and patching tie holes, honeycombs, reveals, and other imperfections; and compatible with substrate and other materials indicated.
- B. Portland Cement: ASTM C 150, Type I.
- C. Sand: ASTM C 144.
- D. Polymer Admixture for Protective Topping: Polymer bonding agent and admixture designed to improve adhesion to prepared substrates and not to create a vapor barrier.
- E. Water: Potable.

## 2.3 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.

## 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 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 manufacturer-recommended 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 concrete surfaces in accordance with ASTM D4258.
  - a. Scratch- and Float-Finished Concrete: Etch with 10 percent muriatic acid solution in accordance with ASTM D4260.
  - b. Smooth-Formed and Trowel-Finished Concrete: Prepare by mechanical abrading or abrasive-blast cleaning in accordance with ASTM D4259.
2. Clean concrete unit masonry surfaces in accordance with 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.
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 for cast-in-place concrete and 48 inches for masonry unless otherwise indicated.
    - c. Onto exterior walls and onto both exterior and interior columns, for a height of 12 inches, where floors, but not walls, are treated.
    - d. Onto every substrate in areas indicated for treatment, including pipe trenches, pipe chases, 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: Smooth.
- 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.

### 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 07 16 16