# PART 1 - GENERAL

## 1.1 SUMMARY

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 and 01 Specification Sections, apply to this Section.

## 1.2 RELATED DOCUMENTS

A. This Section includes:
   1. Crystalline waterproofing at positive-side application to elevator pit, sewage ejector and sump pit concrete walls and slabs.

B. Related Sections include the following:
   1. Section 018113 “Sustainable Design Requirements.”
   2. Section 033000 "Cast-in-Place Concrete" for formwork, waterstops, and finishing concrete walls and slabs to receive waterproofing.
   3. Section 079200 "Joint Sealants" for elastomeric and preformed sealants in concrete and masonry walls and floors.

## 1.3 SUBMITTALS

A. Product Data: Include construction details, and material descriptions and installation instructions for crystalline waterproofing.

B. LEED Submittals: Credit EQc4.2. Refer to Section 018113 “Sustainable Design Requirements” for additional submittal requirements.

C. Product Certificates: For crystalline waterproofing, signed by product manufacturer.

D. Qualification Data: For Installer.

E. Manufacturer's inspection reports of completed installation.

F. Warranty: Special warranty specified in this Section.

## 1.4 QUALITY ASSURANCE

A. Manufacturer: Minimum 10-years of experience in manufacturing crystalline waterproofing.

B. Installer: Familiar with the application of crystalline waterproofing with at least three successful applications in the last three years and approved by waterproofing manufacturer.

C. Preinstallation Conference:
   1. Conduct conference at Project site.

2. Review waterproofing requirements including surface preparation, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

1.5 PROJECT 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 and warranty requirements.

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 concrete and masonry 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.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of crystalline waterproofing that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure to maintain watertight conditions within specified warranty period.
   2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   1. Crystalline Waterproofing:
      a. Xypex Chemical Corporation; Xypex Concentrate (Basis-of-Design).
      b. Or Equal.

2.2 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; that has VOC content complying with limits of authorities having jurisdiction; with properties meeting or exceeding the criteria specified below.
   1. Permeability: 0 for water at 33 feet when tested according to CE CRD-C 48.
   2. Compressive Strength: 4000 psi when tested according to ASTM C 109/C 109M.

B. Crystalline Waterproofing Reinforcing Slurry Coat: Prepackaged chemical treatment designed to chemically reinforce first coat of waterproofing where harder finish is required at locations associated with sewage.

C. 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; compatible with substrate and other materials indicated; and VOC content complying with limits of authorities having jurisdiction.

D. Plugging Compound: Factory-premixed cementitious compound with hydrophobic properties and recommended 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); compatible with substrate and other materials indicated; and VOC content complying with limits of authorities having jurisdiction.

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 structural defects that would affect system performance.

3.2 PREPARATION

A. 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.

B. 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.

C. Stop active water leaks with plugging compound according to waterproofing manufacturer's written instructions.

D. Repair damaged or unsatisfactory substrate with patching compound according to manufacturer's written instructions.
   1. At holes and cracks in substrate, remove loosened chips and cut reveal with sides perpendicular to surface, not tapered, and approximately 1 inch deep. Fill reveal with patching compound flush with surface.

E. Surface Preparation: Comply with waterproofing manufacturer's written instructions to 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 D 4258.
      a. Scratch- and Float-Finished Concrete: Etch with 10 percent muriatic (hydrochloric) acid solution according to ASTM D 4260.
      b. Prepare smooth-formed and trowel-finished concrete by mechanical abrading or abrasive-blast cleaning according to ASTM D 4259.
   2. Concrete Joints: Clean reveals according to waterproofing manufacturer's written instructions.

3.3 APPLICATION

A. General: Comply with waterproofing manufacturer's written instructions for application and curing.
   1. Saturate surface with water for several hours prior to application and maintain damp condition until applying waterproofing. Remove standing water.
   2. Apply waterproofing to surfaces indicated.
   3. Number of Coats: Number required for specified water permeability and as required by manufacturer. Install two coat applications at sewage ejector and sump pits.
   4. Application Method: Spray. Apply to ensure that each coat fills voids and is in full contact with substrate or previous coat.
      a. Application of Second Coat in Two Coat System: Where indicated, or as required by manufacturer, apply reinforcing slurry coat while first coat of waterproofing concentrate is still “green” but after it has reached an initial set. Use light pre-watering between coats when rapid drying conditions exist.

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.

D. Waterproofing Treatment Extensions: Extend waterproofing treatment as follows:
   1. Onto every substrate in areas indicated for treatment.

3.4 PROTECTION

A. Protect applied crystalline waterproofing from rapid drying, severe weather exposure, and water accumulation. Maintain completed Work in moist condition for not less than three days by procedures recommended in writing by waterproofing manufacturer. Protect waterproofing from temperatures below 36 deg F.

3.5 FIELD QUALITY CONTROL

A. Inspection: Manufacturer's representative to inspect completed application and to provide a written report that application complies with manufacturer's written instructions.

B. Flood Testing: Perform flood test on completed waterproofing installation before placement of other construction.
   1. Plug or dam drains and fill area with water to a depth of two inches or to within 0.5 inch of top of waterproofing treatment.
   2. Let water stand for 24 hours.
   3. If leaks are discovered, make repairs and repeat test until no leaks are observed.

3.6 CLEANING AND PROTECTION

A. Cleaning: Clean spillage and soiling from adjacent surfaces using appropriate cleaning agents and procedures.

B. Protection: Take measures to protect completed crystalline waterproof coating from damage after application. Do not permit traffic on unprotected coating.

END OF SECTION