1.01 SUMMARY

A. Section Includes: Furnishing of all labor, materials, services and equipment necessary for the supply and installation of cementitious crystalline waterproofing to concrete substrates, above-grade or below-grade, on either dry or wet side of substrates, as indicated on drawings and as specified herein.

B. Related Sections:
1. Section 03100 - Concrete Work
2. Section 07900 - Joint Sealers
3. Section 09900 - Paints and Coatings

1.02 REFERENCES

A. Applicable Standards:
The following standards are referenced herein.
1. American Society for Testing and Materials (ASTM)
2. Army Corps of Engineers (CRD)
3. NSFInternational (NSF)

1.03 SYSTEM DESCRIPTION

A. Cementitious Crystalline Waterproofing: Blend of portland cement, fine treated silica sand and active proprietary chemicals. When mixed with water and applied as a cementitious coating, the active chemicals cause a catalytic reaction which generates a non-soluble crystalline formation of dendritic fibers within the pores and capillary tracts of concrete. This process causes concrete to become permanently sealed against the penetration of liquids from any direction.

1.04 SYSTEM PERFORMANCE REQUIREMENTS

A. Testing Requirements: Crystalline waterproofing system shall be tested in accordance with the following standards and conditions, and the testing results shall meet or exceed the performance requirements as specified herein.

B. Independent Laboratory: Testing shall be performed by an independent laboratory meeting the requirements of ASTM E 329-95 and certified by the United States Bureau of Standards. Testing laboratory shall obtain all concrete samples and waterproofing product samples.

C. Crystalline Penetration: Crystallizing capability of waterproofing material shall be evidenced by independent SEM (Scanning Electron Microscope) photographs documenting penetration of crystal-forming waterproofing material to a depth of 2 inches (50 mm).

D. Permeability: Independent testing shall be performed according to U.S. Army Corps of Engineers CRD C48-73 “Permeability of Concrete”.

1. Concrete samples (treated and untreated) to have design strength of 2000 psi (13.8 MPa) and thickness of 2 inches (50 mm). No admixtures permitted.
2. Coatings to have maximum thickness of 0.05 inches (1 mm) per coat with up to two coats permitted.
3. Samples to be pressure tested to 175 psi (405 foot head of water) or 1.2 MPa (123.4 m head of water).
4. Treated samples, after crystalline growth has occurred, shall exhibit no measurable leakage.

E. Chemical Resistance: Independent testing shall be performed according to ASTM C 267-77 “Chemical Resistance of Mortars” and ASTMC 39-86 “Compressive Strength of Cylindrical Concrete Specimens”.

1. Concrete samples (treated and untreated) to have design strength of 4000 psi (27.6 MPa). No admixtures permitted.
2. Coatings to have maximum thickness of 0.05 inches (1 mm) per coat with up to two coats permitted.
3. Untreated and treated specimens to be immersed for a minimum of 84 days in following chemical solutions: hydrochloric acid (3.5pH), brake fluid, transformer oil, ethylene glycol, toluene, caustic soda.
4. Treated specimens shall exhibit no detrimental effects after exposure, and shall have a minimum of 14% increase in compressive strength versus untreated control specimens.

F. Potable Water Approval: Independent testing shall be performed according to NSF Standard 61 and approval for use of waterproofing material on structures holding potable water shall be evidenced by NSF certification.

1.05 SUBMITTALS

A. General: Submit listed submittals in accordance with conditions of the Contract and with Division 1 Submittal Procedures Section.

B. Product Data: Submit product data, including manufacturer's specifications, installation instructions, and general recommendations for waterproofing applications. Also include manufacturer's certification or other data substantiating that products comply with requirements of Contract Documents.

C. Test Reports: Submit for acceptance, complete test reports from approved independent testing laboratories certifying that waterproofing system conforms to performance characteristics and testing requirements specified herein.

D. Manufacturer's Certification: Provide certificates signed by manufacturer or manufacturer's representative certifying that the materials to be installed comply in all respects with the requirements of this specification, and that the applicator is qualified and approved to install the materials in accordance with manufacturer's product data.

E. Manufacturer's Field Report: Provide copy of report from manufacturer's representative confirming that the surfaces to which waterproofing material is to be applied are in a condition suitable to receive same.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall be ISO 9001 registered, and shall have no less than 10 years experience in manufacturing the cementitious crystalline waterproofing materials for the required work. Manufacturers that cannot provide the performance test data specified herein will not be considered for the project.

B. Applicator: Waterproofing applicator shall be experienced in the installation of cementitious crystalline waterproofing materials as demonstrated by previous successful installations, and shall be approved by the manufacturer in writing.

C. Pre-Installation Conference: Prior to installation of waterproofing, conduct meeting with waterproofing applicator, installers of work adjacent to or which penetrates waterproofing, Architect/Engineer, owner's representative, and waterproofing manufacturer's representative to verify and review the following:

1. Project requirements for waterproofing as set out in Contract Document.
2. Manufacturer's product data including application instructions.
3. Substrate conditions, and procedures for substrate preparation and waterproofing installation.

D. Technical Consultation: The waterproofing manufacturer's representative shall provide technical consultation on waterproofing application.

1.07 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver packaged waterproofing materials to project site in original undamaged containers, with manufacturer's labels and seals intact.

1.08 PROJECT CONDITIONS

A. Compliance: Comply with manufacturer's product data regarding condition of substrate to receive waterproofing, weather conditions before and during installation, and protection of the installed waterproofing system.

1.09 WARRANTY

A. Manufacturer's Warranty: Manufacturer shall provide standard product warranty executed by authorized company official. Term of warranty shall be [specify term] years from Date of Substantial Completion.

B. Applicator's Warranty: Applicator shall warrant the waterproofing installation against defects caused by faulty workmanship or materials for a period of [specify term] years from Date of Substantial Completion. The warranty will cover the surfaces treated and will bind the applicator to repair, at his expense, any and all leaks through the treated surfaces which are not due to structural weaknesses or other causes beyond applicator's control such as fire, earthquake, tornado and hurricane.

The warranty shall read as follows:

1. Warranty: The applicator warrants that, upon completion of the work, surfaces treated with cementitious crystalline waterproofing will be and will remain free from water leakage resulting from defective workmanship or materials for a period of [specify term] years from Date of Substantial Completion. In the event that water leakage occurs within the warranty period from such causes, the applicator shall, at his sole expense, repair, replace or otherwise correct such defective workmanship or materials. Applicator shall not be liable for consequential damages and applicator's liability shall be limited to repair, replacement or correcting of defective workmanship or materials. Applicator shall have

no responsibility with respect to water leakage or other defects caused by structural failure or movement of the structure, or any other causes beyond Applicator's control.