

## 1.01 SUMMARY

**A. Section Includes:** Furnishing of all labor, materials, services and equipment necessary for the supply and installation of crystalline waterproofing additive to concrete structures as indicated on the drawings and as specified herein. The crystalline waterproofing material shall be added to concrete during the mixing cycle, and shall be used in above or below-grade walls and slabs, including liquid retaining structures where enhanced chemical resistance is required.

**B. Related Sections:**

1. Section 03100 - Concrete Work
  2. Section 03200 - Concrete Reinforcement
  3. Section 07900 - Joint Sealers
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## 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. American Concrete Institute (ACI)
  4. NSF International (NSF)
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## 1.03 SYSTEM DESCRIPTION

**A. Crystalline Waterproofing Additive:** Concrete waterproofing system shall be of the crystalline type that chemically controls and permanently fixes a non-soluble crystalline structure throughout the capillary voids of the concrete. The system shall cause the concrete to become sealed against the penetration of liquids from any direction, and shall protect the concrete from deterioration due to harsh environmental conditions.

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## 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 329-90 and certified by the United States Bureau of Standards. Testing laboratory shall obtain all concrete samples and waterproofing product samples.

**C. Crystalline Formation:** Crystallizing capability of waterproofing system shall be evidenced by independent SEM (Scanning Electron Microscope) photographs showing crystalline formations within the concrete matrix.

**D. Permeability:** Independent testing shall be performed according to U.S. Army Corps of Engineers CRD-C48-73 "Permeability of Concrete". Treated concrete samples shall be pressure tested to 150 psi (350 foot head of water) or 1.05 MPa (106 m head of water). The treated samples shall exhibit no measurable leakage.

**E. Chemical Resistance:** Independent testing shall be performed to determine "Sulfuric Acid Resistance of Concrete Specimens". Treated concrete samples (dosage rates of 3%, 5% and 7%) shall be tested against untreated control samples. All samples shall be immersed in sulfuric acid and weighed daily until a control sample reaches a weight loss of 50% or over. On final weighing the percentage weight loss of the treated samples shall test significantly lower than the control samples.

**F. Compressive Strength:** Independent testing shall be performed according to ASTM C39 "Compressive Strength of Cylindrical Concrete Specimens". Concrete samples containing the crystalline waterproofing additive shall be tested against untreated control sample. At 28 days, the treated samples shall exhibit a minimum of 10% increase in compressive strength over the control sample.

**G. 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

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## 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 certificate signed by manufacturer or manufacturer's representative certifying that the materials to be installed comply in all respects with the requirements of this specification.

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## 1.06 QUALITY ASSURANCE

**A. Manufacturer Qualifications:** Manufacturer to be ISO 9001 registered, and to have no less than 10 years experience in manufacturing the crystalline waterproofing additive for the required work. Manufacturer must be capable of providing field service representation during construction phase. Manufacturers that cannot provide the performance test data specified herein will not be considered for the project.

**B. Applicator:** Installer of crystalline waterproofing additive shall be approved by the manufacturer or manufacturer's representative in writing.

**C. Pre-Installation Conference:** Prior to installation of waterproofing, conduct meeting with Architect/Engineer, owner's representative, applicator (concrete supplier), concrete placer 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.

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

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## 1.07 DELIVERY, STORAGE & HANDLING

**A. Ordering:** Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

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

**C. Storage:** Store waterproofing materials in dry, enclosed location, at temperature and humidity conditions recommended by manufacturer.

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## 1.08 WARRANTY

**A. Project Warranty:** Refer to conditions of the Contract for project warranty provisions.

**B. 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.