

SECTION 071619 – METAL OXIDE WATERPROOFING

PART 1 - GENERAL

1.1 M.S.U. ISSUES

- A. Below grade construction should be protected by self-adhering sheet waterproofing in accordance with SECTION 071326 – SELF-ADHERING SHEET WATERPROOFING. In situations where it is not practicable to apply waterproofing to the outside of the construction (e.g. elevator pits), an interior applied metallic system of waterproofing in accordance with this section should be used. Normally, on alteration projects, either a membrane or a metallic system of waterproofing should protect all below-grade building spaces. All tunnel construction should be protected by a membrane system.
- B. Slabs on grade should be protected by either a membrane, mud mat, or by plastic sheets, depending on conditions.
- C. All above-grade construction, including slabs above grade in potentially wet areas, shall receive waterproofing in accordance with SECTION 071416 – COLD FLUID-APPLIED WATERPROOFING. Sleeves and openings in the slab shall be properly flashed. This protection is required over occupied spaces and under load-all situations, docks or penthouse floor slabs.
 - 1. NOTE: PENTHOUSE FLOORS, ESPECIALLY UNDER LARGE AIR HANDLERS AND INTERIOR COOLING TOWERS HAVE BEEN TROUBLESOME. THESE AREAS NEED SPECIAL ATTENTION.
- D. All horizontal areas should be tested by flooding after the waterproof membrane system has been applied. A five-year warranty is required for all waterproofing work.

1.2 SUMMARY

- A. This Section includes metal-oxide waterproofing.
- B. Related Sections include the following:
 - 1. Division 07 Section SELF-ADHERING SHEET WATERPROOFING for below grade waterproofing.
 - 2. Division 07 Section COLD FLUID-APPLIED WATERPROOFING for above grade waterproofing.

1.3 SUBMITTALS

- A. Product Data: Include material descriptions and installation instructions for metal-oxide waterproofing.
- B. Product Certificates: For metal-oxide waterproofing, signed by product manufacturer.

- C. Qualification Data: For installer and manufacturer.
- D. Material Test Reports: For metal-oxide waterproofing.
- E. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

1.5 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with application only when existing and forecasted weather conditions permit metal-oxide 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 metal-oxide 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.
 - b. Bond failure.
 - 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. Metal-Oxide Waterproofing:
 - a. Euclid Chemical Company (The); Iron Waterpeller.

- b. Western Waterproofing Co.; Ironrite.
- c. Or approved equal.

2.2 MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
- B. Aggregate: ASTM C 144, sand.
- C. Water: Potable.
- D. Metal-Oxide Compound: A product specifically formulated for waterproofing concrete and masonry substrates and consisting of not less than 85 percent pulverized cast iron, 3 to 7 percent chemical-oxidizing agent, and not more than 5 percent iron oxide or more than 0.05 percent oil and 1 percent other foreign substances. Provide finely graded, pulverized cast iron with 100 percent passing a No. 20 sieve and 10 to 25 percent passing a No. 200 sieve.
- E. Caulking: Lead wool saturated in a slurry of metal-oxide waterproofing.
- F. Nonshrink Hydraulic Cementitious Patching: Prepackaged hydraulic cement formulated to stop leaks in concrete and masonry substrates, developing 4700-psi compressive strength in 28 days, according to ASTM C 109.

2.3 PROPORTION AND DESIGN OF MIXES

- A. Add metal-oxide compound to portland cement, sand, and water to produce a slurry consistency according to manufacturer's written instructions. Blend together with mechanical mixer or by hand to required consistency for each coat.
- B. Field-Mixed Protection Coat:
 - 1. Mix protection coat mortar with 1 part portland cement, 2-1/2 parts sand, with water.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Acceptance of Conditions: Examine substrates, with Applicator present, where waterproofing is to be applied.
 - 1. Proceed with application only after unsatisfactory conditions have been corrected.
 - 2. Notify Architect in writing of active leaks or structural defects that would affect system performance.

3.2 PREPARATION

- A. Protect other work from damage from cleaning, preparation, and application of metal-oxide waterproofing. Provide temporary enclosure to ensure adequate ambient temperatures and ventilation conditions for application. Do not allow metal-oxide waterproofing or metal-oxide compound to migrate into reveals or annular spaces intended for resilient sealants or gaskets, such as joint spaces between pipes and pipe sleeves, unless indicated to be filled with lead-wool calking.
 - 1. At cracks in concrete, remove loosened chips and cut square reveal approximately 1 inch deep.
- B. Stop active water leaks according to waterproofing manufacturer's written instructions.
- C. Repair damaged or unsatisfactory concrete or masonry according to manufacturer's written instructions.
- D. Surface Preparation: Comply with waterproofing manufacturer's written instructions to remove efflorescence, chalk, dust, dirt, mortar spatter, grease, oils, curing compounds, and form-release agents to ensure that waterproofing bonds to concrete or masonry surfaces.
 - 1. Clean masonry surfaces according to ASTM D 4261.
 - a. Lightweight Concrete Masonry: Etch with 10 percent muriatic (hydrochloric) 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 Masonry: Sandblast or bushhammer to a depth of 1/16 inch.
 - 2. 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.
 - 3. 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.
 - 1. Dampen surface for several hours prior to application with water and maintain damp condition until applying waterproofing.
 - 2. Number of Coats: One bond coat and sufficient waterproof coats to make the surface absolutely waterproof.
 - 3. Do not apply waterproofing when temperature is forecast to be 40 deg F or less within 24 hours of application.

4. Dampen surface between coats.
5. Allow each layer to dry for a minimum of 24 hours between coats or as recommended by manufacturer.
6. Apply two protection coats of portland cement and sand with a total thickness of a minimum of ¼ inch for walls and 1 inch for floors.

B. Final Coat Finish: Smooth for walls and textured for floors.

C. Curing: Air-cure or moist-cure waterproofing as recommended by manufacturer in writing for the application situation.

3.4 PROTECTION

A. Protect applied metal-oxide waterproofing from rapid drying, severe weather exposure, and water accumulation. Maintain completed Work in moist condition for not less than seven days by covering with impervious sheeting or by other curing procedures recommended in writing by waterproofing manufacturer.

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.

END OF SECTION 071619