

Section 07162: CRYSTALLINE WATERPROOFING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. The Cementitious capillary waterproofing materials specified herein shall be of the surface applied capillary action type, capable of providing the waterproofing qualities as stated under the guarantee, for all vertical and horizontal applications, at locations shown on the drawings or on the finish schedules.
- B. All work of the section shall comply with the conditions of the contract, the drawings and any special conditions forming a part of the contract.

1.2 SCOPE OF WORK

- A. Provide all labor, materials, equipment and appliances as required for the proper installation of the cementitious capillary type waterproofing as follows:
 - 1. Prepare all surfaces, as specified herein, to receive cementitious capillary waterproofing.
 - 2. Provide waterproofing at all vertical and horizontal surfaces shown on the drawings or finish schedule.
 - 3. Manufacturer to provide all certifications, test data, affidavits or samples requested by the architect.
 - 4. Perform all installations to comply with local rules and regulations, OSHA requirements for health and safety and EPA statutes complying with environmental protection.
 - 5. Perform all installations in accordance with the approved construction progress schedule or at such time necessary for the orderly and expeditious completion of the work of the project.
 - 6. Upon completion of waterproofing, remove all waste or rubbish resulting from waterproofing operation and all equipment used for same.

1.3 SUBMITTALS

- A. Manufacturer's Literature
 - 1. Submit approved manufacturer's product literature for cementitious capillary waterproofing materials, including all special details and recommended application procedures.
- B. Warranty
 - 1. The waterproofing applicator shall provide an affidavit stating that all cementitious capillary waterproofing materials were applied in strict accordance with the approved manufacturers recommended procedures.
 - 2. Provide a written warranty that all work executed under this section will be free from defects in materials, workmanship and free of leaks for a period of five (5) years from date of acceptance, unless resulting from structural defects or causes other than the work of this section. Said defects shall be remedied, by the applicator for the period of the warranty, without additional cost to the owner.

1.4 QUALITY ASSURANCE

- A. Qualifications for Installers
 - 1. The applicator performing the work must have had not less than 5 years experience in this type of waterproofing and be able to show that he has successfully carried out contracts of a similar nature, size and scope.
 - 2. Provide at least one person who shall be present during execution of this portion of the work and who shall be thoroughly experienced in the installation of this specified products and shall direct all work performed under this section.

CRYSTALLINE WATERPROOFING**1.5 PRODUCT HANDLING**

- A. Protection: Use all means necessary to protect waterproofing material before, during and after installation and to protect the installed work and materials of all other trades, contiguous to the waterproofed surfaces. Packaged containers shall be stored on wooden skids, 6" off the ground and covered with heavy plastic sheeting which shall remain in place at all times.
- B. Replacement: All broken containers and the contents of same shall be removed from the premises, discarded in legal fashion and replaced with new materials at no additional cost to the owner

1.6 COORDINATION

- A. Review all drawings and details of installations of other adjoining materials and cooperate with respective trade performing same.
- B. The applicators particular attention is directed to the requirement to properly prepare surfaces for the attachment of other materials and to chip out and re-pack surfaces at all attachments.

PART 2 - MATERIALS**2.1 MATERIALS**

- A. The cementitious capillary waterproofing shall be factory formulated in a design mix to be applied in a slurry paste mixed to the proper consistency with the addition of water in quantities recommended by the manufacturer.
- B. Pre-mixed factory formulation shall be guaranteed not to contain additives such as chlorides, sulphates, iron oxides or similar deleterious substances.
- C. All materials used in the formulation shall comply with standards set forth herein, as follows:
Cementitious capillary waterproofing compound shall be composed of specially prepared Portland Cement, fine oven-dried Quartz aggregates and moisture active, chemically treated ingredients as manufactured by:
ICS/PENETRON INTERNATIONAL, LTD.
45 Research Way, Suite 203
East Setauket, NY 11733
Telephone Number: (631) 941-9700
for all applications as specified. Waterproofing compound shall be selected for slurry mix, trowel mix, or mortar mix as follows:
 - A. Slurry Mix - PENETRON® powder
 - B. Mortar Mix - PENECRETE™ powder
 - C. Trowel Application - PENETRON® powder or PENETRON® PLUS powder.

PART 3 - EXECUTION**3.1 PREPARATION**

- A. Prior to commencing waterproofing operations inspect all containers for rips, tears, or holes. Any damaged containers shall be rejected and replaced with new materials.
- B. Make sure that surfaces to be treated are free of laitance and other materials which will inhibit the bonding and penetration capabilities of the waterproofing system. Floor hardeners or curing agents should not be used prior to the application.

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- C. Do not apply PENETRON® slurry or mortar when the ambient temperature falls below 32 degrees Fahrenheit or 0 degrees Celsius. The temperature should remain above freezing until coating is fully dry. Waterproofing materials shall not be applied to frozen or frosted surfaces, nor during periods of rain or snow. PENETRON® PLUS (trowel applied) can be applied in temperatures and general conditions where concrete can be placed. Follow concrete specifications for protection requirements for all horizontal concrete placement.
- D. Surfaces to receive slurry applications shall have a wood float or rough finish and have open capillaries. Concrete will be moist cured only. The use of curing compounds on concrete to receive cementitious capillary waterproofing will not be permitted. Construction joints and visible cracks exceeding 0.01 inch in size shall be routed out 3/4" (1.9 cm). Remove all laitance, dirt, dust and rinse all concrete slabs and cracks with water. The surfaces shall have a dark appearance at the time when the slurry coating is applied. Remove form oil, form release agents and other foreign materials which will inhibit the bond and penetration of the system. Steam clean, acid etch, or brush blast when necessary. Leave tie holes 1" (2.54 cm) back. Segregated areas, honeycombed pockets and faulty construction joints shall be routed out to sound concrete. Construction joints and visible cracks in concrete surfaces exceeding hairline size (larger than 0.01") should be routed out 3/4" (1.9 cm) deep. Construction joints can be formed initially by use of cant strip 1" (2.54 cm) X 3/4" (1.9 cm).
- E. Clean surfaces to be waterproofed with water. Dampness should be present in the concrete strata to achieve maximum initial penetration of the cementitious capillary waterproofing compound. (See Video in DOWNLOADS at <http://www.penetron.com/download.htm>)

3.2 MIXING PROCEDURES

- A. A. Slurry Mix: Use separate containers to measure PENETRON® powder and water. Water must be potable. Add 1 1/2 to 2 parts water to 3 parts PENETRON® powder; mix thoroughly. Should be mixed to the consistency of thick latex paint. Stir the slurry mixture frequently during the application and prepare only as much as can be applied within a 30 minute period. (See Video in DOWNLOADS at <http://www.penetron.com/download.htm>).
- B. Mortar Mix: Add water to PENECRETE™ powder. Work with trowel until medium stiff consistency is reached. Prepare only as much PENECRETE™ as can be applied within a 35 minute period. (See Video in DOWNLOADS at <http://www.penetron.com/download.htm>).
- C. PENEPLUG: Pour a handful into a small mixing (bow/pail) container. (Gloves must be worn) Add just enough water (drops) to form a mix that is (dry pack/dry earth) consistency. Quickly form into a wedge and force it into leak. Apply as much pressure as possible by standing on and or tapping with a wedge of wood. After leak has stopped, fill void to surface with PENECRETE™.

3.3 SAFETY MEASURES

- A. For maximum safety, hands should be protected with rubber gloves whenever cementitious capillary waterproofing materials are being used for an extended period of time. During spray or overhead applications, goggles should be worn.

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3.4 APPLICATION PROCEDURES

- A. Cementitious capillary waterproofing coating shall be applied with stiff masonry brush/broom or normal hopper fed spray equipment. Dry shake PENETRON® PLUS (trowel applied) on concrete slabs when it has reached initial set.
- B. Horizontal Concrete Surfaces: Dry Shake and Power Trowel, Wood Float or Bull Float Application:
 - 1. Dry shake PENETRON® PLUS when horizontal concrete slab is in plastic state. Apply 1.0 lbs (0.45 kg) per sq. yd. Trowel or float surface to specified finish.
 - 2. Slurry Mix; PENETRON® at 2.0 to 2.5 lbs (0.9 to 1.13 kg) per sq. yd. in one (1) coat. Construction joints and pour joints should be treated with PENETRON® at 2.0 to 2.5 lbs (0.9 to 1.13 kg) per sq. yd. in slurry consistency immediately prior to placing of concrete.
 - 3. Install PENECRETE™ mortar strip 3/4" x 1" (1.9 cm x 2.54 cm) at all construction joints. Installation of reglets and cant strips at time of forming is recommended.
- C. Vertical Concrete Surfaces
 - 1. Honeycombed areas, faulty construction joints, cracks and tie holes, apply PENETRON® slurry at 2.0 lbs. (0.9 kg) per sq. yd. and fill with PENECRETE™ mortar.
 - 2. Coat interior/exterior surfaces of concrete walls at 2.0 to 2.5 lbs (0.9 to 1.13 kg) per sq. yd. in two (2) coats of slurry mix.
 - 3. Apply coating of PENETRON® then fill reglets, construction joints, and junction of wall and slab with PENECRETE™ mortar.

3.5 PROTECTION AND CURING

- A. Protect the freshly treated surface from rain or freezing until completely dry and set.
- B. Vertical surfaces: Except for extremely hot weather and very low humidity, curing of the PENETRON® system is not required.
- C. Horizontal surfaces: PENETRON® applied as a coating in slurry form. Wet area down once approximately 24 hours after time of application.
- D. PENETRON® PLUS (trowel applied): Follow concrete specifications for curing procedures.

3.6 BACKFILLING

- A. Backfilling can take place the day following the application of PENETRON®.

3.7 NEUTRALIZATION

- A. Treated surfaces to receive paints or other protective coating should be neutralized with a vinegar water solution or a muriatic acid water solution (1 to 10). Rinse all treated surfaces thoroughly with water. The neutralization procedures should follow direction of product labels.
- B. For application on cisterns and drinking water reservoirs, follow EPA requirements. Special tanks, aquariums and industrial or processing installations, please consult company.

3.8 CLEANING

- A. Upon completion of all waterproofing operations, remove all equipment and debris resulting from work of this section.