

SECTION 07 14 00
CLEAR PENETRATING CONCRETE SEALERS

PART 1 - GENERAL

1.1 DESCRIPTION:

A. Provide concrete penetrating sealer system on all slab on grade and all cast-in-place concrete portions of supported horizontal concrete deck surfaces except as follows:

1. Locations receiving Traffic Bearing Waterproofing Membrane.
2. Locations receiving installation of flooring materials. Such locations shall receive Topical Floor Vapor Retarders.

1.2 RELATED WORK:

- A. Materials testing and inspection during construction: Section 01 45 29, TESTING LABORATORY SERVICES.
- B. Concrete: Section 03 30 00, CAST-IN-PLACE CONCRETE.
- C. Traffic Bearing Waterproofing Membrane: Section 07 18 16, TRAFFIC BEARING WATERPROOF MEMBRANE.
- D. Topical Floor Vapor Retarders: See Section 07 19 00, TOPICAL FLOOR VAPOR RETARDERS.
- E. Sealants and Caulking: Section 07 92 00, JOINT SEALANTS.
- F. Painted Striping and Signage: Section 32 17 23, PAVEMENT MARKINGS.

1.3 QUALITY CONTROL

- A. Codes and Standards:
1. Specified products shall comply with the provision of the following specification and standards, except as otherwise noted.
 - a. NCHRP 244 procedure - Series II & IV.
 - b. Scaling Resistance of Concrete (ASTM C-672) - No Scaling.
 - c. Alberta Department of Transportation and Utilities Penetrating Sealer for Traffic Bearing Surfaces Type 1B - Water Repellency after Abrasion (minimum) 86.0%.

- d. VOC Requirements: Where applicable, the manufacturers shall ensure that all components of specified products do not exceed volatile organic compound (VOC) limits of 400 g/l.

B. Field Testing Acceptance:

- 1. Meet or exceed the following requirements for this project based on testing performed on a minimum of three, 3 inch diameter (or larger) core samples removed from the treated area.
 - a. Repellency Rating (Waterproofing Performance) - 85% or better, based on comparison of untreated versus treated samples. Test procedure for waterproofing performance shall be according to ASTM D 6489-99, "Standard Test Method for Determining the Water Absorption of Hardened Concrete Treated with a Water Repellent Coating".
 - b. Penetration (1 application) 1/4 inch minimum (6 mm), based on the average of a series of measurements on the split face of core samples.

C. Sealer Coordination:

- 1. Review other sections of these specifications in which curing compounds or paints, are to be provided on concrete surfaces to be sealed to ensure compatibility with the concrete sealer.

D. Warranty:

- 1. The system manufacturer shall furnish the Owner a written single-source performance warranty that the Concrete Penetrating Sealer System will be free of defects related to workmanship or material deficiency and meet or exceed the requirements of Part B for a ten (10) year period from the date of substantial completion of the work provided under this section of the specification.
- 2. Any required repairs under the warranty shall be made by the system manufacturer. The required written warranty shall be provided by the system manufacturer.

1.4 SUBMITTALS

- A. Submit manufacturer's product, application and surface preparation specifications, testing data and warranty for approval prior to sealing concrete decks.
- B. When payment for sealer application is based on square foot area of application, the area used in calculations shall be horizontal surfaces only.
- C. As a condition for payment of the sealer application, the contractor must submit an invoice indicating the delivery and site receipt of the quantity of material calculated and designated for this project. In addition to the calculated quantity, the invoice shall also reflect the

project address, or be designated for use on this project, if delivered to the contractor's address. No leftover material from previous projects will be permitted for use on this project.

1.5 JOB CONDITIONS

A. Environmental Requirements:

1. Do not proceed with application of materials if ambient temperature is below 20 degrees F. or if ice or frost are covering the substrate. For Enviroseal 40, do not proceed with application of materials if ambient temperature is below 40 degrees F.
2. Do not proceed with application if ambient temperature of surface temperature exceeds 100 degrees F.
3. Do not proceed with application of materials in rainy conditions or if rain is anticipated within 8 hours after application. Materials shall not be applied to damp substrates. The surface should be sufficiently dry to observe the spray pattern during application.

PART 2 - PRODUCTS

2.1 SEALER MATERIAL

- A. Provide a clear liquid "silane" type sealing compound, minimum 40 percent solid content, which will penetrate the concrete to provide a surface which is resistant to salts, de-icer chemicals, moisture, gasoline, oil and acids. Sealer material shall not permanently alter the appearance or surface texture of concrete surfaces.
- B. Sealer material shall be one of the products offered by the manufacturer's listed below. Substitute materials or manufacturers will not be allowed.
 1. Evonik Degussa Corporation - Protectosil BHN. Apply at application rate of 200 sf/gal.
 2. BASF Building Systems Inc. - Hydrozo 100. Apply at application rate of 200 sf/gal.
 3. LymTal International - ISO-FLEX 618-100 CRS. Apply at application rate of 200 sf/gal.
- C. All penetrating sealers applied shall contain fugitive dye to demonstrate complete and thorough application to surface.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examine surfaces to receive sealer to assure that conditions are acceptable for application of materials. Concrete shall be cured a minimum of 28 days.
- B. Remove dirt, dust and materials that will interfere with the proper and effective application of the water repellent coating.
- C. All caulking, patching and joint sealants should be installed prior to application of this product.

3.2 INITIAL TEST APPLICATION AND TESTING

A. Test Procedure:

- 1. Prior to full scale surface preparation and application of selected material, a trial application shall be conducted. The location shall be 11 feet by 11 feet in size for products applied at 125 square feet per gallon or 13 feet 3 inches by 13 feet 3 inches for products applied at 175 square feet per gallon, at a location determined by the Architect. The preferred location will be on a sloping ramp.
- 2. The trial area shall be cleaned according to manufacturer's recommendations in the same manner as planned for the entire project. This may include sweeping and cleaning with compressed air, water cleaning under pressure or shotblasting. For the purposes of this test only, sandblasting is an acceptable substitute for shotblasting.
- 3. Upon completion of surface preparation, a core will be removed from the cleaned surface and tested for water absorption. This is the Untreated Water Absorption value. The test area will then be treated with one gallon of the selected material. From the treated area, two core samples shall be removed. Both cores are to be tested for Treated Water Absorption and split with a chisel and dye tested for depth of sealer penetration. The repellency rating is calculated on the basis of untreated and treated water absorption values.
- 4. Once field test results are obtained, which meets or exceeds requirements of Section 1.3.B.1.a and 1.3.B.1.b., the contractor will be authorized to perform full scale surface preparation and application of the selected material. Do not proceed with application unless directed in writing by the Architect and Material Manufacturer.
- 5. Cost of trial area application and testing shall be included in the contractor's price for sealer installation. Testing shall be conducted by the Architect or his designee. Additional quality control testing, if desired by the Owner in other areas or subsequent to the installation to determine warranty performance, shall be paid for by the Owner.

3.3 APPLICATION

- A. Product shall be applied at a rate as specified above. Do not dilute or alter the material
- B. Preferred method of application is with low pressure (15 PSI) airless spray equipment or with a heavily-saturated brush or roller. Spray equipment should be equipped with solvent resistant gaskets and hoses.
- C. When applying by brush or roller, care will be taken to ensure that sufficient material is being applied to thoroughly saturate the treatment surfaces maintaining the appropriate square foot coverage rate required.
 - 1. Product shall be applied to horizontal surfaces in a single saturating application.
 - 2. Sufficient material shall be applied so that treated surfaces remain wet for a few minutes before penetration into the surface.
 - 3. Surface residues, pools and puddles shall be broomed out thoroughly until they completely penetrate into the surface.
 - 4. Treated surfaces shall be protected from rain and other surface water for a period of not less than eight (8) hours after application.
 - 5. Treated surfaces shall be protected from excessive foot and vehicular traffic for a period of not less than eight (8) hours after application.

3.4 CLEAN-UP

- A. When the work of this Section is complete, and at such other times as directed, remove surplus and waste materials, debris, rubbish, equipment, and implements from the site, and leave the work in a clean, neat and acceptable condition, as approved by the Architect.

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