

**SECTION 07190
WATER REPELLENTS**

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Exterior water repellent coatings for:
 - a. Concrete deck surfaces.
2. Extended written warranty.

B. Related Items:

1. Section 03330- Cast in place Concrete
2. Section 07900- Caulking, Sealing & Joint Fillers
3. Section 09900- Painting

1.02 SUBMITTALS

- A. Comply with Section 01300, unless otherwise indicated. Substitution requests must be submitted 14 days prior to bid date.
- B. **Product Data: Manufacturer's** specifications and technical data including the following:
1. Detailed specification of construction and fabrication.
 2. Manufacturer's installation instructions.
 3. Certified test reports indicating compliance with performance requirements specified herein.
- C. **Quality Control Submittals:**
1. Statement of qualifications.
 2. Statement of compliance with Regulatory Requirements.
 3. Field Quality Control Submittals as specified in Part 3.
 4. Manufacturer's field reports.

1.03 QUALITY ASSURANCE

- A. **Manufacturer's Qualification:** Not less than 5 years of experience in the actual production of specified products.
- B. **Installer's Qualifications:** Firm experienced in installation or application of systems similar in complexity to those required for this Project, plus the following:
1. Acceptable to or licensed by manufacturer.
 2. Not less than 3 years of experience with systems.
 3. Successfully completed not less than 5 comparable scale projects using this system.
- C. **Product Qualifications:**
Comply with the provisions of the following specifications and standards, except as otherwise specified.
- a. Surface Appearance - No change in the surface appearance to texture.
 - b. NCHRP #244 Series II - minimum 85% reduction in water absorption
minimum 88% reduction in chloride ion intrusion
 - c. NCHRP #244 Series IV - minimum 99% reduction in chloride ion intrusion
 - d. Alberta DOT type 1b Penetrating Sealer Test
-84.6 % reduction in Water Absorption before abrasion
-85.3 % reduction in Water Absorption after abrasion
 - e. ASTM C672 "Deicer Scaling of Concrete"
Rating of 0+ for treated concrete after 60 cycles
5 untreated concrete after 30 to 40 cycles
 - f. ASTM E 303 "Surface Friction Testing" - wet surface "no change over control"
- dry surface "no change over control"

- g. ASTM D 1653 Water Vapor Transmission
76.2 g/ft²/24 hours, 100% breathable

Note: All testing must be performed by an independent laboratory approved by the engineer.

- D. **Regulatory Requirements:** Products shall comply with State and local regulations concerning AIM (Architectural, Industrial and Maintenance) coatings regarding Volatile Organic Content (VOC).
 - 1. The use of 1,1,1 trichloroethane shall not be allowed.

1.04 DELIVERY STORAGE AND HANDLING

- A. Packing and Shipping: Deliver products in original unopened packaging with legible manufacturer's identification.
- B. Storage and Protection: Comply with manufacturer's recommendations.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Maintain ambient temperature above 20 degrees F during and 24 hours after installation.
 - 2. Do not proceed with application on materials if ice or frost is covering the substrate.
 - 3. Do not proceed with application if ambient temperature of surface exceeds 100 degrees F.
 - 4. Do not proceed with the application of materials in rainy conditions or if heavy rain is anticipated with 4 hours after application.
- B. Sealer Coordination:
 - 1. Verify compatibility with curing compounds, patching materials, repair mortar, paints, sealants, etc. to be used on masonry surfaces to ensure compatibility with the water repellent.

1.06 SPECIAL WARRANTIES

- A. 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 for a ten (10) year period from the date of completion of the work provided under this section of the specification. The following performance standards shall be specifically covered under the warranty:
 - 1. Loss of water repellency:
 - a. Using ASTM D 6489 procedure the treated concrete shall not absorb more than 1.0% water by weight for a period of 24 hours.
- B. All defective areas shall be retreated by the system manufacture as determined by the Engineer. The required written warranty shall be provided by the system manufacturer.
- C. The Sealer Manufacturer shall be responsible for providing labor and material to reseal areas of the parking deck where sealer effectiveness does not meet the specified limits.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Acceptable manufacturers and products for concrete deck surfaces:
 - 1. Protectosil® CHEM-TRETE 40 VOC, Evonik Division 1-800-828-0919.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine areas and conditions under which work is to be performed and
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|-----------------------|-----------|-----------|
| Any Project | 07190 - 2 | Date |
| Construction Document | Draft | Project # |

identify conditions detrimental to proper or timely completion.

1. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Install coverings to protect adjacent surfaces.
- B. Surface Preparation:
 1. Surfaces to receive sealer shall be cleaned of dirt, oil, grease, laitance, and other contaminants. Oil, grease and other automotive contaminants shall be removed with degreasers. All other surfaces shall be cleaned by high pressure water (3000 psi). High pressure water is the minimum cleaning that will be accepted, other methods, such as blastracking, mobile power scrubbing and sandblasting may be submitted.
 2. Remove dirt, dust and materials that will interfere with the proper and effective application of the penetrating sealer. It is the responsibility of the Contractor to prepare the surfaces of the concrete to a condition acceptable to the Owner.
 3. Equipment during floor slab cleaning shall not exceed the height limitation of the facility and shall not exceed a 3,000 pounds axle load or vehicle gross weight of 6,000 pounds.
 4. Check the compatibility of all caulking, patching, and traffic marking materials to be used with the penetrating sealer.
 5. Sealants, patching materials, and expansion joints shall have been installed and approved by the engineer.

3.03 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services:
 1. Furnish written certification that surface preparation method and final condition has manufacturer's approval and comply with the warranty.
 2. Test area: Furnish results of test area absorption on each type of substrate. Test results shall determine application rate.
- B. Test Area:
 1. Before a sealer application the following field evaluation will be done. The cost of the field testing will be the responsibility of Water Repellent Manufacturer.
 2. Prepare a five by five area to be sprayed with the water repellent. The area will be determined by the Engineer. Apply the water repellent at the specified rate to the test area.
 3. After curing the material for 3 days, remove a 3x3 core sample, and perform ASTM D 6489.
 4. Acceptable minimum results are as stated in the warranty provisions. Coverage rate used to pass this test section must be used on entire project.

3.04 APPLICATION

- A. Product shall be applied as supplied by the manufacturer without dilution or alteration.
- B. Apply with a low-pressure (15 psi) airless spray equipment with a fan spray coarse nozzle, flooding the surface to obtain uniform coverage unless otherwise recommended by the manufacturer.
- C. Apply at a rate of not less than 175 square foot/gallon unless the field tests determine that a heavier rate of application is necessary to meet the performance requirements.
- D. Apply at temperature and weather conditions recommended by the manufacturer or written in this specification.

- E. Follow manufacturer's recommendations concerning protection of glass, metal and other non-porous substrates. Contractor will be responsible to clean all surfaces that are contaminated by the water repellent.
- F. Follow manufacturer's recommendation concerning protection of plants, grass and other vegetation. Contractor will be responsible for replacing all plants, grass or vegetation damaged by the water repellent.

3.05 CLEANING

- A. As work progresses: Clean spillage and overspray from adjacent surfaces using materials and methods as recommended by water repellent manufacturer.
- B. Remove protective coverings from adjacent surfaces when no longer needed.

3.06 COMPLETION

- A. Work that does not conform to specified requirements shall be corrected and/or replaced as directed by the Owners Representative at contractor's expense without extension of time.

END OF SECTION