SECTION 07140

FLUID-APPLIED WATERPROOFING

PART 1 — GENERAL

1.01 SUMMARY

A. The work of this section includes, but is not limited to, the following at planters:

1. Fluid applied waterproofing system.
2. Protection board.

B. Related Sections:

1. Water repellents are specified in Section 07190.

1.02 SUBMITTALS

A. Product Data: Manufacturer's product data, installation instructions, use limitations and recommendations.

B. Samples: Representative samples of the following for approval:

1. Fluid applied membrane
2. Protection board
3. Prefabricated drainage composite

C. Applicator's Qualification Letter: Furnish a letter from the manufacturer certifying that the applicator is qualified to install modified bituminous sheet membrane waterproofing and has a minimum of 5 installations of similar scope.

D. Warranty.

1.03 QUALITY ASSURANCE

A. Installer: At least 3-years experience in work of the type required by this Section.

B. Materials: Fluid applied waterproofing material shall be two-part synthetic rubber based system free of isocyanates and bitumen. For each type of material required, provide primary materials that are the products of one manufacturer.

C. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include review of special details and flashing.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions, recommendations and material safety data sheets. Protect from damage from sunlight, weather, excessive temperatures and construction operations. Remove damaged material from the site and dispose of in accordance with applicable regulations.

1. Do not double-stack pallets of waterproofing on the job site. Provide cover on top and all sides, allowing for adequate ventilation.

2. Store drainage composite or protection board flat and off the ground. Provide cover on top and sides.

3. Protect waterproofing materials from freezing. In cool temperatures, store the material for several hours at room temperature to facilitate mixing and application.

B. Sequence deliveries to avoid delays, but minimize on-site storage.

1.05 PROJECT CONDITIONS

A. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials and products used.

B. Proceed with installation only when substrate construction and preparation work is complete and in condition to receive membrane waterproofing.

1.06 WARRANTY

A. Warrant fluid-applied waterproofing membrane to be free from defects in materials and workmanship for a period of 5-years from Date of Substantial Completion. This warranty shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under the Contract Documents.

PART 2 — PRODUCTS

2.01 APPROVED MANUFACTURERS

A. Grace Construction Products "Procor" or approved equal.

2.02 MATERIALS

A. Fluid Applied Waterproofing Membranes: Two part, self-curing, synthetic rubber based material. Fluid applied membrane shall meet or exceed the performance requirements of ASTM C836 and other ASTM standards listed in the following table.

B. Waterproofing Membrane Physical Properties:

Property	Test Method	Typical Value
Color	----	terra cotta
Cured film thickness	ASTM D3767 Method A	1.5 mm (0.060 in.) nominal
Solids content	ASTM D1644	100%
Flexibility 180 deg. Bend over 25 mm (1 in.) mandrel at 32 deg. C (-25 deg. F)	ASTM D1790	Unaffected
Elongation	ASTM D412	500% minimum
Peel adhesion to concrete	ASTM D903 Modified 1	800 N/m (5 lbs/in.)

Footnote:

1. Procor waterproofing membrane is applied to concrete and allowed to cure. Peel adhesion of the membrane is measured at a rate of 50 mm (2 in.) per minute with a peel angle of 90° at room temperature.

C. Protection Board:

1. Asphalt Hardboard: A premolded semi-rigid protection board consisting of bitumen, mineral core and reinforcement. Provide 0.125-inch thick hardboard on horizontal surfaces not receiving steel reinforced slab. Where steel reinforcing bars are to be used, apply two layers of 0.125-inch thick hardboard or one layer of 0.25-inch thick hardboard.

D. Miscellaneous Materials: Provide tape and other accessories as required by membrane manufacturer.

PART 3 — EXECUTION

3.01 EXAMINATION

A. Examine conditions of substrates and other conditions under which this work is to be performed and notify the Architect, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected.

3.02 PREPARATION OF SUBSTRATES

A. Refer to manufacturer's literature for requirements for preparation of substrates. Surfaces shall be structurally sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Use repair materials and methods acceptable to manufacturer of the fluid applied waterproofing.

B. Cast-In-Place Concrete Substrates:

1. Waterproofing application may commence as soon as the substrate can accept foot traffic. Surface shall be free of any visible water.

2. Fill form tie rod holes with concrete and finish flush with surrounding surface.

3. Repair bugholes over 0.5-inch in length and 0.25-inch deep and finish flush with surrounding surface.

4. Remove scaling to sound, unaffected concrete and repair exposed area.

5. Grind irregular construction joints to suitable flush surface.

C. Masonry Substrates: Apply waterproofing over concrete block and brick with smooth trowel-cut mortar joints or parge coat.

D. Related Materials: Treat joints and install flashing as recommended by waterproofing manufacturer.

3.03 INSTALLATION

A. Refer to manufacturer's literature for recommendations on installation, including but not limited to, the following:

1. Apply minimum 0.060-inch in areas to be waterproofed. Apply minimum 0.120-inch in all detail areas.

2. If area to be waterproofed is in direct sunlight and temperature is rising, apply "scratch coat" (a thin application of fluid applied waterproofing) prior to the full application of the waterproofing membrane.

3. In applications where a minimum slope of 0.13-in./ft can not be achieved, a two coat application of membrane is recommended to achieve the total thickness.

4. Apply protection board and related materials in accordance with manufacturer's recommendations.

3.04 CLEANING AND PROTECTION

A. Remove masking materials after installation. Clean stains on materials exposed in the completed work.

B. Protect completed membrane waterproofing from subsequent construction activities as recommended by manufacturer.

END OF SECTION

SECTION 07190

WATER REPELLENT COATINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section describes the requirements for furnishing and installing fluid-applied water-repellent coating on exterior decorative concrete unit masonry and board formed concrete surfaces.

B. Related Sections:

1. Cast-in-place concrete is specified in Section 03310.
2. Concrete unit masonry is specified in Section 04220.
3. Graffiti-resistant coatings are specified in Section 09968.

1.02 SUBMITTALS

A. Product Data: Manufacturer's specifications, surface preparation and application instructions, recommendations for water repellents for each surface specified, and protection and cleaning instructions. Include data substantiating that materials are recommended by manufacturer for applications indicated and comply with specified requirements.

B. Samples: 16-inch square samples of each substrate to receive water-repellent, with water-repellent applied to half of each sample.

C. Certification by water repellent manufacturer that products supplied complies with local regulations controlling use of volatile organic compounds (VOC).

1.03 QUALITY ASSURANCE

A. Installation shall be by an applicator with not less than 3-years experience in application of water-repellents of types specified.

B. The water-repellent shall not darken, stain, or discolor substrate surfaces. The product shall not change the reflectivity of the surface by having a sheen or a gloss when dry.

C. Materials shall comply with applicable statutory health and environmental requirements, including VOC limits.

1.04 ENVIRONMENTAL QUALITY ASSURANCE

A. Water repellents shall comply with local Air Quality Management District.

1.05 PROJECT CONDITIONS

A. Weather and Substrate Conditions: Do not proceed with application of water repellent under any of the following conditions:

1. Ambient temperature is less than 40-deg. F.
2. Substrate surfaces have cured for less than one month.
3. Rain or temperatures below 40-deg. F. are predicted for a period of 24-hours.
4. Earlier than 24-hours after surfaces became wet.
5. Surface temperature is less than 40-deg. F.

6. Windy conditions such that water repellent may be blown to vegetation or substrates not intended to be coated.

1.06 EXTRA MATERIALS

A. In addition to materials for completion of the work, furnish 5-gallons of additional water repellent coating materials.

B. Furnish in containers factory sealed and labeled. Identify each container with Project name and type of material.

C. Deliver materials and an inventory list just prior to Substantial Completion and store where directed by Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Water-Repellent Coating over Cast-in-Place Concrete Surfaces: Evonik Degussa Corporation "Protosil Aqua-Trete 20" or approved equal.

1. Water repellent material shall have the following minimum performance:

a. Active Substance: Silane.

b. Active Content: 20-percent.

c. Solvent: Water.

d. Density: 7.8 lb./gal.

e. VOC: 90 g/L.

f. AASHTO T259 (150-sq. ft./gal coverage rate):

1) 0-0.5-inch depth: 93-percent reduction.

2) 0.5-1.0 inch depth: 86-percent reduction.

g. NCHRP #244 (@150 sq. ft./gal):

1) Series II – 80-percent reduction in water absorption.

2) Series II – 84-percent reduction in chloride absorption.

3) Series IV – 96-percent reduction in chloride absorption.

h. ASTM C672: 100 cycles – 0 rating (non-air-entrained concrete).

i. ASTM D1653: 64 grams/sq. ft./24 hours, 93-percent breathability.

B. Water-Repellent Coating over Decorative Masonry Surfaces: Evonik Degussa Corporation "Protectosil Aqua-Trete EM" or approved equal.

1. Water repellent material shall have the following minimum performance:

a. Active Substance: Silane / siloxane.

b. Active Content: 10-percent.

c. Solvent: Water.

d. Density: 950 g/L.

e. VOC: 90 g/L.

f. ASTM C140 24-hour submersion test: 97.3-percent effective in reducing water intrusion.

g. ASTM C67: 24- hour submersion test 98.1-percent effective in reducing moisture intrusion.

h. ASTM C642:

1) 24-hours: 0.49-percent.

2) 48-hours: 0.68-percent.

i. ASTm C672: 60-cycles (non-air-entrained concrete) 0 rating.

j. TT-C-555B: No change.

k. ASTM D1653: 64 g/sq. ft./24 hours, 92-percent water vapor transmission.

l. ASTM E514:

1) Untreated leakage: 5.5 l/hr.

2) Treated leakage: 0 l/hr.

3) Reduction in leakage: 100-percent.

C. Application Equipment: Low-pressure airless sprayer and hoses as recommended by water-repellent coating manufacturer.

PART 3 - EXECUTION

3.01 INSPECTION

A. Prior to execution of work, meet with the water-repellent manufacturer's technical representative and the Architect and inspect the surfaces to be treated and conditions under which the water-repellent coatings will be applied.

3.02 PREPARATION

A. Test Application: Prepare a 24-inch square application on each required substrate in an unobtrusive location in a manner acceptable to Architect.

B. Clean and prepare substrates in accordance with water-repellent coating manufacturer's instructions. Test for moisture content in accordance with manufacturer's instructions to ensure that surface is sufficiently dry.

C. Protect adjoining work, including sealant bond surfaces, from spillage or blow-over.

D. Cover adjoining and nearby surfaces of aluminum and glass where required.

E. Cover plant materials with drop cloths.

3.03 INSTALLATION

A. Apply a heavy saturation spray coating of water-repellent to surfaces exposed to the elements using low pressure spray equipment. Comply with manufacturer's instructions and recommendations, using airless spraying procedure.

B. Apply one coat of water-repellent at application rates recommended by manufacturer for applicable substrates to provide effective treatment.

3.04 CLEANING

A. Clean spillage and overspray from adjoining surfaces. Comply with manufacturer's recommendations for cleaning.

END OF SECTION