

ITEM 595.98200018 – SPRAY-APPLIED WATERPROOFING MEMBRANE

DESCRIPTION

Furnish and install a spray-applied, waterproofing membrane system in accordance with the contract documents, approved Material Detail Sheets, and as directed by the Engineer. Include all surface preparation and quality-control testing of substrates and the applied membrane.

MATERIALS

Use a spray-applied, waterproofing membrane system meeting the requirements of §717-02.

The membrane system shall meet the requirements found under the **Membrane System Application and Quality-Control Testing** section of this specification.

CONSTRUCTION DETAILS

General. Arrange for the membrane system manufacturer to have a competent technical representative with necessary equipment to perform the quality-control testing at the job site during all phases of preparation and installation. The technical representative is responsible to perform quality-control testing during membrane application. The technical representative will present all quality-control testing equipment to the Engineer to verify calibration dates and demonstrate their competency to perform quality-control testing.

Supply Material Safety Data Sheets (MSDS) and approved Material Detail Sheets prepared by the membrane manufacturer to the Engineer a minimum of two weeks prior to the scheduled commencement of work. Protect personnel exposed to primers and membranes in accordance with MSDS. Store all components of the membrane system, including broadcast aggregates, at the job site in accordance with approved Material Detail Sheets.

Use tarpaulin or other suitable masking to protect traffic, the surrounding environment, and adjacent features from over spraying.

Membrane System Application and Quality-Control Testing.

Substrate Preparation. Prepare all surfaces that are to receive the membrane system in accordance with the approved Material Detail Sheets. Blast clean all surfaces as a minimum. Remove residual matter using brooms and oil/moisture-free compressed air.

Substrate Moisture Content and Temperature. Measure the surface moisture content and temperature before applying the primer and membrane. The surface moisture content and temperature will be within allowable tolerances as stated in the approved Material Detail Sheets. Perform one test for every two thousand square feet of area as specified in the contract documents or a minimum of three tests.

Substrate Cohesion/Primer Adhesion. After the substrate has been prepared to the satisfaction of the Engineer, test the cohesion of the substrate and the adhesion of the primer to the substrate in accordance with *ASTM D4541 – Pull-Off Strength of Coatings Using Portable Adhesion Testers*. Conduct tests after the primer has sufficiently cured as determined by the technical representative. Perform one test for every two thousand square feet of prepared substrate area, and at locations where deficient adhesion is suspected by the Engineer or a minimum of three tests. Minimum adhesion strengths of 300 psi for each test on steel or 150 psi on Portland Cement Concrete substrates are required before applying primer to the remaining surface area.

Primer Application. Apply primer to the remaining substrate surface area at a rate specified in the approved Material Detail Sheets.

Membrane Application. Apply each course of the membrane at a rate specified in the approved Material Detail Sheets.

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Membrane Thickness. Measure the wet-film thickness of each course of membrane using a standard comb-type thickness gauge or measure the dry-film thickness of each course of membrane using a dry-film thickness gauge for nonferrous substrates. Submit alternative methods for measuring thickness to the Engineer for approval.

Take one measurement for every one hundred square feet of membrane applied. The measured thickness of each course of the membrane and the entire thickness of the finished membrane will be greater than or equal to the depth specified in approved Material Detail Sheets.

Membrane Pin Holes. Test for pin holes in the cured membrane system over the entire application area in accordance with *ASTM D4787 – Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates*. Conduct the test at voltages recommended by the manufacturer to prevent damage to the membrane.

Membrane Adhesion. Test the adhesion of the membrane system to the substrate in accordance with *ASTM D4541 – Pull-Off Strength of Coatings Using Portable Adhesion Testers*. Conduct tests after the membrane system has sufficiently cured as determined by the technical representative. Perform one test for every two thousand square feet of membrane applied, and at locations where deficient adhesion is suspected by the Engineer or a minimum of three tests. Minimum adhesion strengths of 300 psi for each test on steel or 150 psi on Portland Cement Concrete substrates are required.

Repair and correct any deficiencies in the membrane system and substrate noted during quality-control testing as recommended by the manufacturer's representative to the satisfaction of Engineer at no additional cost to the State.

Binder Aggregate Application. When cold-applied, wearing-surface overlays are specified, or additional shear resistance between the membrane and the wearing surface is desirable, broadcast an aggregate binder onto the membrane in accordance with the approved Material Detail Sheets.

Apply the aggregate binder to the membrane before the membrane cures and as specified in the approved Material Detail Sheets. The aggregate and membrane will be fully integrated after the aggregate has been applied and the membrane has cured. Remove loose aggregate with brooms or oil/moisture-free compressed air before applying the tack coat.

Tack Coat Application. Apply a tack coat to the finished membrane system if needed and as specified in the Material Detail Sheets prior to overlaying the membrane with a wearing surface.

METHOD OF MEASUREMENT

This work will be measured as the number of square feet of spray-applied, waterproofing membrane system satisfactorily furnished and installed as shown on the contract plans or ordered by the Engineer.

BASIS OF PAYMENT

The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work.