

SECTION 00591 – SPRAY WATERPROOFING MEMBRANE

(Follow all instructions and make all edits with “Track Changes” turned on. This Section is not published in the Oregon Standard. If there are no instructions [purple text] above a subsection, paragraph, sentence, or bullet, then include it in the Project, unless the item(s) that are included in the subsection, paragraph, sentence, or bullet are not required on the Project and then they should be deleted. In general do not renumber or re-letter subsections when item(s) are deleted. Delete all purple text before preparing the final document. All other modifications to this Section will require ODOT Technical Resource and State Specifications Engineer approval.)

Section 00591, ~~which~~ is not a Standard Specification and is included in this Project by Special Provision.

Description

00591.00 Scope - This Work consists of furnishing and placing spray waterproofing membrane on Buried Structures as shown.

00591.01 Definitions:

Buried Structures - Complete Structures or structural elements shown that are placed below grade with fill material on all sides.

00591.02 Submittals - Submit the following at least 7 Calendar Days before the pre-placement conference:

- The manufacturer's product data sheet.
- The manufacturer's written installation instructions.
- A Material Safety Data Sheet for each primer and epoxy polymer component.
- Manufacture dates and shelf-life expiration dates for each production lot of primer and epoxy polymer components.
- Tabulated data indicating the estimated cure time, in minutes, for the allowable ambient temperature range, in increments of 10 °F, for both the primer and polymer membrane.
- A detailed work plan for the membrane preparation, application, and cleanup.
- The Manufacturer's recommended application rate, square feet per gallon, to achieve a minimum membrane thickness of 3/16 inch.
- Names of manufacturer-approved supervisory personnel meeting the requirements of 00591.31.
- For each spray membrane proposed for use, submit for the Engineer's review a manufacturer approved procedure for preparing the surfaces to receive membrane and applying the membrane. Include in the procedure the identification of the

manufacturer's representative, the number of persons required, Equipment, installation sequence, traffic control, and the estimated time schedule for installing the membrane.

- For Buried Structures with curbs, head walls or concrete rails, submit unstamped manufacturer Working Drawings according to 00150.35, detailing membrane placement at the curbs or rail.

00591.04 Pre-Placement Conference - Hold a pre-placement conference with the Contractor's supervisory personnel, the manufacturer's authorized representative, the manufacturer certified applicator(s), and the Engineer at least 14 Calendar Days before applying each membrane.

Materials

00591.10 Materials - Furnish a spray waterproofing membrane system that complies with the profile grades shown. Profile grade limitations for products are listed in the QPL and are available from the manufacturer.

(a) **Primer** - Furnish a primer from the QPL.

(b) **Spray Membrane** - Furnish spray waterproofing membrane from the QPL.

(c) **Handling Materials** - Store spray waterproofing membrane at a temperature between 55 °F and 95 °F or as recommended by the manufacturer, whichever is more restrictive.

Labor

00591.30 Personnel Qualifications - Provide manufacturer authorized applicators. Provide applicators that are certified yearly by the manufacturer.

00591.31 Manufacturer's Representative - Provide the services of a manufacturer's representative authorized to observe the installation of each membrane system. ~~The~~Provide a manufacturer's representative ~~shall be~~that is an employee of the membrane system manufacturer. Do not begin membrane Work until the manufacturer's representative is on site and authorizes the Work to begin.

Follow the recommendations of the manufacturer's representative when installing the spray membrane system, as provided in this Section. Instruct the manufacturer's representative to alert the Contractor and the Engineer of anything that could affect the performance of the spray waterproofing membrane.

Submit a daily written report to the Engineer that has been prepared by the manufacturer's representative and details all membrane-related activities, test results, observations, repairs, and post-spray survey results. Submit the daily written report by the end of each Day until the Work is complete.

Construction

00591.40 Construction -

(a) General - Do not begin membrane installation until all Materials and Equipment necessary to perform the installation and required repairs, and qualified personnel are at the Project Site.

(b) Application Conditions - Apply the spray waterproofing membrane on prepared surfaces when the following conditions are met:

- The prepared surface has been visually dry for at least 72 hours.
- The ambient temperature and prepared surface temperature are between 50 °F and 90 °F.
- The prepared surface temperature is at least 5 °F above the dew point.
- No rain is forecasted for the duration of the membrane installation.

00591.41 Preparing Buried Structures - Prepare all surfaces that are to be in contact with the spray waterproofing membrane according to Section 00504.

00591.42 Installation - Install spray waterproofing membrane according to the following:

- Spray, squeegee, or roll primer at a rate of 1 gallon per 100 to 200 square feet of surface area or as recommended by the manufacturer.
- Spray membrane over primed surfaces at a minimum rate of 1 gallon per 20 square feet of surface area, or as recommended by the manufacturer, to achieve a minimum thickness of 80 mils. Apply the spray membrane using methods recommended by the manufacturer.
- In the presence of the Engineer, perform a post spray survey of the membrane by infrared imaging or other approved methods to locate any delamination, bubbles, or other defects. Repair all defects in a manner consistent with the manufacturer's recommendations and satisfactory to the Engineer and document on the daily written report.

The Engineer must accept each layer of the waterproofing membrane system before application of the next layer is allowed.

00591.46 Primer Bond Test - Before placing the membrane, test prepared surface to primer bond according to ASTM D4541, Method E, using Type V tester and 20 mm dollies. Unless otherwise directed, randomly select test locations with a minimum of one test per 750 square feet.

Minimum bond strength is 175 psi or substrate failure.

00591.47 Dry Film Thickness Test - Test spray membrane dry film thickness using test methods approved by the Engineer. Unless otherwise directed, randomly select test locations with a minimum of one test per 750 square feet.

00591.48 Membrane System Bond Test - Before backfilling over the membrane, test the full depth membrane system according to ASTM D4541, Method E using Type V tester and 50 mm test dollies. Minimum bond strength is 175 psi or substrate failure. Cut 2-inch diameter cores full depth through the membrane and 1/4 inch into concrete substrate. Unless otherwise

directed, randomly select test locations with a minimum of one test per 750 square feet. Repair core holes with matching membrane system Materials.

Maintenance

00591.60 Correction of Defects - Correct all defects in Materials and Work, as directed, at no additional cost to the Agency. Defects are defined as leakage of the membrane or delamination of the membrane from the substrate.

Submit a detailed repair plan to the Engineer for approval within 14 Calendar Days of notification of defects. Unless otherwise approved in writing by the Engineer, complete permanent repairs within 60 Calendar Days of notification of defects. Until permanent repairs are completed and accepted, complete temporary repairs as required by the Engineer. Use Materials and procedures meeting the Specifications. Match repairs to finished grade. Coordinate timing of repair Work with the Engineer.

Measurement

00591.80 Measurement - The quantities of spray waterproofing membrane will be measured on the area basis, and will be the sealed surface area, and will be limited to the Neat Lines and dimensions shown or directed.

Payment

00591.90 Payment - The accepted quantities of spray waterproofing membrane will be paid for at the Contract unit price, per square foot, for the item "Spray Waterproofing Membrane".

Payment will be payment in full for furnishing and placing all Materials, and for furnishing providing all Equipment, labor, and Incidentals necessary to complete the Work as specified.