

SB- BRIDGE PENETRATING SEALER

SB- Description

Designer: insert appropriate area(s) in blank below. Clarify areas as needed.

- as indicated in the plans,
- roadway surface,
- side and top of median barrier,
- roadway face and top of barrier,
- sidewalk and curb,
- raised median,
- pier column,
- wing walls,
- abutments

Furnish and apply a penetrating sealer to the [] area of Bridge. Perform this work in accordance with the applicable provisions of 2433, "Structure Renovation," the plans, as directed by the Engineer, and the following:

SB- General

For the following paragraph fill in the blank with 40% or 100% per the Regional Engineer.

Apply a MnDOT approved, penetrating, solvent based [] silane sealer. Provide the Engineer with the sealer Manufacturer's written instructions for application and use, at least 30 calendar days before the start of the work.

SB- Materials

Furnish only one of the materials listed on the Department's "Approved/Qualified Product Lists of Bridge Penetrating Sealers" (<http://www.dot.state.mn.us/products/index.html>). For products not on the Department's prequalified list, provide information as required on the web site and as stated in the following table.

For the following table fill in the blank with 40% or 100% per the Regional Engineer.

Table 1: Qualification Requirements for Penetrating Sealer	
Active Ingredient	Solvent-based alkylalkoxysilane with [] solids minimum for the [] Silane by weight
Resistance to Chloride Ion Penetration AASHTO T259 and T260	Less than 0.55 Chloride Content Ratio of Sealed /Unsealed at 1/2 inch level (Adjusted for baseline chloride)
Penetration Depth OHD L-40	0.15 inch
NCHRP 244 Series II	
Water Absorption	80 % reduction minimum
Absorbed chloride	85 % reduction minimum
NCHRP 244 Series IV - Southern Exposure	
Absorbed chloride	95 % reduction minimum
Alberta DOT Tests	

Waterproofing after Abrasion, % Alberta DOT Type 1b Penetrating Sealer Test	86.0 %
Moisture Vapor Transmission Alberta DOT Type 1b Penetrating Sealer Test	70 % minimum

The manufacturer of the silane product must directly ship a one quart sample of the sealer to the MnDOT Materials Lab (1400 Gervais Avenue; Maplewood, MN 55109) for quality assurance testing and IR scanning at least 30 days prior to the start of the work.

SB- Application Requirements

A. Surface Preparation

Clean all areas to be sealed by removing dirt, dust, oil, grease, curing compounds, laitance, or other contaminants that would impede the penetration of the sealant. Collect all debris and other material removed from the surface and cracks, and dispose of it in accordance with applicable federal, state, and local regulations. Immediately before applying the sealer direct a 125 psi air blast, from a compressor unit with a minimum pressure of 365 ft³ / min. [10 m³ / min.], over the entire surface to remove all dust and debris paying special attention to carefully clean all deck cracks. Use a suitable oil trap between the air supply and nozzle. Use ASTM D 4285 "Standard Test Method for Indicating Oil or Water in Compressed Air" to ensure the compressed air is oil and moisture free. Provide shielding as necessary to prevent dust or debris from striking vehicular traffic. Have the Engineer approve the prepared surface prior to applying the sealer.

Air dry a wet deck for a minimum of seventy-two (72) hours before applying the sealer.

Cover all expansion joints in a manner that will prevent the sealer from contacting the strip seals but will allow sealer to penetrate the steel/concrete interface on each side of the joint. Secure the materials used to cover the strip seals with duct tape or another material approved by the Engineer.

B. Weather Limitations

Do not apply sealer materials during wet weather conditions or if adverse weather conditions are anticipated within 12 hours of the completion of sealer application. Do not mix or apply any of these products at temperatures lower or higher than those specified in their product literature. Apply the sealant at the coolest time of the day within these limitations. Application by spray methods will not be permitted during windy conditions, if the Engineer predicts unsatisfactory results.

C. Test Section

Prior to each bridge application apply the sealant to a test area, of at least 50 ft² [4.6 m²], on the shoulder of each bridge in project requiring this work. The test section will be used to evaluate the application equipment, coverage rate, drying times, traffic control, etc. Propose the specific location and application time for the test section at least 5 days prior to applying the sealer. A technical representative from the sealer manufacturer must be present during application and drying of the test section. Prior to application of the sealant, hold a meeting with the Manufacturer's Representative and the Engineer to discuss all necessary safety precautions and application considerations. If the coverage rate is increased (less product per area), by the Engineer, the contract unit price will be decreased by that same percentage.

D. Sealer Application

Designer: insert 125 for 40% silane application or 400 for 100% silane application in blank below.

Do not thin or alter the sealer unless specifically required in the Manufacturer's instructions. Mix the sealer before and during its use as recommended by the Manufacturer. Distribute the sealant with a spray bar near the surface so the spray pattern and coverage rates are reasonably uniform to the satisfaction of the Engineer. Do not allow running or puddling of the sealer to occur. Apply the sealant at a coverage

rate of ft² / gal and apply in two coats if running or puddling cannot be controlled with one coat. (see "Test Section" below for clarification on coverage rate)

Allow the sealant to dry according to the Manufacturer's instructions. Do not allow vehicular traffic onto the treated areas until the sealer has dried and the treated surfaces provide safe skid resistance and traction.

SB- Method of Measurement

Measurement will be made to the nearest square foot of concrete area sealed based on surface area.

SB- Basis of Payment

Designer: select the appropriate pay item(s)

Payment for Item No. 2433.618 "SILANE 40 PERCENT", will be made at the Contract price per square foot and shall be compensation in full for all costs of furnishing and applying the sealer to the bridge decks, as described above, including surface preparation, and all incidentals thereto.

Payment for Item No. 2433.618 "SILANE 100 PERCENT", will be made at the Contract price per square foot and shall be compensation in full for all costs of furnishing and applying the sealer to the bridge decks, as described above, including surface preparation, and all incidentals thereto.