Regional Engineers

Jack A. Elston

Special Provision for Full Lane Sealant Waterproofing System

August 4, 2023

This special provision was developed by the Central Bureau of Materials as the result of an experimental feature on the full lane sealant (FLS) waterproofing system. The FLS waterproofing system creates a cost effective, beneficial alternative to the traditional waterproofing membrane system for concrete bridge decks. The system uses a combination of highly polymerized asphalt interlayers, FLS, with dense, high-quality HMA to create a waterproofing system that is easier to construct, prevents the ingress of water, and deicing/anti-icing chemicals to protect concrete bridge decks from chloride ingress and subsequent spalling and corrosion.

This special provision should be inserted into contracts utilizing FULL LANE SEALANT WATERPROOFING SYSTEM.

The districts should include the BDE Check Sheet marked with the applicable special provisions for the November 17, 2023 and subsequent lettings. The Project Coordination and Implementation Section will include a copy in the contract.

80452m

# Full Lane Sealant Waterproofing System (bde)

Effective: November 1, 2023

Replace Section 581 of the Standard Specifications with the following:

“**SECTION 581. FULL LANE SEALANT WATERPROOFING SYSTEM**

**581.01 Description.** This work shall consist of furnishing and placing a full lane sealant (FLS) waterproofing system over a prepared concrete bridge deck.

**581.02 Materials.** Materials shall be according to the following.

Item Article/Section

(a) Hot-Mix Asphalt 1030

(b) Bituminous Materials (Note 1) 1032

(c) Full Lane Sealant (FLS) 1032.13

Note 1. The bituminous material used for the tack coat shall be emulsified asphalt according to Article 1032.06. The emulsion producer shall perform any dilution with water. The emulsified asphalt shall be thoroughly agitated within 24 hours of application and show no separation of water and emulsion.

**581.03 Equipment.** Equipment shall be according to Article 406.03 and the following.

(a) Regenerative Air Vacuum Sweeper (Note 1)

Note 1. The regenerative air vacuum sweeper shall blast re-circulated, filtered air through a vacuum head having a minimum width of 6.0 ft (1.83 m) at a minimum rate of 20,000 cu ft/min (560 cu m/min).

CONSTRUCTION REQUIREMENTS

**581.04 General.** FLS waterproofing system shall be constructed according to Section 406, except as modified herein, with a tack coat, a layer of FLS, a layer of IL-4.75, a second layer of FLS, and a final layer of SMA-9.5 as shown on the plans.

581.05 **Preparation of Concrete Deck.** Surfaces shall be cleaned according to Article 406.05(c). In non-attainment areas, vacuum sweeping shall be performed using a regenerative air vacuum sweeper.

Deck drains shall be temporarily plugged before the tack coat is applied.  The material used to plug the drains shall be removed and disposed of upon completion of the work.

From the time the bridge deck is cleaned and prepared for the FLS until the HMA is spread and compacted, the only traffic permitted shall be the necessary workers and equipment to perform the work.

581.06 **Application of Full Lane Sealant Waterproofing System.** FLS shall be applied uniformly to the surface of the bridge deck in a single application per pass with an FLS pressure distributor. Hand application with a squeegee shall be used at places not covered by the FLS pressure distributor.

If FLS pickup occurs, paving shall cease in order for corrective measures to be taken. Corrective measures shall include applying water to the wheels or paving in cooler ambient conditions, and repairing all areas where the pickup occurred.

Before applying the second layer of FLS, remove any standing water from the IL-4.75 binder course.

581.07 **HMA Compaction.** HMA shall be compacted according to Article 406.07, except the density requirement for mixtures on bridge decks shall be replaced with 5 and 7 roller pass coverages per location of IL-4.75 and SMA-9.5 mixtures, respectively.

**581.08 Sequence of Construction Operations.** The sequence of construction operations shall be as follows.

1. Tack coat shall be applied at a residual rate of 0.05 lb/sq ft (0.244 kg/sq m).
2. FLS shall be applied at a residual rate of 0.25 lb/sq ft (1.21 kg/sq m).
3. HMA IL-4.75 binder course shall have a compacted lift thickness of 3/4 in. (19 mm).
4. FLS shall be applied at a residual rate of 0.15 lb/sq ft (0.73 kg/sq m).
5. HMA SMA-9.5 surface course shall have a compacted lift thickness of 1 1/2 in. (38 mm).

581.09 **Method of Measurement.** This work will be measured for payment as follows.

(a) Contract Quantities. The requirements for the use of contract quantities shall conform to Article 202.07(a).

(b) Measured Quantities. This work will be measured for payment and the area computed in square yards (square meters) of the bridge deck surface covered. No measurement or allowance will be made for laps, the material used for extending up curb faces, other vertical barriers, or extensions over lips or edges.

HMA SMA-9.5 will be measured for payment according to Article 406.13(b).

581.10 **Basis of Payment.** This work will be paid for at the contract unit price per square yard (square meter) for FULL LANE SEALANT WATERPROOFING SYSTEM.

HMA SMA-9.5 will be paid for at the contract unit price per ton (metric ton) for POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, STONE MATRIX ASPHALT, 9.5, of the friction aggregate and Ndesign specified, according to Article 406.14.”

80452