

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**PENETRATING HEALER SEALER ON BRIDGE DECKS**

STM:JD

1 of 3

APPR:MTH:JAB:06-01-21

FHWA:APPR:06-03-21

**a. Description.** This work consists of preparing, cleaning, and applying a penetrating epoxy healer/sealer system to concrete bridge decks. Ensure all work is completed in accordance with section 712 of the Standard Specifications for Construction except as modified herein. Bring any discrepancies between the two to the attention of the Engineer.

**b. Materials.** Use solvent-free, moisture insensitive, 100 percent solids, two-component epoxy based healer sealer. Ensure containers are marked clearly "Part A" or "Part B". The epoxies that are approved for healer sealers are in Table 1.

**Table 1: Approved Two Component 100 Percent Solids Epoxy Systems**

Supplier	Product	Telephone
Advanced Chemical Technologies	SIL-ACT EP 1000 HM	(405)-843-2585
E-Chem	EP100	(505) 217-2121
Euclid Chemical	Dural 335 Dural 50 LM	(800) 321-7628
Poly-Carb	Mark 127	(817) 797-1113
Sika	Sikadur 55 SLV	(248) 866-8956
Unitex	Pro-Poxy 40 LV LM	(800) 745-3700

Ensure aggregate meets the gradation requirements in Table 2. Ensure aggregate is angular, consists of natural silica sand, basalt, or other nonfriable aggregate, and contains less than 0.2 percent moisture when tested in accordance with *ASTM C566*.

**Table 2: Aggregate Gradation Requirements**

Sieve Size	Minimum % Passing	Maximum % Passing
4	100	100
16	95	100
30	85	100
50	15	75
100	0	25
200	0	10
Pan	0	0

Provide general certification per the *MQAP Manual* to the Engineer that the aggregate meets the

requirements specified herein.

**c. Equipment.** For the epoxy healer sealer, provide a distribution system or distributor capable of accurately blending the epoxy resin and hardening agent, and uniformly and accurately applying the epoxy materials at the specified rate to the bridge deck in such a manner as to cover 100 percent of the work area, including 1 inch of the vertical face of curb/barrier. Provide a fine aggregate spreader capable of uniformly and accurately applying dry aggregate to cover 100 percent of the epoxy material. Provide a self-propelled vacuum truck.

For hand applications, provide calibrated containers, a-Jiffy® type mixer, squeegees, and stiff bristle brooms suitable for mixing and applying the epoxy and aggregate.

For mechanical applications, provide mixing equipment that will automatically and accurately proportion the components in accordance with the manufacturer's recommendations and will mix and continuously place the healer sealer. Ensure the operation proceeds in such a manner that will not allow the mixed materials to segregate, dry, be exposed or otherwise harden in such a way as to impair the retention and bonding of broadcasted aggregate.

**d. Construction.**

1. Surface Preparation. Ensure patching and cleaning operations are inspected and approved prior to healer sealer installation. Protect utilities, drainage structures, curbs, bridge joints, and any other structure within or adjacent to the healer sealer from surface preparation activities and application of the surface treatment materials. For the purposes of this special provision, the term *bridge joints* does not include sawed construction joints.

Verify that the compressed air used for any work is free of oil and moisture contamination in accordance with *ASTM D4285*. Use either an absorbent or a nonabsorbent white collector positioned within 24 inches of the air-discharge point, centered in the air stream. Allow air to discharge onto the collector for a minimum of 1 minute. Visually examine the collector for the presence of oil and/or water. Conduct the test at least one time per shift for each compressor system in operation in the presence of the Engineer. If air contamination is evident, make adjustments to achieve clean, dry air. Examine the work performed since the last acceptable test for evidence of defects or contamination due to contaminated compressed air. Repair contaminated work at no additional cost to the contract.

Do not perform surface preparation or installation of healer sealer on concrete less than 28 days of age. Ensure that traffic paint lines are removed. Clean the entire concrete surface by abrasive blasting or shotblasting to remove all materials that may interfere with the bonding or curing of the binder. The cleaned concrete surface must meet the *International Concrete Repair Institute Guideline 310.2R, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays and Concrete Repair*, concrete surface profile (CSP) 3. Ensure mortar is sound and sufficiently bonded to the coarse aggregate, and presents a uniform CSP necessary for adequate bond. Use a vacuum truck or oil-free moisture-free air blast to remove all dust and other loose material. Brooms are prohibited. Remove any oil or other contamination after initial cleaning.

The Engineer will inspect and approve patching and cleaning operations prior to placement of the healer sealer. The Engineer's approval is required prior to placement of the healer sealer.

Ensure healer sealer is applied within 24 hours of the final cleaning, and prior to opening the area to traffic.

No visible moisture can be present on the surface of the concrete at the time of healer sealer application. Oil-free moisture-free compressed air may be used to dry the deck surface. Use a plastic sheet left taped in place in accordance with *ASTM D4263* to identify moisture in the healer sealer area except as modified herein. Tape an 18 inch by 18 inch transparent polyethylene sheet (4 mil) to the deck every 500 square feet. Ensure all edges are sealed with tape that will stick to the concrete substrate. Leave the plastic sheet in place for a minimum of 3 hours or as directed by the manufacturer's recommendations for cure time for the conditions, whichever is longer. Ensure there is no moisture visible on the polyethylene sheet. Alternate methods to detect moisture must be approved by the Engineer.

Remove all debris from the bridge joints. Protect the bridge joints, and any other areas not to be sealed, from damage during preparation of the surface. Ensure the protection is removed once the epoxy and aggregate has been applied and prior to initial set. Ensure removing the protection is done soon enough to in no way harm the adjacent sealed surface. Ensure the protection meets the approval of the Engineer.

2. Application. Ensure handling and mixing of the epoxy resin and hardening agent is performed in a safe manner to achieve the desired results in accordance with the manufacturer's recommendations or as directed by the Engineer. Do not place healer sealer materials when the concrete surface is less than 50 °F or ambient air temperature is forecast to fall below 50 °F within 8 hours of application. Do not place healer sealer materials if weather or surface conditions are such that the material cannot be properly handled, placed, and cured in accordance with the manufacturer's requirements and the specified requirements for traffic control.

After the epoxy mixture has been prepared for the healer sealer, immediately and uniformly apply it to the surface of the bridge deck. Allow epoxy to pool and penetrate deck surface per the manufacturer's recommendation prior to application of dry aggregate. Ensure application of aggregate is of sufficient quantity so the entire surface is covered in excess. Ensure no bleed through or wet spots are visible in the overlay. Remove and replace any areas with wet spots or where epoxy has bled through. Minimize all foot traffic on the uncured epoxy and ensure any foot traffic will only be done with steel spiked shoes approved by the Engineer. Cure healer sealer until vacuuming or brooming can be performed without tearing or damaging the surface. Do not allow traffic or equipment on the healer sealer surface during the curing period. Remove all loose aggregate after the curing period by vacuuming or brooming. Ensure all bridge joints are free of loose aggregate, epoxy and other debris resulting from healer sealer operations. Do not re-use excess aggregate.

**e. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

**Pay Item**

**Pay Unit**

Penetrating Healer/Sealer, Bridge Deck ..... Square Yard

**Penetrating Healer/Sealer, Bridge Deck** includes cleaning, preparing and applying a penetrating healer/sealer system including miscellaneous clean-up. Also includes cleaning and protecting bridge joints.