Concrete Joint Sealing

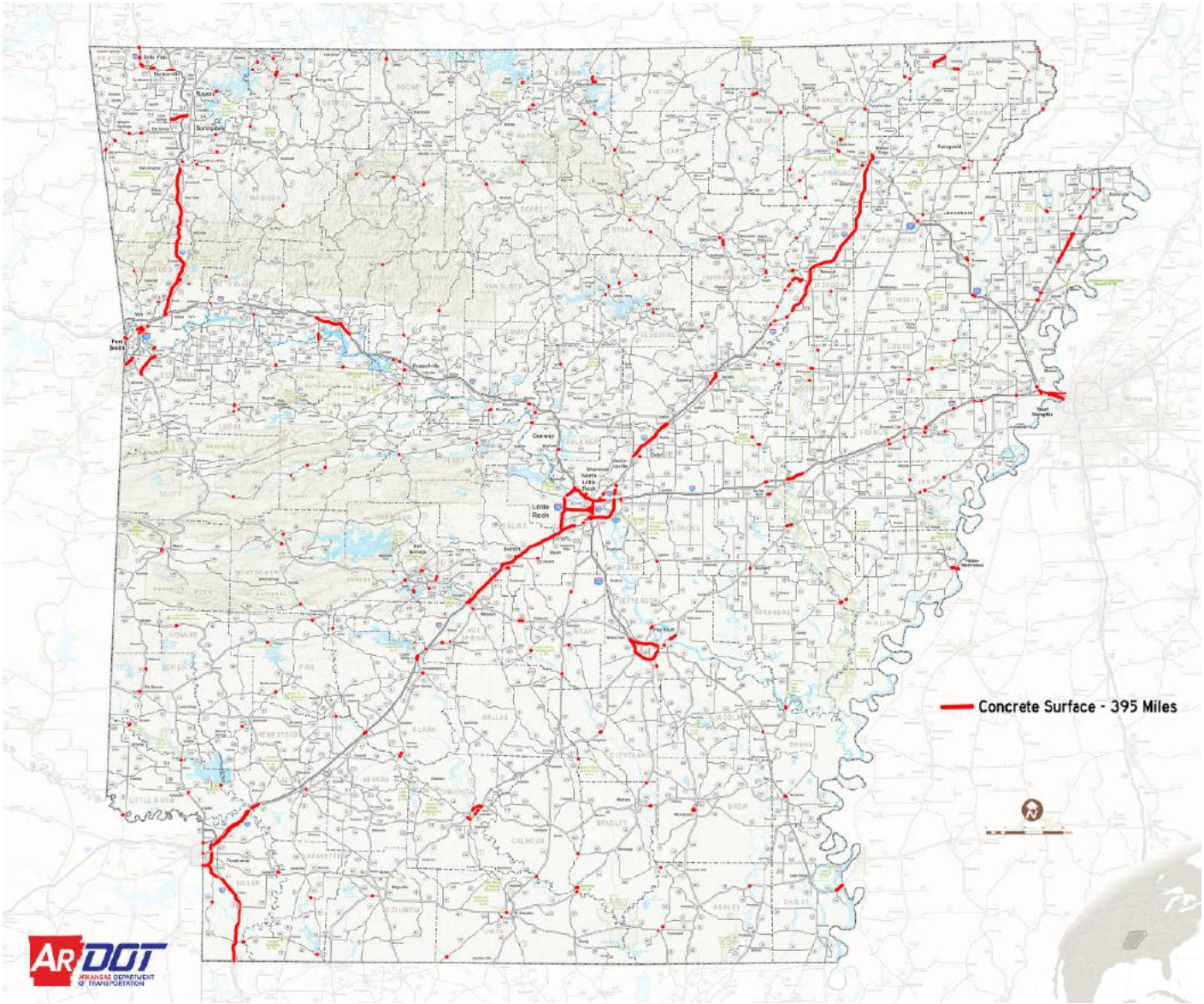
In Arkansas

Arkansas Highway System

90% Asphalt

7% Compost

3% Concrete


Concrete Surface - 395 Miles
AR DOT
ARKANSAS DEPARTMENT OF TRANSPORTATION

All longitudinal and transverse joints shall be constructed, finished, filled, and sealed with joint material as shown on the plans. The joint grooves shall be thoroughly clean and dry when joint material is placed.

Joints shall not be filled and sealed for a minimum of 6 days following placement of the concrete except that when High Early Strength Concrete Pavement is specified, the period may be reduced to 18 hours.

When the joints are thoroughly dry, and just before sealer placement, both vertical faces shall be thoroughly cleaned by sandblasting with a nozzle attached to an aiming device that directs the sand blast at approximately a 45° angle and a maximum of 2" (50 mm) from the face of the joint. Each joint face shall be sandblasted individually. After sandblasting, the joints shall be blown out with compressed air that has been filtered and is completely free of oil and moisture. The joints shall be thoroughly dry before sealer is placed.

All joints shall be filled and sealed the same day of the final sandblasting. Cleaned joints left open overnight shall be re-cleaned by sandblasting before filling and sealing.

In the event freshly cleaned joints become contaminated before they are sealed, they shall be re-cleaned as specified above.

Backer material shall be installed in a manner that will result in the planned depth and shape for the sealant. If primer is required, the primer shall be applied before installing the backer material.

Joint sealer shall be applied by an approved mechanical device from inside the joint in a manner that causes it to wet the joint surfaces. Joint sealer application will not be permitted when the pavement surface temperature at the joint is less than the application temperature specified by the manufacturer.

SECTION 509
JOINT REHABILITATION

509.01 Description. This item shall consist of sawing and cleaning existing transverse and longitudinal joints in portland cement concrete pavement, patches, approach slabs, and bridge decks, and filling and sealing the prepared joints with approved material according to these specifications and the details shown on the plans.

509.02 Materials. Joint filler and joint sealer shall comply with Subsection 501.02(h).

509.03 Construction Requirements. Joint Rehabilitation shall comply with the construction requirements of Subsection 501.05(j) and the following:

Existing joints shall be sawed to expose a new concrete face, free of any joint sealer, and to provide a sealer reservoir. Joints shall be sawed to a sufficient depth to accommodate the joint sealer and backer rod as shown on the plans. Any existing joint inserts,

SECTION 512
CLEANING AND FILLING JOINTS IN EXISTING CONCRETE PAVEMENT

512.01 Description. This item shall consist of routing, cleaning, and filling existing transverse and longitudinal joints in portland cement concrete pavement in preparation for an asphalt overlay.

512.02 Materials. Materials to fill the joints shall be one of the following types:

Type 1. Type 1 joint filler complying with Subsection 501.02(h)(1)a.

Type 7. Type 7 joint sealer complying with Subsection 501.02(h)(2)f.

512.03 Construction Requirements. The Contractor shall remove all existing joint material and other foreign material from the longitudinal and transverse joints.

Before placement of joint material, the joints shall be dry and cleaned of all loose material. The material shall fill the joint to within 1/4" (6 mm) of the surface and shall be applied under pressure if necessary.

512.04 Method of Measurement. Cleaning and Filling Joints in Existing Concrete Pavement will be measured by the linear foot (meter).

512.05 Basis of Payment. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per linear foot (meter) for Cleaning and Filling Joints in Existing Concrete Pavement for the type specified, which price shall be full compensation for cleaning joints; furnishing and placing all materials; and for all labor, equipment, tools, and incidentals necessary to complete the work.

a. Type 1: A joint filler that is a uniform mixture of sawdust and asphalt material in the proportion of one part asphalt to four parts sawdust, by volume. Asphalt material used shall be either MC-250 or SS-1 according to Subsection 403.03. When this material is specified, the joint shall be filled to within 1″ (25 mm) of the pavement surface. The top 1″ (25 mm) shall be sealed with a material complying with the requirements of ASTM D6690, Type I.

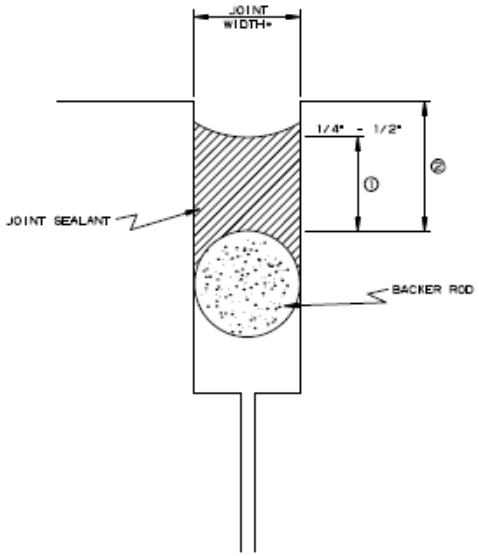
b. Type 2: A joint filler that is preformed, non-extruding, and resilient type, complying with AASHTO M 153 Type I (sponge rubber).

(2) The material for filling and sealing longitudinal, warping, contraction, and other specified joints shall be as shown on the plans and shall comply with the following requirements:

a. Backer rod filler for Types 3, 4, and 5 joints shall meet ASTM D 5249, Type 1 for Types 3, 4, and 5 joint sealers or Type 3 for Types 3 and 4 joint sealers and shall be approximately 1/8" (3 mm) larger in diameter than the width of the joint to be sealed. All components of the joint sealant system, including the backer rod, shall be compatible. No bond shall occur between the backup material and the sealant system for Types 3 and 4 joint sealer.

b. Type 3: A joint sealer that is a cold applied, single component, chemically curing silicone sealant that meets the requirements of ASTM D 5893. The formulation shall not require a primer for bond to concrete. The compound shall be compatible with concrete. The material shall be one that has been approved by the Engineer.

c. Type 4: A joint sealer that is a cold applied, single component, chemically curing silicone sealant that meets the requirements of ASTM D 5893. The formulation shall require a primer for bond to concrete. The compound shall

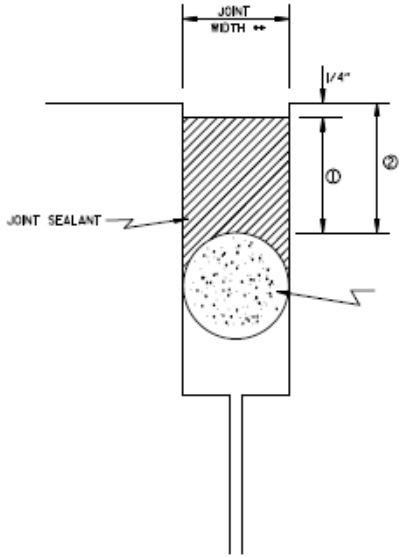


JOINT CONFIGURATION FOR TYPE 3 & 4 JOINT SEALANT

JOINT WIDTH	SEALANT THICKNESS ①	BACKER ROD DIAMETER	BACKER ROD PLACEMENT DEPTH ②
INCHES			
1/4	1/4	3/8	1/2
3/8	1/4	1/2	1/2
1/2	1/4	5/8	1/2
5/8	5/16	3/4	9/16
3/4	3/8	7/8	7/8
4/8	7/16	1	11/16
1	1/2	1 1/4	3/4
1 TO 1 1/2	1/2	1 1/4+	3/4

NOTE: JOINTS GREATER THAN 1 1/2" IN WIDTH SHALL BE SEALED WITH TYPE 5 JOINT SEALANT.

* CONTRACTION JOINTS SHALL BE SAWED TO MIN. WIDTH OF 3/8". WARPING & LONGITUDINAL JOINTS SHALL BE SAWED TO MIN. WIDTH OF EXISTING WIDTH +1/8" (1/16" ON EACH SIDE).



JOINT CONFIGURATION FOR TYPE 5 JOINT SEALANT

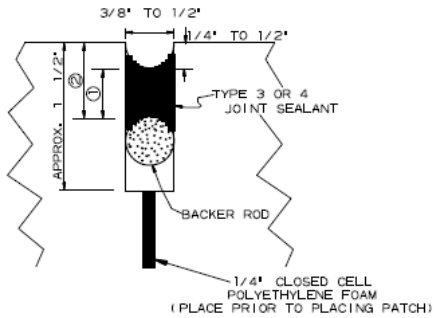
JOINT WIDTH	APPROX. WIDTH TO DEPTH RATIO	SEALANT THICKNESS ①	BACKER ROD DIAMETER	BACKER ROD PLACEMENT DEPTH ②
INCHES		INCHES		
1/4	1x2	1/2	3/8	3/4
3/8		3/4	1/2	1
1/2		1	5/8	1 1/4
5/8		1 1/4	3/4	1 1/2
3/4	1x1.75	1 3/8	7/8	1 5/8
7/8		1 1/2	1	1 3/4
1	1x1.6	1 5/8	1 1/4	1 7/8
1 TO 3		1 5/8+	1 1/4+	1 7/8+

BACKER ROD

NOTE: FOR JOINTS WIDER THAN 1 1/2", THE CONTRACTOR SHALL HAVE THE OPTION OF COMPLETELY FILLING THE JOINT IN LIEU OF USING A BACKER ROD.

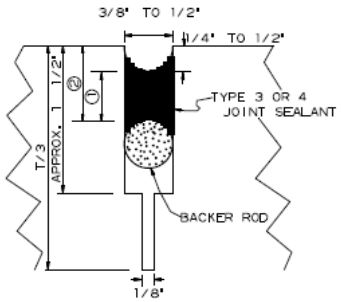
** WARPING & LONGITUDINAL JOINTS SHALL BE SAWED TO MIN. WIDTH OF EXISTING WIDTH +1/8" (1/16" ON EACH SIDE).

REFER TO SECTION 509 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION.

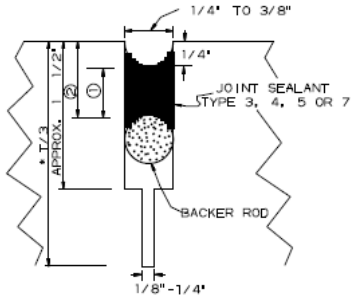


DETAIL OF SAWED FREE TRANSVERSE &
FREE LONGITUDINAL JOINT

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.21250
JASON M. TONEY
10-20-23



DETAIL OF SAWED CONTRACTION JOINT



NOTE T/3 SAW CUT NOT REQUIRED FOR LONGITUDINAL CONSTRUCTION JOINT.

DETAIL OF SAWED
TIED LONGITUDINAL JOINT
AND WARPING JOINT

JOINT CONFIGURATION FOR TYPE 3 OR 4 JOINT SEALANT

JOINT WIDTH	SEALANT THICKNESS ①	BACKER ROD DIAMETER	BACKER ROD PLACEMENT DEPTH ②
INCHES			
1/4	1/4	3/8	1/2
3/8	1/4	1/2	1/2
1/2	1/4	5/8	1/2

JOINT CONFIGURATION FOR TYPE 5 OR 7 JOINT SEALANT

JOINT WIDTH	SEALANT THICKNESS ①	BACKER ROD DIAMETER	BACKER ROD PLACEMENT DEPTH ②
INCHES			
1/4	1/2	3/8	3/4
3/8	3/4	1/2	1