

**STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION 846
POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM**

April 17, 2015

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846.01 Description. This work consists of furnishing and installing polymer modified asphalt expansion joint systems at the locations shown in the plans.

846.02 Materials. Furnish materials conforming to:

Bridging Plate (1/4" x 8"):

Material	ASTM A-36, C&MS 106.09
Coating.....	C&MS 711.02
Locating Pins	16d (or larger) galvanized common nail
Binder.....	ASTM D6297, Table 1

Aggregate:

Type	Crushed, Double washed and dried Granite, Basalt or Gabbro
Gradation.....	Manufacturer's Recommendation

Backer Rod:

Furnish closed cell foam expansion joint filler capable of withstanding placement temperature of the binder.

The Department will prequalify joint systems by the binder manufacturer.

Furnish the polymer modified expansion joint binder according to the Department's Qualified Products List (QPL) maintained by the Department Office of Materials Management. Prior to beginning work on the joint system, provide the Engineer certified test data of the polymer modified expansion joint binder batch supplied ensuring compliance with all material requirements.

846.03 Quality Control. At least 7 days before work begins, submit to the Engineer a detailed installation plan along with a letter from the joint manufacturer stating that the submitted installation plan is acceptable. The installation plan shall include, but is not limited to, the following information:

- A. Minimum labor requirements
- B. Equipment listing
- C. Weather restrictions
- D. Removal methods
- E. Surface preparation requirements including measures necessary to address water seepage; bridging plate leveling; cleaning and drying
- F. Bridging plate installation include whether locating pins are necessary and specify maximum gap width without backer rod
- G. Binder coat quality control measures
- H. Aggregate preparation quality control measures
- I. Material installation including material proportioning and mixing requirements; minimum/maximum lift thickness; placement and finishing methods; compaction requirements; and quality control measures
- J. Quality control checklist

For items E, F, G and I above, include illustrative photographic examples of acceptable work as well as illustrative photographic examples of issues to avoid that can lead to unacceptable work. For unacceptable work examples, provide descriptions of avoidance measures.

Quality control measures shall include testing equipment and frequency of measurements.

The contractor shall submit a completed quality control checklist and installation documentation to the Engineer immediately following completion of each joint installation. The checklist shall include the date and time when the joint installation began; weather conditions; and all QC measurements taken along with the time of each measurement. The installation documentation shall include photo documentation of the joint width and midpoint depth dimensions at each end of the joint prior to the binder coat as well as documentation of issues that arise during work (attach photographs if available) and steps taken to resolve each issue. The checklist shall be signed by the contractor's employee responsible for supervision of the joint installation.

The Engineer may conduct supplementary sampling and testing of the polymer modified expansion joint binder. If required, provide sample with project number, date, time, location, manufacturer and lot number of the adhesive.

846.04 Surface Preparation. After all paving operations are complete, saw cut full depth of any asphalt overlay or no less than two inches deep for monolithic concrete and twenty inches wide centered over the joint opening. Remove all material, including water-proofing material between the transverse saw cuts. For cuts in monolithic concrete, abrasive blast clean the entire cutout area to remove contaminants and loose aggregates. Thoroughly clean and dry exposed concrete, steel and cut surfaces using compressed air and a hot compressed air (HCA) lance as specified in the installation plan.

If there is an interruption due to weather or other causes, repeat the operation with the HCA

lance immediately before the binder coat operation.

Repair deteriorated joint substrate to the Engineer's satisfaction.

846.05 Bridging Plate Installation. Fill expansion gaps exceeding the maximum size specified in the installation plan with an appropriately sized backer rod. Place backer rod $\frac{1}{8}$ " to $1\frac{1}{8}$ " below the top of the expansion gap. Fill the gap above the backer rod with binder, and spread a 10" wide uniform layer of binder centered over the surface area in the bottom of the cutout.

Center the $\frac{1}{4}$ " x 8" steel bridging plate over the expansion joint and bed into the hot binder. Butt joint the bridging plates to accommodate the entire joint length. Seal butt joints with hot binder. If the installation plan requires locating pins, drill $\frac{1}{8}$ " diameter holes in the center of the joint spaced at 1-ft maximum along the entire length of the joint and install locating pins.

846.06 Binder Coat. Seal all exposed surfaces of the joint with binder. Pour the hot binder over the floor area of the joint and spread to coat all exposed surfaces to the minimum thickness specified in the installation plan. Maintain the binder temperature as specified in the installation plan during application. Heat the binder in a double jacketed oil melter equipped with a continuous agitation system, temperature controls and calibrated thermometer.

Provide a system for accurately measuring the weights of the binder and aggregate.

846.07 Aggregate Preparation. Heat the aggregate to the manufacturer's recommended temperature range in a rotating drum mixer using an HCA lance or a pressure air injection torch (PAT).

846.08 Material Installation. Mix, place and finish the aggregate/binder material according to the installation plan.

Broadcast fine dry aggregate over the hot binder surface to eliminate material tracking as specified in the installation plan.

846.09 Maintenance of Traffic. If necessary to facilitate traffic maintenance, install the joint in two partial width phases. During the second phase of construction, remove a minimum of 2" of the previously installed joint at the phase line. Schedule all operations so that all lanes can be opened to traffic according to the project requirements.

846.10 Method of Measurement. The Department will measure these joints to the nearest cubic foot. The Department will determine the quantity by calculations from field dimensions or by plan dimensions if photo documentation of the joint dimensions, 846.03, is not provided.

846.11 Basis of Payment. The Department will pay for repair of deteriorated substrate as Extra Work according to 109.05 when pay items for this work are not included in the Contract. The Department will pay for accepted quantities completed in place at the contract price as follows:

Item	Unit	Description
846	Cubic Foot	Polymer Modified Asphalt Expansion Joint System

Designer Note:

The plans shall show a plan view and cross-section of each polymer modified asphalt expansion joint location on the bridge. The plan view shall provide the station of the joint centerline at the centerline of construction, skew angle and dimension its length as measured along the centerline of the joint. The cross-section shall dimension the width and thickness of the joint, width of the expansion gap and other significant joint details.