

ITEM 567.97102025 - HOT POURED POLYMER MODIFIED BITUMEN BINDER BRIDGE JOINT

1. DESCRIPTION:

- 1.01 This work shall consist of furnishing and installing a polymer modified asphalt binder and select aggregate bridge joint system into prepared expansion joint blockout locations as shown on the plans, or as directed by the Engineer. The bridge joint system shall provide a flexible waterproof bridge joint capable of accommodating all deck expansion - contraction movements of up to two (2) inches while maintaining a durable continuous load bearing surface.
- 1.02 All work and materials related to the removal of the existing joint material and creating the joint block out recess shall be included in this item. Additional work to repair the concrete deck outside the limits of the joint recess shall be paid for under a separate item.

2. MATERIALS:

- 2.01 The supplier of the bridge joint system shall furnish the following: Polymer Modified Bituminous Binder, Select Aggregates, Backer Rod, Bridging Plate, Locating Spikes, and materials for sealing the expansion gap at curbs, parapets and sidewalks.

All materials and installations shall be supplied by one of the following:

Linear Dynamics, Inc.
400 Lanider Plaza
Parsippany, NJ 07054
[REDACTED]

Watson Bowman Acme Corp.
95 Pineview Drive
Amherst, NY 14228
[REDACTED]

Joint System: Expandex

or

The D. S. Brown Company
300 E. Cherry Street
North Baltimore, OH 45872-0158
[REDACTED]

Roaron Construction Ltd.
19747 Telegraph Trail, Unit #4
Langley, British Columbia, Canada
[REDACTED]

Joint System: Matrix 502

Joint System: Deery Flexible
Bridge Joint

No other materials or installers will be allowed. All reference to Suppliers/Installers shall be for the above mentioned companies.

The Contractor shall furnish a manufacturer's certification that the materials proposed for use on the project have been pretested and will meet the requirements as set forth in the manufacturer's current literature.

The binder for use shall be a polymer modified bituminous material which shall meet or exceed the requirements of ASTM D-3405, and AASHTO M-301, and manufactured under the Supplier's strict quality control procedures.

The aggregate for use shall be of the Basalt, Gabbro or Granite groups, as per the manufacturer's recommendation. All stone shall be double-washed, dried and delivered to site pre-weighed in labeled packages.

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2. MATERIALS: (cont'd)

2.01 (cont'd)

Backer rod, used to control the depth of the binder material in the joint gap, shall be closed cell foam expansion joint filler, compatible with polymeric binder and the elevated application temperatures of the binder. The size of the backer rod shall be in accordance with the Suppliers recommendations for the existing expansion gap width and the anticipated expansion - contraction movements at each joint.

Bridge plates shall be mild steel, cut in 3 feet to 5 feet lengths. The thickness and the width of the plates shall be as recommended by the supplier. Holes for the locating spikes shall be provided along a longitudinal centerline, at 1 foot intervals. No plate shall be cut to a length of less than 1 ½ feet

The locating spikes shall be a minimum of 2 inches long and shall be hot dipped galvanized.

- 2.02 The Contractor shall be required to acquire a Performance Bond insuring all materials, workmanship, and the performance of the specified product and the Suppliers/ Installers for the two year period. This Performance Bond shall be effective immediately after the acceptance of the Joint System as specified in the Method of Measurement, and shall extend for a two year period from the acceptance date.

During this performance period any failures indicated by the Authority shall be repaired or replaced by the Contractor as determined by the Chief Engineer, at no cost to the Authority.

Failure shall be interpreted to mean any visible signs of cracking or debonding of the joint material or lack of a watertight seal.

This Bond must be transferable to the Municipality or Agency designated by the Authority.

3. CONSTRUCTION DETAILS:

- 3.01 A. At least two weeks before performing any work, the Contractor shall inform the Engineer, in writing, as to which joint system is being used. The Supplier/Installer shall acknowledge, in writing to the Authority, that they have reviewed all plans, details and project specifications.
- B. The Contractor shall supply the Engineer with the Supplier installation instructions, at least two (2) weeks prior to the anticipated installation of the joint system. These instructions shall show all details associated with the installation of the joint system including the preparation of joint recess, installation of backer rod, binder and plating operations, aggregate mixing and placement details and final finishing requirements. All work to anchor and install the joint system shall be accomplished as per these instructions. Any deviations from these instructions shall be submitted to the Engineer, in writing, for approval.

The expansion gap at curbs, parapets, and sidewalks shall be sealed as detailed on the plans.

An experienced Technical Representative employed by the Supplier shall be present during all phases of surface preparation, and material installation. The representative shall advise both the Engineer and the Contractor regarding proper installation procedures to assure the joint system is installed correctly. No material placement shall be permitted unless the Technical Representative is at the placement site.

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3. CONSTRUCTION DETAILS: (cont'd)

3.01 (cont'd)

- C. No materials shall be installed if the ambient air temperature is expected to be below 40°F at any time during the installation.

Repairs to the joint recess necessitated by the Contractor's operation shall be the Contractor's responsibility and shall be completed at no additional cost to the Authority. Repairs to the joint recess necessitated by deterioration of the concrete not attributable to the Contractor's operations shall be eligible for payment.

If any repairs are necessary, the defective concrete shall be repaired with approved materials, any approval shall be in writing by the Engineer. Failure of the joint as detailed in Section 2.02 due to inadequate repair of the existing substrate shall be considered failure of system to perform and be governed by the repair requirements of Section 2.02.

3.02 **Material Preparation**

- A. **Aggregate:** The aggregate must be dry and clean, and heated in accordance with the Supplier's recommendations in a suitable heated, vented drum mixer. The stone shall be heated to a temperature as recommended by the Supplier and all visible signs of dust must be removed. The temperature of the aggregate shall be monitored with a hand held calibrated digital thermometer or by other means as approved by the Engineer.
- B. **Binder:** The binder shall be heated to the Supplier's recommended pouring temperature. At no time shall the Supplier's recommended safe heating temperature be exceeded. The heating kettle shall be a double oil or air jacketed melter having a continuous agitating system, temperature controls and calibrated thermometer.
- C. **Placement Of Joint Material:** The heated aggregate and binder shall be combined and placed in the blockout area in accordance with the Supplier's requirements. The blockout area shall be overfilled as required to compensate for compaction.

3.03 **Compaction**

- A. The Supplier's Technical Representative shall determine when compaction shall take place. Compaction shall be performed using a vibratory plate or static roller as recommended by the Supplier. The joint surface shall be flush with the existing road surface after final compaction.
- B. **Screeding:** Following compaction a final screed of hot binder shall be applied to the surface of the joint in a manner as recommended by the Supplier/Installer. Prior to the final screeding, the surface of the joint and surrounding pavement shall, if necessary, be dried and cleaned with the hot compressed air lance.

The finished joint shall immediately be covered with a fine dry aggregate or sand to prevent tackiness.

NOTE: Should it not be possible to screed the joint during the same working day/night, the final screeding may be completed on the next working day/night. However, the surface shall be cleaned and dried as described above.

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3. CONSTRUCTION DETAILS: (cont'd)

3.04 Quality Control

- A. The Engineer shall require the Contractor to provide samples of all materials during the course of the work.
- B. The Contractor shall provide the Engineer with certification from the Supplier that the material conforms with the specification set forth in the supplier's current literature. The Supplier shall assume all responsibility for acceptance of the materials, preparation of the joint area, and placement and finishing of the joint. The Engineer shall be provided proper documentation of all materials incorporated into the work. The Engineer shall provide a detailed written report of the joint preparation and installation to the Authority.
- C. **Watertight Integrity Test:** Prior to conducting the Watertight Integrity Test, the Contractor shall provide the Engineer with written evidence that the bridge joint system was installed in accordance with the Supplier's requirements.

The Contractor shall test the entire (full length) joint system for watertight integrity no earlier than 5 work days after the joint system has been fully installed. He shall employ a method satisfactory to the Engineer. The entire joint shall be covered with water, either ponded or flowing, for a minimum duration of 15 minutes. Water tightness shall be interpreted to be no free dripping water on any surface on the underside of the joint. Should the joint system exhibit evidence of water leakage at any place whatsoever, the Contractor shall locate the place(s) of leakage and he shall take any and all measures necessary to stop the leakage. A subsequent Watertight Integrity Test shall be performed subject to the same requirements as the first.

This work shall be done at the Contractors expense and at no additional cost to the Authority. Access for the Engineer to inspect the underside of the joint shall also be provided by the Contractor at no additional cost.

- 3.05 **Contractor Responsibility:** The Contractor shall provide the Engineer in charge with written evidence that the Supplier/Installer has complied with all details of the Specifications and recommendations.

- 3.06 **General Condition:** The Contractor shall install this Bridge Joint System in strict conformity with the Supplier/Installer's instructions and this specification and shall not be permitted to modify the Plan details or Specification without the written approval of the Supplier/Installer and the Authority.

4. METHOD OF MEASUREMENT:

- 4.01 Measurement will be made as the number of linear feet and will include the removal of the existing joint material and asphalt pavement as indicated on the plans and the installation of the new joint system measured horizontally and vertically along the centerline of the joint system.

Complete installation shall be as follows:

- 1. All materials are in their proper position, and show no signs of failure (cracking or debonding).
- 2. Water-tight integrity tests have been performed, and all joints at each location have been deemed water-tight.

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5. BASIS OF PAYMENT:

- 5.01 The unit price per linear foot shall include the removal of the existing joint and pavement materials as indicated on the plans and all labor, materials and equipment necessary to complete the work.
- 5.02 The Contractor shall not receive any payment for this item until delivery and approval of the required Performance Bond by the Authority.
- 5.03 The Contractor shall not receive any payment for this item until the entire joint system has completed the criteria in Sections 2.02 and 3.04.