

SPECIAL PROVISION  
SECTION 520  
EXPANSION DEVICES – NON-MODULAR  
(Asphaltic Plug Joint)

520.01 Description

This work consists of furnishing and installing asphaltic plug joint systems at the locations shown on the Plans, in accordance with these Specifications, and as directed by the Resident. This work shall include furnishing, installation, and removal of all bond breaking materials used to prevent asphalt pavement layers from adhering to waterproofing membrane, all temporary header(s) installed with the intent to form the asphaltic plug joint channel, and all preparation required for the installation of the asphaltic plug joint.

This work shall also include having the approved manufacturer provide a qualified technical representative to supervise the installation of the joint systems. The representative shall instruct, train, and supervise the Contractor's personnel in the proper methods of installation. All costs associated with this service shall be included in the unit price of the work.

520.02 Submittals

Prior to construction, the Contractor shall submit the following to the Resident for review and approval:

(a) Complete and detailed Shop Drawings of the asphaltic plug joint system. Shop Drawings shall include information covering materials, their properties, installation procedures, storage and handling requirements, and Safety Data Sheets.

(b) The resume of the manufacturer's technical representative, which shall include the representative's experience installing the asphaltic plug joint system along with the names and telephone numbers of contact persons for recent projects where technical assistance was provided.

(c) Certified test reports of the asphaltic binder, closed cell foam backer rod, and the plastic compound.

(d) Certificates of Compliance for bridging plates, centering nails, and aggregate.

520.03 Materials

An asphaltic plug joint system from MaineDOT's Qualified Products List for Expansion Devices – Non-Modular (Asphaltic Plug Joints) shall be used.

The bridging plate shall be ASTM A36 steel, a minimum of 1/4 inch thick, and galvanized. Holes for the centering nails shall be approximately 1 foot center to center along the centerline of plates.

Centering nails shall be 16d or larger and hot dip galvanized in accordance with ASTM A153.

#### 520.04 Installation

The asphaltic plug joint system shall be installed in accordance with the manufacturer's latest instructions and this specification. Manufacturer's representatives shall be present during the entire installation to ensure satisfactory results are obtained.

The asphaltic plug joint system shall allow total joint movement for up to 2 inches. The installation shall be centered over the expansion joint gap as indicated on the Plans. It shall not be installed when ambient or substrate temperatures are below 40°F, when rain is imminent, or as directed by the Resident. The area shall be free of dirt, dust, moisture, petroleum, or solvents that might contaminate the joint materials or reduce the bond of the joint system to the substrate or vertical faces. The use of compressed air and heat may be required to dry the area before installing the joint system.

The asphalt pavement layers shall be removed to the required dimensions shown on the plans. The asphalt pavement shall be sawcut to a depth that will not damage the waterproofing membrane, but permit the removal of the asphalt pavement layer. The pavement layer shall be removed in a manner that will not damage the waterproofing membrane. Bond breakers such as interlayers and fabrics, or temporary header(s), may be used with new hot mix asphalt placements to avoid unnecessary sawcuts and protect the waterproofing membrane from damage. The method of attaching temporary header(s) to the concrete deck shall be approved by the Resident. The use of a temporary header shall not be allowed if it will need to be anchored into a precast prestressed concrete member. Should a concrete levelling course be required before installing the bridging plates, and the membrane layer is removed in the process, it shall be replaced before the asphaltic plug joint system is installed. Vertical surfaces of the asphalt pavement layers shall be cleaned to remove all water, dust, or other contaminants.

Backer rods shall be installed in expansion joint openings at a minimum of 1 inch depth or as indicated on the Plans.

Unless otherwise specified by the asphaltic plug joint system manufacturer, liquid asphalt binder meeting the requirements of a 64-28 or 58-28 PGAB shall be used to coat the membrane and bridging plate surfaces.

The binder shall be heated to 350°F to 410°F, or a safe temperature as recommended by manufacturer. Heating kettles shall be equipped with continuous agitation system, temperature controller, calibrated thermometer, and double steel jacket with an oil layer in between, to prevent scorching of the binder. During application, the temperature of the binder shall be maintained at a minimum of 350°F, but not greater than 410°F. It shall be poured and leveled into the expansion joint openings until overfilled, and the excess binder spread over the area covered by the bridging plates.

Steel bridging plates shall be placed from curb to curb on the roadway portion of expansion joints. The plates shall be centered over the joint opening. Centering nails shall be placed in pre-drilled holes and hammered in to secure the plates.

Once the bridging plates are installed, liquid asphalt binder shall be poured and leveled over the bridging plates and adjacent membrane surfaces in a manner that ensures full coverage. Areas with excessive application, such as pooling of liquid, should be removed or dispersed along the joint area.

Asphaltic plug joint system aggregate shall be heated in a rotating drum mixer to a minimum of 350°F but not greater than 410°F, or as recommended by the manufacturer. The thermoplastic polymeric modified asphalt binder shall be added to the mixer to pre-coat the aggregates.

Coated aggregate shall be placed into blockouts in layers as recommended by the manufacturer. Blockouts shall be overfilled with coated aggregate as required to compensate for compaction. Equipment for compaction shall be as recommended by the manufacturer. Additional thermoplastic polymeric modified asphalt binder shall be screeded over the compacted joint to fill all surface voids.

Top dressing aggregate shall be applied per the manufacturer's recommendation.

Plastic compound shall be used for repairing overcuts in bituminous concrete. Cleaning, mixing, and application shall be in conformance to the manufacturer's instructions.

Vehicular traffic may pass over finished joints two-hours after compaction, or as recommended by the manufacturer.

#### 520.05 Method of Measurement

The Asphaltic Plug Joint system will be measured by the linear foot along the top surface of installed joints to the limits shown on the Plans. Preparation of surfaces for the proposed joint system including cutting, grinding, and cleaning will not be measured separately for payment, but shall be incidental to the Asphaltic Plug Joint.

#### 520.06 Basis of Payment

The Asphaltic Plug Joint system will be paid for at the Contract unit price per linear foot, which price shall be full compensation for all labor, materials, equipment, and incidentals required for furnishing and installing the Asphaltic Plug Joint system as shown on the Plans, in accordance with these Specifications, and as directed by the Resident. Payment shall also include all work required to repair the concrete deck where anchors were used with a temporary header, and all patching needed for the waterproofing membrane.

Payment will be made under:

Pay Item

Pay Unit

520.232 Expansion Device - Asphaltic Plug Joint

Linear Foot