How to rehabilitate bridge and terminal joint’s economically and with long term performance

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What do agencies want?

- Long Lasting
- Smoothness
- Cost Effective
- Rapidly Built
- Sustainable
Joint Types

Common Bridge Types

- Beam
- Truss
- Arch
- Suspension
- Cantilever

Joint Types

- Open
- Closed
Open Joints

- Butt Joint
- Sliding Plate Joint
- Finger Joint
Closed Expansion Joints

- Field Molded
- Compression Seal
- Strip Seal
- Cushion Seal
- Inflatable Neoprene Seal
- Modular Elastomeric Joint
- Asphaltic Plug Joint
Design & specifying factors

- Movement Range
- Costs
- Alignment
- Span
- Type of bridge
- History
- Maintenance requirements
- Installation time
No consensus as to which type of closed joints work best. Most common factor considered when design and specifying a particular expansion joint is “movement range”.

Asphaltic Plug Joint is one of the preferred joint types for short to moderate length spans.
Asphaltic Plug Joint
What is it?

- Watertight bridge expansion joint system placed in the deck surfacing layer
- Blend of Polymer Modified Asphalt and select aggregate
- System includes primer, bridging plates, mastic and cover aggregate
- ASTM Specification- D6297
- Two types- Field blended and pre-packaged
Asphaltic Plug Joint
What is it?

[Diagram of asphaltic plug joint with labels such as Wearing Surface, Sealed Expansion Gap, Matrix 501 Mastic, etc.]

Matrix 501 Mastic
Matrix 501 Adhesive Application
Backer Rod
Concrete Deck
Sealed Expansion Gap
Bridge Plate
Wearing Surface (concrete or asphalt)
Top Dressing of Matrix D Type Aggregate
10" (250mm)
10" (250mm)
Approach Slab
Asphaltic Plug Joint
Where is it used?

- Expansion, fixed end, pressure relief, and terminal joints in new construction and rehabilitation projects
- AC and PCC pavement
- Joints with maximum movement of +/- 3/4”
- Joints on skews up to 30 degrees (45 degrees with low ADT)
Asphaltic Plug Joint
FIELD BLENDED

- Material - Multiple component - Aggregate and Binder
  - Requires heating of aggregate
  - Heating of binder
  - Proportioning of aggregate and binder
  - Mixing and heating of aggregate and binder
Asphaltic Plug Joint

Field Blended Material Equipment
Asphaltic Plug Joint
Pre-blended

• Single component- prepackaged / premeasured
• Polymer modified asphalt with select aggregate
• Flexible
• Good extension
• Resists tracking and shoving
Asphaltic Plug Joint

Pre-blended APJ Equipment required
APJ Pre-blended Installation

1. Cutout Prep
2. Clean and dry
3. Seal and Bridge the Joint Expansion Gap / Seal the Blockout
4. Heat & mix pre-blended APJ
5. Place plug joint mixture
Asphaltic Plug Joint

INSTALLATION- Pre-blended Material

- Cutout Preparation
Asphaltic Plug Joint

INSTALLATION - Pre-blended Material

- Clean and Dry
Asphaltic Plug Joint

INSTALLATION- Pre-blended Material

- Seal and Bridge the Joint Expansion Gap / Seal the Blockout
Asphaltic Plug Joint

INSTALLATION
Asphaltic Plug Joint
Asphaltic Plug Joint
Asphaltic Plug Joint

INSTALLATION- MATRIX 501
Asphaltic Plug Joint

Finish lift is leveled to pavement surface and allowed to cool
Asphaltic Plug Joint

INSTALLATION

- Install Surface Aggregate
Asphaltic Plug Joint

Finished Matrix 501 Joint is smooth and waterproof.
Asphaltic Plug Joint

Finished Joint is smooth and waterproof
INDOT terminal joint’s, I 465 ramps
INDOT Greenfield Expansion Joint
INDOT Lloyds Expressway Evansville terminal joint
Installed pricing for Asphaltic Plug Joints range from $75 to $100 dollars a LF with a 2 inch depth and a 20 inch width. $450-700 a cubic foot.
Thank You!!!!

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