

**MATRIX 501 ASPHALTIC PLUG  
 BRIDGE JOINT SYSTEM**

DECEMBER 2019

**READ BEFORE USING THIS PRODUCT**

**GENERAL** The Crafc Matrix 501 Asphaltic Plug Bridge Joint System is a pre-measured, pre-packaged hot-applied bridge expansion joint system primarily composed of uniquely formulated polymer modified asphalt binder combined in one box with the exact ratio of select aggregate. The Crafc Matrix 501 Joint eliminates field measuring; proportioning and mixing required with traditional plug joint systems and provides a watertight, smooth riding joint that can accommodate up to ±1 inch (25 mm) of annual joint movement at the time of installation. The factory blended material is heated and installed in blockouts that are from 2 to 8 inches (5 to 20 cm) deep and 20 to 24 inches (51 to 61cm) wide in either asphalt concrete or portland cement concrete bridge deck surfaces. The density of the blended Matrix 501 is 119 lb./ft<sup>3</sup> (1.9 Mg/m<sup>3</sup>). Simply apply and level the material and then allow to cool. No compaction is required. The Crafc Matrix 501 Joint can be used for expansion, fixed end, and pressure relief joints, in both new construction or rehabilitation projects. The Crafc Matrix 501 Joint can be installed on skews up to 45 degrees and can be used for joint gaps up to 6 inches (15 cm). Crafc Matrix 501 joints are low cost, quick, and easy to install and maintain compared to anchored joint systems and standard field blended plug joints. The Crafc Matrix 501 Joint meets the requirements of ASTM D6297, Standard Specification for Asphaltic Plug Joints for Bridges; detailed Installation Instructions for Matrix 501 available at www.crafco.com. VOC = 0 g/l

**COMPONENTS** The Matrix 501 Asphaltic Plug Bridge Joint System is composed of Matrix 501 Mastic, Matrix 501 Adhesive, D Surface Dressing aggregate, backer rod, bridging plates and locating pins. Details and specifications for these components follow.

**MATRIX 501 MASTIC, Part No. 33345**

Matrix 501 Mastic is a single component blend of a specially formulated polymer modified asphalt binder and aggregate. The mastic is designed to be workable at application temperatures and resistant to segregation and binder flow on bridge surfaces that are sloped, crowned or super elevated. Matrix 501 Mastic requires no compaction and will form a bonded, flexible, extensible, compressible and traffic resistant joint system. The polymer modified asphalt binder in Matrix 501 Mastic meets the requirements of Table 1 ASTM D6297 as follows:

**Test**

Softening Point (ASTM D36)  
 Tensile Adhesion (ASTM D5329)  
 Ductility, 25°C (77°F) (ASTM D113)  
 Cone Penetration, 25°C (77°F)(ASTM D5329)  
 Low Temperature Cone Penetration, -18°C (0°F) 200g, 60s (ASTM D6297, sec 9.1)  
 Flow 60°C (140°F), 5 h (ASTM D5329)  
 Resilience, 25°C (77°F) (ASTM D5329)  
 Asphalt Compatibility (ASTM D5329)  
 Recommended Installation Temperature  
 Maximum Heating Temperature  
 Bond, 100% extension, 12.5 mm, 3 cycles (ASTM D 5329)  
 Flexibility (ASTM D5329)  
 10°F)

**ASTM D6297 Limits**

83°C min  
 700% min  
 400 mm min  
 75 unit max  
 10 unit min  
 3.0 mm max  
 40 – 70%  
 Pass  
 380°F (193°C)  
 400°F (204°C)  
 -7°C (20°F)  
 -23°C (-

Additional properties of the polymer modified binder are as follows.

**Test**

Brookfield Viscosity, 400°F (204°C)(ASTM D4402)  
 Unit Weight at 60°F (15°C)

**Requirements**

4000 cp max.  
 9.3 lbs/gal (1.12 kg/l)

Aggregate in Matrix 501 Mastic is a specially selected hard, durable igneous rock that is screened to a specific gradation. Aggregate is double washed, dried, and bagged, and then combined with binder in one container. Aggregate content of Matrix 501 Mastic is 73 +/- 5%. Gradation of the aggregate in Matrix 501 Mastic is as follows:

Screen Size	Percent Passing
1/2-Inch	100
3/8-Inch	80 – 100
No 10	0 – 15
No 16	0 – 3

**PACKAGING** Product is supplied in cardboard boxes. The package is labeled in accordance with OSHA, GHS, and specification requirements; is sold by net weight; is interlock stacked on 48 x 40 in. (122 x102 cm) 4-way pallets; can be stored outside; and is covered with a

weather resistant pallet covers and 2 layers of UV protected stretch wrap.

- o BOX packaging consists of cardboard boxes containing 40 lb. (18.1 kg) of product with 60 boxes per pallet, weighing approximately 2400 lb. (1088 kg). Boxes contain a quick melting release film for easy removal and are taped closed, without any staples.

**MATRIX 501 ADHESIVE Part No. 33346**

Matrix 501 Adhesive consists of the specially formulated polymer modified asphalt designed to coat the blockout area and provide adhesion. Matrix 501 Adhesive meets the properties of Table 1 in ASTM D 6297.

**PACKAGING** Product is supplied in cardboard boxes. The package is labeled in accordance with OSHA, GHS, and specification requirements; is sold by net weight; is interlock stacked on 48 x 40 in. (122 x102 cm) 4-way pallets; can be stored outside; and is covered with a weather resistant pallet cover and 2 layers of UV protected stretch wrap.

- o BOX packaging consists of cardboard boxes containing 30 lb. (13.6 kg) of product with 75 boxes per pallet, weighing approximately 2250 lb. (1020 kg). Boxes contain a quick melting release film for easy removal and are taped closed, without any staples.

**GRAY SURFACING AGGREGATE, Part No. 33375SA**

Specially selected igneous aggregate that is screened to a specific gradation, double washed, dried and packaged in 50 lb (22.7 kg) bags. Gray Surfacing Aggregate is a fine gradation used to surface the completed joint. Gradation requirements are as follows.

Screen Size	GRAY SURFACING AGGREGATE	% Passing
¼		100
No 4		50 – 90
No 8		10 – 45
No 16		0 – 10

**BRIDGING PLATES**

Steel Bridging Plates are used to span the expansion gap, to function as a bond breaker and to support traffic loads. Bridging plates for expansion gaps up to 3 inches (7.6 cm) wide are ¼ inch (6.4mm) thick, 8 inches (20 cm) wide and between 36 and 60 inches (0.9 to 1.5 m) long. For expansion gaps from 3 to 6 inches (7.6 to 15 cm) wide, plates that are 3/8 inch (10 mm) thick, 12 inches (30 cm) wide and between 36 and 60 inches (0.9 to 1.5m) long shall be used. Plates are to have 3/16 inch (4.8mm) diameter holes along the centerline spaced at 1 ft (30cm) intervals for placing locating pins to aid in centering the plate over the joint gap. Plates are cut during installation to required lengths to cover the entire length of the joint gap.

**LOCATING PINS**

16D galvanized common nails are placed through the holes in the bridging plates and down into the expansion gap opening to center the plate in the joint.

**BACKER ROD, Part No. 34609**

A closed cell heat resistant backer rod used to provide back up in the expansion gap. Backer rod is 2 inch (5cm) diameter, supplied in 6 ft (1.8m) lengths and meets requirements of ASTM D5249, “Standard Specification for Backer Material for Use with Cold and Hot Applied Joint Sealants in Portland Cement Concrete and Asphalt Joints, Type 1”. If required for narrow or wide expansion gaps, other diameters can be used.

**TYPICAL INSTALLATION** Figure 1 shows a typical installation of the Matrix 501 Asphaltic Plug Bridge Joint System. Locations for each of the components are shown.

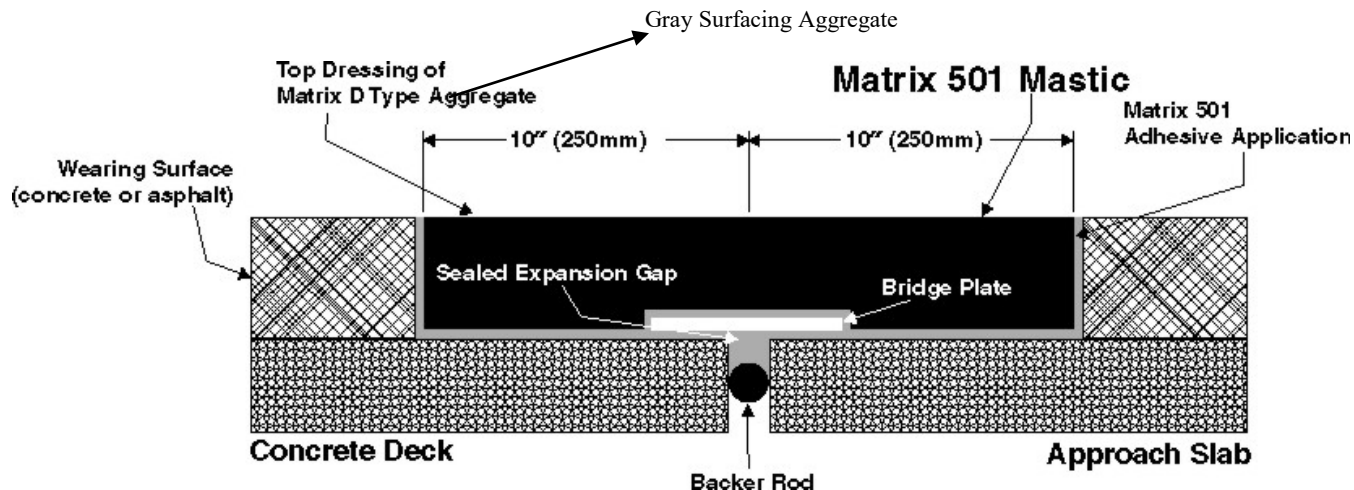


Figure 1. Typical Matrix 501 Asphaltic Plug Bridge Joint System Installation

For complete detailed installation procedures, refer to the “Installation Instructions for Matrix 501 Asphaltic Plug Bridge Joint System”.

**WARRANTY** CRAFCO, Inc. warrants that CRAFCO products meet applicable ASTM, AASHTO, Federal or State specifications at time of shipment. Techniques used for the preparation an installation are beyond our control as are the use and application of the products; therefore, CrafcO shall not be responsible for improperly applied or misused products. Remedies against CrafcO, Inc., as agreed to by CrafcO, are limited to replacing nonconforming product or refund (full or partial) of purchase price from CrafcO, Inc. All claims for breach of this warranty must be made within three (3) months of the date of use or twelve (12) months from the date of delivery by CrafcO, Inc. whichever is earlier. There shall be no other warranties expressed or implied. **For optimum performance, follow CrafcO recommendations for product installation.**

