

ITEM 516 EXPANSION AND CONTRACTION JOINTS JOINT SEALERS AND BEARING DEVICES

- 516.01 Description**
- 516.02 Fabrication**
- 516.03 Coating**
- 516.04 Materials**
- 516.05 Expansion and Contraction Joints**
- 516.06 Joint Sealers**
- 516.07 Bearing Devices**
- 516.08 Method of Measurement**
- 516.09 Basis of Payment**

516.01 Description. This work consists of fabricating, assembling, constructing, coating, and installing expansion and contraction joints, vertical extension of structural expansion joints, joint sealers, or bearing devices of the type and size specified.

516.02 Fabrication. Fabricate metal joint armor and metal bearings according to Items 513. Select a fabricator that is at least pre-qualified at level SF. The City will base final acceptance of fabricated members on the Engineer’s approval that the fabricated items that can be successfully incorporated into the structures. Submit mill test reports for structural steel, steel castings, bronze, and sheet lead certified according to 501.06.

516.03 Coating. Coat exposed steel bearings according to Items 513 and 514 that are to be attached to structural steel. Galvanize bearings according to 711.02 that are to be attached to concrete beams.

Coat metal parts of expansion joints with metalized 100% zinc wire. Prepare the surface to be coated and apply coating as required by The Society of Protective Coatings SSPC-CS-23.00(1). Apply coating to a minimum thickness of 6 mils.

Repair metalized coatings damaged during fabrication by removal of the damaged coating and reapplication as specified above. Repair metalized or galvanized coatings damaged during shipping, construction, or field welding according to 711.02.

516.04 Materials. Furnish materials conforming to:

Structural steel.....	513
Bearing bolts and anchor rods	711.10
Painting	514
Joint sealer, hot applied.....	705.04
Preformed elastomeric compression stager	705.11
Steel castings.....	711.07
Sheet copper	711.15
Bronze	711.16, 711.17, 711.18
Sheet lead.....	711.19
Preformed bearing pads.....	711.21
Elastomeric bearings	711.23

Preformed fillers.....	705.03
Swedged anchor bolts or bars*	711.10

* Fabricated by deforming a minimum of 20 percent of the embedded bolt surface with deformations whose radial dimensions are 15 to 20 percent of the bar diameter.

516.05 Expansion and Contraction Joints. Ensure that expansion joints are completely open for the dimension specified for their full length. Remove stones, forms, or other materials that interfere with expansion.

Finish the surface adjacent to preformed expansion joints to a smooth, uniform surface. Use methods that do not interfere with the free compression of the joint material to anchor the expansion joint materials. The joint material shall neatly fill the space, and have a uniform thickness for the full extent of the joint.

516.06 Joint Sealers. Before applying joint sealer to the surface, clean the concrete of foreign matter, curing compounds, oil, grease, dirt, free water, and laitance and clean steel by sand blasting.

Apply joint sealer with a minimum depth of 1 inch (25 mm) at its thinnest section. Fill joints to within 1/4 inch (6 mm) of the roadway surface.

Separate joint sealer from contact with asphalt concrete using a barrier of foil or other material that is impervious to the joint sealer.

As required to prevent bonding of the joint sealer with a joint surface, place a suitable bond breaker barrier before applying the joint sealer.

Remove joint sealer that did not bond to the joint face as intended within 24 hours after placing. Clean the joint by sandblasting and reseal the joint.

Mix and place joint sealer according to the manufacturer's instructions. Provide the Engineer with a copy of the manufacturer's instructions.

Protect joint sealer with an impervious masking tape during the application of concrete protective coatings containing mineral spirits.

516.07 Bearing Devices. For sliding plates, lubricate the sliding surfaces with flake graphite, and superimpose plates on each other with their edges flush.

Accurately set the level and alignment of elastomeric bearings, bearing plates, and bolsters. Set bearing plates and bolsters on 1/8-inch (3 mm) thick sheet lead, conforming to 711.19, or on 1/8-inch (3 mm) thick preformed bearing pads, conforming to 711.21.

Set bearing plates or bolsters on bridge seat areas that are flat and smoothly finished. If the bridge seat area is high or uneven, use a bushhammer or grinder followed by thin film of portland cement mortar or paste to fill the pitted surface to bring the seat area to the proper elevation and provide a level, even surface. If the bridge seat area is low, use steel plate shims of the same bearing area as the bearing plates and bolsters to bring the seat area to the proper elevation.

Set elastomeric bearing pads directly on the concrete surface.

Position rockers, elastomeric bearings, and rollers so that, when the completed bridge is at 60 °F (16 °C), the rockers and elastomeric bearings are vertical and the rollers are centered on the base.

516.08

Set anchor bolts for bearing devices that are clear of the beam or girder flanges, in the concrete after erecting the main structural steel, except as specified below for bearing devices at abutments. Place reinforcing steel in the bridge seat to not interfere with the drilling of anchor holes. Accurately set anchor bolts in the holes and embed the anchor bolts in cement mortar. Until the anchors' are installed, prevent water from entering and or freezing in the anchor bolt holes.

If structural steel interferes with the setting of the anchor bolts, set the anchor bolts before erecting the steel. The Contractor may determine the location of the bolts by using a template and form holes or embed the bolts when placing concrete or, drilling holes in the hardened concrete.

Install anchor bolts to project at least ¼ inch (6mm) beyond the nut when tightened. Damage or burr the threads on the projecting end of the bolt after the nut is tightened. The bolt threads shall not extend to the planes of the contact surfaces between the connected parts. Include the length of two additional threads to the specified thread length of the bolt to allow for thread runout. Washers no thicker than ¼ (6mm) are permitted under the nut.

Permanently fasten bearing devices to the abutments, steel beams, or girders after backfilling the abutments to within 2 feet (0.6 m) of the top of the bridge seat.

516.08 Method of Measurement. The City will measure the specified items by the number of each, square feet (square meters), pounds (kilograms), or feet (meters) horizontally along the joint centerline and between the outer limits of the fabricated joint.

For deck resurfacing, the City will measure Structural Steel Expansion Joints extending vertically by the actual horizontal length of joint.

516.09 Basis of Payment. The City will pay for accepted quantities at the contract prices as follows:

Item	Unit	Description
516	Foot or Pound (Meter or Kilogram)	Structural Steel Expansion Joints
516	Foot (Meter)	Structural Expansion Joints Including Elastomeric ___ Seals
516	Foot (Meter)	Elastomeric Compression Seals for Structural Steel Joints, ___ Width
516	Foot (Meter)	Folder Copper Strip ___
516	Foot (Meter)	Vertical Extension of Structural Expansion Joints
516	Square Foot (Square Meter)	___ Preformed Expansion Joint Filler
516	Foot (Meter)	Joint Sealer
516	Each, Foot, Square Foot, Pound (Meter, Square Meter, Kilogram)	Bearing Devices
516	Each, Square Foot (Square Meter)	___ inch (___ mm) Elastomeric Bearing Pad
516	Each	Elastomeric Bearing with

516	Each	Internal Laminates Only ____ × ____ × ____ Elastomeric Bearing with Internal Laminates and Load Plate ____ × ____ × ____
516	Square Foot (Square Meter)	1/8-inch (3 mm) Preformed Bearing Pads