

## **SUPPLEMENTAL SPECIFICATION**

### **AMENDMENT TO SECTION 560– PREFABRICATED COMPRESSION SEAL EXPANSION JOINT**

*This supplemental specification replaces Section 560 – Prefabricated  
Compression Seal Expansion Joint.*

**Replace Section 560** with the following:

#### **Description**

**1.1** This work shall consist of fabricating, furnishing and installing one of the following: (a) watertight prefabricated expansion joint utilizing a single preformed polychloroprene elastomeric (neoprene) compression seal, (b) watertight prefabricated expansion joint utilizing a single preformed polychloroprene elastomeric compression seal with a prefabricated plow plates, in accordance with the contract plans, specifications, and the manufacture’s recommendations.

#### **Materials**

**2.1 Compression Seal.** The compression seal shall be polychloroprene elastomeric (neoprene) material conforming to AASHTO M297 (ASTM D3542) and meet the configuration shown on the plans and shall be a product as included on the Qualified Products List. Each seal shall be furnished full length. Splices in the length of an individual seal will not be permitted unless the splices are made at the plant by the manufacturer of the seal with the approval of the Department. The seal material shall be identified with the production date, manufacturer’s name or trademark, and lot number.

**2.2 Steel Members.** Steel members for prefabricated expansion joint and plow plates shall conform to specifications AASHTO M 223/M 223M (ASTM A 572/A 572M) Grade 50. Minor steel plates and stop bars may conform to specifications AASHTO M 183/M 183M (ASTM A 36/A 36M).

**2.2.1** Studs shall meet the requirements of AASHTO M 169 (ASTM A 108).

**2.2.2** All steel members shall be galvanized conforming to Section 550.2.9 and Section 708, Appendix A, 3.2.3, 3.2.4 and 3.2.5. If distortion becomes an issue, an approved zinc rich coating shall be used as approved by the Engineer.

**2.2.3** Anchorage of the compression seal expansion joint to the backwall and deck, between the curb lines, shall be made using a loop rebar attached to a joint support plate and shall be spaced at 1’-0” (300 mm) maximum, as shown on the plans. Brush curb and sidewalk anchorage shall be made of stud anchors and shall be spaced at 1’-6” (450 mm) maximum, as shown on the plans. The anchorage reinforcement shall extend into the backwall or curb reinforcement cage for proper anchorage.

**2.3 Lubricant Adhesive.** Lubricant adhesive shall be a one-part moisture curing polyurethane and aromatic hydrocarbon solvent mixture meeting the requirements of ASTM D4070 for use in lubricating preformed bridge seals for insertion and adhesion to metal and concrete surfaces.

**2.3.1** Each lot of adhesive shall be delivered in containers plainly marked with the manufacturer's name or trademark and shall be accompanied by the manufacturer's affidavit attesting conformance with the specification.

#### **2.4. Bolts for Plow Plates and Anchor Rods.**

**2.4.1** Bolts for the plow plates in roadway shall be ¾" diameter high-strength hexhead bolts conforming to ASTM A325, galvanized.

**2.4.2** Anchor rods shall conform to ASTM 307, galvanized.

### **Construction Requirements**

**3.1 General.** The expansion joint assembly shall be fabricated at an AISC certified plant with a certification in accordance to Section 550.3.2.

#### **3.2 Fabrication.**

**3.2.1 Submittals.** Shop fabrication drawings showing all details of the complete expansion joint assembly, such as dimensions, anchorage and welding procedures shall be submitted for approval in accordance with 105.02. Approval of the shop fabrication drawings shall be required prior to the manufacture of the assembly. Detailed welding procedures shall be considered an integral part of shop fabrication drawings and shall be submitted for approval along with the shop fabrication drawings. The shop fabrication drawings shall indicate the welding procedure to be used for each weld shown. The name of the manufacturer of the elastomeric compression seal shall be shown on the shop fabrication drawings. Original shop fabrication drawings, corrected, shall be delivered to the Department before the final payment is made.

**3.2.1.1** The manufacturer instructions for the proper installation of the joint system shall be shown on the shop drawings. Shop drawings that lack the manufacturer installation instruction, may be returned without approval.

**3.2.2** Fabrication and workmanship shall be performed in accordance with the applicable provisions of 550.3.

**3.2.3 Preblast.** All steel elements shall be blast cleaned before fabrication in conformance with the requirements of SSPC-SP 10, Near White Blast Cleaning. At the fabricators option, surfaces to be welded may be ground to bare metal. If the product is to be galvanized, blasting is not required before galvanizing.

**3.2.4** Welding of steel shall be performed in accordance with 550.3.6. Welding shall be performed by prequalified welders and welding operators.

### **3.2.5 Stud Welding.**

**3.2.5.1** Studs shall be welded using automatically-timed stud welding equipment in accordance with AASHTO Welding Specifications, Section 7 (see Section 550.3.6.10). Welding by SMAW is an option only if approved by the Department.

**3.2.5.2 Automatic equipment.** Studs shall be welded with automatically timed stud welding equipment connected to a suitable source of direct current straight polarity power. Welding voltage, current, time, and gun settings for lift and plunge should be set at optimum settings, based on past practice, recommendations of stud and equipment manufacturer, or both. AWS C5.4, Recommended Practices for Stud Welding, should also be used for technique guidance.

**3.2.5.3 Testing.** The first two welded studs installed and ten percent (10%) of the remaining studs shall be tested. The test shall consist of bending the studs, after they are allowed to cool, to an angle of approximately 15 degrees from their original axes by either striking the studs on the head with a hammer or placing a pipe or other suitable hollow device over the stud and manually or mechanically bending the stud. If any studs fail the test, then all studs shall be tested. Acceptable bent studs shall be left in the bent position.

**3.2.6** Shipping and adjusting devices required to ship, install, and adjust the joint assembly on the bridge shall be provided at approximately 4 ft. (1 m) spacings and shall be furnished and installed by the fabricator.

**3.2.7** The joint system shall be fabricated by the manufacturer and delivered to the bridge site completely assembled, unless otherwise specified in the contract documents. The compression seal will be clearly identified for the corresponding joint location .

### **3.3 Inspection.**

**3.3.1 Notice.** The fabricator shall give ample notice (two weeks minimum) of the beginning of work so that arrangements can be made for inspection. No materials shall be fabricated before the Engineer has been so notified.

**3.3.2** The Department will inspect the fabrication of expansion joints. This inspection will include the examination of materials, welding, testing, work procedures, painting, and the final fabricated product.

**3.3.3** The Engineer may waive shop inspection and make a complete inspection at a later stage in the construction sequence.

**3.3.4** The Engineer shall visually inspect the seal material to confirm size, configuration, and identify possible defects in seal due to manufacturing or shipment. Any seal with defects shall be replaced at the Contractor's costs.

**3.3.5** When the materials are delivered to the job site, the manufacturer shall provide a certification to the Engineer that all materials meet the specification requirements.

**3.4 Installation.** The joint assembly shall be installed in the bridge as shown on the plans, in strict accordance with the manufacturer's written instructions along with the advice of their qualified representative.

**3.4.1** Class AA concrete shall be placed as blockout filler as directed.

**3.4.2** The joint system shall be set to line and grade and 1/8" lower, with vertical offset as detailed on the plans, ensuring that the system's uppermost plane parallels the finished roadway profile.

**3.4.3** In order for the expansion joint to be installed properly, it must be set at a width that is directly dependent upon the ambient temperature at the start of installation under the direction of the Engineer, as shown on the contract plans. The width setting shall be accomplished through the use of mechanical devices supplied by the fabricator.

**3.4.4** Cleaning the mating surfaces of the steel elements shall be performed just prior to installing the seal. The steel and seal surfaces shall be cleaned in accordance with the manufacturer's recommendations.

**3.4.5** Immediately after the joint has been secured to the structural steel and the abutment, the shipping and adjustment devices shall be removed and any bolt holes plug welded. Any welds on exposed surfaces shall be ground smooth. Repair any damaged galvanized surfaces according to Section 550.2.9.1.

**3.4.6** The compression seal shall be inserted into the joint with tools that will not damage the seal and will place the seal at the proper level in the joint. The seal shall be installed in the joint without stretching.

**3.4.7** The depth of setting the compression seal below the joint surface is critical to its performance. The seal shall be set in accordance to the depth indicated on the plans or per manufacturer's recommendation.

**3.5 Watertight Integrity Test.** At least five work days after the joint system has been fully installed, the Contractor shall test the entire (full length) joint system for watertight integrity employing a method satisfactory to the Engineer. The entire joint system shall be covered with water, either ponded or flowing, for a minimum duration of 15 minutes. The concrete surfaces under the joint shall be inspected, during this 15 minute period and also for a minimum of 45 minutes after the supply of water has stopped, for any evidence of dripping water or moisture. Water tightness shall be interpreted to be no free dripping water on any surface on the underside of the joint. Patches of moisture shall not be cause for non-acceptance.

Should the joint system exhibit evidence of water leakage at any place whatsoever, the Contractor shall locate the place(s) of leakage and take all measures necessary to stop the leakage. The repair procedure shall be recommended by the manufacturer and approved by the Engineer. This work shall be done at the Contractor's expense. A subsequent water integrity test shall be performed subject to the same conditions and consequences as the original test.

### **Method of Measurement**

**4.1** Prefabricated compression seal expansion joint will not be measured but shall be the linear foot (linear meter) final pay quantities in accordance with 109.11 for expansion joint required as shown on the plans.

**4.2** Prefabricated compression seal expansion joint with plow plates will not be measured but shall be the linear foot (linear meter) final pay quantities in accordance with 109.11 for expansion joints required as shown on the plans.

### **Basis of Payment**

**5.1** Prefabricated compression seal expansion joint are final pay quantity items and will be paid for at the Contract unit price per linear foot (linear meter) complete in place in accordance with 109.11.

**5.2** Prefabricated compression seal expansion joint with plow plates are final pay quantity items and will be paid for at the Contract unit price per linear foot (linear meter) complete in place in accordance with 109.11.

#### **Pay item and unit:**

560.10XX	Prefabricated Compression Seal Expansion Joint (F)	Linear Foot (Linear Meter)
560.12XX	Prefabricated Compression Seal Expansion Joint w/Plow Plates (F)	Linear Foot (Linear Meter)
560.13XX	Prefabricated Compression Seal Expansion Joint – Rehabilitation (F)	Linear Foot (Linear Meter)