

SECTION 00586 - EXPANSION JOINTS, MODULAR

(Follow all instructions and make all edits with "Track Changes" turned on. This Section is not published in the Oregon Standard. If there are no instructions [purple text] above a subsection, paragraph, sentence, or bullet, then include it in the project, unless the item(s) that are included in the subsection, paragraph, sentence, or bullet are not required on the Project and then they should be deleted. In general do not re-number or re-letter subsections when item(s) are deleted. Delete all purple text before preparing the final document. All other modifications to this Section will require ODOT Technical Resource and State Specifications Engineer approval.)

Section 00586 is not a Standard Specification and is included in this Project by Special Provision.

Description

00586.00 Scope - This Work consists of designing, fabricating, testing, and installing modular bridge joint systems (MBJS) according to the geometry and movements shown and specified.

00586.01 Acceptable Manufacturers - Select one of the following pre-approved manufacturers of MBJS:

(List qualified modular bridge joint system manufacturers. Obtain information from the bridge joint specialist.)

_____(manufacturer name)_____, telephone: _____

_____(manufacturer name)_____, telephone: _____

_____(manufacturer name)_____, telephone: _____

00586.02 Design Requirements - Design MBJS according to the AASHTO LRFD Bridge Design Specifications and interim revisions and the following:

- Design and detail MBJS to provide inspection and maintenance access to all internal components.
- Detail MBJS to provide at least 3 inches of concrete, with reinforcement over the top of support boxes. Provide sufficient top plate thickness to prevent concrete cracking over the support boxes.
- Detail MBJS and bridge deck steel reinforcement to assure concrete consolidation can be achieved underneath all support boxes.

- Detail expansion joint seals so that they do not protrude above the top of the expansion joint system under any service condition. Split extrusions may be used at curb upturns.
- Design elastomeric or urethane springs and bearings to be removable and replaceable. Furnish extruded elastomeric seals that can be removed and reinstalled from above the joint with at least a 1 1/4-inch gap width. Install seals in one continuous strip, extending across the full roadway width and into the curbs without splices.
- Design MBJS to be watertight.
- Design and detail MBJS to accommodate all movements shown.
- Design and detail a steel cover plate for facilities with a pedestrian access route (as defined in 00759.00), Temporary Pedestrian Accessible Route, or Multi-Use Path intended for pedestrian travel. Hot-dip galvanize the steel plate and furnish a slip-resistant surface or coating. Limit the elevation change between the steel plate and deck surface with a vertical face to 1/4 inch not to exceed 1/2 inch. When the elevation change is greater than 1/4 inch, bevel the steel plate corners to a slope not steeper than 1V:2H.

00586.03 Submittals - Submit stamped Working Drawings, design calculations, and the following for the MBJS:

- Plan, elevation, and section of the MBJS for each movement rating and bridge deck width. Specify all dimensions and tolerances.
- Sections showing all materials composing the MBJS with complete details of all individual components including all bolted and welded shop splices and connections.
- All ASTM, AASHTO, or other material designations.
- Installation plan including sequence, lifting mechanisms and locations, details of temporary anchorage during setting, temperature adjustment devices, opening dimensions relative to temperature, installation details at curbs, and seal installation details.
- Plan for achieving and testing water tightness.
- Details and material designations pertinent to the corrosion protection system.
- Requirements and details related to temporary support of the MBJS for shipping, handling, and job site storage.
- Design calculations for all structural elements including all springs and bearings. Include calculations for fatigue design for all structural elements, connections, and splices.
- Welding procedures comply with AWS D1.5.
- A written maintenance and part replacement plan, including drawings, to facilitate replacement of parts subject to wear. Include a list of parts, instructions for maintenance inspection, acceptable wear tolerances, methods for determining wear, procedures for replacing worn parts, and procedures for replacing seals.
- Any required modifications to blockout reinforcing steel to accommodate the MBJS.
- Design and details for MBJS temperature adjustments. Specify each MBJS gap width set to correspond with the ambient temperature at the time of setting.
- Design and details for positioning the MBJS in the block-outs to provide a minimum of 3 inches clearance between the block-out surface and the bottom of support boxes for concrete placement.

- Documentation that the manufacturer is certified through the AISC Quality Certification Program under the category Highway Component Manufacturer.
- Documentation that welding inspection personnel are qualified and certified as welding inspectors according to AWS QC1.
- Documentation that personnel performing nondestructive testing (NDT) are qualified and certified as NDT Level II under the American Society for Nondestructive Testing (ASNT) Recommended Practice SNT-TC-1a.
- Manufacturer's certificate of compliance for all polytetrafluoroethylene (PTFE) sheeting, PTFE fabric, and elastomer.
- Certified mill test reports for all steel and stainless steel in the MBJS assemblies.
- Certified test reports confirming that the springs and bearings meet the design load requirements.
- A Quality Assurance Inspection program performed by an independent inspection agency provided by the MBJS manufacturer. Include the name of the independent inspection agency, details of the proposed inspection program including inspection frequency, and all applicable reporting forms.
- A temporary bridging method for each MBJS where traffic is anticipated to cross before joint concrete has fully cured.

Materials

00586.10 Materials - Furnish MBJS Materials meeting the following requirements:

Elastomeric Strip Seal	02440.20
Lubricant and Adhesive	ASTM D4070
Polytetrafluoroethylene (PTFE)	02570.10
Stainless Steel Sliding Surfaces.....	02570.10
Structural Steel.....	02530.20

00586.20 Tests - Test MBJS according to AASHTO *LRFD Bridge Construction Specifications*, Appendix A19. Perform the following tests:

- Open Movement and Vibration (OMV) Test
- Seal Push-Out (SPO) Test
- Fatigue test

Labor

00586.30 Manufacturer's Representative - Provide a manufacturer's representative on-site during installation of each MBJS.

The representative duties include:

- Discussing the Work to be done, the methods of installation, and the required Equipment to use.
- Advise the Engineer and the Contractor on proper installation procedures to assure correct installation of each MBJS.

Construction

00586.40 Installation - Install MBSJ according to the manufacturer's approved Working Drawings and the recommendations of the manufacturer's representative and the following:

- Install each MBSJ to match the finished bridge deck profile and grades.
- Protect each MBSJ from damage and protect concrete blockouts and supporting systems from damage and construction traffic prior to installation. Do not apply any construction loads on the MBSJ until installation is complete.
- Set each MBSJ gap width to correspond with the ambient temperature at the time of setting.
- Remove all forms and debris that may impede movement of the MBSJ.

00586.47 Watertightness Test - Test each MBSJ for watertightness after installation. Flood each completed MBSJ with water to at least 3 inches deep for 1 hour. If leakage is observed, repair the joint at no additional cost to the Agency according to the manufacturer's recommendations. Repeat the watertightness test after repairs are complete.

00586.48 Manufacturer's Representative Certification - When the MBSJ installation is complete and accepted, provide written certification from the manufacturer's representative stating that each MBSJ was installed according to the manufacturer's recommendations and the approved Working Drawings.

Measurement

00586.80 Measurement - No measurement of quantities will be made for modular bridge joints.

The estimated quantities of modular bridge joints are:

(List the structure number and quantities for modular bridge joints. Obtain information from the Bridge Designer.)

Structure	Quantity (Feet)
Bridge No. _____	
Bridge No. _____	

Payment

00586.90 Payment - The accepted quantities of Work performed under this Section will be paid for at the Contract lump sum amount for the item "Modular Bridge Joint Systems".

Payment will not be made before joints have passed the watertightness test. No payment will be made for any Material installed as replacement Material for that removed, unless the Engineer determines that the reason for the removal was beyond the Contractor's control, or that the Plans specifically required the removal.

Payment will be payment in full for designing, furnishing, and placing all Materials, and for providing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

No separate or additional payment will be made for providing the manufacturer's representative.