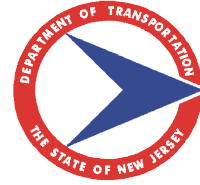


New Jersey Department of Transportation
1035 Parkway Avenue, PO Box 600, Trenton, New Jersey 08625-0600



Baseline Document Change Announcement

ANNOUNCEMENT: BDC21S-08

DATE: November 18, 2021

SUBJECT: Modular Expansion Joint Assemblies
- **Revision to the 2019 Standard Specifications for Road and Bridge Construction, Subsection 105.05 & Subparts 507.03.01 and 914.04.03.**

Subsection 105.05 & Subparts 507.03.01 and 914.04.03 of the 2019 Standard Specifications for Road and Bridge Construction have been revised in order to clarify the requirements and responsibilities of the Designer and Fabricator of the Modular Expansion Joint Assembly design, testing, materials, and fabrication.

The following revisions have been incorporated into the Standard Inputs (SI 2019):

105.05 WORKING DRAWINGS
TABLE 105.05-1 IS CHANGED TO:

Table 105.05-1 – Working Drawing Submission Category

Certified	Approved
Breakaway I-Beam GA Sign Support Posts	Catalog Cuts (related to landscape Items)
Bridge Drainage	Change in Structural Steel Details
Bridge Railing and Fencing Anchorage System	Change of Prestressed Concrete Strand Patterns
Catalog Cuts	Demolition Plans
Composite Piles	Erection Plans
DMS Sign Support Structure	High Load Multi-Rotational (HLMR) Bearings
DMS Standard Ground Mounted	Isolation Bearings
Elastomeric Bearings Pads	ITS System Drawings, including Block Diagrams
Electrical Items Not Pre-Qualified	Machinery and Electrical Items for Movable Bridges
Expansion Joint Assemblies (except Modular Expansion Joint Assemblies)	Mechanically Stabilized Earth (MSE) Walls
Precast Prestressed Concrete Beams and Piles Fabrication	Modular Expansion Joint Assemblies
Reinforced Elastomeric Bearings	Other work shown on the Plans as conceptual
Sign Legends	Precast Concrete Arch Structures
Sign Support Structures	Precast Concrete Box Culverts

Structural Steel Fabrication

Prefabricated Modular Walls

Stay-In-Place Forms

Temporary Sheeting and Cofferdams

Temporary Shielding

Temporary Structures

Value Engineering Plans

507.03.01 Joint Assemblies**A. Working Drawings.****PART A IS CHANGED TO:**

Submit working drawings for approval, as specified in 105.05, for modular expansion joint assemblies. Submit working drawings for certification, as specified in 105.05, for strip seal expansion joint assemblies, preformed elastomeric joint assemblies, and other types of expansion joint assemblies. Finger joint assemblies are not allowed. As a minimum, indicate the following information on the working drawings:

1. Plan, elevation, and section of the joint system for all movement ratings and roadway width limitations, as well as relative dimensions and tolerances.
2. All ASTM, AASHTO, or other material designations.
3. Method of installation including sequence of installation, relative temperature settings, setting anchorage, and installation at curb lines.
4. Corrosion protection system or material.
5. Details of temporary supports for shipping and handling. Include lifting mechanisms and locations.
6. Design calculations for all structural elements. As warranted, include fatigue design calculations and strength design calculations. Indicate locations of all welded splices.
7. Design the joint system as one continuous unit without field splices. If due to shipping or construction requirements, splices are necessary indicate that the locations of the splices are to be in areas outside the main traffic lanes. Provide field splicing procedures.
8. Ensure that the removal and reinstallation of the strip seal can be accomplished from above the joint without full closure of the roadway.
9. Ensure that the expansion joint assembly seals do not protrude above the top of the joint. Use preformed neoprene strip seals that are mechanically held in place.

In addition, for modular expansion joint assemblies, incorporate the following requirements:

1. Provide the modular expansion joint assembly to accommodate all expected longitudinal movements as well as vertical and horizontal rotations. Incorporate strip seal glands with a maximum movement range of 3.15 inches per seal. Support centerbeam(s) with an independent support bar that is welded to the centerbeam. Suspend the support bars over the joint opening by sliding elastomeric bearings. Incorporate an equidistant control system that develops its maximum compressive force when the joint is at its maximum opening. Do not use bolted connections between the centerbeams and support bars unless approved by the Designer. If bolted connections are approved, lock them into position after tightening. Provide tightening procedure for Designer's approval to ensure all bolts cannot loosen during the service life.
2. Provide continuous centerbeams without any field splice unless approved by the Designer. If a field splice is inevitable due to a manufacturing constraint, provide a fatigue resistant field splice (welded or bolted, and located away from potential wheel paths) and installation procedure. Submit welding procedure specification (WPS), welder qualification, weld procedure, and QC inspection plans for field welds for Designer's approval. Installation is to be supervised by the Manufacturer and Contractor. If bolted connections are used, provide a bolt tightening procedure and ensure bolt loosening does not happen during service life. Provide continuous strip seals even if centerbeams are spliced.

Verify the blockout location, dimensions, and details shown on contract plans, and ensure that installation of a modular expansion joint assembly shall fit in the blockouts on site.

3. Fatigue test the modular expansion joint assembly, including the transverse centerbeams, support bars, and other structural elements and connections, according to Section 19/A19 of AASHTO LRFD Construction

Specifications. Submit prequalification fatigue test report. Ensure welded (or bolted, if approved) details used in project products match those that have been fatigued tested. When a fatigue test report is not available, welded, or bolted details may be fatigue designed in accordance with Section 14 of AASHTO LRFD Bridge Design Specifications as approved by the Designer.

4. Perform prequalification tests, Open Movement and Vibration (OMV) testing and Seal Push-Out (SPO) testing as specified in 914.04.03 for review and approval by the Designer.
5. Provide the elastomeric springs and bearings to be removable and replaceable in the event maintenance is necessary.

Verify the blockout location, dimensions, and details shown on contract plans, and ensure that installation of a modular expansion joint assembly shall fit in the blockouts on site.

B. Installation.

PART 3 IS CHANGED TO:

3. **Modular Expansion Joint Assemblies.** Modular expansion joint assemblies include preformed neoprene strip seals that are held in place by steel edgebeams and centerbeams, support bars to support the centerbeam and sliding elastomeric bearings. These assemblies contain no bolted connections unless approved by the Designer.

914.04.03 Modular

THE SUBPART IS RENAMED TO:

914.04.03 Modular Expansion Joint Assemblies

B. Materials.

PART 1 IS CHANGED TO:

1. Use structural steel conforming to the requirements of AASHTO M 270M / M 270 (ASTM A 709 / A 709M), Grade 50, or Grade 50W with Zone 2 CVN requirements for centerbeams, supporting beams, and yokes. Use structural steel AASHTO M 270 M / M (ASTM A 709 / A 709M) Grade 36, Grade 50, or Grade 50W for other steel components. Do not use aluminum components.

PART 3 IS CHANGED TO:

3. Use PTFE that is 100 percent virgin material, woven PTFE fabric, or dimpled PTFE conforming to the material requirements in Section 14 of the AASHTO LRFD Bridge Design Specifications, and Section 19 of AASHTO LRFD Bridge Construction Specifications.

THE 2ND PARAGRAPH IS CHANGED TO:

Perform prequalification tests, Open Movement and Vibration (OMV) testing and Seal Push-Out (SPO) testing, according to AASHTO LRFD Construction Specifications Section 19/A19 and provide testing report. Certify that the tested modular expansion joint assembly has passed the prequalification tests required in AASHTO LRFD Construction Specifications.

THE FOLLOWING IS ADDED AT THE END:


Provide certification that materials of bearings, springs, and equidistant devices used in the project product are identical to those used in the prequalification tests in material composition and formulation, and conform to the same manufacturing process, fabrication procedure, and configuration as those used in the prequalification tests. In addition, certify that these materials and fabrication procedures are as per working drawing plans and specifications provided by the manufacturer at the time of approval.

Implementation Code R (ROUTINE)

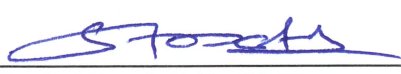
Changes must be implemented in all applicable Department projects scheduled for Final Design Submission at least one month after the date of the BDC announcement. This will allow designers to make necessary plan, specifications, and estimate/proposal changes without requiring the need for addenda or postponement of advertisement or receipt of bids.

Recommended By:

Approved By:



Paul F. Schneider
Director
Capital Program Support



Snehal Patel, P.E., PMP
Assistant Commissioner
Capital Program Management
and State Transportation Engineer

PS: NE: HP