DESIGNER NOTES

*The full text of this Special Provision as presented below is written to be included as a Heading within a Lump Sum item, such as Item 995.01, where Laminated Elastomeric Bearings without Anchor Bolts designed using AASHTO Method B are used. This Special Provision is NOT applicable if the bearing was designed using AASHTO Method A, in which case Section M9.14.5 should be specified without modification.*

*DELETE ALL DESIGNER NOTES, AND REMOVE HIGHLIGHTING PRIOR TO SUBMITTAL*

**LAMINATED ELASTOMERIC BEARING W/O ANCHOR BOLTS (XX-XXXK)**

**DESCRIPTION OF WORK**

The work to be performed under this item shall conform to the relevant provisions of Section M9.14.5 and the following:

**SUBMITTALS**

The Contractor shall submit to the Engineer for approval the following documents:

1. Prior to fabrication:
	1. Written notification in accordance with M9.14.5
	2. Shop drawings for approval in accordance with Section 5.02 of MassDOT’s Supplemental Specifications to the Standard Specifications for Highways and Bridges.
		1. Fabrication shall not begin until the Contractor receives written approval from the Department that the submitted shop drawings have been received.
2. Upon delivery of the bearing pads:
	1. A Certificate of Compliance certifying that the elastomeric bearing pads meet the requirements of the contract specifications.
		1. A Mill certificate and certificate of compliance for the steel laminates shall accompany the bearing pads.
	2. Independent testing results as required below.
	3. Additional elastomeric bearing pads for MassDOT Acceptance testing as required below.

**MATERIALS**

Elastomer: The elastomeric compound shall be composed of 100% low temperature Grade 3 virgin crystallization resistant polychloroprene (neoprene).

Steel Laminates: The steel laminates shall meet the requirements of AASHTO M 251.

Internal Load Plates: The internal load plates shall conform to AASHTO M 270 Grade 36 or Grade 50.

**FABRICATORS**

The National Transportation Product Evaluation Program (NTPEP) shall find the bearing pad fabrication plant to be in compliance with the Elastomeric Bridge Bearing Pad Technical Committee Work Plan. Approved fabricators are listed on the MassDOT QCML.

**FABRICATION**

Bearing pads shall be fabricated in conformance with the “Method B” design method outlined in the AASHTO LRFD Bridge Design Specifications.

The bearing dimensions, including elastomer thickness and edge cover, number and thickness of steel reinforcing laminates, dimensions of load plates (if any), and the design shear modulus of the elastomer shall be as shown on the Plans.

The tolerances on the overall dimensions for the bearings shall be according to Table 2 of AASHTO M 251, except that the tolerance on the overall vertical dimension shall be limited to -0, +1/8” regardless of the design thickness.

**SAMPLING**

Sampling of bearing pads for testing shall be random and performed on a lot basis. Lots shall be divided into sublots of 10 bearings. Acceptance samples shall be independently tested as outlined below. For Verification samples taken by the Engineer at the project, the sampling rate shall be one randomly selected full size bearing pad of each size and type in accordance with Subsection M9.14.5. A lot shall be defined as the smallest number of bearings determined by the following criteria:

1. A lot shall not exceed a single contract quantity.
2. A lot shall consist of bearings of the same size and configuration.
3. A lot shall consist of bearings produced in a continuous manner from the same batch of elastomer and cured under the same conditions.

All pads required for testing purposes in accordance with Subsection M9.14.5 of the Standard Specifications shall be considered as incidental to this item. The quantities listed in the Schedule of Basis for Partial Payment only include the number of bearings required for construction and do not include the additional bearings required for conformance and destructive testing as outlined herein.

**INDEPENDENT TESTING**

Independent testing shall be performed by a nationally recognized testing laboratory approved by the Engineer which shall provide certified test results.  Each Lot of bearings as defined above shall be randomly sampled and tested at the frequency specified under Section 8.5 of AASHTO M 251. The minimum testing shall be in conformance with Sections 8 and 9 of M 251 as specified below:

1. Materials shall meet Section 4 of M 251.
2. Dimensions per Section 8.4 of M 251.
3. Elastomer per Section 8.6 of M 251.
4. Compressive Strain at maximum dead and live load (service) per Section 8.8.1 of M 251.
	1. The compressive deflection of each bearing shall not exceed 10% of the design effective rubber thickness at a compressive load equal to the maximum design load.
5. Short Duration Compression Test per Section 8.8.2 of M 251.
6. Shear Modulus of the Elastomer per Section 8.9.1 of M 251.
	1. The shear modulus shall be between 0.136 and 0.184 ksi.
7. Tensile Strength, Ultimate Elongation per ASTM D412.
8. Shear Bond Strength per ASTM D429.
9. Heat Resistance per ASTM D573.
10. Compression Set per ASTM D395.
11. Low Temperature Brittleness per ASTM D746 for Elastomer Grades 3.

**PACKAGING, HANDLING, AND STORAGE**

The bearing pads shall be packaged, handled and stored in accordance with Section 18.1.3 of the AASHTO LRFD Bridge Construction Specifications. On the top of each completed bearing it shall be clearly identified and marked in accordance with M 251 Section 7. In addition, a 1/32” deep direction arrow shall be inscribed into the bearing which will allow the bearing to be aligned with the up-station direction. All marks shall be permanent and be visible after the bearing is installed.

**INSTALLATION**

The bearing pads and bridge seat bearing areas shall conform to Section 901.65A(3).

**ACCEPTANCE**

Requirements for providing notification to the Department prior to the start of bearing pad production as well as the provisions for random sampling of the bearings by the Department at the job site for additional destructive testing shall be in accordance with M9.14.5 and this specification. The Department shall use the results of the Independent testing as well as their own testing in the Acceptance of the bearing pads.