

Methods Memo No. 32: Elastomeric Expansion Bearings, New AASHTO Method A Rotation Formulas

At the AASHTO committee meetings during May 2001 the rotation formulas for Method A were corrected for steel reinforced elastomeric bearings. The corrected formulas are less restrictive than the Method B rotation formulas used recently by the office to develop new bearing details, and the new formulas permit use of simpler details for many design conditions. Therefore, the office is modifying policy to accept the new formulas immediately.

Modify the Method A rotation formulas (14.6.6.3.5-1) for rectangular, steel reinforced elastomeric bearings to the following:

$$\sigma_{\tau L} \geq 0.5GS \left(\frac{L}{h_{ri}} \right)^2 \frac{\Theta_{m,x}}{n} \qquad \sigma_{\tau L} \geq 0.5GS \left(\frac{W}{h_{ri}} \right)^2 \frac{\Theta_{m,z}}{n}$$

Where:

h_{ri} = thickness of the i^{th} layer of elastomer (inches)

n = number of interior layers of elastomer, where interior layers are defined as those layers which are bonded on each face. Exterior layers are defined as those layers, which are bonded on only one face. [When the thickness of an exterior layer of elastomer is more than one-half the thickness of an interior layer, the parameter, n , may be increased by one-half for each such exterior layer. *This will not apply for the typical Iowa bearings that use an exterior layer one-half the thickness of an interior layer.*]

The new formulas generally will affect the height of expansion bearings shown on OBS Standard Sheets 4541A and M4541A and the details and sizes for similar bearings designed for stub abutments and steel superstructures.

If you have any questions please check with your section leader.

GAN/KFD/ln