<< DEVELOPMENT SECTION BULLETIN >>

No. 13-07-DSB Design for Elastomeric Bearing Rotations
Contact: Boyd Denson
Effective: Immediately for all jobs

Instruction:
The rotation check for elastomeric pads and steel reinforced elastomeric bearings being designed using Method A was eliminated with the 2012 AASHTO LRFD Bridge Design Specification, Sixth Edition. Therefore rotation need not be considered in the design of these bearings.

Background:
This bulletin was created out of a question on when the 0.05 radian allowance for rotational uncertainties specified in AASHTO 14.4.2.1 should be considered. The following provides guidance on when and when not to use the uncertainty allowance. Please note the two situations where rotation is considered are not office practice and would only be considered when Method A designed elastomeric bearings are not feasible and only with the approval of the Structural Project Manager or Structural Liaison Engineer.

1. Use with design Method B at non-integral bents when checking combined compression, rotation, and shear AASHTO 14.7.5.3.3 and determining the need for anchorage for bearings without bonded external plates AASHTO 14.7.5.4.
2. Use with design Method A at non-integral bents when checking rotation of **CDP** AASHTO 14.7.6.3.5b.
3. Don't use when determining the need for shim plates and how much to taper if needed. No allowance for uncertainties should be used when sizing an item based on theoretical displacements since there is no way to predict the orientation of the uncertainty and could therefore induce more stress into the item.
4. Don't use with any type of bearing at integral bents. The rotational limits in AASHTO are not applicable when the superstructure is built integral with the substructure. This is why the bearing design spreadsheet produces a NA next the rotational design check if plain elastomer pads are being considered.
5. Don't use with design Method A with plain and steel reinforced elastomeric pads and FGP pads. The design for rotation in Method A is implicit in the geometric and stress limits given AASHTO.

Reason for Bulletin:
To quickly update design guidance to match AASHTO and be effective until the appropriate EPG section can be updated.

EPG and Design Spreadsheet:
The EPG bearing design criteria is in the process of being reviewed for other updates with the above information being added to these updates. In addition to updating the EPG, the bearing design spreadsheet located on LRFD Design Website will also be updated. With both the EPG and spreadsheet revisions, clear instructions and/or reasoning for the above design criteria will be provided.

Sincerely,

Boyd L Denson, P.E.
Senior Structural Designer
Bridge Division, 573-526-4855