



Minnesota Department of Transportation

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Memo

TO: Bridge Design Engineers
Construction Managers Group (CMG)
Resident Engineers

FROM: Kevin Western *Kevin Western*
State Bridge Design Engineer

DATE: April 12, 2012

MEMO TO DESIGNERS (2012-01): Discontinued Usage of Plain Elastomeric Bearing Pads and Substitution with Cotton-Duck Bearing Pads

In light of some recent excessive deformations of plain elastomeric bearing pads (PEP), the use of PEP will be limited. At this time, the precise cause of the performance issue has not been determined. Further research is being completed by the AASHTO Bearing Committee to isolate the source of the issue. When the research is complete, final guidance on plain elastomeric bearing pads will be issued. The guidance provided in this memo should be used in the interim.

Plain elastomeric bearing pads are used at fixed bearing assemblies and at integral abutments. There will be no change to the use of PEP at integral abutments. Because the bearing pads are confined by the concrete and the polystyrene, the amount of deformation is limited and is not a concern.

For all fixed curved plate bearing assemblies for both steel and prestressed beams, replace the plain elastomeric bearing pad with a cotton-duck bearing pad (CDP) of the same size as required for a PEP. CDP are preformed pads that are produced in large sheets and cut to size for specific bridge applications. CDP are reinforced with closely spaced layers of cotton-duck and typically display high compressive stiffness and strength, obtained by the use of very thin elastomeric layers. These pads are often used on railroad structures due to their high compressive strengths.

Cotton-duck pads must be manufactured and tested under compression in accordance with Military Specification MIL-C-882E, except where superseded by the current AASHTO LRFD Bridge Design Specifications Article 14.7.6.2 or by this memo. The minimum low-temperature grade of elastomer for cotton-duck pads is Grade 3.

This change to the bearing pads is effective for all bridges where the bearings have not yet been installed. For bridges still in the design phase that utilize standard detail B310 or B354, include revised special provision SB2012-3741 that is attached to this memo. For projects that have been submitted to CO, but not yet let, an addendum will be necessary. For projects that have already been let, please coordinate and assist the districts to obtain CDP through the



supplemental agreement process. As a minimum, these changes will be in effect for the entire 2012 construction season. This guidance will remain in place until final guidance supersedes this memo.

If you have any questions contact myself or Arielle Ehrlich at (651) 366-4515.

Thank you.

cc: Dave Conkel/Local Consultants
Dave Dufresne/PACAL Industries, LLC
Bob Timpane/Construction Materials Inc.
Craig Kirks/D.S. Brown
Jim Kochsiek (MS 645)
Steve Grover (MS 645)



Use on all jobs requiring Elastomeric Bearing Pads.

(1) Use where standard details B310 and B354 are used.

Created: 3/22/2002

Revised: 4/12/2012 (7)

SB- (3741) ELASTOMERIC BEARING PADS

Apply the provisions of 3741 except as modified below:

Replace the first sentence in 3741.2A with the following:

Provide elastomer for bearing pads meeting the requirements of AASHTO M 251 with durometer hardness of 60 ± 5 on the Shore "A" scale. Provide elastomer compounds classified as low-temperature Grade 4 meeting the grade requirements of AASHTO *LRFD Bridge Design Specifications*, Table 14.7.5.2-1, "Low temperature Zones and Minimum Grade of Elastomer."

Delete all of 3741.2B1 except for the last paragraph.

Utilize cotton-duck bearing pads (CDP) where standard details B310 and B354 are used. Test and manufacture CDP in accordance with Military Specification MIL-C-882E, except where superseded by the current AASHTO LRFD Bridge Design Specifications Article 14.7.6.2 or by Memo to Designers (2012-01). For CDP, provide elastomer compounds classified as low-temperature Grade 3.

