



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

MEMORANDUM TO: Project Engineers
Project Design Engineers

FROM: G. R. Perfetti, P. E.
State Structures Engineer

DATE: October 24, 2012

SUBJECT: STEEL REINFORCED BEARING PADS

Steel reinforced bearing pads shall be designed in accordance with Article 14.7.5 – Steel Reinforced Elastomeric Bearings – Method B of the AASHTO LRFD Bridge Design Specifications. However, an exception to paragraph four of Article 14.7.5.2 is allowed. For calculations involving the shear modulus, the value specified in the contract documents may be used instead of the least favorable value. Acceptance of the bearing pads will be based on the requirements of AASHTO M251.

The maximum loads and expansion lengths for standard steel reinforced bearing pads presented below have been developed for a specified shear modulus of 0.160 ksi (1.10 MPa). Use loads from the Service I Limit State to select suitable bearing pads from the appropriate table. The following note has been added to Standard Drawings EB1 – EB4:

The elastomer in the steel reinforced bearings shall have a shear modulus of 0.160 ksi, in accordance with AASHTO M251.

Prestressed Concrete Girders (G = 0.160 ksi)		Maximum DL + LL (No Impact) @ Service I Limit State (kips)								
Standard	Max. Expansion	Ratio of Live Load to Total Load (LL/(DL+LL))								
Bearing Pad	Length at the Bearing(ft)	30%	35%	40%	45%	50%	55%	60%	65%	70%
Type II	115	145	140	135	130	125	120	115	110	105
Type III	115	205	195	185	180	170	165	160	155	150
Type IV	140	225	215	210	200	190	185	180	175	170
Type V	160	365	350	335	320	310	295	285	275	265
Type VI	180	420	405	385	370	355	345	330	320	310
Type VII	200	470	445	430	410	395	380	365	350	340

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Steel Beams or Girders (G = 0.160 ksi)		Maximum DL + LL (No Impact) @ Service I Limit State (kips)								
Standard	Max. Expansion	Ratio of Live Load to Total Load (LL/(DL+LL))								
Bearing Pad	Length at the Bearing (ft)	30%	35%	40%	45%	50%	55%	60%	65%	70%
Type I	105	140	135	130	125	120	115	110	110	105
Type II	150	180	170	165	160	155	145	140	135	135
Type III	180	255	245	235	225	220	210	200	195	190
Type IV	215	310	305	295	280	270	260	255	245	235
Type V	235	335	335	330	320	310	295	285	275	270
Type VI	250	375	360	345	330	320	305	295	285	275

This policy is effective for all new projects. Investigate the feasibility of using elastomeric bearing pads designed in accordance with Method B on existing projects on a case-by-case basis. The Design Manual and Standard Drawings have been updated.

GRP/BCH/AAC/gdt

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