BRIDGE DESIGN STANDARD PRACTICES

The following standard practices were established by the Department.

1. Elimination of Weepholes

Section 8.2.1.2 of the Bridge Design Manual will be revised in an upcoming revision to reflect the Department's preference to no longer install weepholes in cast-in-place concrete bridge decks. Plate Nos. 6.1.7, 6.1.8 and 6.1.9 will be eliminated.

2. Seismic Design of Foundation

Section Nos. 4.2.1, 4.3.2 and 4.4 of the Bridge Design Manual will be revised in an upcoming revision to revise the seismic requirements for single span bridges to match AASHTO.

- Section 4.2.1 - Single Span Bridges

  Delete the last sentence; "*New abutments and wingwalls shall be designed for seismic forces. (See Section 4.4)"*

- Section 4.3.2 - Abutments and Wingwalls

  Revise the first sentence to read; "New abutments and wingwalls (excluding single span bridges) shall be designed for seismic forces."

- Section 4.4 - NEW RETAINING WALLS

  Revise the last bullet to read; "A wall supporting a multi-span structure. (such as an abutment)"

3. Bridge Deck Expansion Joints

Section 10.2.4 of the Bridge Design Manual will be revised in an upcoming revision to reflect the Department's preference to use the "Silicone Expansion Joint System" for joint movements between 40 and 80 mm. Neoprene Strip Seals with Elastomeric Concrete Headers should only be used for joint movements between 80 and 100 mm. A copy of the special provision for "Silicone Expansion Joint System" is attached along with the following bridge plates: 7.5.1a, 7.5.1b, 7.5.1c and 7.5.1d.

4. Structure Mounted Sign Supports

The following pending additions to the Bridge Design Manual should be adhered to in all future designs:

- Section 14.1.3 - Design Requirements:

Structure mounted sign supports are, by their nature, complex and difficult to model structures. In all but the simplest cases (small signs with virtually no skew) a rigorous three-dimensional analysis is required.

The analysis of structure mounted sign supports shall, in general, be based on pin connected truss members. However, simplified connections, such as angles welded back to back, can sometimes result in substantial eccentricities from the assumed truss nodes. More detailed analysis taking these eccentricities into account may sometimes be necessary in order to reasonably model the structure.

Structures involving larger sign panels and/or significant skew angles may also require more highly detailed and precisely fabricated designs such as gusset plates and tubular members to eliminate eccentricities at the nodes.

Sufficient members shall be employed to brace the structure in all directions and maintain structural stability under all design assumptions. Horizontal rail elements between trusses should be designed as continuous members.

- Section 14.1.5 - Detail Requirements:

  In general, placement of signs on structure mounted supports is discourage on bridges with skew angles of greater than 30º.

  The height of signs should be kept in reasonable proportion to the height of the sign support frame. Since the bridge superstructure depth limits the height at the frame, this limits the height of sign that can reasonably be supported in this manner. In general, the height of the sign should not exceed twice the height of the frame, particularly on bridges with significant skews.

5. Inventory and Operating Load Ratings for Precast Concrete Box Culverts

Inventory and operating load ratings must be provided for all precast concrete box culverts carrying vehicular traffic. Since the Contractor typically designs these, the contract specifications must contain these requirements.

The analysis shall be performed using the Strength Design Method (Load Factor Method) described in the AASHTO Manual for Condition Evaluation of Bridges. The live load used in the analysis shall be the MS18 truck or lane loading, whichever controls.

The inventory and operating load rating analysis and a summary of the results shall be submitted with the final documents for review.