2009 STATE BRIDGE ENGINEERS’ QUESTIONNAIRE RESULTS
(51 Responses)

Trusses and Gusset Plates

1) How many trusses are in your state?
   2392 number of trusses owned by the state
   8651 number of trusses owned by local agencies

2) What percentage of trusses owned by your state has had a gusset plate detailed inspection and rating completed?
   49% percentage of detailed inspections completed
   20% percentage of ratings completed

3) What percentage of trusses owned by local agencies has had a gusset plate detailed inspection and rating completed?
   25% percentage of detailed inspections completed
   9% percentage of ratings completed

4) Has your state performed any gusset plates repairs or retrofits based on recent truss inspections and ratings?
   21 Yes
   30 No

   If “yes”, please briefly describe the repair or retrofit: Edge stiffening with angles, additional plates, full replacement of gussets, additional HS. Bolts along with bolt/rivet replacements (See website for additional information).

Inspections and Ratings

5) Does your state require all bridge inspections performed by consultants be signed and sealed by a licensed engineer?
   36 Yes
   13 No

6) Does your state require all bridge ratings performed by consultants be signed and sealed by a licensed engineer?
   46 Yes
   3 No

7) Does your state require all bridge inspections performed by in-house staff be signed and sealed by a licensed engineer?
   10 Yes
   39 No
8) Does your state require all bridge ratings performed by in-house staff be signed and sealed by a licensed engineer?
   15    Yes
   33    No

9) Does your state have a procedure for rating precast prestressed deck beam bridges with cracking or delaminations or exposed/corroded strands?
   18    Yes
   31    No

   If “Yes”, Please briefly describe that procedure: Most states reduce the capacity of the beams by not accounting for any strength from any corroded strands. (See website for additional information)

10) Does your state inventory structures less than or equal to 20 feet?
    36    Yes
    13    No

   If “Yes”, at what span length do you start at?
   Many states start at either 5 feet or 6 feet. (See website for additional information)

   If “Yes”, how many of these structures are in your state?
   93,000 number of structures
   Reported by the 36 states

   Does your state have an inspection policy for these structures?
   31    Yes
   14    No

   If “Yes”, what inspection interval is used?
   12    NBIS interval used
   8     Interval determined by structure condition
   11    Other - Describe: (See website for information)

11) Does your state perform load ratings on box culverts?
    28    Yes
    20    No
If “Yes”, what are the parameters for these ratings?
7 Rate all culverts
3 Rate all culverts over 10 feet in span length
12 Rate all culverts over 20 feet in span length
8 Other: Please explain: (See website for information)

What method is used to rate those culverts?
2 Allowable Stress Method
18 Load Factor Method
2 LRFR Method
8 A mixture of all three methods
3 Not applicable

12) Does your state use the Load and Resistance Factor Rating (LRFR) to rate the following?

<table>
<thead>
<tr>
<th>Category</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>All new structures</td>
<td>23</td>
<td>31</td>
</tr>
<tr>
<td>Some new structures</td>
<td>14</td>
<td>31</td>
</tr>
</tbody>
</table>

percentage of new structures rated by LRFR Between 85% and 100%
31 Currently not rating with LRFR

13) If your state is load rating structures using the LRFR method, please indicate which bridge types that your state has rated.
12 Concrete slabs
12 Concrete beams
28 Prestressed concrete beams
22 Steel beams
4 Timber beams
5 Trusses
6 Culverts

14) Has your state had the opportunity to compare the LRFR ratings to the LFR/ASR ratings?
17 Yes
33 No

15) If “Yes”, describe your analysis of that comparison.
3 Ratings are about the same
12 LRFR tends to produce lower rating factors than LFR/ASR
1 LFR/ASR tends to produce lower rating factors than LRFR
16) For long span bridges, has your state considered reducing the number of lanes for live load instead of posting the structure?

   8    Yes
   41   No

Scour

17) How many "scour critical" bridges are in your state?

   9,812 number of "scour critical" bridges on the state system
   27,703 number of "scour critical" bridges on the local system

18) What is the status of Scour Plans of Action (POA) on your state system?

   8,383 (85%) percentage of POAs developed
   7,554 (76%) percentage of POAs implemented

19) What method does your state use for monitoring flooding conditions and initiating callout?

   4   Monitoring and callout from a central location
   19  Monitoring and callout from a regional or district location
   13  Monitoring and callout assigned to a nearby maintenance yard
   4   BridgeWatch
   8   Other commercially available service, Please indentify: (See website for additional information)

20) What field monitoring methods does your state use at flooded bridges? Please check all that apply.

   28   Probing of stream bed
   19   Depth finder or sonar
   1   Float out devices
   21   String line and weights
   20   Stream bed is not monitored but bridge is closed at a specified water elevation
   10   Other, Please describe: (See website for additional information)

21) What is your state’s average response time from callout to initiation of monitoring?

   Hours for response time: Varies from 1 hour to 24 hours (See website for additional information)
**LRFD Live Load**

22) Does your state make any modifications to the HL-93 live load?

- 7 Yes
- 43 No

If “Yes”, please explain that modification: *(See website for additional information)*

23) Does your state require a Strength II design check using a live load based on your state’s design permit truck?

- 16 Yes
- 33 No

If “Yes”, please describe that design permit truck (gross weight, axle loads, and axle spacing): *(See website for various truck configurations)*

**QC/QA Procedures**

24) On average, how many hours does your state use to check bridge plans and computations completed by consultants (based on an average three span continuous structure)?

- # of hours Varies from 1 hour to 200 hours *(See website for detailed information)*

**AVERAGE: 50 hours**

25) Does your state require that construction submittals from the bridge contractor involving the design of items such as cofferdams, sheet piling, steel erection plans, falsework, etc. be signed and sealed by a licensed engineer?

- 47 Yes
- 3 No

**LRFD Design**

26) Has your state developed LRFD Standard Bridge Plans that can be used on bridge projects?

- 16 Yes
- 34 No
If “Yes”, what type of LRFD Standard Bridge Plans are available? Check all that are applicable:

4 Steel Girder Bridges
9 Precast, Prestressed Concrete Girder Bridges
6 Precast, Prestressed Concrete Box Beam Bridges
7 Culverts
8 Others; (See website for other types of bridges)

Are those LRFD Standard Bridge Plans signed and sealed by the State Bridge Engineer?

5 Yes
14 No

27) With the target goal of having all new culverts designed using LRFD by October 1, 2010, has your state implemented the LRFD Specifications for reinforced concrete box culvert designs?

16 Yes
12 No
22 Conversion to LRFD in progress

If “Yes”, what software package is your state using for those designs? (See website for various software)

28) AASHTO now has two documents for seismic bridge design, a force-based design in the LRFD (4th edition and interims) and a displacement-based design in the Guide Specifications for LRFD Seismic Bridge Design. Which document does your state follow?

17 Force-based Document
10 Displacement-based Document
7 Other. Please Explain: (See website)
14 Seismic design not needed in our state

29) Has your state made any modifications to the 400 kip collision load found in Article 3.6.5.1 (Vehicular and Railway Collision for Structures)?

9 Yes
41 No

If “Yes”, please explain that modification: (See website for modifications)

30) Does your state use the AASHTO LRFD resistance factors for deep and shallow foundations?

38 Yes
11 No
If “No”, how did your state develop the resistance factors that you use:
(See website)

31) Does your state use the AASHTO LRFD resistance factors for earth retaining structures?
   37   Yes
   13   No

If “No”, how did your state develop the resistance factors that you use:
(See website)

32) When applying column design moments to footings, does your state include the moment magnification factors, as specified in Article 4.5.3.2.2, from the column design?
   36   Yes
   14   No

33) For shear design of cast-in-place concrete substructure caps, does your state check the longitudinal reinforcement requirements of Article 5.8.3.5 at the support points?
   37   Yes
   13   No

Materials

34) Does your state specify different concrete strengths for precast panels used in mechanically reinforced earth walls and “dry-cast” precast block walls?
   27   Concrete strengths are specified the same
   15   Concrete strengths for MSE precast panels are specified higher than those for precast block walls

35) If your state uses asphalt overlays on your bridge decks, has your state had any success using asphalt plug-joints?
   16   Yes
   15   No
   19   Our state does not use asphalt overlays
General

36) Does your state maintain a list of prequalified prefabricated steel pedestrian bridge suppliers?
   10  Yes
   40  No

If "yes", do those suppliers have to be AISC certified?
   14  Yes
   1   No

If "yes", what AISC certification must they meet?
   9   Simple Steel Bridges
   5   Major Steel Bridges

Does the design for those prefabricated steel pedestrian bridges require an independent check that is sealed by a licensed engineer?
   25  Yes
   16  No

37) For bridge widenings, does your state require the same superstructure type as the original to be used?
   31  Yes
   19  No

If "No", how are differential deflections handled?  
(See website for additional information)

38) Does your state allow the following items to be supported on bridge superstructures?

   Sound Barriers  32  Yes
   Overhead Sign Trusses  29  Yes
   Cantilever Signs  24  Yes

39) Does your state bridge staff review commercially designed high mast tower lighting structures?
   26  Yes
   24  No

If "No", who is responsible for that review?  (See website for information)

40) What is the number of bridges in your state?
   288,756  bridges on the state system
   312,782  bridges on the local system
41) What is the number of staff in your state's Bridge Office?
   
   Number of Bridge Office Staff
   
   (Varies between a staff of 6 to a staff of 1500)
   
   (5043 total staffing, 57 bridges/person on the state system)
   
   Of the number above, please list the percentage of staff involved in each specific activity: (Averages)
   
   - 25% percent involved in inspections
   - 47% percent involved in in-house design
   - 11% percent involved in ratings
   - 17% percent involved in other significant bridge activity (Describe that activity): Fabrication inspection, consultant plan review, bridge programming and management. (See website for more details)

**Bridge Management**

42) Does your state perform these routine maintenance activities on your bridges? (Please check all activities that apply and an approximate percentage of bridges that receive that specific activity).

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deck Washing</td>
<td>Varies</td>
</tr>
<tr>
<td>Deck Sealing</td>
<td>Varies</td>
</tr>
<tr>
<td>Deck Crack Sealing</td>
<td>Varies</td>
</tr>
<tr>
<td>Girder Washing at Joints</td>
<td>Varies</td>
</tr>
<tr>
<td>Substructure Washing Under Deck Joints</td>
<td>Varies</td>
</tr>
<tr>
<td>Floor Drain Cleaning</td>
<td>Varies</td>
</tr>
<tr>
<td>Other Activities: Describe – (See website for percentages and other activities)</td>
<td></td>
</tr>
</tbody>
</table>

43) Would your state support allocation of a portion of the NCHRP research funds dedicated to research for bridge preservation issues only?

- 25 Yes
- 22 No

If "Yes", what percentage would your state recommend?

Average 25%
44) Consideration is being given to move in a direction that will establish a "national" set of CoRe Elements to be reported to the FHWA to improve the usefulness of NBI data for reporting on national bridge conditions and other bridge management purposes. The enhancement would be a subset of the CoRe Elements and not additional CoRe elements. Does your state see a benefit to the establishment of these "national" CoRe elements?

20 Yes. It would improve the usefulness of the NBI data and our state supports that direction.

7 No. Existing NBI data is adequate and/or benefits would not be worth the added effort involved.

22 Not sure. Our state would like to hear more information regarding the "national" CoRe elements and potential impacts in collecting the data.

45) Would your state support a portion of your state’s Federal Bridge allocation dedicated to preventive maintenance activities only?

24 Yes

23 No

If "Yes", what percentage would your state recommend?

Average 22%

What inspection data should be used to determine eligibility for use of these dedicated preventive maintenance funds?

5 NBI data

21 Element Level data

13 Other, Please Describe: (See website)

WEBSITE FOR RESULTS:

http://desktop.websurveyor.net/analysis/generatepublicreport.aspx?esid=283502 &subaccountid=30839