2011 STATE BRIDGE ENGINEERS’ QUESTIONNAIRE  
(51 Responses)

GENERAL

1) Currently, what version of the LRFD Specifications is your state using to design bridges?

2) What percentage of bridge projects in your state are Design/Build compared to the traditional Design/Bid/Build?
   19 – (0%)
   20 – (1 – 5%)
   2  – (6 -10%)
   5  – (11- 20%)
   2  – (21 – 30%)
   0  – (31 – 40%)
   3  – (41 - 50%)

3) Does your state own/maintain any roadway tunnels?
   31 Yes
   20 No

RAILROAD PROJECTS

4) Has your state experienced difficulties in planning and coordinating with railroad companies on bridge projects?
   49 Yes
   2  No

5) When a railroad company’s clearance requirements extend beyond the AREMA requirements, does your state use those extended clearances for that bridge project?
   36 Yes
   15 No
If “Yes”, does the railroad company pay for the additional bridge costs associated with those clearances?

3 Yes
33 No

**SEISMIC DESIGN**

6) What seismic design methodology does your state use in designing bridges?

- 20 Force-based Design (LRFD Bridge Design Specifications)
- 16 Displacement-based Design (Guide Specifications for LRFD Seismic Bridge Design)
- 4 Other, Please explain: Several states use both methods while two states have developed their own methodology.
- 14 Seismic design not needed in our state

Some states indicated that they use both methods.

7) Currently, do you design retaining walls in your state for seismic loads?

17 Yes
34 No

**CONCRETE DESIGN**

8) When the maximum shear stress exceeds 0.18 f’c in the design of prestressed concrete beams using Article 5.8.3.2, what design solutions does your state typically apply?

- 28 Increase the final concrete strength
- 26 Increase the beam depth *
- 8 Perform a strut-and-tie model in the analysis

*Several states mentioned that increasing the web width was also an option used.
9) In the design of hammer-head or single column pier caps, does your state check the provisions of Article 5.8.3.5?
   32 Yes
   19 No

If “yes”, does that Article typically control the tension reinforcement design?
   10 Yes
   17 No

10) What type of reinforcement does your state typically use in your concrete bridge decks?
   14 Black reinforcement bars
   39 Epoxy-coated reinforcement bars
   1 Stainless steel clad reinforcement bars
   2 Stainless steel reinforcement bars
   1 FRP reinforcement bars

Other Reinforcement Types: MMFX, Galvanized, ASTM 1035 (low carbon/chromium), Use of a low permeability concrete mix design

**FHWA INITIATIVES**

11) Does your state feel that the criteria established in the new FHWA Metrics measuring each state’s compliance with the NBIS are too strict and unachievable?
   37 Yes
   14 No

12) Has your state constructed any bridges utilizing the Geosynthetic Reinforced Soil (GRS) Bridge Technology as part of FHWA’s Every Day Counts initiative?
   5 Yes
   46 No

13) Is your state concerned about using the GRS Technology on stream crossings due to scour concerns?
   44 Yes
   7 No
14) Has your state utilized any of the following Accelerated Bridge Construction techniques on recent bridge projects? Check all that apply.
   10   Self Propelled Modular Transporters (SPMT)
   16   Bridge Roll-In
   34   Installation of Modular Superstructure Components
   31   Modular Precast Concrete Substructure Components

**BRIDGE INSPECTIONS**

15) Has your state completed a detailed gusset plate inspection on all state-owned trusses?
   36   Yes
   6    No
   9    Currently being completed

16) Has your state completed a gusset plate rating on all state-owned trusses?
   19   Yes
   15   No
   17   Currently being completed

17) Does your state intend to collect both national and optional element data suggested in the 2011 edition of the AASHTO Guide Manual for Bridge Element Inspection?
   39   Yes
   12   No

18) In your opinion, do the ratings obtained from that inspection data realistically represent the bridge conditions for project and network level safety evaluations?
   37   Yes
   12   No

**FOUNDATION DESIGN**

19) Does your state include the permanent steel casing when determining the structural capacity of concrete pile and drilled shaft designs?
   7    Yes
   44   No
20) What types of software does your state use to perform substructure analysis?
   2   In-house software
   20  Commercial software
   29  Both

21) If commercial software is used by your state to perform substructure analysis, which programs does your state use? Check all that apply.
   6   BridgeWare Opis Substructure
   0   BRUFEM
   15  STAAD
   15  SAP 2000
   4   Florida Pier
   5   Georgia Pier
   13  FB-Pier/MultiPier
   32  RC-PIER
   5   BRASS PIER (LRFD)

Other commercial software used: GT-STRUDL, VBent, ABLRFD, BPLRFD, PAPIER, Penn DOT software, SHAFT, LARSA. COM624, WinRECOL, MATHCadd, WEAP, and RESSA

22) What software does your state utilize for pile and drilled shaft lateral load analysis?
   3   DFSAP
   44  L-Pile
   21  COM624P
   16  FB-Pier

Other software used: Driven, ALLPILE, GROUP> RC-PIER, DS SAP, and Strain Wedge

23) What substructure design features does your state feel are currently not available in commercial software and need to be developed?

24) Has your state used micro-piles on any of the following bridge projects? Check all that apply.
   
   23. New bridges
   13. Bridge widenings
   25. Foundation repairs
   6. Seismic retrofitting

25) What types of retaining walls has your state placed integral traffic barriers at the top of the wall? Check all that apply.
   
   35. Standard T-type Retaining Walls
   5. Cantilever Sheet Pile Walls
   5. Cantilever Soldier Pile Walls
   9. Tie-Back Walls
   42. MSE Walls (utilizing moment /anchorage slab for the barrier)

26) What is the maximum test level rated traffic barrier your state has utilized when placing barriers integral with the top of retaining walls?
   
   5. TL-3
   38. TL-4
   8. TL-5

27) What maximum deflection at the top of the pile does your state use/allow in calculating the lateral capacity of piles at abutments?
   
   2. - ¼” deflection
   5. - ½” deflection
   13. - 1” deflection
   3. - 1 ½” deflection
   4. - 2” deflection
   1. - 5” deflection

28) When checking a spread footing against sliding, does your state include the resisting earth pressures on the front face of the footing/wall?
   
   7. Yes
   44. No
OVERWEIGHT TRUCK PERMIT PROCESS

29) What type of system does your state utilize for issuing overweight truck permits?
   17    Bridge analysis and administration/routing of permits integrated into one system
   30    Bridge analysis separated from the administration /routing of permits
   4     Other: Several states currently developing an integrated system

30) In your state’s overweight truck permit process, when is the bridge analysis performed?
   17    “Real Time” – every bridge is individually analyzed for the given load and configuration at the time of permit application
   14    Load capacities are predetermined for each bridge prior to permit application and applied to the load configuration submitted with the permit
   20    Both statements apply in our state. Please explain:
          Many states develop state overweight maps based on a particular threshold. They utilize those maps for permit loads under that threshold and perform individual analysis when those thresholds are exceeded. Five of the thresholds mentioned where 100 kips, 140 kips, 154 kips, 156 kips and 250 kips.

31) Does your state use bridge analysis data from previous permit applications for issuing overweight truck permits of similar or lesser loads and configurations, eliminating the need for another analysis?
   28    Yes
   23    No

32) What type of software does your state utilize for the bridge analysis in your overweight truck permit process?
   25    In-house software
   36    Commercial software

Several states use both in-house and commercial software.
If commercial software is utilized, please list the software name and supplier:

Bentley Systems ALPASS, Bentley SUPERLOAD, Bentley LARS, VIRTIS, SAP CSI, PENN DOT SUITE, BAR 7, SAP 20000, LEAP, MDX, Permits CS, DESCUS, and BRASS.

**BRIDGE PRESERVATION**

33) Does your state do preventive actions (such as washing bridge decks or superstructure/substructure components, sealing decks or substructure components, greasing bearings, cleaning deck joints, etc.) using in-house staff to extend the service life of bridge elements before damage/deterioration occurs?

   40  Yes  
   11  No

34) Does your state do preventive actions (such as washing bridge decks or superstructure/substructure components, sealing decks or substructure components, greasing bearings, cleaning deck joints, etc.) using contract maintenance to extend the service life of bridge elements before damage/deterioration occurs?

   38  Yes  
   13  No

35) How many existing steel bridges does your state paint on average per year?

   1120  # of bridges painted

36) How many concrete bridge decks does your state repair and overlay, with any type of concrete overlay, on average per year?

   1485  # of bridge decks overlaid