FHWA UPDATE

AASHTO SUBCOMMITTEE ON BRIDGES AND STRUCTURES
TECHNICAL COMMITTEE T-18 ANNUAL MEETING
JULY 10, 2012

Thomas D. Everett, P.E.
Federal Highway Administration
Office of Bridges and Structures
OUTLINE

- National bridge inspection program oversight
- MAP-21 for bridges
- National Bridge Inventory (NBI) coding guide
- Training on new AASHTO elements
NATIONAL BRIDGE INSPECTION PROGRAM
OVERSIGHT
1,196 metrics assessed

- 71% (843) assessed at the satisfactory level
  - 60% (713) assessed as fully compliant
  - 11% (130) assessed as substantially compliant

- 29% (347) actively improving under approved PCAs

- <1% (6) assessed at an unsatisfactory level
MOST COMMON AREAS REQUIRING PLANS OF CORRECTIVE ACTIONS

- Routine Inspection Frequency (Metric 6)
- Load Rating Procedures (Metric 13)
- Fracture Critical Inspection Frequency (Metric 10)
- Scour Critical Bridges Needing POAs (Metric 18)
- Underwater Inspection Frequency (Metric 8)
Personnel Qualifications – Metrics 2 – 5

Metrics 2-5 Performance

- 2 - Program Manager
- 3 - Team Leader
- 4 - Load Rater
- 5 - Underwater Diver

0% 20% 40% 60% 80% 100%

- Unsatisfactory
- Actively Improving
- Satisfactory
Inspection Frequencies – Metrics 6 – 11

Metrics 6-11 Performance

6 - Routine Inspections
7 - Routine - Extended Intervals
8 - Underwater Inspections
9 - Underwater - Extended Intervals
10 - Fracture Critical Inspections
11 - Special Inspections

- Unsatisfactory
- Actively Improving
- Satisfactory
- Not Applicable
Metrics 12-21 Performance

- 12 - Team Leader @ Inspection
- 13 - Load Rating
- 14 - Posting
- 15 - Bridge Files
- 16 - Fracture Critical Members
- 17 - Underwater Inspections
- 18 - Scour Critical Bridges
- 19 - Complex Bridges
- 20 - QC/QA Procedures
- 21 - Critical Findings

Legend:
- Unsatisfactory
- Actively Improving
- Satisfactory
NATIONAL BRIDGE INSPECTION PROGRAM
JOINT FHWA/AASHTO TASK FORCE
Mission

“To engage in a discussion of the 2011 baseline review process and results and flesh out ideas that AASHTO and FHWA divisions offer for modifications and improvements to the process. Because of the Federal/State relationship under Title 23, final decisions on revisions to the oversight process will rest with FHWA.”
Feedback solicited from States and FHWA Divisions

4 themes emerged from feedback:

1. Some thresholds for compliance difficult to achieve,
2. Need for assessing quality in both inspection and data,
3. Need to re-examine how risk is factored into the metrics assessments, and
4. Be proactive and careful about communicating results of FHWA’s assessments nationally.
15 action items identified, prioritized, and grouped into 3 main areas:

- Short-term changes (for PY 2013 implementation)
- Recommended long-term changes (for implementation in PY 2014 and beyond)
- Identification of NBIS regulations issues
NATIONAL BRIDGE INSPECTION PROGRAM
SHORT TERM CHANGES

- Review cycle shifted to align with FHWA performance year
- Frequency metrics modified
- Two metrics significantly revised to better assess data quality and inspection quality
- Consideration of risk moved into one procedure metric
- Communications document issued
- Other guidance developed
NATIONAL BRIDGE INSPECTION PROGRAM
LONG TERM ACTION ITEMS

- Improve other metrics:
  - Add commentary, define terms and population, incorporate Q&As, and address risk in other procedure metrics
- Share best practices among the states
- Work with T-18 on MBE updates
  - Clarify bridge records requirements
  - Clarify complex bridge inspection requirements
  - Clarify mandatory data needs versus optional
  - Update the general inspection requirements
Risk-based inspection frequency flexibility

Increased/reduced inspection frequency for special situations

Revisit definitions for terms like “complex” and “critical findings”

Revisit refresher training – more definition needed?
NATIONAL BRIDGE INSPECTION PROGRAM
POSSIBLE NBIS REGULATION IMPROVEMENTS

- Revise NBI database
  - web-based system that enables the States to provide more up-to-date data to facilitate the metric assessments
  - other enhancements to facilitate the metric assessment process
- Time limits for placement of load posting signs
- Enhanced QA/QC and qualifications for inspectors on fracture critical bridges
Task Force Outcomes Presented During May 2, 2012 Webinar

- https://connectdot.connectsolutions.com/p49vkw02b60/
- Slides can be downloaded from the web room
MAP-21 FOR BRIDGES
MAP-21 FOR BRIDGES*

- Two year bill (SEC 1101)
- Four main programs (there are more)
  - National Highway Performance Program
  - Surface Transportation Program
  - Highway Safety Improvement Program
  - Congestion Mitigation and Air Quality Improvement Program
- Funding for these programs
  - $37.5 billion in 2013
  - $37.8 billion in 2014
  - Continue under extension until October 1, 2012 (2009 funding levels)

*Based on early unofficial interpretation by T. Everett
**MAP-21 FOR BRIDGES**

- **Apportionment process (SEC 1105)**
  - Take downs (e.g., administration)
  - Determine amount for CMAQ and metropolitan planning following process in law
  - From the remaining amount...
    - 63.7% for NHPP
    - 29.3% for STP
    - 7% for HSIP

*Based on early unofficial interpretation by T. Everett*
MAP-21 FOR BRIDGES*

- Apportionment process (SEC 1105)
  - Apportioned to states based on total Federal apportionment in 2012
  - Process differs for 2013 and 2014
  - Adjusted for minimum tax payments into the trust fund (95% minimum)
  - Can transfer up to 50% among programs

- National Highway System expanded (SEC 1104)
  - Now includes urban and principal arterials and other connector highways

*Based on early unofficial interpretation by T. Everett
MAP-21 FOR BRIDGES *

- National Highway Performance Program (SEC 1106)
  + NHS Performance targets set by state as part of an asset management plan
    ❌ Risk and performance based
    ❌ In line with national goals, specified in law (SEC 1203)
  + Includes bridges and tunnels on the NHS
    ❌ Eligible - construction, replacement, rehabilitation, preservation, protection, inspection, evaluation, inspector training

*Based on early unofficial interpretation by T. Everett
MAP-21 FOR BRIDGES*

- National Highway Performance Program (SEC 1106)
  - Timing of actions
    - 18 months after October 1st - Secretary to issue regulations defining the process for developing an asset management plan
    - 18 month transition period beyond publication of final rule
    - Total = 36 months, but bill is for two years ??

*Based on early unofficial interpretation by T. Everett
MAP-21 FOR BRIDGES*

- National Highway Performance Program (SEC 1106) – other details
  + If no approved asset management plan, Federal share is 65%
  + Penalty if > 10% of deck area on structurally deficient NHS bridges for the prior 3 years
    - 50% of 2009 Highway Bridge Program apportionment equals the amount that must go to bridges under the NHPP

*Based on early unofficial interpretation by T. Everett
MAP-21 FOR BRIDGES*

- Surface Transportation Program (SEC 1108)
  - Includes bridges and tunnels on public roads of all functional classifications
  - Eligible - construction, replacement, rehabilitation, preservation, protection, inspection, evaluation, inspector training

*Based on early unofficial interpretation by T. Everett
Surface Transportation Program (SEC 1108)
- 15% of 2009 Highway Bridge Program apportionment set aside for bridges not on Federal-aid highways (waiver still allowed)
- Credit for bridges not on Federal-aid Highways

*Based on early unofficial interpretation by T. Everett
MAP-21 FOR BRIDGES*

- National Bridge and Tunnel Inventory and Inspection Standards Program (SEC 1111)
  - Congress determined that it is in the vital interest of the U.S. to use performance based bridge management systems – is this a mandate???
  - Need to establish tunnel inspection standards and an inventory
  - Need to revisit Sufficiency Rating – consider emergency and freight mobility

*Based on early unofficial interpretation by T. Everett
MAP-21 FOR BRIDGES*

- National Bridge and Tunnel Inventory and Inspection Standards Program (SEC 1111)
  + Determine cost of rehabilitating or replacing each SD bridge
  + New Report to Congress on inventories
  + Element level data:
    - Issue guidance and begin collecting w/i 2 years of enactment
    - Study cost-effectiveness, benefits, feasibility of collecting for non-NHS bridges

*Based on early unofficial interpretation by T. Everett
MAP-21 FOR BRIDGES*

- National Bridge and Tunnel Inventory and Inspection Standards Program (SEC 1111)
  - Update the National Bridge Inspection Standards within 3 years
    - National inspector certification process
    - Establish procedures for reporting critical findings
    - Risk-based approach to setting inspection intervals
  - Annual compliance process and penalty (both bridges and tunnels)
  - Develop training program for tunnel inspectors

*Based on early unofficial interpretation by T. Everett
MAP-21 FOR BRIDGES*

National Goals and Performance Management Measures (SEC 1203)

- 7 national goal areas defined in law
- Infrastructure condition – maintain a state of good repair
- 18 months after enactment – rulemaking to “establish performance measures and standards.”
- 12 months after the rule, states set their targets

*Based on early unofficial interpretation by T. Everett
MAP-21 FOR BRIDGES*

- National Goals and Performance Management Measures (SEC 1203)
  - For bridges, limited to standards and measures for bridge conditions on the NHS
- 4 years after enactment and biennially thereafter, states report on conditions and progress

*Based on early unofficial interpretation by T. Everett
NATIONAL BRIDGE INVENTORY (NBI) CODING GUIDE STATUS
FHWA team formed in fall 2011
Reviewing 2,007 comments on year 2006 draft
Obtained input from other Federal stakeholders
Review of sections by T-18
  + Identification section complete
  + Structure Type and Material section next
Target date for implementation: 2015
  + Lots of factors could influence this
NBI CODING GUIDE UPDATE: CRITERIA

- Basis for changing....
  - Data needed for administering the program
  - Data needed for oversight of bridge inspection program
  - Improve reporting of safety and condition information to Congress and leadership
  - Clarification of existing items
  - Accurate information during emergencies
  - Facilitate performance measurement
NBI CODING GUIDE UPDATE: THE PLAN

Incorporate National Bridge Elements and Identify Bridge Management Elements for inclusion in NBI.

Proposed NBI Specification Development Plan:

- Federal Agencies: NPS, DoD, BLM etc.
- Federal Lands Highway
- Division Offices, Resource Center
- Office of Policy: C&P Report, HPMS, NBIAS, HIPAT
- Legal: Good guidance, data collection burden
- Office of Safety

- State DOTs
- AASHTO SCOB T-18
- Pontis Task Force
- Pontis Users Group

- Incorporate NBEs & Identify BMEs for inclusion in NBI
- Legal Review/Approvals
- Obtain OST/OMB Approvals for Data Collection

- Revise NBI Regulations 23 CFR 650 subpart C
- Develop/Deploy NBI Specification
- Update NBI Database

- Deploy NBI Converter
- Develop Training Materials
- Develop Questions and Answers

Modified: Jun 4, 2012
Created: May 3, 2011
Transition from current general component condition rating system to the AASHTO element based reporting

Initial vision is to require reporting of element data for NHS bridges and accept data for all
  Consistent with provisions in MAP-21

New tool: “Converter”
  Allow for NBI <> element data conversion
  Concept: Old translator and NBIAS synthesizing process
  Status: Under development
TRAINING ON NEW AASHTO ELEMENTS

- NHI course updates
- FHWA Resource Center services
  - Introduction to Element Level Bridge Inspection
ELEMENT LEVEL BRIDGE INSPECTION

- Based on AASHTO Guide Manual for Bridge Element Inspection
- Introductory training on element level inspection of in-service highway bridges
- 1-day and 2-day versions
  - 2-day version includes field exercise for 2 bridges (more host coordination)
    - 1 bridge with concrete superstructure
    - 1 bridge with steel superstructure
Course Learning Outcomes (2-day version)

A. Explain the following terms:

- Element vs. Component vs. Safety Inspection
- Structures and Structure Units
- Elements
  - Element Environments
  - Element Condition States
  - Element Defect Flags
Course Learning Outcomes (cont’d)

B. Explain the rules and conventions for identifying and quantifying elements

C. Review as-built plans to identify bridge elements and determine appropriate units and quantities for elements*

D. Interpret condition state definitions
Course Learning Outcomes (cont’d)

E. Interpret condition state definitions based on visual observations and quantify and record observations

F. Explain why bridge management is important*

G. Explain how Pontis supports an agency’s bridge management business process*
Course Learning Outcomes (cont’d)

H. Identify areas of inconsistency and/or differing interpretations

I. Suggest areas for clarification or further guidance
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<thead>
<tr>
<th>Lesson No.</th>
<th>Topic</th>
<th>Duration hh:mm:ss</th>
<th>Start</th>
<th>End</th>
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<td>0:30:00</td>
<td>8:00 AM</td>
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<td>Terminology</td>
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<td>Element Condition Assessment: Decks/Slabs</td>
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<td>Element Condition Assessment: Superstructures</td>
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<td>Element Condition Assessment: Substructures</td>
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<td>Element Exercise Part 1: Identify/Quantify elements from plans</td>
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<td>Element Condition Assessment: Culverts</td>
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<tr>
<td>5b</td>
<td>Element Condition Assessment: Joints</td>
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<tr>
<td>5c</td>
<td>Element Condition Assessment: Bearings</td>
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<td>5d</td>
<td>Element Condition Assessment: Approach Slabs</td>
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<td>5e</td>
<td>Element Condition Assessment: Rails</td>
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<td>Element Condition Assessment: Defect Flags</td>
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<td>11</td>
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**Typical 2-day agenda**

**8:00a-4:30p**
**ELEMENT LEVEL BRIDGE INSPECTION**

- Typical 1-day agenda
- 8:00a-4:30p

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<tr>
<th>Day</th>
<th>Training Agenda (1-day format)</th>
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<td>Break</td>
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<td>Element Condition Assessment: Superstructures</td>
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<td>5f</td>
<td>Element Condition Assessment: Defect Flags</td>
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<td>7</td>
<td>Virtual Inspection Exercises: Assess element condition</td>
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<tr>
<td>11</td>
<td>Wrap-up and Evaluation</td>
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TARGET AUDIENCE

- Federal, State, and local highway agency employees, and consultants involved in inspecting bridges or in charge of a bridge inspection unit

CONTACTS

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Questions

Thank you!