FHWA National Bridge Inventory of the Future

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Washington D.C.
Presentation Outline

• NBI of the Future: Vision
• NBI Coding Guide: Goals, Status, Tasks, Team and Plan
• NBI of the Future: Transition, NBEs, BMEs
• Why collect Element Level Data
“A NBI that accurately reflects the condition and performance of our nation’s highway bridges”

From: The National Bridge Inventory of the Future, Vision, Goals, Stakeholders, Primary Actions Needed Paper
NBI Coding Guide: Goals

• Advance the NBI

1) Through, quality data…

2) Incorporates data that provides for: a) support of the data driven, risk based NBIP oversight process; b) develop and use of effective performance measures; c) support for National level analysis

3) Improved timeliness …
NBI Coding Guide: Status

• Initiative to update the NBI Coding Guide is underway
• Forming a FHWA Team and developing a work plan
• To review the 2,007 comments and the material from previous team
• Produce the NBI specification one section at a time, request T-18 support to review these sections
NBI Coding Guide: Tasks

• Update the NBI addressing previously mentioned goals
• Identify and incorporate bridge element data into the NBI
• Seek assistance from T-18 in reviewing the draft document(s)
• Publish revised spec in Federal register (TBD)
• Provide training and rollout new spec
NBI Coding Guide: FHWA Team

- Wade F. Casey, HQ (Team Lead)
- Gary Moss, HQ
- Larry O’Donnell, Resource Center
- Ann Shemaka, HQ
- Dennis O’Shea, DelMar Division Office
- Derek Soden, Florida Division Office
NBI of the Future: Transition

• Transition bridge condition reporting requirements from the current general component condition rating system to the element level condition state rating system

• Initially – element data for NHS bridges
Element vs. Component vs. Safety Inspections

**Element**
Quantified data for all elements
Detailed condition descriptions

**Component**
General condition rating (GCR)
Deck, Super, Sub, Culvert

**Safety**
All other information needed to insure safety and structural integrity
- Sketches, photos & narratives
- Critical finding follow-up procedures

FHWA Converter
NBI of the Future: NBES

**NBI Current**
Component data only for all bridges (deck, superstructure, substructure, culverts)

**NBI Future (2015?)**
NBI Component and element data for all bridges
Possibly drop component in future
NBI of the Future: NHS, non-NHS, Component, Element

NBI of the Future (2015?)

NHS

"Original" element data

Component can be generated or original

Non-NHS

Generated or "original" element data -**

Generated or "original" component data -**

Need a “flag” in NBI Data Base to indicate if data was generated or original.

** - At least one type of data must be “original”
AASHTO Guide Manual for Bridge Element Inspection classifies bridge elements under the following three element types:

1) National Bridge Elements (NBEs);
2) Bridge Management Elements (BMEs); and
3) Agency Developed Elements.

We’re finding that we desire more than NBEs i.e. BMEs.
NBI of the Future: NBES

- FHWA Plans to collect highlighted NBES
The BMEs comprise the following general categories and these specific elements:

- **Bridge Management Elements (BME)**
  - **Decks/Slabs**
    - Joints
      - Strip Seal Expansion Joint (300)
      - Pourable Joint Seal (301)
      - Compression Joint Seal (302)
      - Assembly Joint Seal (modular) (303)
      - Open Expansion Joint (304)
      - Assembly Joint w/ Seal (305)
    - Approach Slabs
      - P/S Concrete Approach Slab (320)
    - Protective Systems
      - Wearing Surfaces (510)
      - Deck/Slab Protection System (520)
  - **Superstructure**
    - Protective Systems
      - Steel Protective Coating (515)
    - Concrete Protective Coating (521)
  - **Defect Flags**
    - Steel Cracking/Fatigue (336)
    - Concrete Cracking (358)
    - Settlement (360)
    - Traffic Impact (load capacity) (362)
    - Traffic Impact (load capacity) (366)
    - Substructure Traffic Impact (367)
    - Barrel Distortion (culvert only) (368)

- FHWA Plans to collect highlighted BMEs
NBI of the Future: BMEs - Joints
Proposed additional elements to be collected in the NBI – Joints:

<table>
<thead>
<tr>
<th>Element Number</th>
<th>Element Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>Strip Seal Expansion Joint</td>
</tr>
<tr>
<td>301</td>
<td>Pourable Joint Seal</td>
</tr>
<tr>
<td>302</td>
<td>Compression Joint Seal</td>
</tr>
<tr>
<td>303</td>
<td>Assembly Joint Seal</td>
</tr>
<tr>
<td>304</td>
<td>Open Expansion Joint</td>
</tr>
<tr>
<td>305</td>
<td>Assembly Joint Seal w/o Seal</td>
</tr>
<tr>
<td>306</td>
<td>Other (This is a new element which covers any other type that is not already included)</td>
</tr>
</tbody>
</table>
NBI of the Future: BMEs - PS

Proposed additional elements to be collected in NBI, BMEs – Protective System:

<table>
<thead>
<tr>
<th>Element Number</th>
<th>Element Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>510</td>
<td>Wearing Surfaces</td>
</tr>
<tr>
<td>515</td>
<td>Steel Protective Coating</td>
</tr>
<tr>
<td>520</td>
<td>Deck/Slab Protection Systems</td>
</tr>
<tr>
<td>521</td>
<td>Concrete Protective Coating</td>
</tr>
</tbody>
</table>
Why collect element Level Data?

1. Granularity part 1. More quantitative condition assessment
2. Granularity part II. Enhance and facilitate needs assessments, and performance measurement
3. Simplify the general condition rating scale from nine to four condition state (CS) ratings
4. Superior to the NBI…
Why collect element Level Data?

5. Easily understood rating measurements by the public (Good/Fair/Poor/Severe)

6. Field collected data preferred by NBIAS which goes into the C&P report to Congress that identifies national needs which translates into funding

7. OIG recommendations: a) Greater use of BMS (Bridge Management Systems); b) Update CoRe elements and require data be submitted to FHWA
Why collect element Level Data?

9. GAO recommendations: a) Identify best tools and practices for bridge management systems; b) Review and evaluate HBP funding mechanism to align with performance

10. Congressional Interest

11. It doesn’t take much more time to collect and it makes my boss look good
Questions?