Mandated National Bridge Elements

What’s an agency to do?
MAP-21 Mandate

- Starting October 1, 2014 states must report element inspection data for NHS bridges
- FHWA has interpreted this to mean states must start element inspection of bridges on the NHS on October 1, 2014
- Spring 2015 report element data on NHS bridges
- FHWA will study requiring element inspection for all bridges – Proposed Rule
FHWA Issues

- Initially report Element data separate from NBI data
- Eventually element data and NBI data reported together
- FHWA will release an XML Schema this year for reporting element data
- FHWA will determine what elements need to be reported
- Provide training
Agency Management Issues

- Transition to the new elements
  - Agency currently doing element inspection
  - Agency not currently doing element inspection
- Create report format to match FHWA requirements
AASHTO Element Inspection Manual

- National Bridge Elements (NBE)
- Bridge Management Elements (BME)
- Agency Defined Elements (ADE)
National Bridge Elements

- Deck (includes Railings but not Joints)
- Superstructure (includes Bearings)
- Substructure
- Culverts
- Broken down by Material Types (Steel, Reinforced Concrete, Prestressed Concrete, Timber, Masonry, Other)
Defects

- Condition States Assigned based on Defects
- Defects are based on Material Type
- Example RC Decks
  - Spalls/Delamination/Patch Areas
  - Exposed Rebar
  - Efflorescence
  - Cracking (RC and Other)
  - Load Capacity (Strength)
  - Damage
Example Defect Language

Exposed Rebar

- CS 1 – No Exposed Rebar
- CS 2 – Present without Section Loss
- CS 3 – Present with Section Loss Does not Warrant Review
- CS 4 – Present with Section Loss Structural Review Required
Child Elements

Child Elements use same defects and CS definitions as an already defined element (the parent element) and will be rolled up with the parent element in reporting to FHWA.

Examples

- Beam Ends for Beams
- Composite Precast Deck Panel System for RC Deck
- Paint, Galvanization, Weathering Steel and Other for Steel Protective Coating
Deterioration Process for Precast Deck Panels

- Load
- Longitudinal Cracks
- Diagonal Shear Crack
- Compressed Fiberboard
- Panel
- Girder

*Exaggerated Deformation
Failure Examples
Bridge Management Elements

- Deck Joints
- Wearing Surfaces
- Steel Protective Coatings
- Concrete Protective Coatings
- Deck/Slab Protective Systems
- Approach Slabs
Agency Defined Elements

- Up to Agency
- FDOT Examples
  - Ancillary Structures
  - Movable Bridge Elements
  - Channel Element
Factors to consider

- What portion of your bridge inventory to perform element inspection?
- Only NHS bridges or all bridges (State/Local)
- NHS system has grown with MAP 21
  - Florida NHS was about 60% of state bridges
  - Now 85% state bridges and includes some locals
Factors to consider

- Collect condition state data only or break down by defects
- Who to get input from
Game Plan

- Develop State Manuals (e.g. Inspector Field Guides)
  - Identify agency elements
  - Identify child elements
- Develop required software to collect data
  - Use vendor software
  - Use vendor software with agency customization
  - Develop in house
Game Plan Continued

- Test with Inspectors
  - Vital if this is first element inspection
  - This learning experience is not limited to the inspectors
- Revise as needed
  - From the tests and input from other stakeholders there will be changes
Game Plan Continued

- Train, Train, Train
  - You can’t train too much
  - Field exercises will help
- Implement
  - Convert all at once or stagger
  - How to handle inspections that are not complete on transition date
  - Existing consultant contracts
Who to include

- Depends on how organized
- Central Office
  - Inspection Program Manager
  - Computer Support
  - Preservation/Maintenance
  - Bridge Management
  - Planning
- District Bridge Inspection Staff
- Consultants
FDOT Game Plan

- Develop Draft Inspector Field Guide
- Review by Districts (invite Consultants)
  - Face to face meetings
  - Goto meetings
- Finalize Field Guide
- Train Inspectors
FDOT Game Plan Continued

- Move to AASHTO Bridgeware Bridge Management 5.X
  - Update FDOT customized applets
  - Update FDOT customized reports
  - Data migration
- Determine how to handle existing inspection contracts during conversion
  - Consultants might want extra pay for change in scope
FDOT Game Plan Continued

- Implement change
- Correct problems that occur
  - Quality Control – Districts
  - Quality Assessment – Central Office
- Assess process
- Periodically revisit system
Benefits to Agency

- Create projects
- Identify what works and what doesn’t
- Better knowledge of inventory
- Ability to create better performance measures
Questions

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