

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

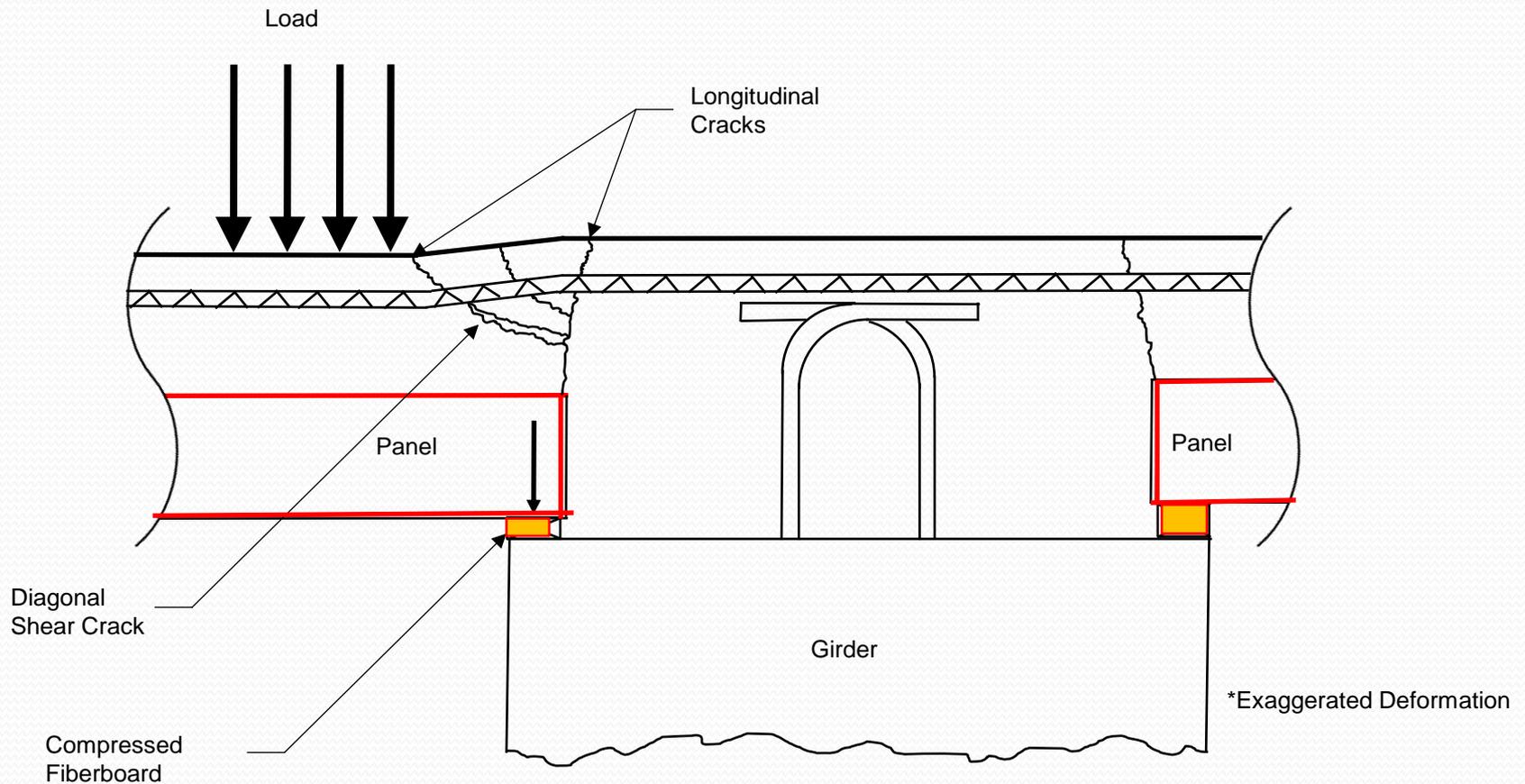
Exposed Rebar

- 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

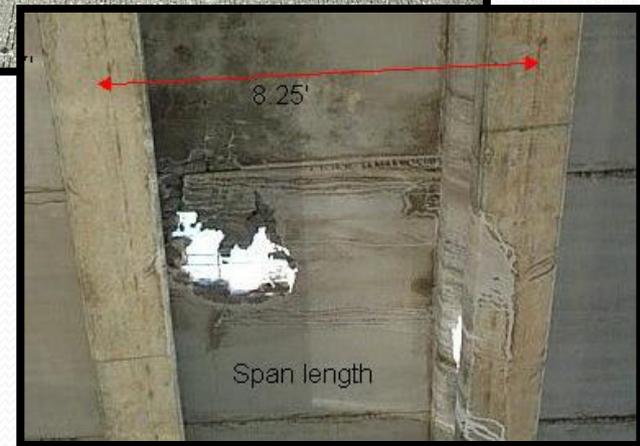
Child Elements

- 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



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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