Implementation of the AASHTO Bridge Element Inspection Manual

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AASHTO Element Basics

- AASHTO Bridge Element Inspection Manual 2011
- Four condition states for all elements
  - Good, Fair, Poor, Severe
- Utilizes a multi-defect path assessment approach.
  - Each defect is defined separately with the criteria to place it in one of the four defined condition states.
- Units for decks and slabs changed to square area.
- Decks and wearing surfaces elements separated.
- Steel and protective coating elements separated.
- Defect Flags (Smart Flags) applied at the element level.
Element Types

• National Bridge Elements
  • The NBE’s are standardized elements that represent all the primary load and safety components on a bridge.
  • NBE’s are intended to be collected by the FHWA and cannot be edited by agencies

• Bridge Management Elements
  • Elements such as wearing surfaces, joints, protective coatings or similar bridge preservation elements.

• Agency Custom Elements
  • Other elements not covered above that are of interest to the agency.
Implementation Key Considerations

- Existing Element Data Conversion
- Inspector Training
- Inspection Software Coordination
- Timing Considerations
- Impacts on Performance Measures
Element Inspection Data

- Two options exist to create the new elements
  - Manually create the elements using the new AASHTO Bridge Element Inspection Manual.
  - Migrate your legacy elements using the AASHTO Element Migrator software.
- Regardless of the selected option, legacy element data needs to be preserved.
- Migration is the only practical option if you wish to convert all previous inspections.
Element Migration

- The AASHTO “Element Migrator” will mass convert CoRE elements to new elements.
- Will handle State developed elements.
- Recommend migrating existing elements and then checking over the inspection cycle.
- Migrator is software/DB independent and will be free to AASHTO states when released.
- Difficulty with some SMART/defect Flags.
Inspector Training

- Experienced element inspectors will need some training prior to implementation.
  - Measurement Conventions
  - Four State General Definition
  - Wearing Surfaces and Protection Sys.
  - Unit Changes
  - Defect Flag Application
  - Multi-Defect Language
  - New Elements
- Training Time Estimate
Inspector Training

- Inspector Training Activities
  - NHI 80 hour Bridge Inspector Training Course being updated to reflect new elements.
  - NHI Bridge Inspector Refresher Training Course being updated.
  - Bridge Inspection Reference Manual being updated.

- Web Training
  - Discussions are underway to provide free inspector training via webinar.
Software Interaction

- Agency custom software must be modified to support the new elements.
  - Database changes to support new element storage.
  - New inspector element interface
  - Custom reports, queries, etc. need to be modified.
- Migrator compatibility needs to be developed.
- NBE language should not be altered in custom applications to retain national consistency.
Interaction With Pontis

- Pontis 5.1.2 will support the new AASHTO elements.
  - Preloaded with all the elements.
  - New elements stored separately from old.
  - Support agency developed elements.
  - Supports element level defect flags and protection systems.
  - Support for Migrator XML file import.

- Modeling in Pontis 5.2
  - Pontis 5.2 (under development) will perform multi-objective modeling with new element data.
  - Improved elements will mean better modeling.
Implementation Timing

- Requirements before new element inspections occur.
  - Software that supports new inspections must be available.
  - Legacy inspections must be complete at cross over.
    - All inspection entities should cut over at once.
  - Element conversions need to have taken place.
  - Inspection staff need to have been trained.
  - Agency inspection manuals need to available.
  - Custom bridge inspection reports need to be available.
- Possible dates: Start of new cycle, after NBI data submission, start of new contract, slow season....
### Sample Implementation Timing

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Performance Measures / Translation

- New elements impact the Bridge Health Index
  - New elements better represent condition.
  - Bridge Health Index calculation unchanged.
  - Resulting values will differ from current.
  - May have impacts on GASB 34 reporting.

- NBI Translator Impacts
  - Translator will not work with new elements.
  - You may be using the translator without knowing it.
Summary

- The new elements provide improved inspection results.
- Converting over will take planning and effort.
- Migrator can help do the conversion from old to new.
- Pontis 5.1.2 will support new elements.
- Inspector training fairly straightforward.
- Performance measures may be influenced.
- Improved condition assessments will improve management decisions.