

The National Bridge Inventory (NBI)

“Issues of Concern”

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Bridge and Tunnel Safety and
Security
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To be covered

- The NBI – what it is and what it isn't
- Recent Examples
 - Technical Advisory – deck truss reevaluations
 - Other events – hurricanes, tunnel incidents
- Lessons learned
- What lies ahead?

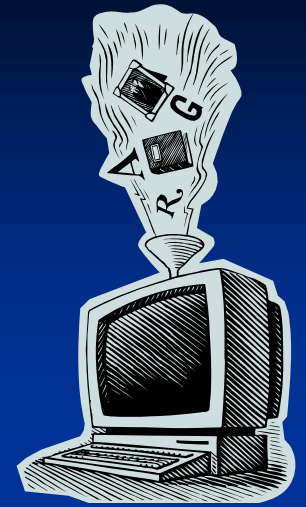
What is the NBI?

■ It is...

- A large collection of information...required by law (23 U.S.C. 151 & 144)
- 94 data items reported for nearly 600,000 bridges
- Items are categorized:

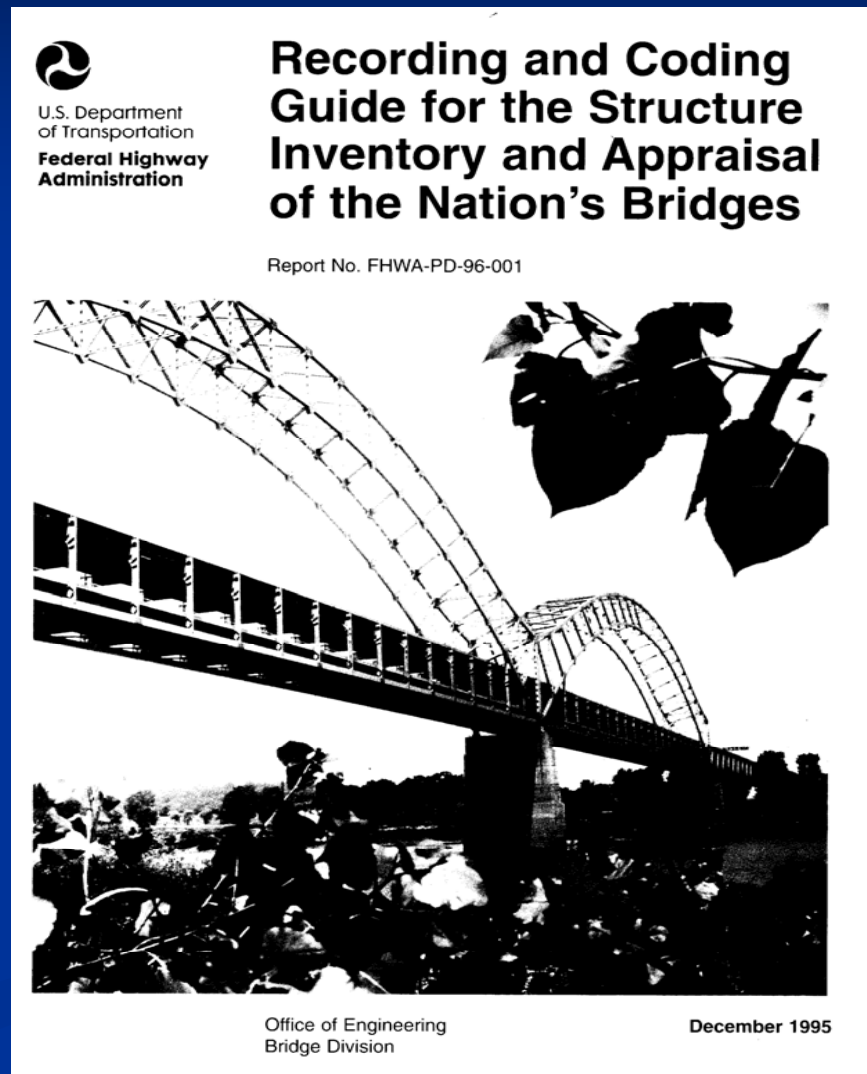
- Identification Data
- Structure Type and Material Type
- Age and Service
- Geometric Data
- Navigational Data
- Classification Data

- Condition Data
- Load Rating and Posting Data
- Appraisal Items
- Proposed Improvements
- Inspection Data



National Bridge Inventory

- The National Bridge Inspection Standards establish the “Coding Guide” as the guiding document for
 - Minimum data elements to be recorded, (owners often collect more)
 - Defines how data is to be recorded
 - Format in which data is to be reported to the FHWA



National Bridge Inventory

- Data is checked both by the submitter and FHWA prior to incorporation into the database.
- Data is stored in an Oracle relational database.
- Some items are calculated as the data is loaded:
 - Status
 - Sufficiency Rating
 - Structural Evaluation, Deck Geometry, and Underclearances

National Bridge Inventory

Calculated Items

- Status:
 - Structurally Deficient
 - Functionally Obsolete
 - Not Deficient
 - Not Applicable (for any non highway structures submitted)
- Sufficiency ratings are assigned to highway bridges only and range from 0 to 100.

National Bridge Inventory

- Web interface for the system
- Modules for:
 - submitting files and unit cost data
 - running pre-developed reports
 - running ad hoc reporting through Business Objects
 - error checking
 - download files

National Bridge Inventory

Reports

- Load rating and posting reports
- Inspection compliance reports
- Closed bridge report
- Executive briefing report (Annual Summary of data)
- Item change report
- SIA report
- Selection list report
- Persistent error report

National Bridge Inventory

Used for...

- Apportioning Highway Bridge Program funds to the States
- Biennial Report to Congress and annual report on bridge materials
- Tracking bridge conditions
- Monitoring compliance in conjunction with the State's system
- Research and reporting

The NBI is not...

- “Real-time”
 - Introduces many limitations
- A design or construction database
- A database for routing vehicles around deficient bridges
- A tunnel or ancillary structure database
- A database with information on bridge failures

Example: Technical Advisory 5140.27 Immediate Inspection of Deck Truss Bridges

- Initial report from NBI
 - 756 steel deck truss bridges
- Actual data
 - More than 250 had incorrect structure type or material type coding
 - 10 were actually closed – some 15 years ago!
 - 2 were duplicate records
 - 6 that had been demolished or replaced
 - Some were pedestrian bridges
- Final total will be closer to 466.

Other Examples: Hurricanes and Tunnel Incidents

- Post-hurricanes
 - Types of foundations?
 - Simple span type approaches?
 - Subject to storm surge and wave forces?
- Tunnels
 - The NBI is not a tunnel database.
 - Some info on tunnels, but very limited, and not mandatory to report.

Lessons Learned

- Many items (such as structure type and material type) are not being verified for accuracy.
- Data is not as good as we thought.
- Still some lack of understanding and consistency in coding guidance.

Lessons Learned

- More detailed information would help in some cases, but there is a cost for collection.
- Managers, public, media need to be educated.
- Everyone is “data hungry,” particularly during times of crisis.

What lies ahead?



- Updated coding guidance
- A possible tunnel database
- A possible bridge failure database
- “Real time” access to issues critical to bridge safety
- Focus on improving data quality
- More standard reports on the web

