PRESERVING OUR BRIDGE INFRASTRUCTURE

Local Bridge Conference, 2008
Peter Weykamp, P.E.
NYSDOT Bridge Maintenance Program Engineer
Presentation Points
Integration
Assessments
Decision Support
Delivery Mechanisms
INTERNATIONAL SCAN

- Bridge Preservation and Maintenance - 2003
  - Management Systems
- BEQA - 2008
  - Inspection Data Quality
  - Applications
  - Findings
- BEQA Report
  - www.international@dot.fhwa.dot.gov
FINDINGS

- Reference Materials
- Cause of Damage Determination
- Reports & Data Management
- Inspector Training & Certification
- Inspection Types & Frequency
- Use of Reference Bridges
- Non-Destructive Testing
- Other
REFERENCES MANUALS

- Detailed & Illustrated
- Damage Types Identified
- Damage Quantified
- Performance Indices
- Maintenance Manuals
Inspectors determine cause of failure.

Inspectors trained to assess damage to a structural element and recommend action based on:

- structural stability, user safety & effect on the damaged component’s durability

Procedures to initiate actions based on the severity of the condition.
### BASt SYSTEM

#### Calculation of Condition Index

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**Example:**

S = 2 (Structural Stability)
V = 2 (Traffic Safety)
D = 3 (Durability)
### Grade 3.0-3.4

**Critical structural condition**

The **structural stability and/or traffic safety** of the structure are negatively affected.

Possibly, **durability** of the structure is **no longer given**. An expansion of the damage or **consequential damages** may, in the **short term**, lead to the fact that structural stability and traffic safety are no longer given.

**Continuous maintenance** is required.

**Immediate repairs** are required.

**Measures to eliminate the damage or warning signs to maintain traffic safety** or restrictions in its use might be required as soon as possible.
Inspection friendly, security wise details were incorporated into the design of bridges on a routine basis.
SCAN TOUR
IMPLEMENTATION PLAN

- Develop a Rational Basis for Bridge Inspection Frequency
- “Guidelines for Implementing Quality Control and Quality Assurance for Bridge Inspections” NCHRP 20-07 Task 252
- “Guidelines for Illustrations & Reference Photos for Manuals” AASHTO/NCHRP
NATIONAL

- FHWA
  - Long Term Bridge Performance Program
  - R&D Workshop
- TRB - 2009
  - AHD30 Waterproofing Workshop
- AASHTO
  - TSP2
    - www.tsp2.org
R&D WORKSHOP

Top Four

- Improved Inspection Techniques for Steel Pre-stressing Strands, Cables, & Ropes
- Best Practices for Preserving Bridges
- Quantify Information Necessary to Guide Bridge Preservation Decisions
- Implementation of Preservation Practices on Highway Bridges by State DOTs
RESEARCH

- “Guidelines for Selection of Bridge Deck Overlays, Sealers, and Treatments”
  - NCHRP Project 20-07 Task 234

- “Performance of Thin Polymer Overlays for Bridge Decks”
  - NCHRP Project 20-5 Topic 39-11

- “Developing a National Database System for Maintenance Actions on Highway Bridges”
  - NCHRP 14-15
INDUSTRY

- Bridge Preservation Association
- Stakeholders
  - Expertise
  - Applications
- Materials
- Equipment
REGIONAL

- **Regional Bridge Maintenance Groups**
  - NE, Midwest, NW, SW, SE

- **Research Partnerships**
  - NEPCOAT
  - NE Research Consortium

- **Univ. Transpo Centers**
OWNER / NYSDOT

- Regional Structures Management Teams
- Division Integration
- Documentation
  - Fundamentals Manual
  - Preservation Manual
  - MMS
- Bridge Maintenance Engineer Meetings
OWNER/NYSDOT

- Bridge Conference
- Skills Training
  - State & Local
    - “Shared Practices”
    - Maintenance Fairs
- Advocacy
- Research
OWNER / NYSDOT

- Assessment
  - Element Level
  - Decks - GPR

- Design Alternatives
  - Materials
  - Tools

- Delivery Mechanisms
  - State Forces
  - Traditional
  - JOC
ASSESSING NEEDS

- **POOR to BAD**
  - Replace

- **GOOD to GREAT**
  - PM

- **FAIR**
  - Urgency of Repair
    - Can it be Safely Deferred?
## Chloride Content at Varying Depths

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### Activity Totals

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<td>Repair Joints</td>
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<td>Repair Concrete Members</td>
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<td>Repair Deck</td>
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<td>Clean/Wash</td>
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<td>Repair Superstructure</td>
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FOCUS AREAS

Substructures

Deck Waterproofing

Expansion Joints

Spot Painting
MATERIALS & APPLICATIONS

[Images of materials and applications related to construction or roadwork.]
CONCRETE REPAIR
DELIVERY MECHANISMS

- Responsive & Flexible
- Field Engineering
  - Indeterminate Quantity
  - Indeterminate Location
- Own Forces
  - Equipment, Skills
- Contract
  - Non-Traditional
  - Job Order Contracting
JOB ORDER CONTRACTING
SUMMARY

- **Integration of PM**
  - Organization, Documents, Procedures
- **Assessment Tools**
  - Augment inspection data
- **Candidate Selection**
  - Decision Support
- **Delivery**
  - Timely, Flexible, Best Value
We, the bridge maintainers of America hold these truths to be self-evident: all joints leak, all concrete cracks, and rust never sleeps. We will strive to capitalize our way out of maintenance and maintain our way out of capital. It is our endeavor to educate others that a bridge is as important to a highway as a diamond is to a ring.
THANK YOU

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