

A National Perspective

BRIDGE SAFETY, MANAGEMENT & PRESERVATION DEVELOPMENTS

National Bridge Management, Inspection and Preservation Conference

November 1, 2011

St. Louis, MO

Anwar S. Ahmad, P.E.

Federal Highway Administration



**U.S. Department of Transportation
Federal Highway Administration**



Roadmap

- Reauthorization
- National Bridge Inspection Program
- National Bridge Inventory
- Research
- Preservation
- Management
- Tunnels



U.S. Department of Transportation
Federal Highway Administration



Reauthorization

- Nothing passed but continuing resolutions
- 2012 budget proposals



U.S. Department of Transportation
Federal Highway Administration



FY 2012 Budget Proposal: Highways

- \$336 billion over six-years
- Programs consolidated from 55+ to 5
 - National Highway Program
 - Safety Program
 - Livability Program
 - Research, Technology & Education Program
 - Federal Allocation Program
- Investments most critical to National interest
- Performance-based program in safety and “state of good repair”
- Spurs innovations to shorten project delivery and accelerate technology deployment



U.S. Department of Transportation
Federal Highway Administration



National Bridge Inspection Program

“Oversight & Technical Assistance”

- New FHWA oversight process
- LRFR Webinar Series
 - LRFR Implementation – 10/5/2011
 - LRFR and Load Ratings of Culverts – 11/17/2011
 - LRFR and Load Ratings of Segmental Bridges – 01/ 2012
- Assigned Load Rating Memo – 09/29/2011
- Technical Advisory on T-1 Steel – 09/12/2011



National Bridge Inspection Program “Training”

- **NHI 130053/130053A Bridge Inspection Refresher Training** - Major update completed in 2010
- **NHI 130054 Engineering Concepts for Bridge Inspections** - Major update completed in 2010
- **NHI 130055 Safety Inspection of In-service Bridges** - Major update underway



U.S. Department of Transportation
Federal Highway Administration



National Bridge Inspection Program

“Training”

- **NHI130078 Fracture Critical Inspection Techniques for Steel Bridges** - Major update completed in 2010
- **NHI 130091/130091A Underwater Bridge Inspection and Underwater Bridge Repair, Rehabilitation, and Countermeasures** - Major update completed in 2010
- **NHI 130099 – Bridge Inspection Non-Destructive Evaluation Showcase (BINS)** - New course



National Bridge Inspection Program

“Critical Findings” Project

- Goal: Collect facts on state-of-the-practice
 - HDR providing support to FHWA
 - Do we need to improve our national program?
-
- 12 States were visited between June and August
 - Report being prepared



National Bridge Inventory → Future

Vision: A National Bridge Inventory (NBI) that accurately reflects the condition and performance of our nation's highway bridges.

Objectives:

- Update NBI Coding Guide
- Transition bridge condition reporting requirements from general condition rating system to the element level condition state rating system
 - Develop Converter Tool (Element Condition States ↔ NBI Components General Condition Ratings)



Research Projects – Steel Bridges



Steel Bridge Testing Program: Evaluated...

1 – Acoustic Emission

2 – Eddy Current

3 - Electrochemical

4 – Finite Element

5 – Magnetometer

6 – Phased Array UT



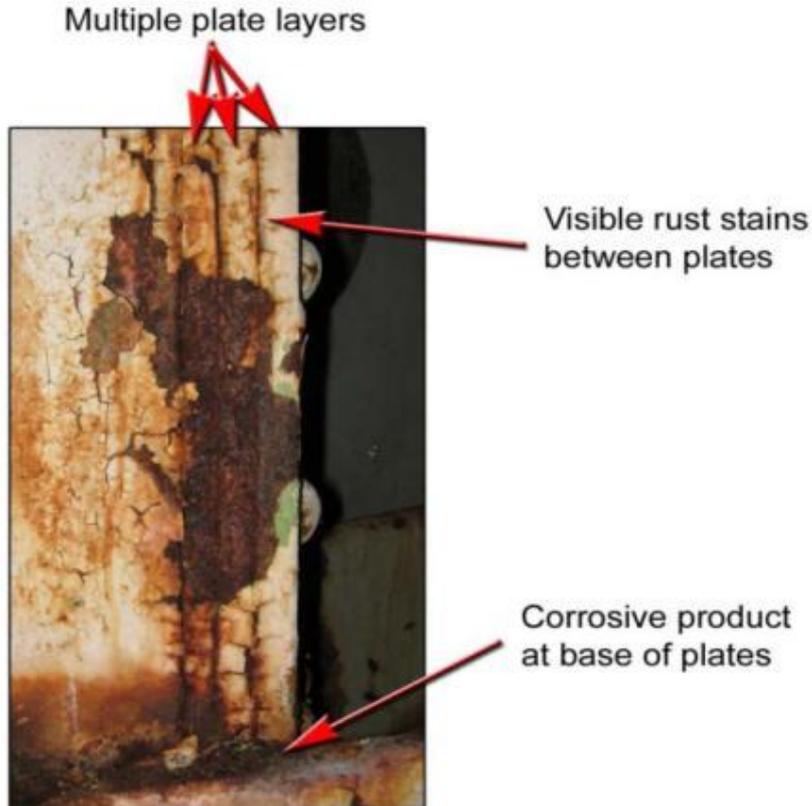
U.S. Department of Transportation

Federal Highway Administration



Research Projects – Steel Bridges

Gusset Plate Testing Program



- Develop inspection procedures for single- and multi-layer gusset plates
- Single-layer plates evaluated with Pocket and Phased Array UT
- Currently selecting available technologies for multi-layer inspection procedures
- Ongoing Project



Research Projects – Concrete Bridges

Prestressed Concrete Beams with Corrosion Induced Damage



- Better understanding of strand corrosion
- Evaluate:
 - corrosion mitigation and repair methods
 - NDE technologies
- Develop decision making protocol and maintenance manual

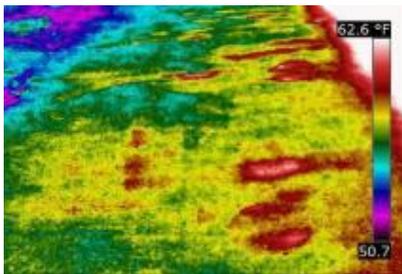


Research Projects – Concrete Decks

Time-resolved Microwave Thermoreflectometry for Corrosion Detection



- Identification of corrosion in reinforced concrete
- Combines multiple convention inspection techniques to achieve better results if used separately
- Time Resolved Thermography with Induction Heating and 3D microwave imaging



Pooled Fund Project

Underwater Inspection Using Acoustic Imaging Technology

- Evaluate the use of acoustic imaging technology to produce results equal or better than current practice for Level I underwater inspection
- To be conducted at the FHWA Hydraulics Lab
 - Two-year study
- Still accepting contributions



Active NCHRP Research Projects

NCHRP 12-82	Developing Reliability-Based Bridge Inspection Practices
NCHRP 12-84	Guidelines for the LRFR Design and Rating of Riveted, Bolted, and Welded Gusset-Plate Connections for Steel Bridges
NCHRP 14-19	Culvert Rehabilitation to Maximize Service Life While Minimizing Direct Costs and Traffic Disruption
NCHRP 14-20	Consequences of Delayed Maintenance
NCHRP 14-21	Resource Allocation Framework to Meet Highway Asset Preservation Needs
NCHRP 14-23	Practical Bridge Preservation Actions and Investment Strategies
NCHRP 14-24	Guidance for Communicating the Value of Highway System Maintenance and Preservation
NCHRP 14-25	Guide for Selecting Level-of-Service Targets for Maintaining and Operating Highway Assets
NCHRP 14-28	Condition Assessment of Bridge Post-Tensioning and Stay Cable Systems Using NDE Methods



Bridge Preservation

- FHWA Bridge Preservation Expert Task Group
- AASHTO Regional Partnerships
- AASHTO SCOBS, T-9 Committee
- AASHTO SCOM, BTWG
- TRB, AHD-00 Bridge Preservation Committee
- TRB, AHD-30 Structure Maintenance Committee
- ARTBA Bridge Council



Bridge Management

- Bridge Management Peer Exchanges
- Bridge Management Technical Assistance
- National Bridge Mgmt Business Plan and Roadmap
- Performance Based Bridge Management Training
- BMS Implementation Guide
- Bridge Management Case Study

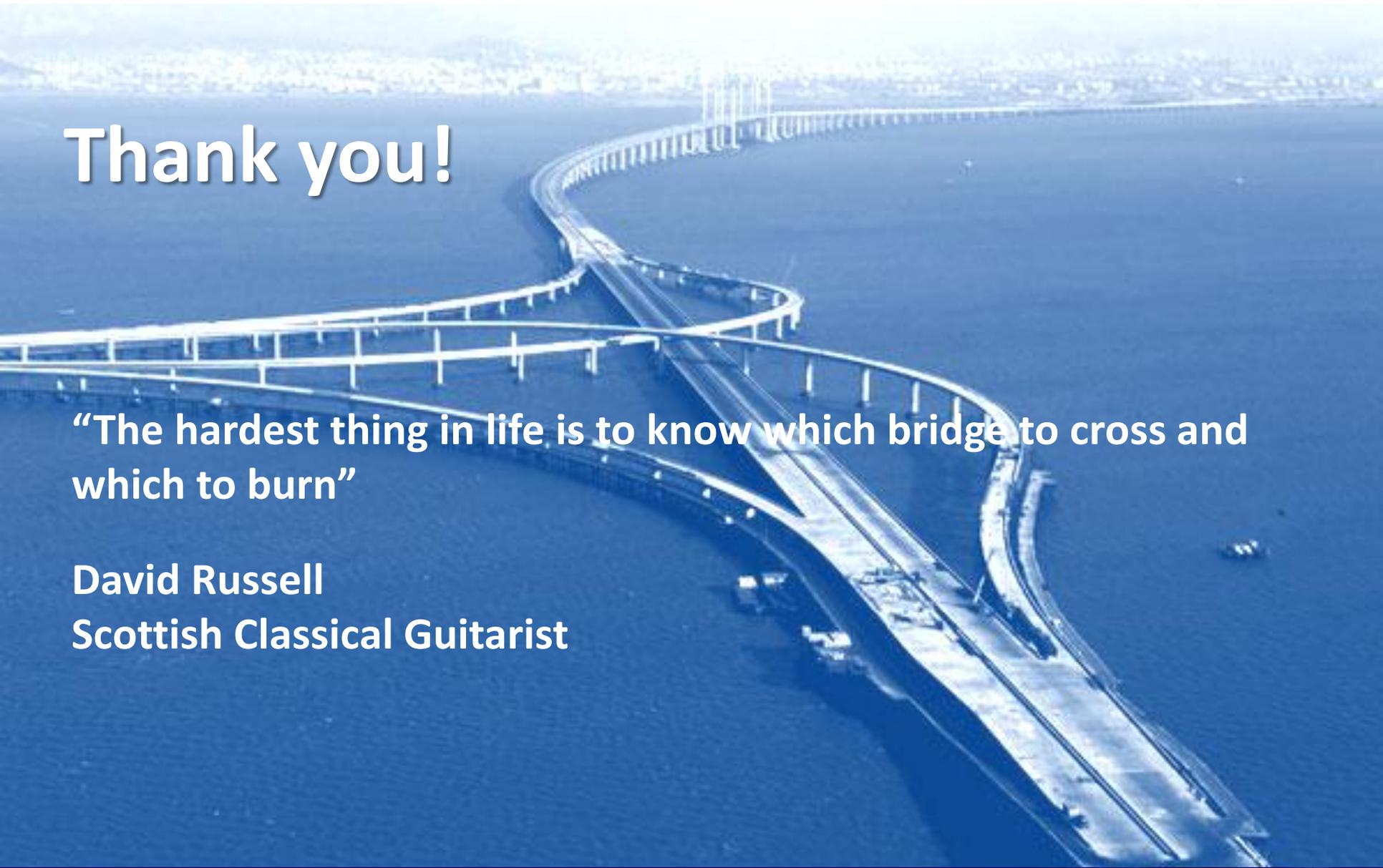


National Tunnel Inspection Standards



U.S. Department of Transportation
Federal Highway Administration





Thank you!

“The hardest thing in life is to know which bridge to cross and which to burn”

David Russell
Scottish Classical Guitarist



U.S. Department of Transportation
Federal Highway Administration

