NCHRP 20-68A
US Domestic Scan Program
Scan 07-05

Webinar – November 19, 2009

Best Practices in Bridge Management Decision-Making

AGENDA

- *Welcome & Introduction* - Shashi Gowda
- *Overview of Scan Results* - Pete Weykamp/Tod Kimball
- *California, Effective Practices* - Mike Johnson
- *Michigan, Effective Practices* - David Juntunen
- *Implementation Plan* - Bruce Johnson
- *Q/A Session*

NCHRP 20-68A
US Domestic Scan Program
Scan 07-05

Best Practices in Bridge Management Decision-Making

Overview of Scan Results

November 19, 2009

Peter Weykamp
Co-Chair
Bridge Maintenance Program Engineer
New York Department of Transportation

Tod Kimball
Co-Chair
Design and Structures Engineer
Federal Highway Administration

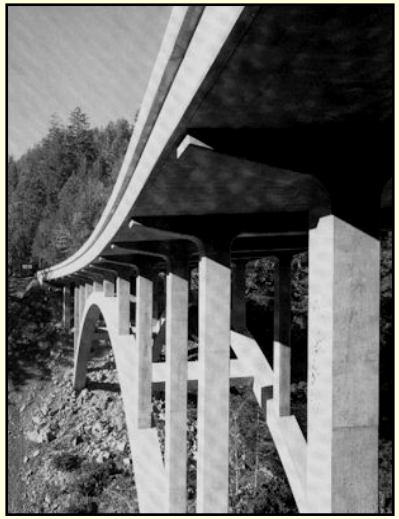
Purpose:

Discover and collect information on how DOTs manage maintenance of highway bridges and how maintenance impacts the overall bridge program

Focus on decision processes for maintenance programs;

How Do Decisions Rely On:

- Bridge Conditions
- Maintenance Needs
- Effectiveness of Maintenance
- Funding Availability



California

The Need: Background

- There are over 600,000 bridges nationwide
- Stakeholders:
  - 280,000 State bridges (46%)
  - 230,000 County bridges (38%)
  - 41,000 City bridges (7%)
  - 30,000 Town bridges (5%)
  - 8,000 Federal bridges (1%)
- Significant investment in bridge asset

Based on December 2008 NBI Data

The Need: National Perspective

<u>Concern Regarding a Number of Factors:</u>

- Rising traffic demand, heavier loads
- Continued bridge aging and deterioration
- Limited funds for rehabilitation and replacement
- Often inadequately funded maintenance programs

The Need: National Perspective

<u>Moreover, States are Experiencing:</u>

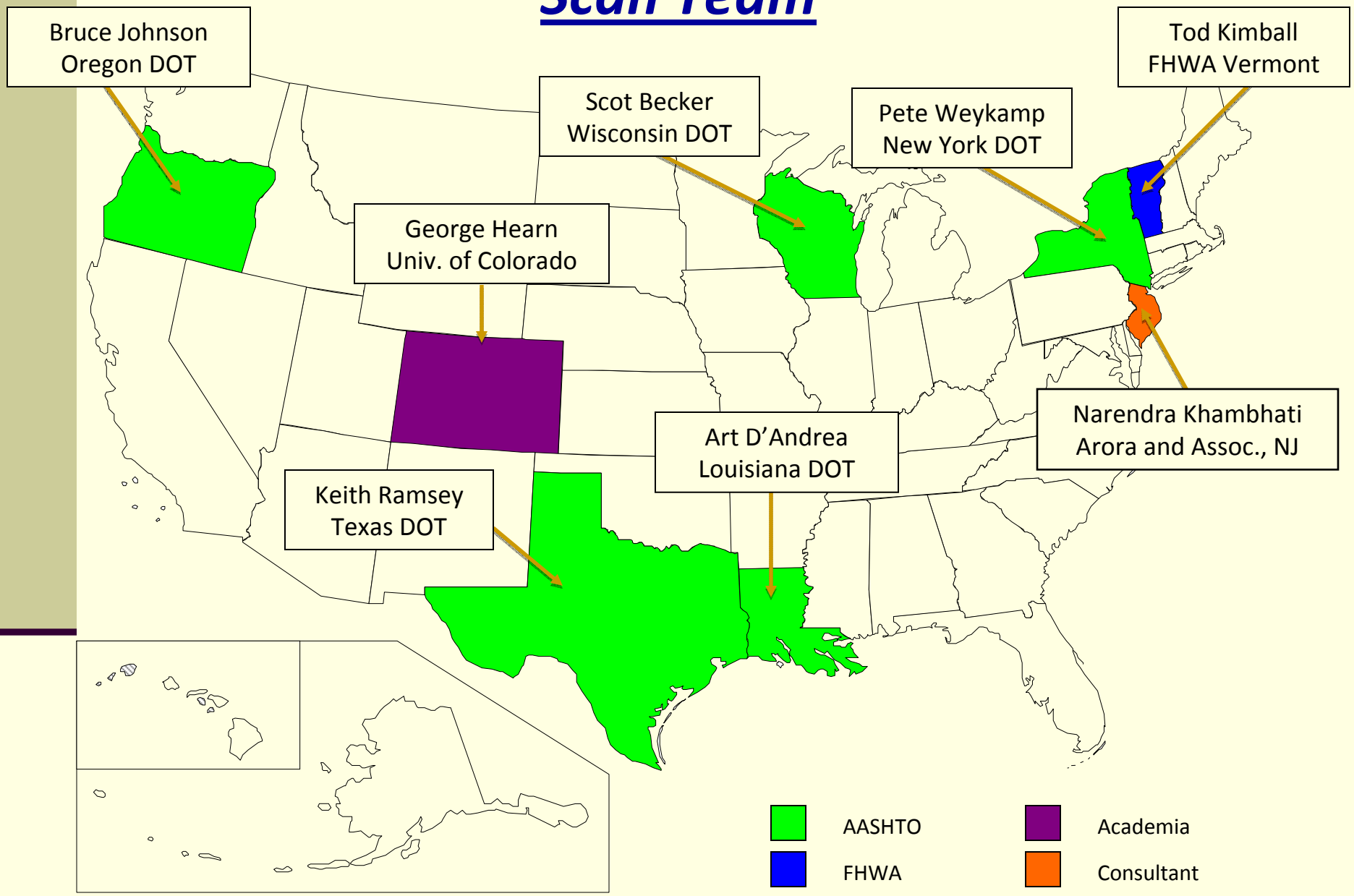
- Reduced revenue streams
- Diminished buying power
- Competing cross-asset demands for available funds

Summarizing:

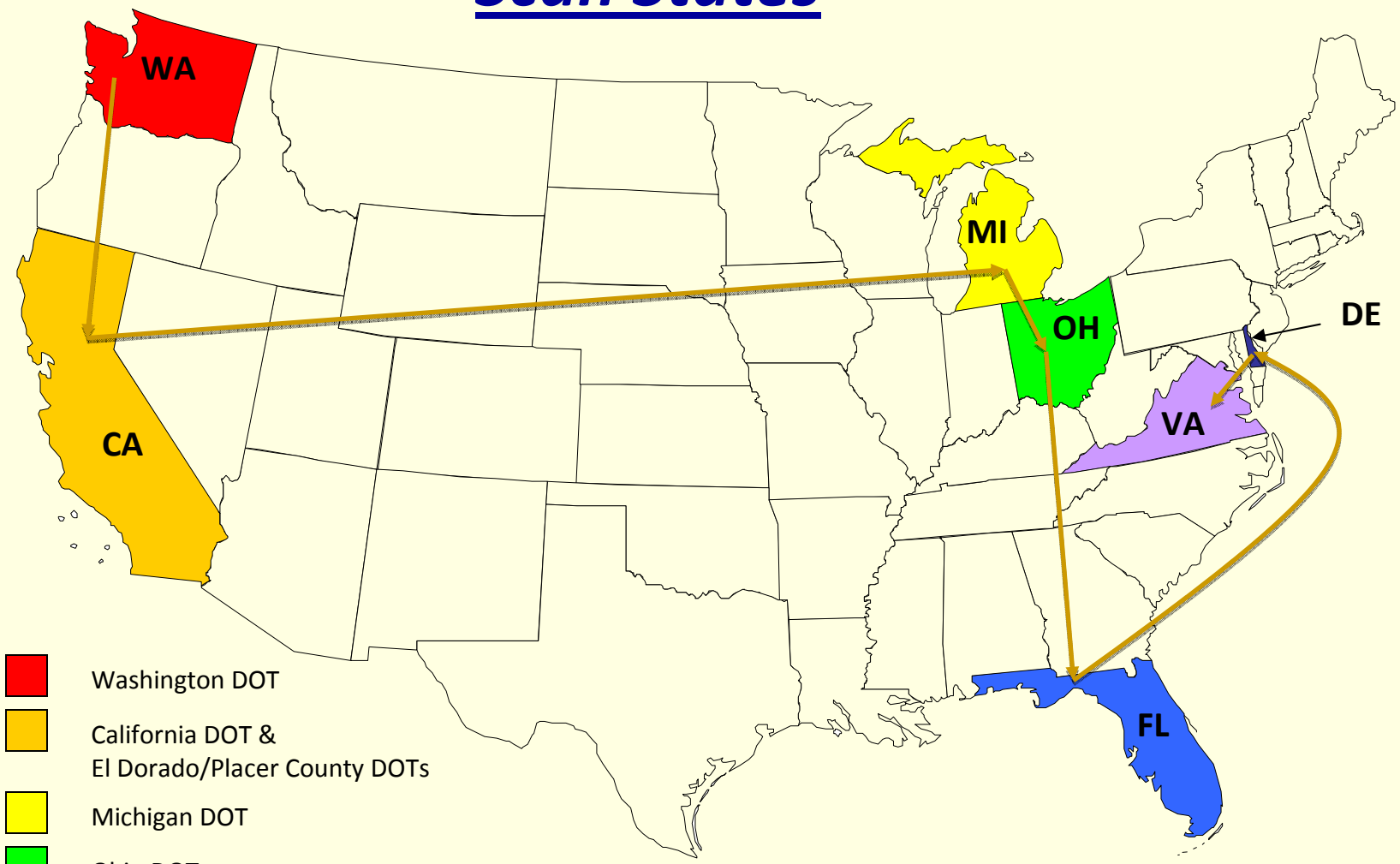
With the scale of the challenges facing the Country's bridge infrastructure today…

There is renewed national interest with how Bridge Maintenance Programs, as an integral part of any solution, can be best positioned and administered to meet these challenges.

Scan Team

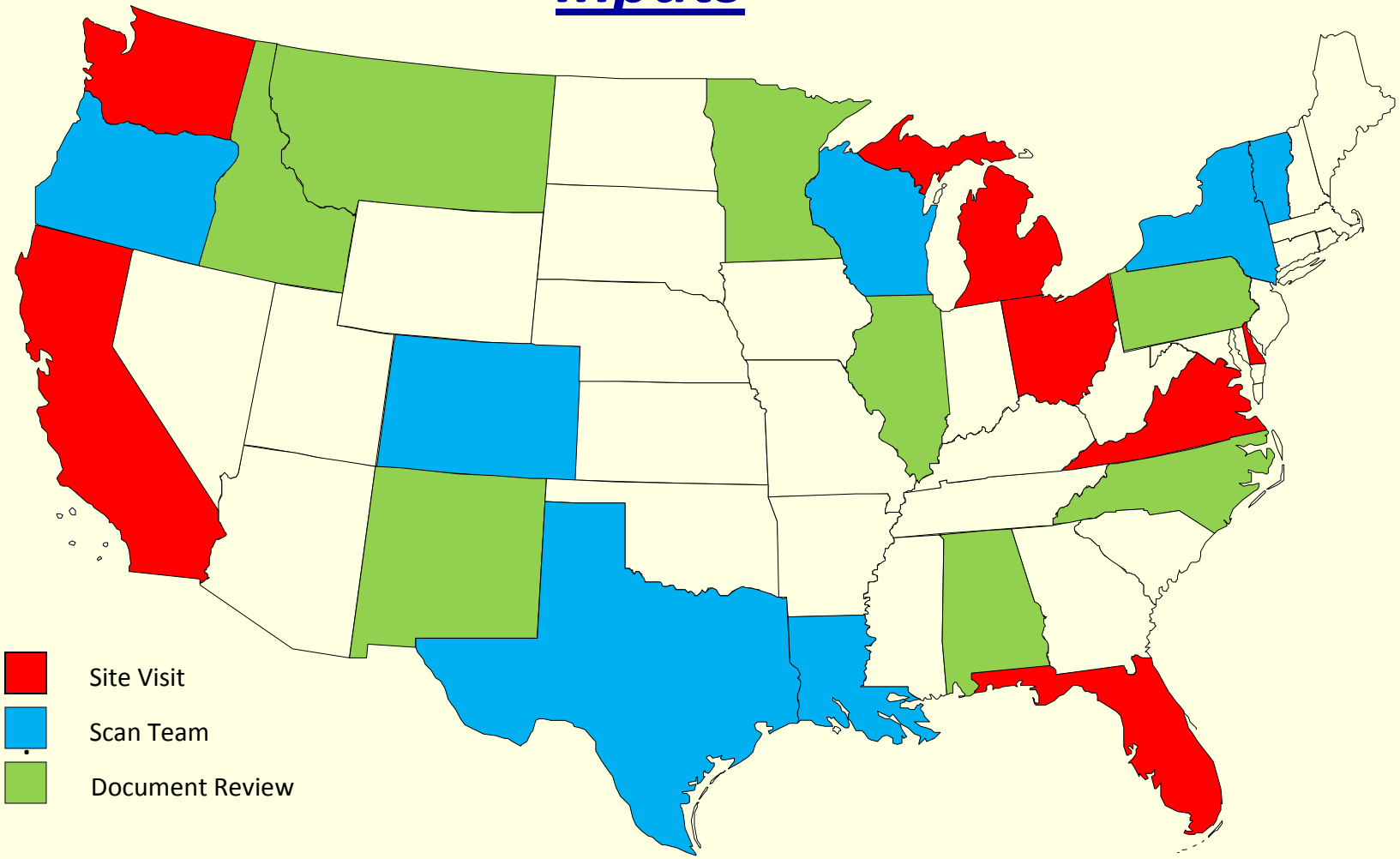

Bruce Johnson
Oregon DOT
Scot Becker
Wisconsin DOT
Pete Weykamp
New York DOT
Tod Kimball
FHWA Vermont
George Hearn
Univ. of Colorado
Art D'Andrea
Louisiana DOT
Narendra Khambhati
Arora and Assoc., NJ
Keith Ramsey
Texas DOT
AASHTO
Academia
FHWA
Consultant

Scan States



- Washington DOT
- California DOT & El Dorado/Placer County DOTs
- Michigan DOT
- Ohio DOT
- Florida DOT & Turnpike
- Delaware DOT
- Virginia DOT

Inputs



KEY FINDINGS

A. Bridge Management Process

B. Preventive Maintenance

C. Agency Support

Michigan

A. Bridge Management Process

Findings in 4 Areas of Bridge Management Process

- ***Maintenance Needs***
- ***Performance Measures***
- ***Prioritization***
- ***Verification***

A. Bridge Management Process

Maintenance Needs

- *Uniform, specific and repeatable*
- *Identified at the bridge element level*
- *Stated as standard work actions*
- *Accessible throughout the agency*

California

A. Bridge Management Process

Performance Measures

- *Match objectives in bridge maintenance*
- *Identify work to advance maintenance objectives*
- *Provide simple indications of status of bridge networks*

Virginia

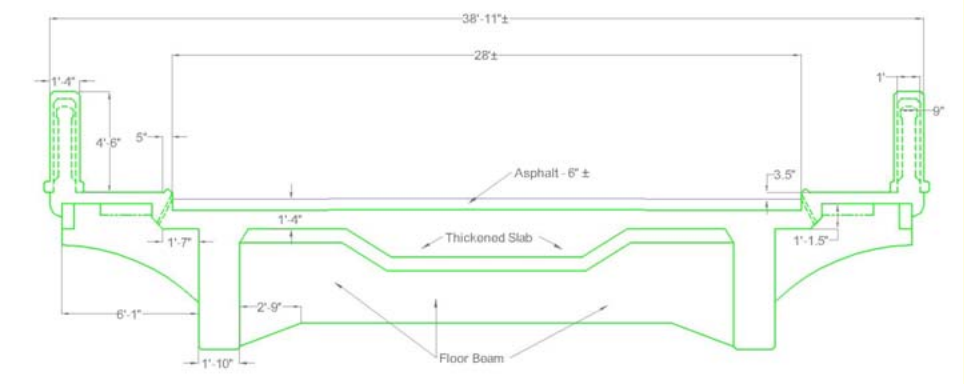
A. Bridge Management Process

Prioritization

- *Integrate objectives for deficiencies, preventive maintenance, network performance, and risk*

- *Engage both central and regional DOT offices*

- *Advance from network-level rankings to selection of specific projects*



Florida

A. Bridge Management Process

Verification

- *Maintenance work completed*
- *Conditions improved, Risk reduced, or PM met*
- *Report to BMS, MMS, Capital Program, …*

Michigan

B. Preventive Maintenance

- *Significant part of program*
- *Applied before bridges become deficient*
- *Implements clear plans of action*
- *Flexible allocation of resources*

Washington

C. Agency Support

All levels

- *Inspectors: Identify needs, Recommend actions, Verify completion*
- *Crews: Execute work, Take initiative*
- *District Engineers: Evaluate needs and trends, Seek funds and projects*
- *DOT Central: Use quantitative performance measures, Recognize districts' first-hand knowledge*
- *DOT Executives: Maintenance is not a episodic. Maintenance is continuing support*

Key Recommendations (Draft)

1. Require element-level inspection programs, and establish standard condition states, quantities, and recommended actions (maintenance, rehabilitation, replacement) to match the operational characteristics of the maintenance program of the agency
2. Establish national performance measures for all highway bridges for comparisons among bridge owners and owner-specific performance measures that can be used to allocate funding levels for a full range of actions to optimize bridge conditions

Key Recommendations (ctd)

3. Use owner-specific performance measures to set overall funding levels for maintenance programs.
4. Determine bridge needs and treatment schedule based on owner-specific objectives, and utilize schedule to develop needs-based funding mechanisms (for the full range of recommended actions) that are consistent with network performance measures.

Key Recommendations (ctd)

5. Establish standards, and require implementation by bridge owners, of preventive maintenance programs that are funded at levels set by analysis of performance measures. Programs must include the repair needs of 'cusp' bridges to keep them from becoming 'deficient' bridges. Experience in scan states has shown that preventive and minor maintenance must be a significant portion of bridge programs that optimize bridge conditions within limited budgets.

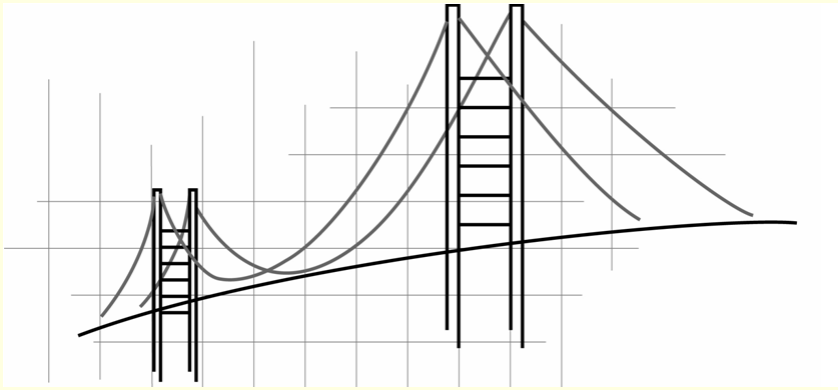
Key Recommendations (ctd)

6. Develop work programs for maintenance at the unit or crew level (i.e. at the lowest level of management or supervision) when those positions are staffed by supervisors with extensive field maintenance knowledge and experience. Avoid “blind” use of work programs from bridge management systems, and work programs dictated by goals to maximize performance measures (although both bridge management systems and performance measures provide useful information to maintenance crews).

Timeline

Scan Travel	*June 2009*
Scan Report	*December 2009(?)*
Implementation	*Summer 2009 & beyond*

Next Webinar – December 17: Featuring VA, WA, OH



California