



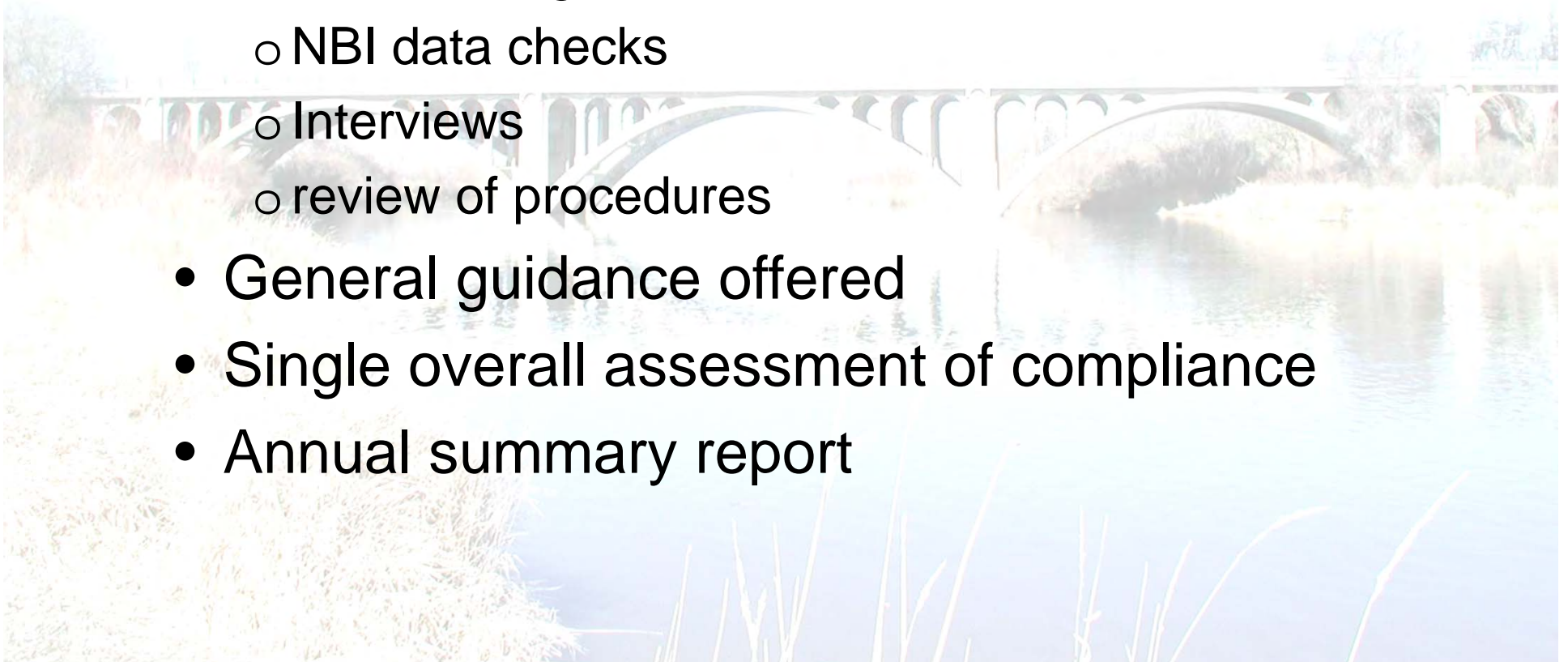
# **National Bridge Inspection Program**

## **Risk-based, Data-driven FHWA Oversight**

March 20, 2012

# Previous FHWA NBIP Oversight

- Typical annual review
  - review of files and documentation
  - on-site bridge visits
  - NBI data checks
  - Interviews
  - review of procedures
- General guidance offered
- Single overall assessment of compliance
- Annual summary report



# Background: Why are we doing this?

- Recognition by FHWA of several opportunities for improvement
- NBIP continually identified as high-risk area
- Concerns by States that level of oversight is not consistent across the nation
- **OLG audits following I-35W bridge collapse**
- **FY 2010 Appropriations Act - *“The Committee expects the Federal Highway Administration to **make more significant progress in improving its oversight of bridge conditions and safety over the course of fiscal year 2010.**”***

# OIG Audit Recommendations

## 1. Develop and implement an oversight program

- Minimum requirements for reviews
  - data-driven, risk based bridge oversight during annual NBIS compliance reviews
- Detailed criteria to be met
  - Determine compliance with greater consistency
- A policy
  - Define procedures for FHWA Division Offices to follow to enforce compliance with the NBIS

# OIG Audit Recommendations

## 2. Develop comprehensive plan

- Routinely conduct systematic, data-driven analysis to identify nationwide bridge safety risks
- Prioritize identified risks
- Target higher priority risks
- In implementing the plan:
  - Direct HIBT to prioritize nationwide bridge safety risks.
  - Direct Division Offices to work with states to remediate higher priority nationwide bridge safety risks

# What will this affect?

- **New NBIS regulations are not being created**
- **Overhaul of how FHWA monitors and assesses MDOT and Local Agency compliance with the NBIS including:**
  - **clear and uniform expectations for all States.**
  - **consistent criteria for judging each metric.**
  - **compliance determination based upon the criteria listed for each metric rather than an unstructured policy.**

# What does the new NBIP oversight process look like?

- 23 Individual Metrics. Each metric ...
  - Covers a specific requirement of the NBIS
- 3 Assessment Levels with Each level ...
  - Having specific criteria to be reviewed
- 4 Levels of Compliance. Each level ...
  - Having specific thresholds to meet for compliance

# What does the new NBIP oversight process look like? (continued)

- Evaluation process is consistent across the Nation
- Compliance with the NBIS is determined based upon statistical samples
- Compliance status is continuously being updated
- “Final Summary of Metric Compliance Report” reported annually on December 31



# Assessment Levels

- **Minimum**: Division Bridge Engineer's general knowledge and awareness of the state's program in relation to the metric.
- **Intermediate**: Verifying minimum level review through sampling of inspection records or files, analysis of NBI data, visits to bridges, interviews of inspectors, and documentation of qualifications
- **In-depth**: Supplementing intermediate review with larger sample sizes, more interviews, and research of records and/or history

# Compliance Definitions

- **Compliance:** The act of adhering to the NBIS regulation.
- **Substantial Compliance:** The act of adhering to the NBIS regulation with minor deficiencies. Deficiencies are expected to be corrected within 12 months or less, unless the deficiencies are related to issues that would most efficiently be corrected during the next inspection.
- **Non-Compliance:** The act of not adhering to the NBIS regulation. Identified deficiencies may adversely affect the overall effectiveness of the program. Failure to adhere to an approved plan of corrective action is also considered non-compliance.
- **Conditional Compliance:** The act of taking corrective action in conformance with an FHWA approved plan of corrective action (PCA) to achieve compliance with the NBIS. Deficiencies, if not corrected, may adversely affect the overall effectiveness of the program.

## **Metric #6: 23 CFR 650.311 Inspection frequency – Routine**

650.311 (a) (1) & (2) – Routine inspections

Have all bridges been inspected at regular intervals not exceeding 24 months? Have criteria to determine level and frequency for which bridges that require inspection at less than 24 months been established?

**Criteria:** Percent of bridges inspected in accordance with the established criteria and frequency.

### **Assessment Levels**

**Minimum:** Based on Division Office Bridge staff's knowledge and awareness of Agency's process for ensuring bridge inspections are performed on schedule. Generate standard reports on current and historical inspection frequency data and review results.

**Intermediate:** Generate standard reports on current and historical inspection frequency data and review results. Randomly sample using a MOE of 15% and a LOC of 80% to review bridge inspection records, including a historical review of reports, to ensure frequency in the records match the data recorded in the NBI. The sample population should include structurally deficient and load restricted bridges, as well as bridges that require inspection at less than 24 months, as applicable. The review should include some site visits.

**In-depth:** Generate standard reports on current and historical inspection frequency data and review results. Randomly sample using a MOE of 15% and a LOC of 90% to review bridge inspection records, including a historical review of reports, to ensure frequency in the records match the data recorded in the NBI. The sample population should include structurally deficient and load restricted bridges, as well as bridges that require inspection at less than 24 months, as applicable. Review criteria for establishing inspection intervals less than 24 months and ensure that the sampling includes bridges covered by the criteria. The review must include some site visits.

## **Compliance Levels**

**Compliance (C):** Yes. - All 100%

**Substantial Compliance (SC):** 100% of all structurally deficient or load restricted bridges (NBI item 41 coded as P or R) have been inspected in accordance with the established frequencies. At least 98% of all other bridges have been inspected in accordance with the established frequency. At most 2% of all other bridges have been inspected no more than 4 months beyond the scheduled inspection date.

**Non-Compliance (NC):** Less than 100% of all structurally deficient or load restricted bridges have been inspected in accordance with the established frequencies. Less than 98% of all other bridges have been inspected in accordance with the established frequency. Greater than 2% of all other bridges inspected within 4 months beyond the scheduled inspection date. Any bridge delinquent for inspection by more than 4 months.

**Conditional Compliance (CC):** Adhering to approved plan of corrective action.

**Sample Size Table**

Sample Size	Populations			
	Intermediate AL - (LOC of 80%)		In-depth AL - (LOC of 90%)	
	Tier 1 - (MOE of 15%)	Tier 2 - (MOE of 10%)	Tier 1 - (MOE of 15%)	Tier 2 - (MOE of 10%)
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	7	6	6	6
7	9	7	8	7
8	11	8	9	8
9	14	9	11	9
10	17	10	13	10
11	21	13	15	12
12	27	15	17	13
13	34	17	20	15
14	43	19	24	16
15	57	21	26	18
16	80	24	29	19
17	123	26	34	21
18	235	29	37	23
19	Over 1,248	32	44	25
20		35	50	27
21		39	58	28
22		42	68	31
23		47	80	33
24		52	95	35
25		57	116	37
26		63	144	40
27		70	187	42
28		77	257	45
29		86	395	48
30		97	794	51
31		109	Over 14,154	54
32		124		57
33		142		60
34		165		64
35		193		68
36		232		72
37		286		76
38		366		81
39		498		85
40		759		91
41		1,512		97
42		Over 27,668		103
43				110

NBIP Metrics Assessment Projected Schedule												
Metric	Description	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
		CY 2011	CY 2012	CY 2013	CY 2014	CY 2015	CY 2016	CY 2017	CY 2018	CY 2019	CY 2020	CY 2021
1	Br. Insp. Organization	Yellow	Green	Yellow	Green	Green	Green	Green	Yellow	Green	Green	Green
2	PM Qualification	Yellow	Green	Yellow	Green	Green	Green	Green	Yellow	Green	Green	Green
3	TL Qualification	Yellow	Green	Green	Yellow	Green	Green	Yellow	Green	Green	Green	Green
4	Load Rater Qualifn	Yellow	Blue	Green	Green	Green	Green	Yellow	Green	Green	Green	Green
5	U/W Diver Qualifn	Yellow	Green	Green	Green	Blue	Green	Green	Green	Green	Yellow	Green
6	Routine Insp. Freq.	Yellow	Green	Yellow	Green	Green	Green	Green	Yellow	Green	Green	Green
7	Routine- Exten. Freq.	Yellow	Green	Yellow	Green	Green	Green	Green	Yellow	Green	Green	Green
8	U/W Insp. Freq.	Yellow	Green	Green	Green	Yellow	Green	Green	Green	Green	Yellow	Green
9	U/W Insp.- Exten. Freq.	Yellow	Green	Green	Green	Yellow	Green	Green	Green	Green	Yellow	Green
10	FC Insp. Freq.	Yellow	Green	Green	Yellow	Green	Green	Green	Green	Yellow	Green	Green
11	Dam., In-Depth, Special Insp Freq.	Yellow	Green	Green	Green	Green	Yellow	Green	Green	Green	Green	Yellow
12	TL Procedures	Yellow	Green	Yellow	Green	Green	Green	Green	Yellow	Green	Green	Green
13	Load Rating Procedures	Yellow	Blue	Green	Green	Green	Green	Yellow	Green	Green	Green	Green
14	Posting Procedures	Yellow	Yellow	Green	Green	PCA Ends	Yellow	Green	Green	Green	Yellow	Green
15	Bridge Files Procedures	Yellow	Green	Green	Yellow	Green	Green	Green	Green	Blue	Green	Green
16	FC Procedures	Yellow	Green	Green	Yellow	Green	Green	Green	Green	Blue	Green	Green
17	U/W Procedures	Yellow	Green	Green	Green	Blue	Green	Green	Green	Green	Yellow	Green
18	Scour Critical POAs	Yellow	Green	Green	Green	Yellow	Green	Green	Green	Green	Blue	Green
19	Complex Bridge Insp. Procedures	Yellow	Green	Yellow	Green	Green	Green	Yellow	Green	Green	Green	Green
20	QC/QA Procedures	Yellow	Yellow	Green	Green	Green	Green	Yellow	Green	Green	Green	Green
21	Critical Findings Procedures	Yellow	Yellow	Green	Green	Green	Green	Yellow	Green	Green	Green	Green
22	State Inventory of Bridges	Yellow	Green	PCA Ends	Yellow	Green	Green	Green	Yellow	Green	Green	Green
23	Timeliness of Data Updates	Yellow	Green	Green	Yellow	Green	Green	Green	Green	Yellow	Green	Green

Key:	Green	Minimum Assessment
	Yellow	Intermediate Assessment
	Blue	In-Depth Assessment
	Yellow with diagonal lines	5-Yr Summary & Trend Analysis

Population:		10,847	0	287	0	111	91	10,847	10,847	1,197	10,847	111	287	2,093	25	10,847	10,847	10,847
Intermediate Tier1:		19	0	18	0	16	16	19	19	18	19	16	18	19	11	19	19	19
Intermediate Tier2:		41	0	37	0	31	29	41	41	40	41	31	37	41	16	41	41	41
In-Depth Tier1:		30	0	28	0	24	23	30	30	30	30	24	28	30	14	30	30	30
In-Depth Tier2:		68	0	55	0	43	40	68	68	65	68	43	55	66	19	68	68	68
Rnd Num	8 Str Num	M6	M7	M8	M9	M10	M11c	M12	M13	M14	M15	M16	M17	M18	M19	M20	M22	M23
0.000015	27306C00015B010	A1	-	-	-	-	-	A1	A1	-	A1	-	-	A1	-	A1	A1	A1
0.000024	78304H00030B010	A1	-	-	-	-	-	A1	A1	-	A1	-	-	-	-	A1	A1	A1
0.000077	39139014000S030	B1	-	-	-	-	-	A1	B1	-	A1	-	-	-	-	A1	A1	A1
0.000134	64164015000S180	A1	-	-	-	-	-	A1	A1	-	A1	-	-	-	-	A1	A1	A1
0.000391	19119022000S020	A1	-	-	-	-	-	A1	A1	-	A1	-	-	-	-	A1	A1	A1
0.000429	25307H00003B010	B1	-	-	-	-	-	A1	B1	-	A1	-	-	A1	-	A1	A1	A1
0.000585	67167031000B020	A1	-	-	-	-	-	A1	A1	-	A1	-	-	A1	-	A1	A1	A1

Topic 14 - Ecological Inspecti

Organizations





<b>Metric</b>	<b>Description</b>	<b>Final Determination</b>
1	Bridge Inspection Organization	Compliant
2	Qualifications of Personnel -Program Manager	Compliant
3	Qualifications of Personnel -Team Leader	Compliant
4	Qualifications of Personnel -Load Rating Engineer	Compliant
5	Qualifications of Personnel -UW Bridge Inspection diver	Compliant
6	Inspection Frequency - Routine	Conditional Compliance
7	Inspection Frequency - Routine Extended	Compliant
8	Inspection Frequency - Underwater	Conditional Compliance
9	Inspection Frequency - Underwater Extended	Compliant
10	Inspection Frequency - Fracture Critical Member	Conditional Compliance
11	Inspection Frequency - Damage, In-depth or Special	Substantial Compliant
12	Inspection Procedures - Team Leader	Compliant
13	Inspection Procedures - Load Rating	Conditional Compliance
14	Inspection Procedures - Post or Restrict	Substantial Compliant
15	Inspection Procedures - Bridge files	Conditional Compliance
16	Inspection Procedures - Fracture Critical Members	Conditional Compliance
17	Inspection Procedures - Underwater	Compliant
18	Inspection Procedures - Scour Critical Bridges	Compliant
19	Inspection Procedures - Complex Bridges	Compliant
20	Inspection Procedures - QC/QA	Substantial Compliant
21	Inspection Procedures - Critical Findings	Conditional Compliance
22	Inventory - Prepare and Maintain	Compliant
23	Inventory - Update Data	Compliant

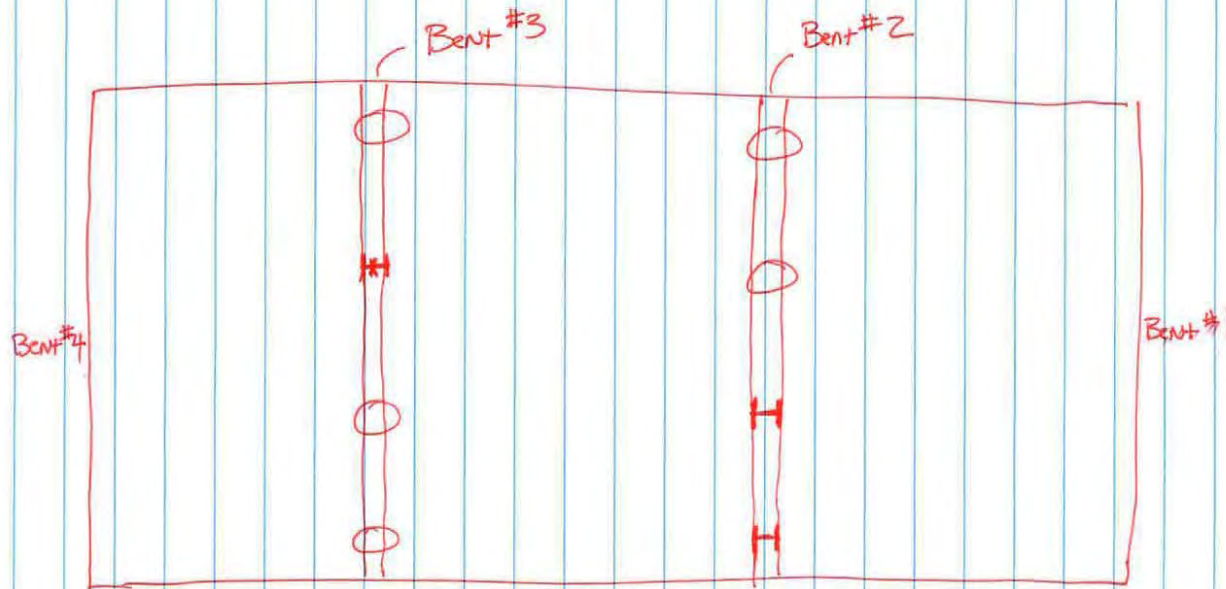
- **What is the current status?**
- Analysis of the 2011 assessments is underway and will be completed this spring.
- Improvement opportunities have been identified in State programs, and corrective actions are underway.
  
- **What are future steps for the NBIP oversight process?**
- Results are being evaluated to identify any national risk areas and possible emphasis areas for future assessments.
- Improvements will be made to FHWA's oversight process based upon the results of the 2011 baseline assessment.
- Timeline shifted to April thru April. Determinations due at end of December, PCA's by end of March.
  
- **Preliminary Statistics based on 2011 Assessments**
- There are 1196 total metrics (23 metrics in 52 states - includes PR & DC).
- Out of the total metrics reported:
- 71% of the metrics can be viewed as representing satisfactory program components
  - ~60% of the metrics (713) determined to be fully compliant
  - ~11% of the metrics (130) assessed as substantially compliant
- 28% of metrics (338) represent program areas that are actively improving under approved plans of corrective actions.
- 1% of the metrics (15) assessed as "non-compliant" and represent program areas that need improvement. Four states involved.
- 
- **The following 2011 metrics had the highest number of assessments resulting in plans of corrective action:**
- Routine Inspection Frequency (Metric 6)
- Fracture Critical Inspection Frequency (Metric 10)
- Load Rating Procedures (Metric 13)
- Plans of Action for Scour Critical Bridges (Metric 18)
- Underwater Inspection Frequency (Metric 8)

# Questions



Oct. 6, 2011

④



○ - missing piling

⊞ - Piling cut @ BASE

H - Remaining Piling

SKETCH #1 - PLAN View (N.T.S.)

BRIDGE # SA0900000000165

PILING VANDALISM





