

National Bridge Inspection Program

Risk-based, Data-driven FHWA Oversight

March 21, 2012

National Bridge Inspection Standards (NBIS) Metrics

Metric #1: 23 CFR 650.307 Bridge inspection organization

Metric #2: 23 CFR 650.309 Qualifications of personnel – Program Manager

Metric #3: 23 CFR 650.309 Qualifications of personnel – Team Leader(s)

Metric #4: 23 CFR 650.309 Qualifications of personnel – Load Rating Engineer

Metric #5: 23 CFR 650.309 Qualifications of personnel – UW Bridge Inspection Diver

Metric #6: 23 CFR 650.311 Inspection frequency – Routine

Metric #7: 23 CFR 650.311 Inspection frequency – Routine Extended

Metric #8: 23 CFR 650.311 Inspection frequency – Underwater

Metric #9: 23 CFR 650.311 Inspection frequency – Underwater Extended

Metric #10: 23 CFR 650.311 Inspection frequency – Fracture Critical

Metric #11: 23 CFR 650.311 Inspection frequency – Damage, In-depth or Special

Metric #12: 23 CFR 650.313 Inspection procedures – Team Leader

Metric #13: 23 CFR 650.313 Inspection procedures – Load Rating

Metric #14: 23 CFR 650.313 Inspection procedures – Post or Restrict

Metric #15: 23 CFR 650.313 Inspection procedures – Bridge Files

Metric #16: 23 CFR 650.313 Inspection procedures – Fracture Critical Members

Metric #17: 23 CFR 650.313 Inspection procedures - Underwater

Metric #18: 23 CFR 650.313 Inspection procedures – Scour Critical Bridges

Metric #19: 23 CFR 650.313 Inspection procedures – Complex Bridges

Metric #20: 23 CFR 650.313 Inspection procedures – QC/QA

Metric #21: 23 CFR 650.313 Inspection procedures – Critical Findings

Metric #22: 23 CFR 650.315 Inventory – Prepare and Maintain

Metric #23: 23 CFR 650.315 Inventory – Update Data

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	5-Yr Summary & Trend Analysis									

Metric	Description	Final Determination
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.
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- **The following 2011 metrics had the highest number of assessments resulting in plans of corrective action:**
- Routine Inspection Frequency (Metric 6)
- Underwater Inspection Frequency (Metric 8)
- Fracture Critical Inspection Frequency (Metric 10)
- Load Rating Procedures (Metric 13)
- Plans of Action for Scour Critical Bridges (Metric 18)

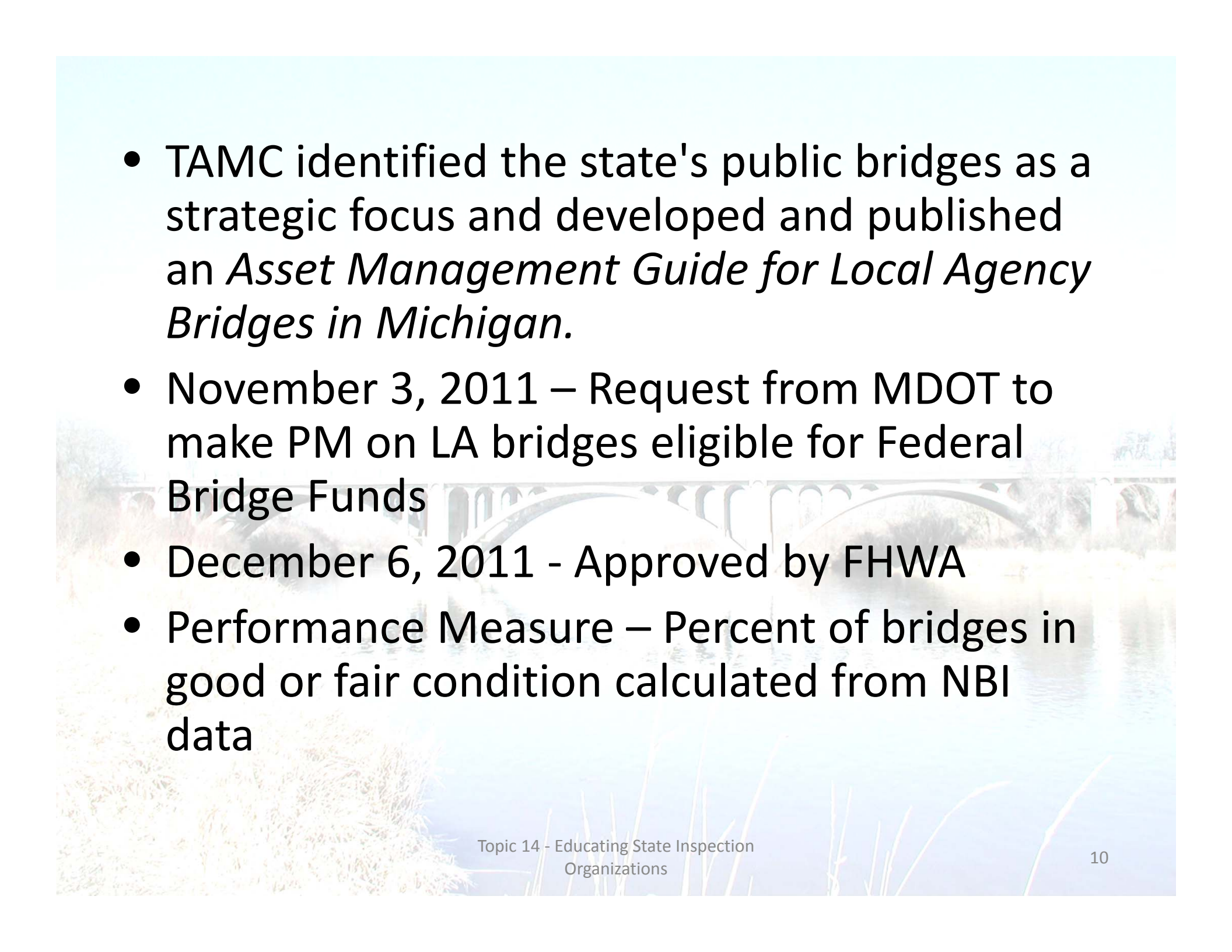
Preventive Maintenance on Local Agency Bridges

- **Preventive Maintenance-** PM is a planned strategy of cost-effective treatments to an existing roadway system and its appurtenances that preserves the system, retards future deterioration, and maintains or improves the functional condition of the system (without substantially increasing structural capacity). (AASHTO)

Preventive Maintenance- Commentary

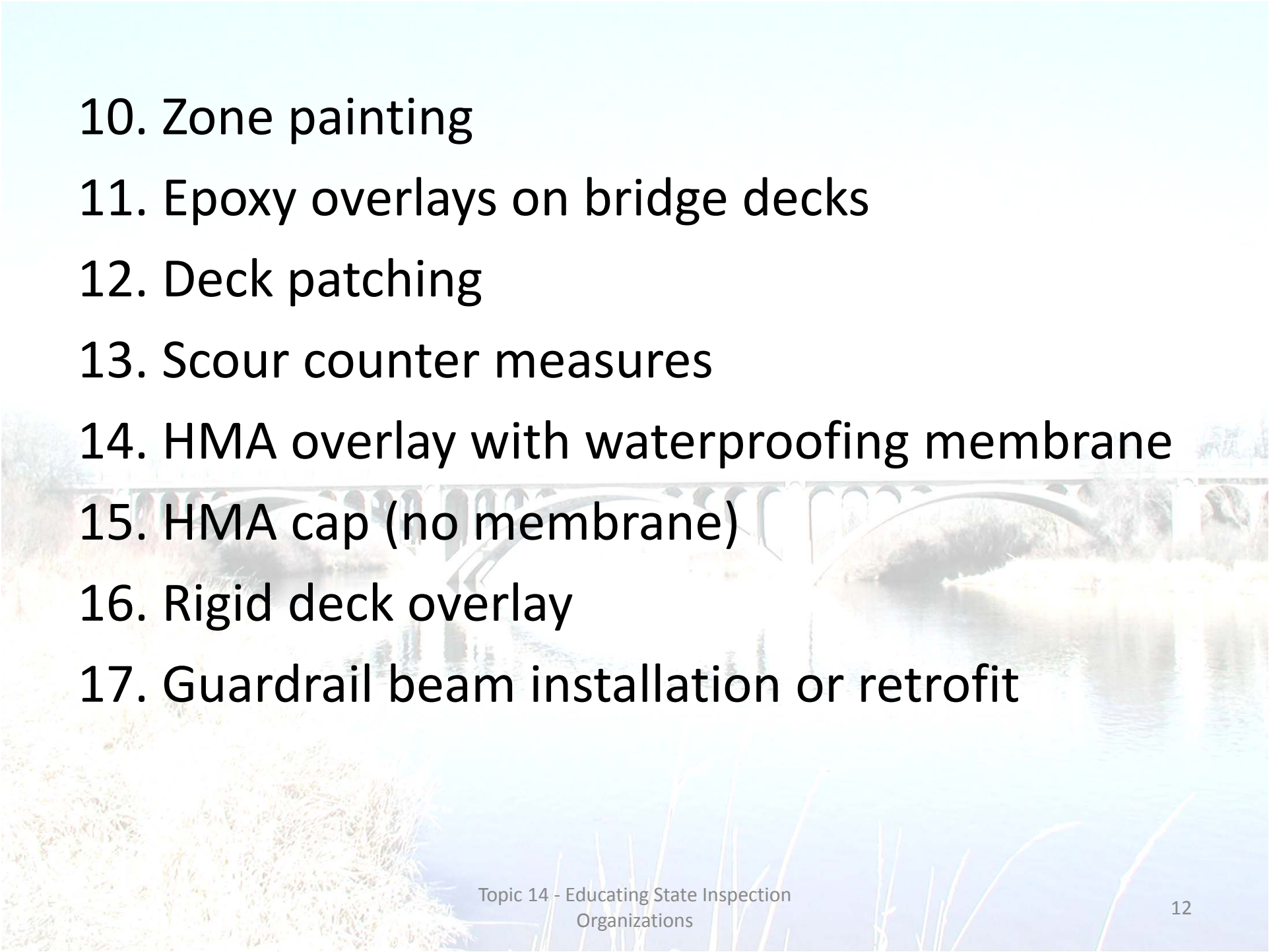
- Bridge owners typically apply PM to elements or components of structures with significant remaining useful life.
- As a major part of bridge preservation, PM is a strategy of extending useful life by applying cost-effective treatments to sound bridges (good or fair condition).
- The concept of preventive bridge maintenance suggests a planned strategy of cost-effective treatments should be performed to keep bridges in good condition, retard future deterioration, and avoid large expenses in bridge reconstruction or replacements.

- HBP funds are allowed to be expended for **systematic preventive maintenance** on highway bridges located on public roads.
- The FHWA - MI Division has allowed MDOT to use HBP funds for preventive maintenance since 1999
- Michigan's Transportation Asset Management Council (TAMC) was established to annually systematically assess the condition of the state's road and bridge systems.

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- TAMC identified the state's public bridges as a strategic focus and developed and published an *Asset Management Guide for Local Agency Bridges in Michigan*.
 - November 3, 2011 – Request from MDOT to make PM on LA bridges eligible for Federal Bridge Funds
 - December 6, 2011 - Approved by FHWA
 - Performance Measure – Percent of bridges in good or fair condition calculated from NBI data

Classifications of Local Agency PM

1. Drainage system cleaning out and repair (bridge deck joints and bridge approach down spouts)
2. Spot painting
3. Expansion or construction joint repair or replacement
4. Concrete sealing
5. Minor concrete patching and repair
6. Concrete crack sealing
7. Approach pavement relief joints
8. Slope paving repair
9. Pin and hanger replacement

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10. Zone painting
 11. Epoxy overlays on bridge decks
 12. Deck patching
 13. Scour counter measures
 14. HMA overlay with waterproofing membrane
 15. HMA cap (no membrane)
 16. Rigid deck overlay
 17. Guardrail beam installation or retrofit

Administration

- Through MDOT's Local Agency Program Division and the Local Agency Bridge Advisory Board and Regional Bridge Councils.



FHWA - MDOT Stewardship and Oversight Agreement

November 29, 2011

- data-driven decision making process
- use of performance management principles

Goals

1. We will plan, build, maintain and operate the highest quality, integrated transportation system for the economic benefit, safety, and improved quality of life for our customers.
2. We will optimize the use of all available Federal aid to achieve the best outcomes for the transportation system and our customers.
3. We will collaborate to be as efficient and streamlined as possible in delivering the FAHP.
4. We will collaborate to pursue innovative approaches to improve Federal aid Highway Program processes and to enhance transportation system performance.
5. We will apply value-added stewardship and risk-based management to ensure effective management of the Federal aid Highway Program.

Project Oversight

Type of Project	Primary Oversight Responsibility
Interstate 4-R \geq \$5 million	FHWA
Interstate 4-R $<$ \$5 million	MDOT
Interstate 3-R \geq \$5 million	FHWA or MDOT - to be determined
Interstate 3-R $<$ \$5 million	MDOT
Non-Interstate NHS \geq \$5 million	FHWA or MDOT - to be determined
Non-Interstate NHS $<$ \$5 million	MDOT
Non-NHS - All Projects	MDOT
Major Projects \geq \$500 million	FHWA
Projects \$100-500 million	FHWA or MDOT - to be determined

Program and Risk Assessments

- Program assessments are used to evaluate the current state of the program and determine the desired future state. Program assessments then identify initiatives intended to ‘close the gap’ between current practice and the desired future state.
- Program assessments are used to document and ensure programs operate efficiently and effectively, compliance with federal regulations, and to ensure project oversight.

Program Reviews

Program Reviews are a primary tool used by FHWA to evaluate and oversee the delivery of the FAHP. The size and intensity of the Program Review will depend on the topic or program being reviewed. The primary purpose of the Program Review is to provide the FHWA with a control technique that documents Federal Aid funds are being spent in accordance with federal laws, regulations, and policies. In addition, the Program Review may evaluate the effectiveness of the processes, procedures, and products developed by MDOT, as well as the internal operations of the FHWA.

Moving Ahead for Progress in the 21st Century

(MAP-21)

Senate Bill: 1813

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Current Extension thru
3/31/2012

Every Day Counts



Questions

