

Bridge Preservation - Maintaining State of Good Repair Using Low Cost Investment Strategies



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Presentation Outline

- **National Bridge Preservation Efforts**
- **Bridge Preservation Related Terminology**
- **Systematic Preventive Maintenance**
- **Cost Effective Bridge Preservation Examples**

National Bridge Preservation Efforts

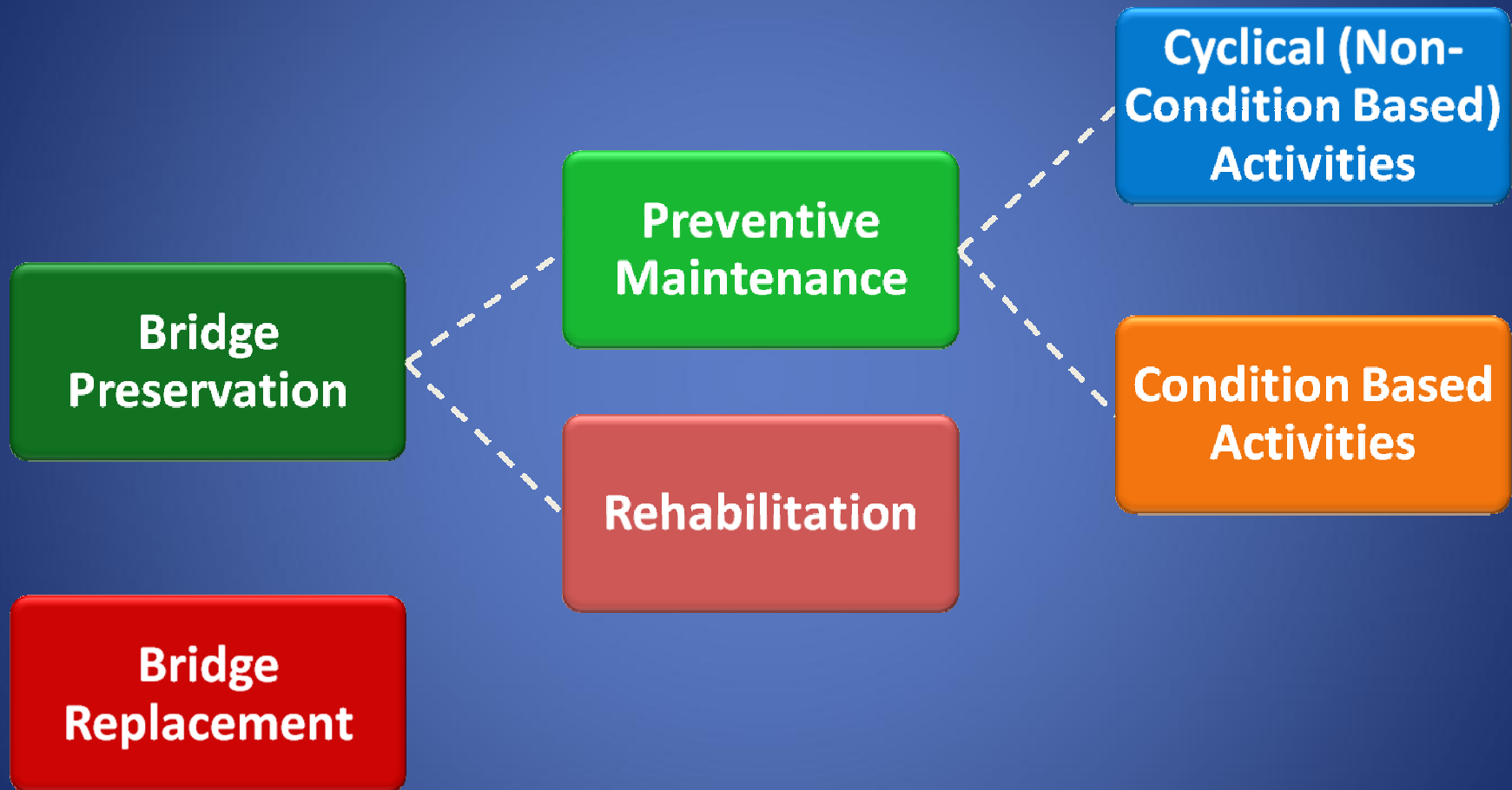
- FHWA Bridge Preservation Expert Task Group (ETG)
- AASHTO (TSP.2), Bridge Preservation Regional Partnerships
- Bridge Preservation Association
- AASHTO SCOBs, T-9 Committee
- TRB, AHD-00 Committee



BRIDGE PRESERVATION ACTION ITEMS

Action Items	Organization				
	SEBPP	NEBPP	MWBPP	WBPP	BPETG
Performance Measures	✓		✓		✓
Public Awareness/Marketing	✓	✓			✓
Research	✓	✓		✓	✓
Specifications & Materials	✓				✓
Toolbox, & Best Practices	✓		✓	✓	✓
Website Development	✓	✓		✓	
Definitions	✓	✓	✓		✓
Maintenance Contracting		✓			
2011 Meeting Planning	✓	✓	✓	✓	
Local Agency Outreach			✓		
Monitor BP Laws, Regs, & Policies					✓
BP as Applied Asset Management					✓
Streamline Analysis & Data					✓
Presentation					
Work Force Training & Development					✓

Bridge Preservation Terminology



Bridge Preservation Definition

Actions or strategies that prevent, delay or reduce deterioration of bridges or bridge elements, restore the function of existing bridges, keep bridges in good condition and extend their useful life. Preservation actions may be preventive or condition-driven.



Preventive Maintenance

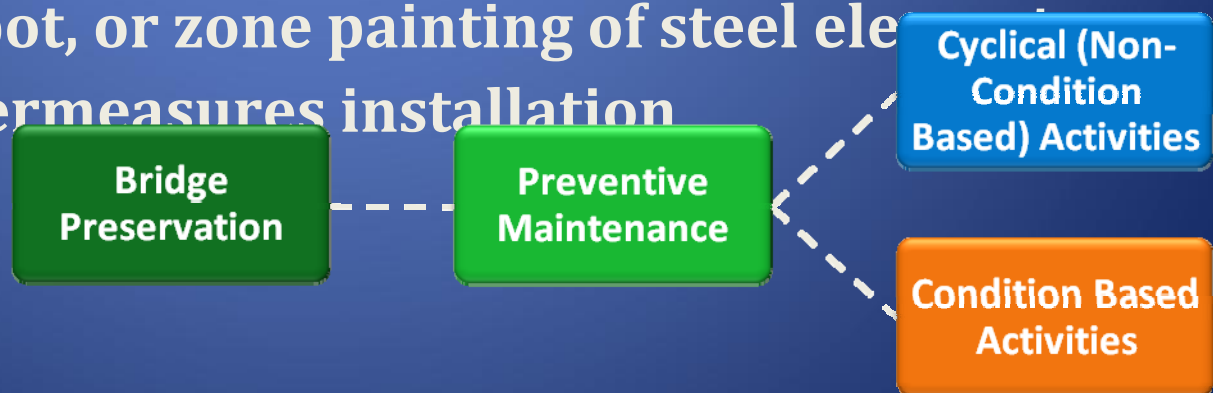
Preventive maintenance is a planned strategy of cost-effective treatments to an existing roadway system and its appurtenances that preserves the system, retards future deterioration, and maintains or improves the functional condition of the system (without substantially increasing structural capacity).

Source: AASHTO Subcommittee on Maintenance



Preventive Maintenance

- Preventive maintenance (PM) is considered a component of preservation
- PM includes cyclical (non-condition based) and condition based maintenance activities
- Examples of condition based PM activities include:
 - Sealing or replacing leaking joints
 - Installation of deck overlays
 - Installation of Cathodic Protection (CP) systems
 - Complete, spot, or zone painting of steel elements
 - Scour countermeasures installation
 - etc.



Preventive Maintenance

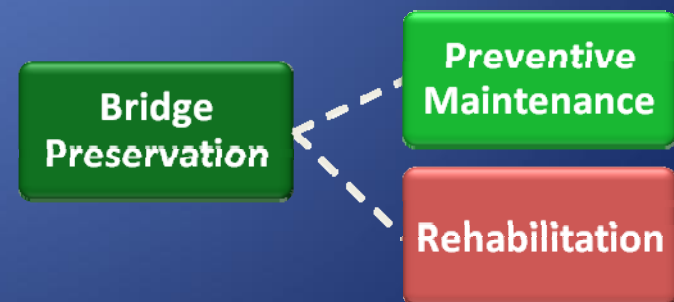
Cyclical PM Activity Examples	Commonly Used Frequencies ⁽²⁾
Wash/clean bridge decks or entire bridge	1 to 2 Years
Install deck overlay on concrete decks such as:	10 to 15 Years
- Thin bonded polymer system overlays	
- Asphalt overlays with waterproof membrane	10 to 15 Years
- Rigid overlays such as silica fume and latex modified	20 to 25 Years
Seal concrete decks with waterproofing penetrating sealant	3 to 5 Years
Zone coat steel beam/girder ends	10 to 15 Years
Lubricate bearing devices	2 to 4 Years
Coat timber elements with wood preserver sealant	1 to 2 Years

⁽²⁾- Frequencies are based on FHWA's knowledge of typical state DOT Practices

Rehabilitation

Rehabilitation involves major work required to restore the structural integrity of a bridge as well as work necessary to correct major safety defects. *Source: 23 CFR 650.403(c).*

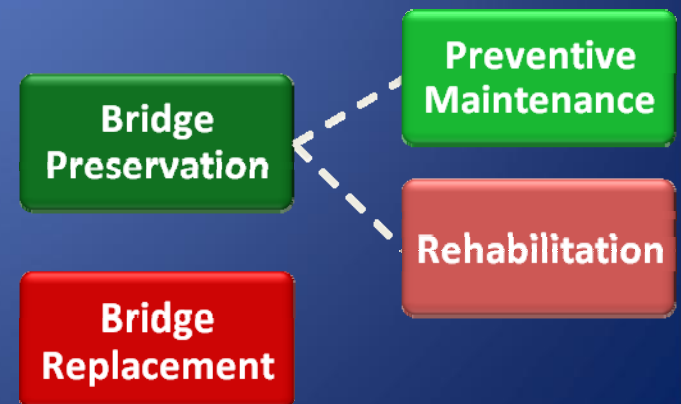
- bridge rehabilitation activities are considered bridge preservation. However functional improvements such as adding a travel lane or raising vertical underclearance, while often is considered as rehabilitation are not considered preservation.



Replacement

Total replacement of a structurally deficient or functionally obsolete bridge with a new facility constructed in the same general traffic corridor. the facility over its design life. *Source: 23 CFR 650.405(b)(1).*

- Bridge replacement is not considered a preservation activity.



Benefits of Preventive Maintenance

- **Cost Effective**
- **Minimum Traffic Disruption**
- **Lower User Costs**
- **Public Safety**
- **Reduce Need to Rehab and Replace**



Systematic Preventive Maintenance



Examples of Preservation Activities

- ❑ Following are examples of preservation activities that can extend the life of bridges when applied to the appropriate bridge at the appropriate time:

1. Seal or replace leaking joints or elimination of deck joints



Examples of Preservation Activities

2. Deck overlays



Examples of Preservation Activities

3. Spot, zone, and complete coating of structural steel elements.



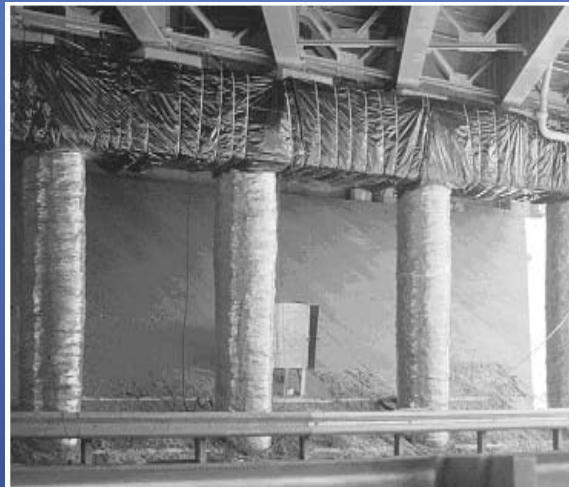
Examples of Preservation Activities

5. Installation of Cathodic Protection (CP) Systems.



Examples of Preservation Activities

6. Electrochemical Chloride Extraction (ECE) Treatment for decks and substructure elements



Examples of Preservation Activities

7. Installations of scour countermeasures.

8. Removing large debris from channels.



Examples of Preservation Activities

9. Retrofit of fracture critical members

10. Retrofit of fatigue prone details



Examples of Preservation Activities

11. Application of concrete sealants, coatings, and membranes.

12. Bridge cleaning and/or washing service.



Bridge Preservation Guide

- FHWA bridge preservation guide published in May, 2011.
- The guide can be found at the following web link:

<http://wwwdev.fhwa.dot.gov/bridge/preservation/guide/index.cfm>



Bridge Management, Inspection, and Preservation National Conference

- **October 31 – November 2, 2011, at the Millennium Hotel - Downtown St. Louis**
- **Three focus areas – Management, Inspection, and Preservation**
- **Preconference Workshops on October 31**
- **Technical presentations and Breakout sessions**
- **More info at <http://www.tsp2.org/>**





Thank you!

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