



T-9 ASSHTO Technical Committee on Bridge Preservation
Update
By Randall Mullins, PE
July 17, 2019

Bridge Preservation Technical Committee

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Graham Bettis, Texas

David Miller, LA - Liaison



Bridge Preservation Technical Committee Strategic Plan

The overall COBS Strategic Plan is presently being updated at this time. The plan will be viewable at the AASHTO COBS website. Below is a synopsis of T-9's part of the latest plan and goals:

- Provide guidance on effective bridge preservation strategies for increased service life of bridge to support the national economy and quality of life for users.
- Use the synergy of the AASHTO Committee system and member network to advance the state of the art in Bridge Preservation through collaborative efforts and sharing of information and data.
- Provide guidance to improve the State Highway Department stewardship of the major infrastructure investment in bridges and structures.



Bridge Preservation Technical Committee Strategic Plan

- Collaborate with and support bridge industry and academia efforts to improve strategies, materials and method for preserving bridges and structures.
- Provide guidance on strategies, materials, and methods for extending service life of new, existing, rehabilitated and widened bridges and structures.

Bridge Preservation Technical Committee Strategic Plan

- Emphasize and promote the benefits of preventive, periodic and scheduled preservation actions to maximize the impacts of limited funding and clearly demonstrate the need and benefits of adequate funding for preserving existing infrastructure.
- Develop and disseminate educational materials on preservation strategies, materials, and methods for a new generation of bridge engineers.
- Lead and support the quest for new strategies, materials, and methods to construct and rehabilitate bridges and structures that have longer service life.

Bridge Preservation Technical Committee Agenda

1. Guide Specification for Service Life Design of Highway Bridges
Presented by Tom Murphy, Modjeski and Masters
2. Guide To Bridge Preservation Actions
Presented by George Hearn, University of Colorado
3. Guide for Design and Construction of Near Surface Mounted Titanium Alloy Bars for Strengthening Concrete Structures
Presented by Chris Higgins, Oregon State University

Bridge Preservation Technical Committee Agenda

4. Historic Bridge Preservation Guide

Presented by Ray Bottenberg, Oregon State University

5. Bridge Preservation using Cathodic Protection

Presented by Paul Vinik, GPI

6. MaC Bridge Technical TWG Update

Presented by David Miller, LA DOT

Bridge Preservation Technical Committee Agenda

7. Bridge Preservation video and ETG Update
Presented by Raj Ailaney, FHWA
8. FHWA Long Term Bridge Program Update
Presented by Jean Nehme, FHWA
Website [InfoBridge.fhwa.dot.gov](https://www.infobridge.fhwa.dot.gov)
9. TSP2 Bridge Preservation Update
Presented by Jeff Pouliotte, Florida DOT

Bridge Preservation Technical Committee Agenda

10. Paint Warranties

Presented by Jeff Pouliotte, Florida DOT

11. T-9 Research Priorities

Presented by no one since 12 noon struck

This will be taken up during our Midyear meeting

Bridge Preservation Technical Committee

NCHRP 12-108

Guide Specification for Service Life Design of Highway Bridges

Presented by Tom Murphy, Modjeski and Masters

- The objective of these Guide Specifications is to provide practical guidance to designers and owners on design decisions that affect the durability of highway bridges. The understanding of the influence of design decisions on durability is evolving, and there are different levels of rigor that can be applied, but often the uncertainty remains large regardless of the methods used.
- It is the intent of these Guide Specifications to allow for the incorporation of improved deterioration and service life models as they become available.



Methodology

- Three tiered approach, separating practice into:
 - **Good**
 - **Better**
 - **Best**
- Example: Steel protection
 - **Good**: Unpainted weathering steel
 - **Better**: Coated steel
 - **Best**: Metallized A709

- Majority of the methodology consists of:
 - **Deemed-to-satisfy**
 - **Avoidance-of-deterioration**
- Supplemented by probabilistically calibrated deemed-to-satisfy provisions where applicable,
 - **Chloride-induced corrosion**

Bridge Preservation Technical Committee

NCHRP 14-36

Guide To Bridge Preservation Actions

Presented by George Hearn, University of Colorado

This is a *Guide* to the preservation of highway bridges. Preservation keeps existing bridges in service, keeps load capacities and traffic capacities at design values, and keeps bridges in fair or good condition.

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Guide for Design and Construction of Near-Surface Mounted Titanium Alloy Bars for Strengthening Concrete Structures

Presented by Chris Higgins, Oregon State University

This guide provides design and construction recommendations for strengthening existing reinforced concrete (RC) structures with titanium alloy bars (TiABs) using the near-surface mounted (NSM) construction method. The overall approach and organization of this guide are based on those presented in ACI 440.2R (2017). Recommendations are provided for shear and flexural strengthening. The design approach is based on and adapted from AASHTO-LRFD (2017). The recommendations are supported by experimental and analytical research as well as field

Bridge Preservation Technical Committee

Guide for Design and Construction of Near-Surface Mounted Titanium Alloy Bars for Strengthening Concrete Structures

experiences that have demonstrated the application of TiABs for strengthening full-scale specimens typical of bridge girders. The available experimental evidence includes the influences of combined high-cycle fatigue and environmental durability on the structural performance of NSM-TiAB strengthened girders.

TiABs are not sensitive to environmental deterioration such as corrosion. Their use near the concrete surface will not be adversely impacted by environmental degradation. Long-term durability of

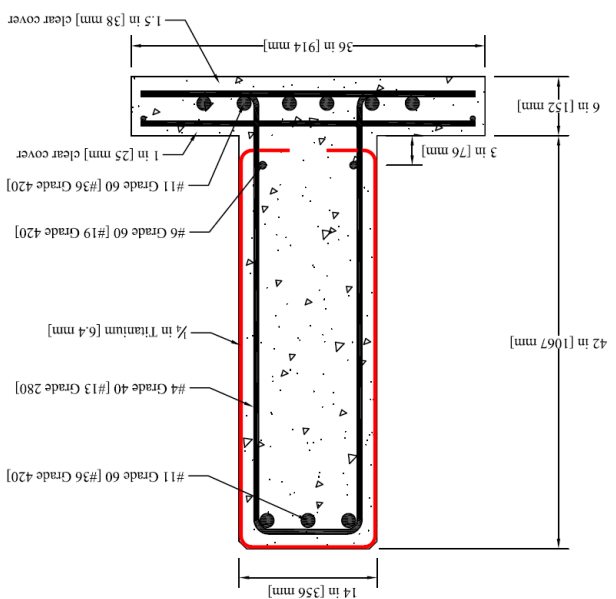
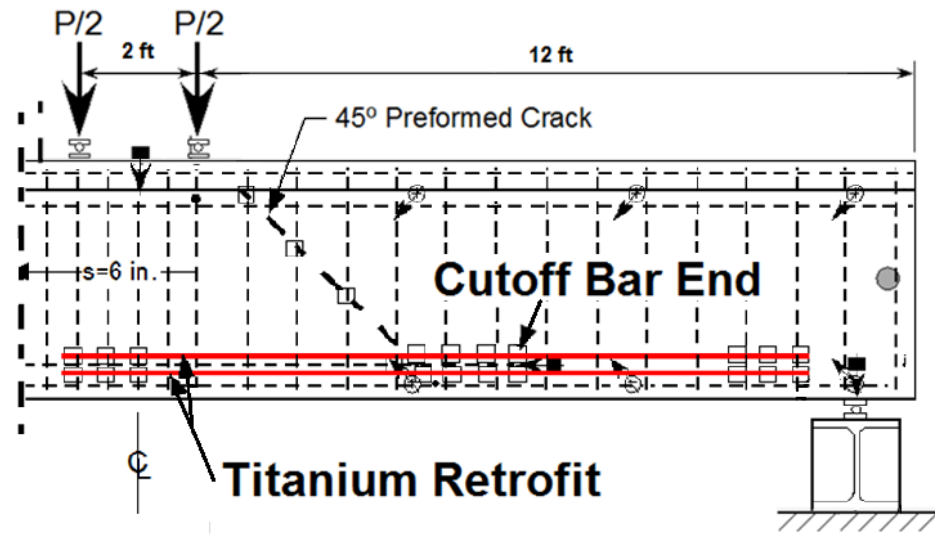
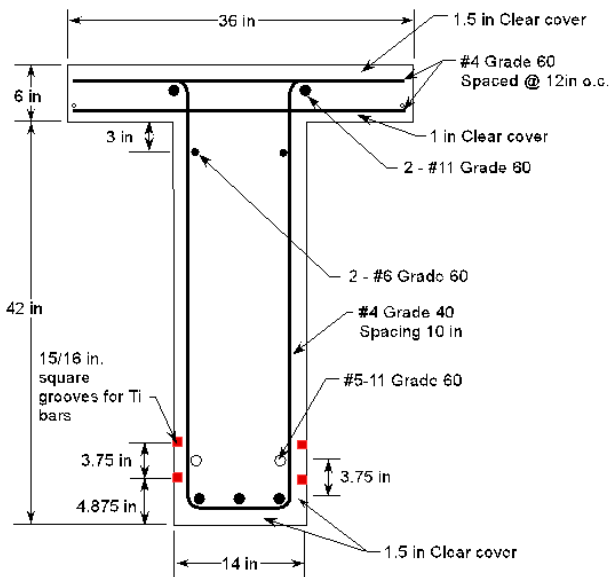
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Guide for Design and Construction of Near-Surface Mounted Titanium Alloy Bars for Strengthening Concrete Structures

applications with TiABs will be controlled by the concrete substrate and bonding materials.

This guide does not address seismic strengthening applications. This is a *Guide* to the preservation of highway bridges. Preservation keeps existing bridges in service, keeps load capacities and traffic capacities at design values, and keeps bridges in fair or good condition.

Strengthening – Flexure and Diagonal Tension (Shear)



26 full-scale specimens

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HISTORIC BRIDGE PRESERVATION GUIDE

Presented by Ray Bottenberg, Oregon State University

The provisions of this Guide are intended for the preservation and rehabilitation of both fixed and movable historic highway bridges. Mechanical, electrical, and special vehicular and pedestrian safety aspects of movable bridges, however, are beyond the scope of these Guide Specifications.

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HISTORIC BRIDGE PRESERVATION GUIDE

This Guide is intended to be used in conjunction with the *AASHTO LRFD Bridge Design Specifications (AASHTO LRFD)*, and may be used with the *AASHTO Standard Specifications for Highway Bridges* when consistent with state requirements.



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HISTORIC BRIDGE PRESERVATION GUIDE

Historic bridge preservation and rehabilitation utilizes a unique and diverse set of skills and knowledge, and sometimes involves approaches to projects that are different than those used in ordinary bridge projects. This Guide addresses the elements of design for successful historic bridge preservation and rehabilitation projects.