



NBPP Local Agency Outreach for Bridge Preservation

National Bridge Preservation Partnership
Working Group

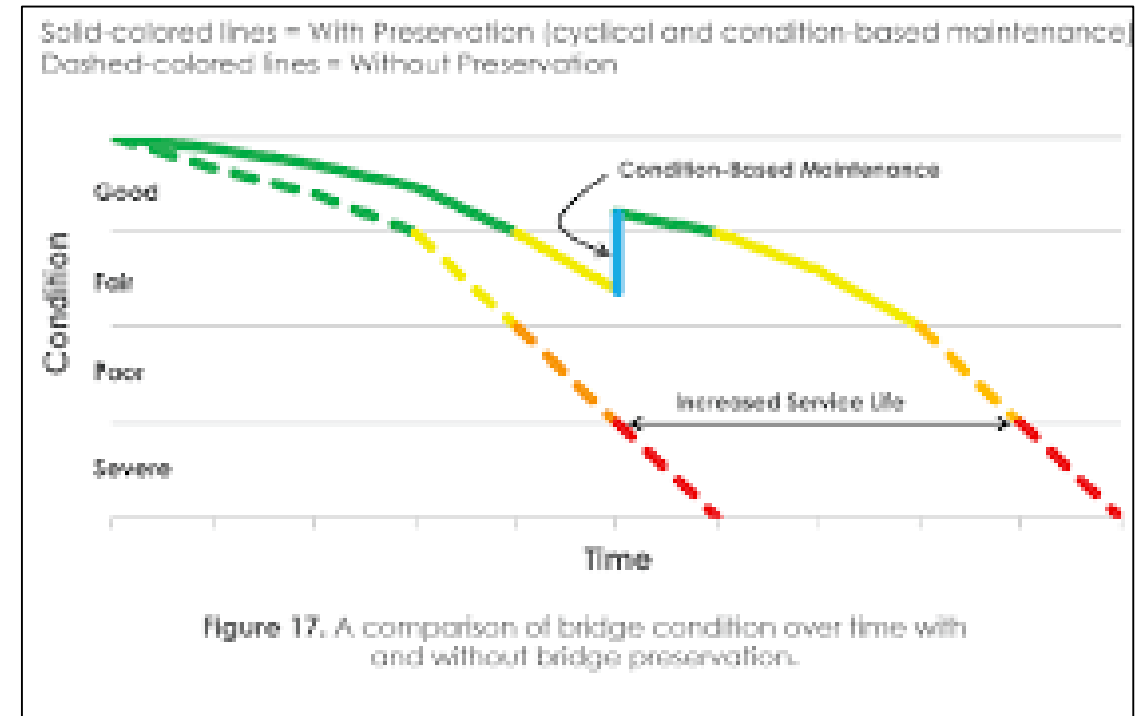
**2019 Midwest Bridge
Preservation Partnership Meeting**

Enhancing Bridge Preservation Practices through Innovation and Collaboration



Bridge Preservation for Local Agencies – Training Module

- Better understand how bridge preservation is a crucial component of an asset management
- Bridge preservation activities that have demonstrated the best cost/benefit
- Demonstrate the BPETG pocket guides/phone app
- Coordinate with training offered by NCPP, NHI, AASHTO TC3



NBPP Local Agency Outreach for Bridge Preservation-Scope

- Develop training modules for Local Agencies on Bridge Preservation
- Work with AASHTO in providing an avenue for Local Agencies to attend and participate in NBPP Regional Conferences



New Membership Category for Local Agencies

- April 2019 – AASHTO TSP2 Oversight Panel issues a new category for local agencies
- Annual Fee \$2,500 includes:
 - Cost of travel
 - Lodging
 - Registration
 - Meals
 - Travel Arrangements



Audience

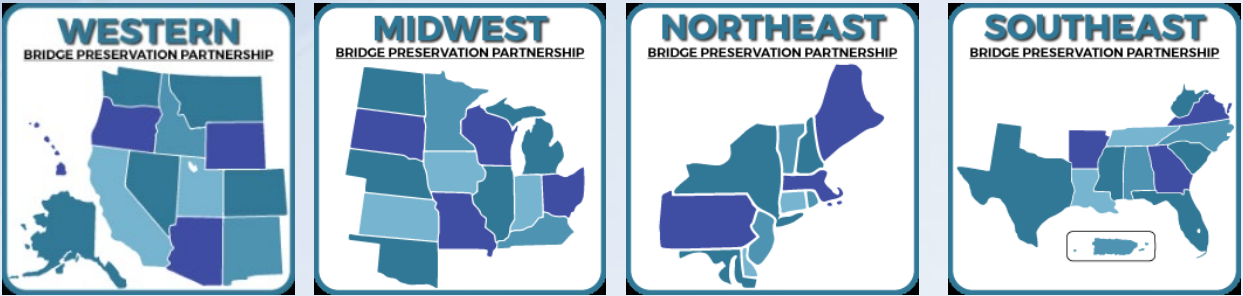
- Cities & County engineers, designers, maintenance crews, inspectors...
- State DOT officials
- State FHWA representative
- LTAP, NACE & other groups supporting bridge preservation



Bridge Preservation Training – Part 1



Bridge Preservation for Local Agencies



National Bridge Preservation Partnership

Part 1 – Overview

- What is TSP-2 and the NBPP
- Why focus on preservation?
- How to identify bridges for preservation?
- Developing and funding a bridge preservation project
- Preservation as part of an asset management plan
- Bridge Preservation Activity Review



Bridge Preservation Activities Modules

- 2-3 slides for each bridge preservation activity to include:
 - Thin Polymer Overlay
 - Joint Systems
 - Bridge Cleaning & Washing
 - Bridge Maintenance Painting
 - Patching
 - Penetrating Sealers
 - Crack Sealers
 - Waterproofing Membrane



Bridge Preservation Activities Modules

Modules should discuss:

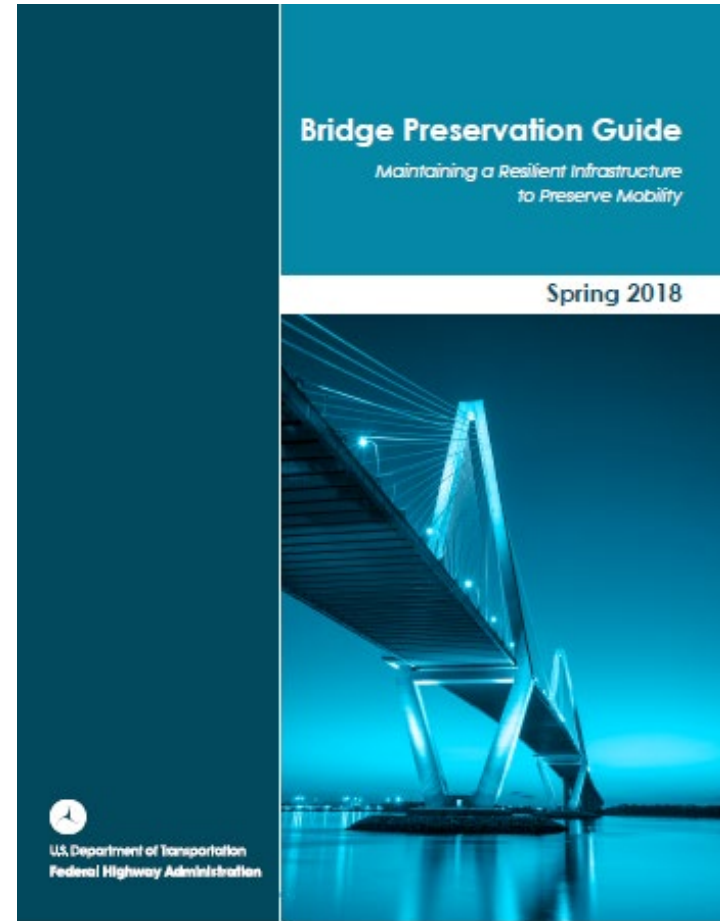
- When do perform each activity?
- Can this activity be performed in-house?
- Idea of cost to perform activity

Further preservation activity modules:

- Need volunteers to develop
- Review FHWA BPG to determine further activities that are funded



How to support these efforts??



FHWA BPG – Preservation Activities (Examples)

Table 2. Examples of cyclical maintenance activities.

Cyclical Maintenance Activity	Bridge Component
Clean/Wash Bridge	Deck and/or Super/Substructure
Clean and Flush Drains	Deck
Clean Joints	Deck
Deck/Parapet/Rail Sealing and Crack Sealing	Deck
Seal Concrete	Super/Substructure



Figure 7. Before bridge maintenance painting (left) and after (right).

Table 3: Examples of condition-based maintenance activities

Examples of Condition-Based Maintenance Activity	Bridge Component
Drains, Repair/Replace	Deck
Joint Seal Replacement	Deck
Joint Repair/Replace/Elimination	Deck
Electrochemical Extraction (ECE)/Cathodic Protection (CP)	Deck
Concrete Deck Repair (see halo effect below) in Conjunction with Overlays, CP Systems or ECE Treatment	Deck
Deck Overlays (thin polymer epoxy, asphalt with waterproof membrane, rigid overlays)	Deck
Repair/Replace Approach Slabs	Approach
Seal/Patch/Repair Superstructure Concrete	Superstructure
Protective Coat Concrete/Steel Elements	Superstructure
Spot/Zone/Full Painting Steel Elements	Superstructure
Steel Member Repair	Superstructure
Fatigue Crack Mitigation (pin-and-hanger replacement, retrofit fracture critical members)	Superstructure
Bearing Restoration (cleaning, lubrication, resetting, replacement)	Superstructure
Movable Bridge Machinery Cleaning/Lubrication/Repair	Superstructure
Patch/Repair Substructure Concrete	Substructure/Culvert
Protective Coat/Concrete/Steel Substructure	Substructure/Culvert
ECE/CP	Substructure/Culvert
Spot/Zone/Full Painting Steel Substructure	Substructure
Pile Preservation (jackets/wraps/CP)	Substructure
Channel Cleaning / Debris Removal	Channel
Scour Countermeasure (installation/repair)	Channel

Thin Polymer Overlay System

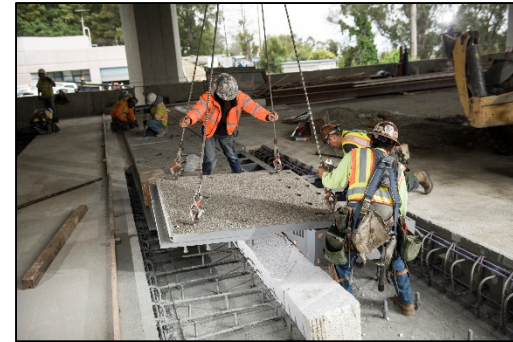
- Ultra low permeability to protect the deck concrete from the intrusion of moisture, de-icing chemicals and degradation
- Provide a protective, durable, skid-resistant wearing course for a concrete bridge deck



Joint Systems – Repair & Replacement

A bridge expansion joint is designed to:

- Provide a gap to accommodate longitudinal and transverse movements of a bridge superstructure. These movements are generally a result of live loads, thermal changes, creep and shrinkage, and the physical properties of the bridge materials.
- Protect the superstructure and substructure elements below the bridge deck from water runoff, adverse chemicals, and debris buildup.



Bridge Cleaning & Washing

- Removal of chlorides and moisture trapping debris that can accelerate corrosion
- Keeps the bearing and joints free to move
- Promotes drainage with scuppers and inlet drains that function properly
- Provides bridge inspectors a better opportunity to spot deficiencies
- Extends the service life of coatings systems



Bridge Maintenance Painting

- Bridge maintenance painting by removal and replacement is the most common method of using protective coatings to protect bridge steel from corrosion
- Painting provides a durable protective coating that usually contains color pigments to provide aesthetics as well as corrosion protection



Patching

- Patching materials replace damaged concrete / restore concrete cover
- Considerations
 - Service Conditions
 - Causes of Deterioration
 - Methods of Testing
 - Application Conditions
 - Finish Requirements



Penetrating Sealers

- Penetrating water repellents that mitigate moisture and chloride penetration in concrete
- Achieve a depth of penetration into the concrete that protects the treatment from surface abrasion and does not impact slip/skid resistance
- Do not treat visible cracks in concrete



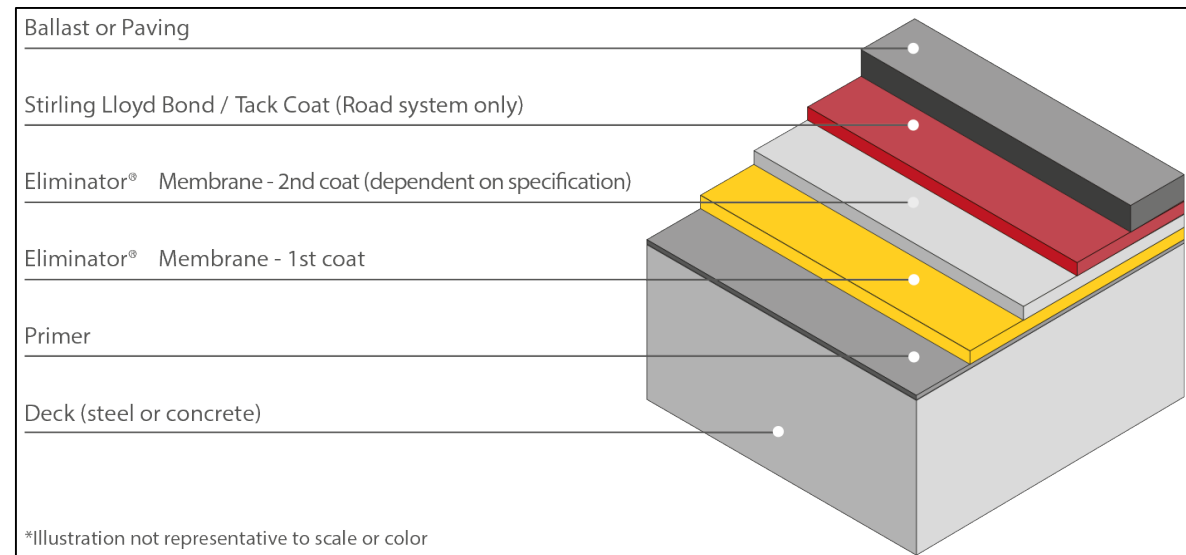
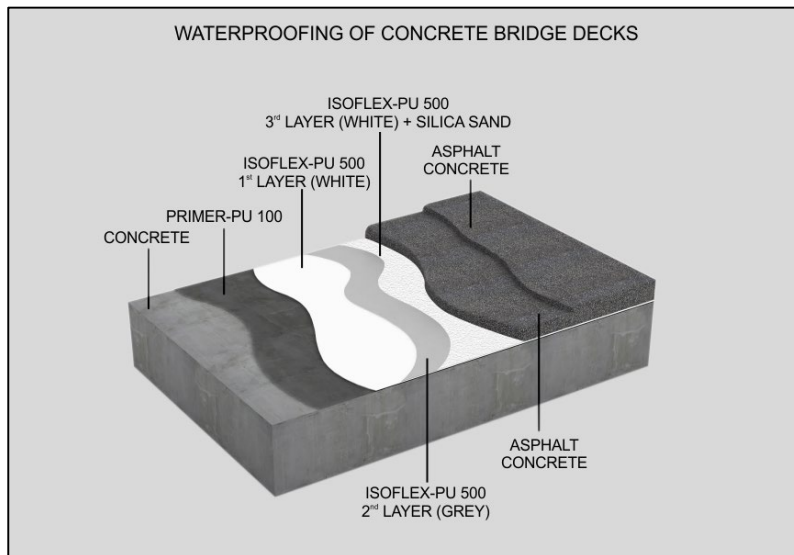
Bridge Deck Crack Sealing – Flood Coat Application

- Seals cracks in the bridge deck concrete to prevent the intrusion of moisture, de-icing chemicals and other damaging environmental affects
- Most effective when placed early, after initial shrinkage cracking and prior to exposure to de-icing chemicals



Waterproofing Membrane

A waterproofing membrane is used on a concrete bridge deck to preserve the concrete deck underneath an asphalt overlay.



FHWA BPETG – Local Agency Outreach Efforts

Communication Plan – Local Agencies & Training

- Meetings, conferences and periodicals are important communication channels.
- There is also a time and need for instructor led technical training. The training arm of the FHWA is the National Highway Institute (NHI). As such, NHI has developed training specific to bridge preservation and maintenance.
- The BPETG will explore the possibility of adapting portions of the training specifically for use by local agencies and locally delivered training.

Also reference the FHWA Bridge Preservation Guide, Pocket Guides & Newsletter

<https://tsp2bridge.pavementpreservation.org/technical/fhwa/bp-etg-fhwa/>

<https://tsp2bridge.pavementpreservation.org/Bridge-Preservation-News-2/>

AASHTO TC3 – Transportation Curriculum Coordination Council Training Support – FHWA BPG/Pocket Guides

- FHWA Bridge Preservation Guide (2 Modules) – has been published to the AASHTO TC3 training site and available to all
- Thin-Polymer Overlays- Complete
- Bridge Cleaning – Complete
- Bridge Coatings – Complete



<https://store.transportation.org/>



ncpp

NATIONAL CENTER FOR PAVEMENT PRESERVATION

MICHIGAN STATE UNIVERSITY | ENGINEERING EDUCATION RESEARCH & OUTREACH



BRIDGE PRESERVATION TRAINING FOR LOCAL AGENCIES

TSP-2 Transportation System Preservation Technical Services Program
AASHTO THE VOICE OF TRANSPORTATION **Bridge Preservation Blog**
"A Conversation About Bridge Preservation"

REGIONAL / NATIONAL WORKING GROUPS

TECHNICAL EXCHANGE

RESEARCH ROADMAP DATABASE

TSP2 TRANSPORTATION SYSTEM PRESERVATION TECHNICAL SERVICES PROGRAM
AASHTO **BRIDGE PRESERVATION**

Developing the Bridge Preservation Pocket Guides

Developed in conjunction with the FHWA BPETG



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AASHTO TSP2

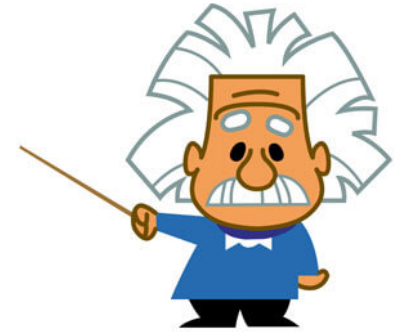
Initial Pocket Guides Categories

- Thin Polymer Overlay Systems
- Bridge Cleaning
- ~~Bridge Joint Systems~~
- Removal & Replacement of Bridge Coatings



Development of the Pocket Guides

- Subject matter experts
- Sub-groups chosen - experts within each category
- Content developed - checklist format
- Focus - potential failure mechanisms
- Preliminary draft developed – sent out for review
- GPI - awarded the contract to develop and produce the PG's



Who are the Intended Users?

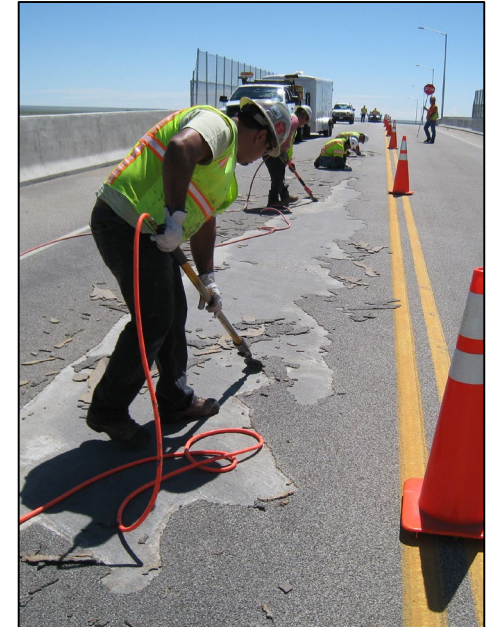
- Design – Spec writers
 - Understanding of QA/QC language and “best practices”
- Inspectors
 - Understand proper installation procedures
- Contractors/Installers
 - Guidance to “best practices”
- Maintenance crews



Intent of the Pocket Guides

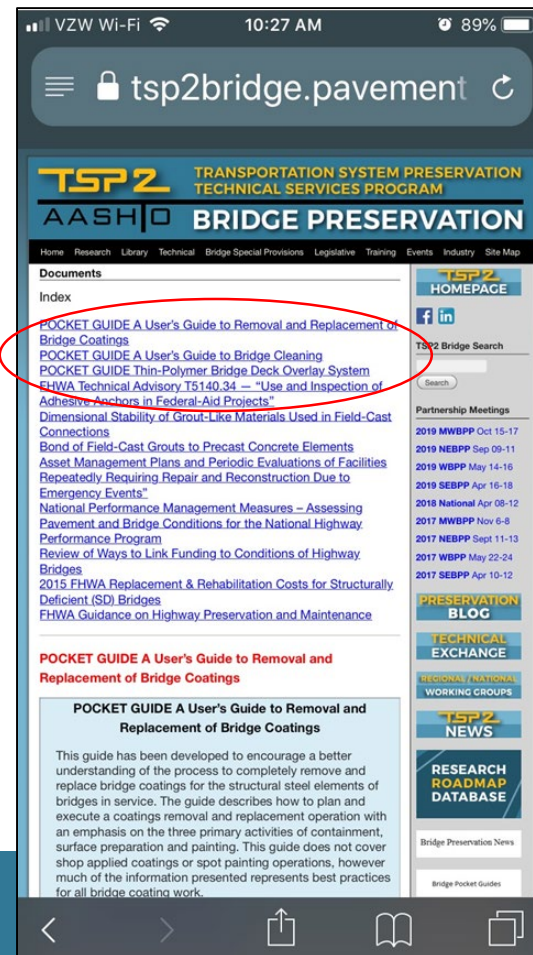
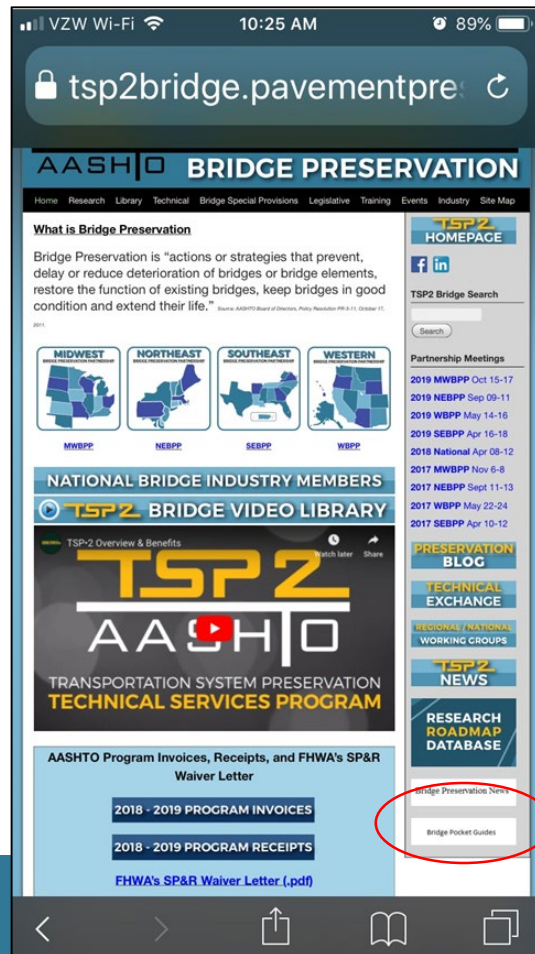
Checklist Format

- Installation guidelines
- Equipment and tools
- Limitations & restrictions
- Avoiding potential failure mechanisms
- Recommended training
- Required technical support
- Recommended QA/QC



Pocket Guides Available @

<https://tsp2bridge.pavementpreservation.org/technical/fhwa/documents/>



Replacement of Bridge Coatings

POCKET GUIDE A User's Guide to Removal and Replacement of Bridge Coatings

This guide has been developed to encourage a better understanding of the process to completely remove and replace bridge coatings for the structural steel elements of bridges in service. The guide describes how to plan and execute a coatings removal and replacement operation with an emphasis on the three primary activities of containment, surface preparation and painting. This guide does not cover shop applied coatings or spot painting operations, however much of the information presented represents best practices for all bridge coating work.

[Download the Pocket Guide \(.pdf\)](#)

POCKET GUIDE A User's Guide to Bridge Cleaning

POCKET GUIDE A User's Guide to Bridge Cleaning

This guide is to inform the reader of cleaning methods appropriate for the removal of debris and chemicals, natural or manufactured, that can accumulate on a bridge. The guide describes how to plan and execute a bridge cleaning operation considering best practices and introduces the reader to environmental protection, maintenance of traffic and safety requirements. The removal of animals from the structure and debris within the waterway are not within the scope of this guide.

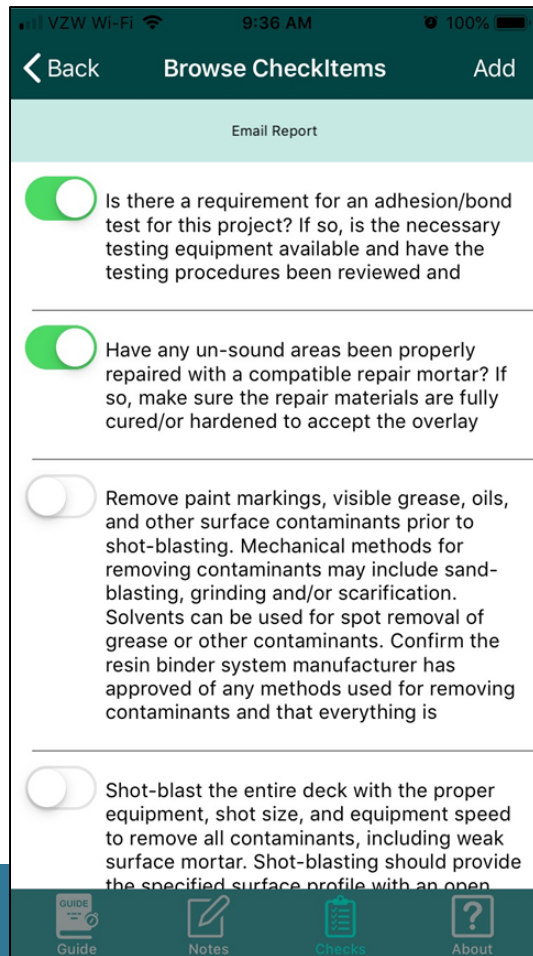
[Download the Pocket Guide \(.pdf\)](#)

POCKET GUIDE Thin-Polymer Bridge Deck Overlay System

POCKET GUIDE Thin-Polymer Bridge Deck Overlay System

The contents of this guide on Thin-Polymer Bridge Deck Overlay Systems reflect the views of the Bridge Preservation Expert Task Group, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the Federal Highway Administration (FHWA). The content does not constitute a standard, specification, or regulation. FHWA does

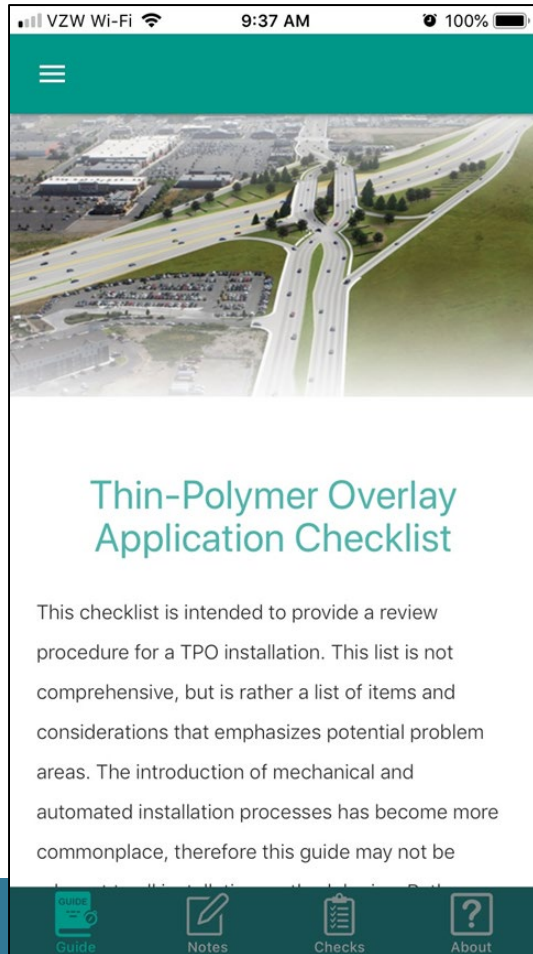
Pocket Guide Phone Apps



Now available for I-Phone and Android phones:

- Thin Polymer Overlay PG
- Bridge Cleaning & Washing PG
- Bridge Coating PG

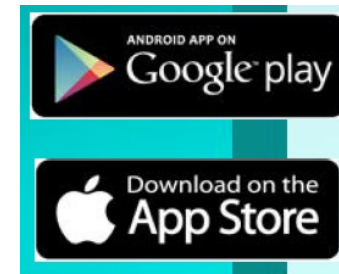
Pocket Guide Phone Apps



Phone app pocket guides are now useable and e-mailable from your smart phones

Implementation Plan

- Coordinate AASHTO TSP2, Regional Partnerships, Local Agency Outreach & BPETG efforts
- Webinars
- Industry presentations to owner agencies
- Videos – TC3, FHWA
- Phone apps now available
 - Thin Overlay App
 - Bridge Cleaning & Washing
 - Bridge Painting



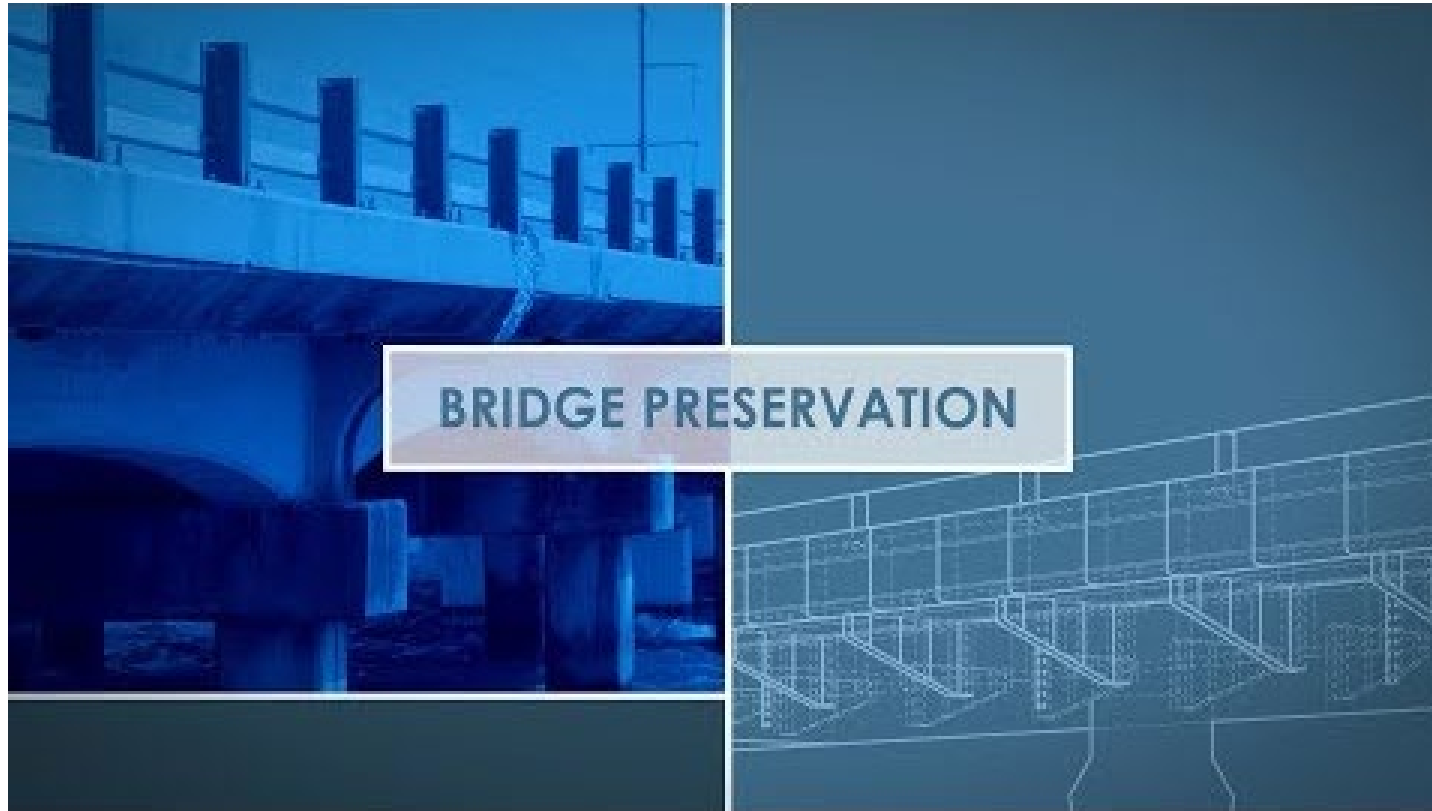
Now available for
I-Phone or Android phones



Download app by searching
"TPO Pocket Guide"
"BC Pocket Guide"
"RBC Pocket Guide"

Other News – FHWA BPETG

8-minute video to promote bridge preservation



<https://www.youtube.com/watch?v=E8xHWtTkVOI&feature=youtu.be>

Any Questions?

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