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# FHWA BRIDGE PRESERVATION EXPERT TASK GROUP – STRATEGIC PLAN FY2020 – FY2024

## **ABSTRACT**

The FHWA Bridge Preservation Expert Task Group Strategic Plan identifies strategic objectives and actions in the area of highway bridge preservation by working collaboratively with Federal, State and local agencies, industry, and academia.

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## Table of Contents

Notice .....	1
Non-Binding Contents .....	1
Quality Assurance Statement .....	1
VISION.....	4
MISSION.....	4
GOALS .....	4
OBJECTIVES.....	5
Strategic Objective #1: Share cost-effective bridge preservation strategies .....	6
ACTION 1 – Develop documents on practices adopted or conducted by the States or bridge owners .....	6
ACTION 2 – Develop apps for mobile devices .....	6
ACTION 3 – Develop case studies .....	6
ACTION 4 – Determine duration of bridge preservation treatments from a bridge condition rating perspective ..	7
ACTION 5 – Study next generation data framework for developing data-driven preservation performance estimates .....	7
Strategic Objective #2: Promote bridge preservation as a component of asset and performance management .....	7
ACTION 1 – Integrate bridge preservation into asset management .....	7
ACTION 2 – Support the development of bridge deck preservation portal .....	8
ACTION 3 – Communicate how bridge preservation extends the life of a bridge at other venues .....	8
Strategic Objective #3: Develop educational materials on bridge preservation.....	8
ACTION 1 – Develop web-based training .....	8
ACTION 2 – Communicate the importance of bridge preservation as a component of an asset management strategy .....	8
ACTION 3 – Explore developing and deploying curricula modules on bridge preservation, including appropriate references to asset management and life-cycle costs, for undergraduate and graduate level courses .....	8
ACTION 4 – Provide technical assistance to local agencies .....	9
Strategic Objective #4: Foster a collaborative environment that encourages innovation and adoption of new technologies for bridge preservation .....	9
ACTION 1 – Explore opportunities to improve States’ qualified product list (QPL) process for owners, suppliers and contractors to identify new technologies, gaps, and key performance indicators .....	9
ACTION 2 – Assist other research sponsors to promote bridge preservation research .....	9



# FHWA Bridge Preservation Expert Task Group

The FHWA provides a forum through the Bridge Preservation Expert Task Group (BPETG) whereby knowledgeable practitioners can provide timely input to and coordination among stakeholders in the bridge community on strategies, practices, research, deployment, and professional development needs pertaining to preservation in the overall management of the national inventory of publicly owned highway bridges.

The composition of the BPETG may include at a minimum, representatives from the following entities.

- Federal Highway Administration (FHWA)
- State Highway Agencies and State Highway Agency representatives of Bridge Preservation Regional Partnerships
- The American Association of State Highway Transportation Officials (AASHTO) Subcommittee on Bridges and Structures- such as T-9 and T-18 Technical Committees
- AASHTO Subcommittee on Maintenance- Bridge Technical Working Group
- AASHTO Transportation System Preservation Technical Services Program (TSP2)- Bridge Preservation Staff
- Transportation Research Board (TRB) – Chairs of Standing Committees on Bridge Preservation, Structure Maintenance, and Bridge Management
- Academia- University Researchers with expertise in Bridge Preservation
- Industry – Contractors, Suppliers, Consultants, Associations, etc.
- County/ local government

## STRATEGIC PLAN – FY 2020 – 2024

The Strategic Plan – FY 2020 – 2024 outlines four strategic objectives to guide the BPETG’s work over this five-year period.

### VISION

Bridge preservation today...for a better transportation infrastructure tomorrow.

### MISSION

The BPETG will advance and improve the state of the practice of highway bridge preservation by working collaboratively with Federal, State and local agencies, professional associations (AASHTO, TRB, etc.), industry, and academic institutions.

### GOALS

- **Share cost-effective bridge preservation strategies** for increased service life of highway bridges to support the national economy and the quality of life for users
- **Promote bridge preservation as a component of asset and performance management** by demonstrating the need and benefits of funding the preservation of existing bridges
- **Develop educational materials on bridge preservation** strategies, materials, and technologies

- **Foster a collaborative environment that encourages research innovation and adoption of new technologies for bridge preservation** by identifying gaps and supporting an outcome-driven work plan that reflects a balanced and prioritized consideration of research, program development, and deployment initiatives

## OBJECTIVES

The following strategic objectives and action items provide direction for future work:

**Strategic Objective 1** – Share cost-effective bridge preservation strategies

**Strategic Objective 2** – Promote bridge preservation as a component of asset and performance management

**Strategic Objective 3** – Develop educational materials on bridge preservation

**Strategic Objective 4** – Foster a collaborative environment that encourages innovation and adoption of new technologies for bridge preservation

## Strategic Objective #1: Share cost-effective bridge preservation strategies

### ACTION 1 – Develop documents on practices adopted or conducted by the States or bridge owners

#### Outcome/Product – Adopted Practices

Background - To promote preservation activities with an emphasis on construction quality, continue developing documents that share practices adopted by the States or bridge owners on preservation of decks, superstructures, substructures and culverts. The following topics may be covered:

- Rigid Concrete Deck Overlays
- Bridge Deck Sealing
- Maintaining Expansion Joints – Develop based on range of movement and/or expansion joint type

Additional documents may be identified for development based on the case studies developed in ACTION 3 below.

### ACTION 2 – Develop apps for mobile devices

#### Outcome/Product – Mobile Device Apps and Videos

Background - Promoting preservation activities with an emphasis on construction quality may be accomplished by making information available on mobile devices. A short YouTube video guide on how to download and use the Apps may be developed.

See Action 1 for list of publications that may potentially be available through mobile device applications.

### ACTION 3 – Develop case studies

#### Outcome/Product – Case Studies

Background – To increase service life of existing highway bridges, develop case studies on cost-effective bridge preservation strategies. The following topics may be covered:

- Link Slabs for Joint Elimination
- How to Respond to Bridge Hits
- Preservation of Bridge Bearings
- Preservation of Channel: Removing Debris and Scour Repairs
- Bridge Substructure Repairs
- Steel Superstructure Repairs
- Bridge Deck Overlays

## **ACTION 4 – Determine duration of bridge preservation treatments from a bridge condition rating perspective**

### **Outcome/Product – Research Study**

Background – Preservation actions performed on bridges or bridge elements extend their service life. This depends on several factors, such as, construction materials, initial condition, location, environment, operational demands, quality of work etc. This effort will focus on quantifying the service life extension by considering a population of bridges that have had preservation actions. The study may include obtaining condition histories and considering various operational demands such as differing traffic volumes, varying climates, monitor changes in performance, rates of deterioration etc. The study may improve current preservation action decision-making tools.

## **ACTION 5 – Study next generation data framework for developing data-driven preservation performance estimates**

### **Outcome/Product – Research Study**

Background – While State agencies are using bridge and maintenance management tools to manage their bridge inventory, the data collected may not support preservation actions. To preserve bridges in good and fair condition, consistent and uniform records of maintenance and preservation actions over time are needed. In accordance with the 23 CFR 515.17(a)-(c), there is a need to study a framework that collects key preservation actions and its cost data over time to help agencies in developing preservation actions' efficiency models. This new framework could be incorporated with the existing bridge management systems. This study may assist States in undertaking the life-cycle planning analysis for the bridge network, managing the network for its whole life while minimizing cost and improving or preserving the condition.

## **Strategic Objective #2: Promote bridge preservation as a component of asset and performance management**

### **ACTION 1 – Integrate bridge preservation into asset management**

#### **Outcome/Product – Bridge preservation and asset management research**

Background – The Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) requires States to develop risk- and performance-based asset management plans. In accordance with the 23 U.S.C 119, all the States have developed Transportation Asset Management Plans (TAMP), but only a few have comprehensively addressed preservation and the structured sequence of maintenance, preservation, rehabilitation, and reconstruction of their bridge network in a state-of-good-repair at the minimal practicable cost over its whole life. This effort will develop research about how to show the connection between bridge preservation and asset management.



**ACTION 2 – Support the development of bridge deck preservation portal**

Outcome/Product – Web- or PC-based Portal

Background – The Bridge Deck Preservation Portal may help standardize the bridge deck maintenance process by assisting engineers with the logical selection of maintenance actions. The Portal may create a set of maintenance scenarios based on cost-effective actions implemented at the most efficient point in the deck’s life cycle. This is a project level tool that may be developed under the pooled-fund project led by the Iowa Department of Transportation (DOT) that may provide alternative maintenance strategies for bridge decks.

**ACTION 3 – Communicate how bridge preservation extends the life of a bridge at other venues**

Outcome/Product - Workshops

Background – Develop a product such as a workshop where abstracts may be sought and papers assembled relating to bridge preservation. Potential venues may include the International Bridge Conference, TRB Workshops, TRB Committee Meetings, and regional bridge conferences.

**Strategic Objective #3: Develop educational materials on bridge preservation****ACTION 1 – Develop web-based training**

Outcome/Product – Web-based Training

Background – Develop online training courses based on documents and research developed by the BPETG that may be hosted by the National Highway Institute or AASHTO Transportation Curriculum Coordination Council (TC3).

**ACTION 2 – Communicate the importance of bridge preservation as a component of an asset management strategy**

Outcome/Product - Webinars

Background – Information developed in bridge preservation research, practices that are adopted by the States or bridge owners, case studies or topics of national interest may form the basis of these periodic webinars. These webinars may be delivered through TRB or AASHTO TSP2.

**ACTION 3 – Explore developing and deploying curricula modules on bridge preservation, including appropriate references to asset management and life-cycle costs, for undergraduate and graduate level courses**

Outcome/Product – Course Material

Background – Explore developing educational materials on bridge preservation that could be incorporated into a college program. Promote and deploy the materials through appropriate bridge committees, the TSP2 website, newsletters, magazines, journals, etc.

#### **ACTION 4 – Provide technical assistance to local agencies**

Outcome/Product – Instructor-led Training

Background – In collaboration with the AASHTO TSP2's National Working Group on Local Agency Outreach, develop training for local bridge owners that promote bridge preservation. Coordinate with the FHWA's Local Technical Assistance Program to promote bridge preservation as an element of an overall "local" transportation asset management plan.

**Strategic Objective #4: Foster a collaborative environment that encourages innovation and adoption of new technologies for bridge preservation**

**ACTION 1 – Explore opportunities to improve States' qualified product list (QPL) process for owners, suppliers and contractors to identify new technologies, gaps, and key performance indicators**

Outcome/Product – White Paper

Background – Qualified Product Lists (QPLs) serve as the gateway to the introduction of new products and technologies in construction. However, suppliers need to qualify their products in every State, sometimes repeating the same exact tests in neighboring States, and view it as a hindrance to faster adoption of innovative products and technologies. A white paper may summarize the current state-of-practice and offer potential avenues for collaboration or synchronization of the QPL process among States.

**ACTION 2 – Assist other research sponsors to promote bridge preservation research**

Outcome/Product – Sponsoring Research Need Statements

Background – Since BPETG has members representing various TRB Technical Committees Chairs, AASHTO Committee on Bridges and Structures, Committee on Maintenance and TSP2 Regional Partnerships, it is proposed that the group discusses and sponsors bridge preservation research need statements that have national significance.

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