



West Virginia Division of Highways Policy:

Bridges: Key Activities for Maintenance and Preservation Plan

Issued by the Commissioner of Highways

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1.0 PURPOSE

The purpose of this policy is to explain the Bridges: Key Activities for Maintenance and Preservation Plan and its emphasis on the performance of essential “key” preservation activities of bridge maintenance.

2.0 SCOPE

This policy applies to Operations Division Employees and District Annual Plan Employees.

3.0 DEFINITIONS

- 3.1 **ADEB:** Assistant District Engineer-Bridge, also known as the District Bridge Engineer.
- 3.2 **BKAMPP:** Bridges: Key Activities for Maintenance and Preservation Plan.
- 3.3 **Bridge Safety Inspection Report:** A report compiled based on visual and physical inspection of a bridge by certified persons, that gives a condition rating for the primary components (Deck, Superstructure, Substructure, Culvert) of a bridge and in which the deficiencies are documented and repairs are recommended.
- 3.4 **Bridges: Key Activities for Maintenance and Preservation Plan:** Concept that has been established to place emphasis on the performance of the crucial “key” preservation activities for bridge maintenance including cyclical and condition-based activities that, if performed regularly, will increase the service life of bridges.
- 3.5 **Condition-Based Activities:** Preventative maintenance activities that are scheduled to be completed because of condition concerns that are typically documented from observations and recommendations made in Bridge Safety Inspection Reports: Expansion Joint Repair/Replacement, Patching Concrete Decks, Painting Steel Elements, Bearing Repair, Fatigue Crack Mitigation, and Drainage System Repairs.
- 3.6 **Condition Rating:** Numerical rating on a scale from 9-0, that qualifies the condition of a bridge and its primary components and corresponds to a general condition of good (9,8,7), fair (6,5), poor (4,3) or critical (2,1,0).
- 3.7 **Cyclical Activities:** Preventative maintenance activities that are scheduled to be completed at regular intervals: Cleaning/Washing Bridges, Cleaning and Flushing Drainage Systems, Cleaning Expansion Joints, Sealing Concrete Decks,

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Superstructures, and Substructures (included are full coverage sealants and crack sealing).

- 3.8 **Key:** Of paramount or crucial importance.
- 3.9 **Preventative Maintenance Activities:** Cyclical and Condition-Based activities that preserve a bridge's condition rating and increase its service life. A list of all these activities can be found in the Federal Highway Administration's (FHWA) Bridge Preservation Guide. Additionally, these activities are eligible for federal aid.
- 3.10 **Routine Maintenance Activities:** Maintenance activities that are performed in reaction to an event, season, or activities that are done for short-term operational needs that do not have preservation value. This work is not eligible for federal aid.
- 3.11 **SRIC:** Snow Removal and Ice Control.

4.0 POLICY

4.1 General

Importance: The Bridge Key Activities for Maintenance and Preservation Plan (BKAMPP) concept has been established to place emphasis on the performance of the crucial "key" preservation activities for bridge maintenance including cyclical and condition-based activities that, if performed regularly, will increase the service life of bridges. Through the implementation of this plan, bridges that are in good or fair condition will remain in those conditions for an increased period of time. These activities comprise the basics of any successful bridge preservation program and are to be monitored through the planning, scheduling, and execution of the BKAMPP. The importance of planning all bridge preventative maintenance and preservation activities and performing the work in accordance with these plans cannot be overemphasized.

4.2 Objective

To ensure that the performance of the BKAMPP activities is consistent statewide, the State Highway Engineer will require, through the Director, Operations Division or designee, that each ADEB plan and schedule all bridges with superstructure and substructure condition ratings of 6 or higher, and deck condition ratings of 5 or higher, that are on any NHS, US, and WV Routes, and County Routes with an ADT of 3000 or greater, at the intervals established below. Prior to the preparation of each Annual Plan, the Director, Operations Division, will designate those maintenance performance activities approved to be included in the BKAMPP. Performance criteria for these activities are contained individually in the Operations Manual and Maintenance Management System - Performance Standards.

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4.3 Planning

A. BASIS OF PLAN

The Director, Operations Division, or designee, will provide each ADEB with an electronic spreadsheet of the most recent Bridge Inventory/Appraisal Data available for each respective district. This report will identify, at a minimum, each bridge within the respective organization by BARS number, route number and type, structure type, deck type, condition codes for primary components, and whether the route is NHS or Non-NHS.

The BKAMPP shall consist of 4 individual preventative maintenance activity sub-plans: Bridge Washing, Patching Concrete Decks, Sealing Concrete Bridge Elements, and Expansion Joints and Bearing Work. Every bridge that has superstructure and substructure condition ratings of 6 or higher and deck condition ratings of 5 or higher, and is on US, WV, and NHS routes and County Routes with an ADT of 3000 or greater shall be scheduled in the organization's BKAMPP at the following frequencies:

1. Bridges on paved routes shall be scheduled for cleaning and washing once per calendar year, after the SRIC season has ended in the spring.
2. All bridges with concrete decks shall be scheduled for patching a minimum of one time per year.
3. All bridges with concrete decks shall be listed for sealing a minimum of one time in a three calendar-year period.
4. All bridges with leaking expansion joints noted in the most recent inspection report, shall be listed for repair. The list should be prioritized by route type, ADT, and its frequency of exposure to de-icing chemicals. Once a bridge is placed on this list, repairs shall be completed within 5 years.

B. FORMAT OF PLAN

The ADEB is to prepare the BKAMPP with the direct assistance of the District Bridge Repair and Design Engineer, District Bridge Evaluation Engineer, and the District Bridge Maintenance Supervisor. The following should be developed: one plan for bridge cleaning and washing activities, one plan for bridge deck patching activities, one plan for concrete sealing activities, and one plan for expansion joint repair activities. The BKAMPP is to be entered into the GIS Database provided by Operations Division and GTI Section. No exceptions will be permitted.

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The individual BKAMPP for each activity group will be prepared once per calendar year and submitted to the Operations Division for the entire calendar year.

The planned accomplishment date of the BKAMPPs on individual bridges will be broken-down to one of two periods within each month. The periods will be either the “first half” of the month (1st thru 15th) or the “second half” of the month (16th thru 30th/31st).

C. PERFORMANCE REQUIREMENTS OF PLAN

All BKAMPP activities are to be performed according to policy and procedures in the Operations Manual, the Maintenance Management System - Performance Standards, and to the following criteria:

1. Bridge Washing

Bridges having superstructure and substructure condition ratings of 6 or higher and deck component ratings of 5 or higher, and located on US, WV and other NHS routes, and county routes with an ADT of 3000 or greater, shall be scheduled for cleaning and washing once per calendar year, after the SRIC season has ended in the spring. The ADEB shall consult with the District Environmental Coordinator each year, prior to performing work, to ensure that all environmental requirements and guidelines are followed. Special attention should be given to washing the deck, expansion joints, bridge seats, and bearing areas. The superstructure and substructure should be cleaned as well as practical, feasible, and environmentally permissible. Opening of the bridge drainage system is also paramount. Activity Codes 389 and 390 are utilized for this subplan.

2. Concrete Deck Patching

All bridges with concrete decks on US, WV, or other NHS routes, and county routes with an ADT of 3000 or greater, having superstructure and substructure condition ratings of 6 or higher, and deck component ratings of 5 or higher, shall be scheduled for patching yearly by removing old loose concrete and replacing it with concrete or other types of commercially available deck patching materials. Care should be given to ensure the patch is large enough to repair all the deficient deck area near the spall repaired. If the deck is reviewed, and no spalls exist or no areas are heavily cracked or delaminated that will likely pop out in the year, the bridge can be marked as inspected and no work needed for BKAMPP credit. Asphalt patches in concrete decks are only acceptable as a temporary repair. Any asphalt patches will need

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removed and permanently patched for BKAMPP credit (Asphalt Patches in an asphalt wearing surface are permissible, if done in accordance with activity 201). Activity Code 392 is utilized for this subplan.

3. Concrete Sealing

All bridges with concrete decks on US, WV, or other NHS routes, and county routes with an ADT of 3000 or greater, having superstructure and substructure condition ratings of 6 or higher, and a deck component rating of 5 or higher, shall be scheduled for sealing one time in a three calendar-year period. At a minimum, all open cracks shall be filled with epoxy or other proven concrete crack sealing materials. Additionally, those bridges without a Latex Modified Concrete (LMC) or a Microsilica overlay shall have a full protective surface treatment applied. Prior to sealing the deck any needed patching should be completed. Concrete substructures in good or fair condition can also be crack sealed or have a protective coating applied for BKAMPP credit. Activity Codes 387 and 388 are utilized for this subplan.

4. Expansion Joints and Bearing Repairs

All bridges on a US, WV, or other NHS route, and county routes with an ADT of 3000 or greater, with superstructure and substructure condition ratings of 6 or higher and deck condition ratings of 5 or higher, and that have leaking expansion joints noted in the most recent inspection report, shall be listed for repair. The list should be prioritized by route type, ADT, and its frequency of exposure to de-icing chemicals. Once placed on the list, the repairs shall be made within a 5-year period. Most of this work will be removing leaking seals, and replacing with a new seal, however other repairs and full joint replacements will count for BKAMPP credit. Bearing repairs and realignment should also be made as needed. The ADEB is to coordinate with Operation Division's Central Heavy Maintenance Division (CHMD), to see what expansion joint work is planned for their district that year. Work performed by CHMD will count toward the District's BKAMPP completion. Activity Codes 385 and 386 are utilized for this subplan.

D. **PLAN REVIEW**

District Bridge Key Activities for Maintenance and Preservation Plans will be reviewed and approved by the ADEB to ensure they are realistic and based upon the District's goals and budgets. The ADEB will then approve each of the sub plans in the BKAMPP entered into the GIS database for Director, Operations

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Division, or designee, for review to assure the plan meets the overall aims and objectives of the Department.

E. PLAN SUBMITTAL

The BKAMPP will be completed by the ADEB and staff on or before November 15. The ADEB will ensure that the plan is entered into the GIS Database for review by the Director, Operations Division or designee, by December 1 for the following calendar-year.

Adjustments to the BKAMPP for the second half of the calendar year may be necessary once annual plan allocations for the next fiscal year are finalized for the organization. Adjustments shall be made by the ADEB, then entered in the GIS Database for review by the Director, Operations Division, or designee.

The District Bridge Maintenance Supervisor and ADEB are to retain a copy of the current BKAMPP, and all adjustments, for their use during the applicable period. They shall provide the updated progress of the BKAMPP when requested by management.

F. SCHEDULING ACTIVITIES AND ADJUSTING SCHEDULES

The "Work Planned – Accomplished Tracking Sheet", provided by the Performance Management Central Data Analytics Group, is to be utilized by District Bridge Departments in scheduling maintenance resources and maintenance activities (BKAMPP maintenance and routine maintenance) on a weekly basis. The preparation of this sheet allows the District Bridge Maintenance Supervisor to achieve maximum use of available resources for a period (weekly) that can be successfully planned.

When prolonged inclement weather, the need to perform emergency work, or other external factors significantly interrupt or adversely affect an organization's BKAMPP, the ADEB shall work with the District Bridge Maintenance Supervisor to revise the organization's BKAMPP. The revised BKAMPP shall adhere to the guidelines contained herein and once submitted to, and approved by the Director, Operations Division, or designee will replace the existing BKAMPP in its entirety.

G. DOCUMENTATION OF WORK PERFORMED

ADEBs are to ensure that the completion of preventative maintenance activities is documented on the BKAMPP standardized forms weekly, or more frequently as required. GIS web documentation on the Department's website will be performed at a minimum bi-weekly. All activities may be marked "inspected, not needed", if the site is reviewed and no work is needed (There is no specific

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documentation required, but it suggested that some type of record be kept in case management or the public, has a question as to why no work was done).

H. MONITORING PROGRESS OF ACHIEVING GOALS

Monitoring of the progress made by a bridge organization toward achieving the goals of the BKAMPP is paramount to the success of the BKAMPP. Monitoring increases the efficiency and effectiveness of the organization and helps ensure success of the BKAMPP. Through monitoring, any necessary corrective action can be taken in a timely manner, sound practices can be fostered, and areas for improvement can be identified.

The ADEB is to ensure each organization's BKAMPP is reviewed weekly. The date and time of those reviews shall be recorded, along with any pertinent comments, and kept with and made a part of the organization's BKAMPP.

I. SUBMITTAL OF DOCUMENTED WORK PERFORMED

The ADEB or designee is to enter updates of completed BKAMPP work into the GIS Database within **five (5) working days** of the end of the "first half" and "second half" of each month. The ADEB will review the updated GIS Database for completed BKAMPP activities and approve in the database within **ten (10) working days** of the end of the "first half" and "second half" of each month. The Director, Operations Division, or designee will further review and submit it for publishing on the Public Web Map.

J. EVALUATION PROCESS

The Director, Operations Division, or designee will provide a form to be used to evaluate district bridge organization's adherence to their respective BKAMPP and compliance to directives regarding the BKAMPP process. The timing of the evaluation process will be at the discretion of the Director, Operations Division; however, each bridge organization will be evaluated a minimum of once per quarter by the Regional Operations Engineers or the Director's other designee.

5.0 ENFORCEMENT & AUTHORITY

All BKAMPP activities are to be performed according to policies and procedures in the Operations Manual and the Maintenance Management System - Performance Standards. The Maintenance Performance Standards include a month/seasonal performance schedule for each maintenance activity. The District Bridge Maintenance Supervisor should review and become familiar with the Maintenance Performance Standards as a tool to assist in the task of planning.

6.0 RELEVANT MATERIALS/DOCUMENTS

6.1 Bridges: Key Activities for Maintenance and Preservation Plan

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6.2 Operations Manual

6.3 Annual Plan

6.4 Maintenance Management System - Performance Standards

6.5 FHWA Bridge Preservation Guide

7.0 CHANGE LOG