CENTER FOR ENVIRONMENTAL EXCELLENCE BY AASHTO HISTORIC BRIDGES COMMUNITY OF PRACTICE

SUMMARY STATEMENT

April 7, 2010

INTRODUCTION

The Center for Environmental Excellence (Center) by the American Association of State Highway and Transportation Officials (AASHTO), in cooperation with the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Historic Bridge Alliance,[1] established a web-based Historic Bridge Preservation Community of Practice (COP). The CoP's purpose is to provide an on-line forum for invited participants to identify and discuss emerging needs and issues associated with the identification, evaluation, and management of our nation's historic bridges.

Individuals invited to join the Historic Bridges CoP included bridge engineers from state Departments of Transportation (DOT) and other public agencies, and bridge engineers from the private sector and academia. Historic preservation professionals, from the public and private sector, with experience in the identification, and evaluation, and management of historic bridges, were also invited to join the CoP. The goal was to have an interdisciplinary group of professionals so multiple view points and experiences would guide the CoPs' efforts.

A Center technical expert serves as the moderator for the on-line Historic Bridges CoP. The Center technical expert assisted AASHTO in the development of the CoP website, invited individuals to become members of the CoP, and monitors the CoP discussion threads.

The Historic Bridges CoP went on-line in March 2009. Initial discussion threads among the CoP members took place between March 2009 and June 30, 2009. A report on the results of these initial discussions is available on the Historic Bridges CoP website at: http://environment.transportation.org/cop/groups/historic_bridges/media/p/112.aspx.

This summary statement report summarizes the discussions of CoP members who spoke as individual members of the community and does not necessarily represent their agency's views or positions. In addition, the contents of this report do not necessarily represent the views or positions of AASHTO or the Center for Environmental Excellence.

[1] The Historic Bridge Alliance (HBA) is a community of engineers, preservationists, historians, and other public and private sector members promoting effective practices in the identification, evaluation, management, rehabilitation, maintenance, and continued use of historic bridges. The HBA is administered through the Historic Bridge Foundation (http://historicbridgefoundation.com/)

A second round of discussion threads was initiated with a December 15, 2009 teleconference, followed by a second teleconference held on February 16, 2010. This Summary Statement discusses the results of these discussions. This report also reviews the-state-of-the practice at both the national and state levels in terms of key and creative approaches to the identification, evaluation, and management of historic bridges.

BACKGROUND

There are several historic preservation laws and regulations that affect FHWA, FTA, and state DOT decision-making related to historic bridges. These include Section 106 of the National Historic Preservation Act (NHPA), and its implementing regulation 36 CFR 800, and Section 4(f) of the Department of Transportation Act. Section 106 of NHPA requires federal agencies like FHWA and FTA to take into account the effects of their undertakings on properties listed in and eligible for listing in the National Register of Historic Places, and afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the effects of these undertakings. The outcome of the Section 106 process, as describe in the regulation, is the result of consultation among a number of participants, although the final decision on the process outcome is made by the federal agency. The steps in the Section 106 process include conducting a reasonable and good faith effort to identify properties listed in and eligible for listing in the National Register within a project area, evaluating the effects of the federal undertaking on these properties, and if the effect is adverse, resolving this adverse effect. Resolution of adverse effects may involve redesigning a project or taking other types of actions in order to avoid, minimize, or mitigate impacts to properties. The federal agency is responsible for completing these steps in the Section 106 process, and decides how to implement these steps. A more detailed discussion of the Section 106 process in the context of transportation projects can be found in a practitioner's handbook posted on the Center's website: (http://environment.transportation.org/center/products_programs/practitioners_handbooks.aspx#5)

Section 4(f) of the Department of Transportation Act prohibits federal transportation agencies from using land from properties listed in and eligible for listing in the National Register, in addition to publicly owned parks, recreation areas, and wildlife and water fowl refuges, unless there is no feasible and prudent alternative to the use of this land, and the agency undertaking includes all possible planning to minimize harm to the property, resulting from this use. When a transportation project uses land from a historic property, but, based on the results of the Section 106 process, the project will not adversely affect the property, then Section 4(f) requirements are satisfied, since the impacts to the historic property are found by FHWA and FTA to be *de minimis* (i.e., minimal). A more detailed discussion of Section 4(f) and *de minimis* findings can be found in a practitioner's handbook posted on the Center's website: http://environment.transportation.org/center/products_programs/practitioners_handbooks.aspx#10

FHWA has issued five Section 4(f) programmatic evaluations; one of these is for the evaluation and approval for projects that involve the use of historic bridges. A legal sufficiency review is not required each time a programmatic evaluation is applied to a project, as is required for individual Section 4(f) evaluations. In addition, a programmatic

evaluation is not reviewed by the Department of Interior and other agencies (as appropriate), as is normally done for individual evaluations. Thus, programmatic evaluations result in a time savings in project review. Additional information on this and other programmatic evaluations is presented in the above referenced Section 4(f) practitioner's handbook.

In addition to Section 106 and Section 4(f), there are sections of federal transportation laws and programs that affect FHWA and state DOT decision-making involving historic bridges. The Highway Bridge Program, established at 23 U.S.C. 144, requires each state to complete an inventory of historic bridges on and off the federal-aid system in order to determine the historic significance of these bridges. Most state DOTs conducted comprehensive inventories of historic bridges in their respective states in the years immediately following the program's enactment in 1987. Several state DOTs have updated their inventories in the past few years. Section 144(o) allows a historic bridge being replaced by new construction to be preserved off-system, provided a state, local or private entity agrees to take responsibility for its future preservation and maintenance. The same provision allows federal funds not to exceed the estimated cost of demolition to be used for this effort; however, any bridge preserved using such funds will not be eligible for any further funding assistance under Title 23. Detailed information on this program may be found on FHWA's website on historic bridges: http://environment.fhwa.dot.gov/histpres/bridges.asp.

Some state DOTs have also developed policies and manuals for the management of historic bridges. Examples of these policies and manuals can be found on the Center's web site at: http://environment.transportation.org/environmental_issues/historic_cultural/docs_reports.aspx#bookmarkHistoricBridgeResources

STATE-OF-THE PRACTICE: NATIONAL OVERVIEW

As noted in the Introduction of this report, a second round of Historic Bridges CoP discussion threads was initiated with a December 15, 2009 teleconference, followed by on-line discussions, and then a second teleconference held on February 16, 2010. Prior to the December 15th teleconference, CoP members were asked to identify one emerging trend, issue, research, and/or data need that might serve as the focus of the initial discussion threads. The topics identified and then discussed during the teleconference (and on-line) were as follows:

- Conduct research on sustainability of truss bridges.
- Examine issues associated with fracture critical bridges and relation to historic bridge preservation requirements and policy. Consider AASHTO definitions of and federal rules on fracture critical bridges (e.g., FHWA Manual for Evaluating Existing Bridges), and methods for testing and monitoring.
- Investigate reasoning behind the lack of confidence in truss bridges and older structures, even though they have been in place for many, many years.
- Identify best practices for early problem detection in order to better maintain historic bridges

- Look at data behind cost-benefit ratios used in decision-making on rehabilitation versus replacement. Conduct research on the use-life of rehabilitated historic bridges compared to new structures.
- Moving trusses to lower volume roads. Being "green" by re-using existing materials.
- Research on best practices for sealing historic timber bridges
- Replication of historic concrete bridge railings
- How to deal with identification and evaluation of significant railroad bridges within ARRA-funded state DOT project areas.

Several of these topics, especially those related to 1) cost-benefit ratios used in decision-making on rehabilitation versus replacement, 2) the use-life of rehabilitated historic bridges compared to new structures, and 3) issues associated with fracture critical bridges and relation to historic bridge preservation requirements and policy, will be examined, along with other related topics, in a future National Cooperative Highway Research Program (NCHRP) study, conducted under NCHRP's 25-25 rapid research program. This study (Task 66) will compile and disseminate best practices and lessons learned on preservation and rehabilitation of historic bridges. An important component of this study will be to examine the extent that state DOTs and others have used NCHRP Project 25-25, Task 19, "Guidelines for Historic Bridge Rehabilitation and Replacement." This NCHRP study documents:

> ...nationally applicable decision-making guidelines for historic bridges. The guidelines are intended to be used as a protocol for defining when rehabilitation of historic bridges can be considered prudent and feasible and when it is not based on engineering and environmental data and judgments. The guidelines include identification of various approaches to bringing historic bridges into conformance with current design and safety guidelines/standards, and the effect or implications of remedial action on historical significance (NCHRP Project 25-25, Task 19, March 2007, page vii).

Another important objective of this study will be to evaluate liability issues associated with the rehabilitation of historic bridges, examining the implications of tort liability and risk management.

During the second Historic Bridges CoP teleconference, held on February 16, 2010, CoP members discussed the following topics:

- Opposing views on historic bridges, where bridge engineers document a bridge as being in bad shape, while historic preservation professionals do not want to consider that a bridge is in fact in really bad shape and is not a rare bridge type.

- State Historic Preservation Officers (SHPOs) rejecting processes that establish preservation priorities for historic bridges, and want to treat each bridge case-by-case. There is also a lack of readily available information (guidance, case studies, etc.) that bridges do not have to be dealt with on a case-by-case basis, but can be managed programmatically, as Indiana DOT is now doing.

- Getting more life out of good historic bridges.

As a result of these discussions, the teleconference participants agreed that promoting programmatic approaches to managing historic bridges would be a high priority initiative for the Historic Bridges CoP. Teleconference participants discussed the importance of setting up policies to implement these programmatic approaches, since it is not possible to save every historic bridge. State DOTs need the correct people to develop and then make these programmatic approaches work. It is also important to have FHWA supporting these approaches so there is some consistency from state to state.

The following section provides an overview of the state-of-the-practice in terms of programmatic approaches used by State DOTs to identify, evaluate, and manage historic bridges.

STATE-OF-THE PRACTICE: STATE PERSPECTIVE

The primary tools for implementing programmatic approaches for identifying, evaluating, and managing historic bridges are management plans and formal Section 106 programmatic agreements (PA). As noted in a 2001 study on state DOT historic bridge management plans (conducted by Mead & Hunt, Inc. and Allee King Rosen & Fleming, Inc. for the New York DOT), a management plan helps:

> facilitate the preservation of eligible and listed bridges and streamline DOT's compliance with Section 106 of the National Historic Preservation Act; clearly articulates a state's goal of preserving historic bridges, constructs mechanisms for achieving that goal, and identifies the parties who share responsibility for implementing the plan (Mead & Hunt, Inc. and Allee King Rosen & Fleming, Inc., June 2001, page 3).

The study found that the six most common elements to these plans include:

- Comprehensive historic bridge inventories
- Scheduled inventory updates
- Programmatic agreements
- Bridge- or type-specific management plans
- Tracking methods
- Bridge adoption and reuse programs

Programmatic agreements are signed by the FHWA, a state's Historic Preservation Officer, and generally, the ACHP. PAs establish an alternative procedure to the standard approach for complying with Section 106, eliminating case-by-case compliance and streamlining routine management activities. These agreements can also be used to set up a custom-designed process for an agency's program, and can establish a standard management approach for dealing with a category of historic properties, such as National Register eligible or listed historic bridges.

In June 2008, Mead & Hunt, Inc. published a pamphlet "Historic Bridge Practices Nationwide: Inventory, Evaluation, and Management." This document is available at: http://www.meadhunt.com/documents/newsletters/HistoricBridgePractices.pdf. The Mead & Hunt study surveyed 50 state DOTs and received responses from all of the states. This study found that 16 states have a general management plan for historic bridges and ten states have plans for individual bridges. Twenty states have plans to complete historic bridge management plans in the future.

Examples of state DOT historic bridge management plans and the above referenced report, with includes a survey of selected plans, can be found at: http://environment.transportation.org/environmental_issues/historic_cultural/docs_reports.aspx#bookmarksubHistoricBridgeManagementandTreatmentPlans

The Mead & Hunt study found that 19 states have programmatic agreements that deal with historic bridges. The study noted that 14 of the state DOTs:

> have comprehensive bridge-specific programmatic agreements that address wide-ranging issues such as National Register evaluations and coordination processes. Four states have programmatic agreements for individual bridge types, such as bascule or covered bridges, while other agreements serve as management tools dictating acceptable repair work. (http://www.meadhunt.com/documents/newsletters/HistoricBridgePractices.pdf)

The study also noted that several states were planning to or were in the process of preparing historic bridges programmatic agreements.

Historic bridge management plans are good tools for focusing and streamlining decision-making associated with the management of historic bridges. To be formally used as tool for compliance with Section 106 of NHPA, however, these plans need to be made operational through the execution of a Section 106 programmatic agreement. Some state historic bridge PAs lay out the process for developing and implementing these management or preservation plans. Thus, the first step in developing a program to manage a state's historic bridges is often the preparation of a Section 106 PA, involving all of a state DOT's Section 106 partners, and generally, the Advisory Council on Historic Preservation.

The following is a sample of state DOT programmatic agreements that involve historic bridges. This sample highlights the range of PAs developed by FHWA and state DOTs.

Colorado

Colorado DOT's PA, executed in 2003, describes the treatments to be applied to historic bridges that are not eligible for listing in the National Register, bridges that are potentially eligible, and those that are eligible or already listed in the National Register. In terms of the latter category, for example, the PA states that certain types of activities involving eligible bridges do not require consultation with the SHPO (which is normally done under the Section 106 process), but are evaluated and approved by a qualified Colorado DOT staff. A list of these types of activities and minor projects is included as an attachment to the PA. If

an eligible or listed bridge is affected by the DOT, and this activity or project is not included in this list, then the DOT carries out the normal Section 106 review process, as described in 36 CFR 800.

Indiana

Indiana DOT's PA, which was executed in 2006, was developed by a Historic Bridge Task Group. This group included representatives from the FHWA, ACHP, Indiana SHPO, Indiana DOT, Indiana Association of County Highway Engineers and Supervisors, Indiana Association of County Commissioners, Indiana Local Technical Assistance Program, and statewide historic preservation organizations. The PA defined a process for identifying National Register historic bridges suitable for preservation that are excellent examples of a given type of historic bridge. These bridges were defined as "Select Bridges." FHWA does not consider demolition of a Select Bridge as a prudent alternative for any federal-aid project. If the state's or a local jurisdiction's project will result in the demolition of a Select Bridge, the FHWA will not contribute funding to the project. The PA also establishes a process for considering alternatives to maintain Non-Select historic bridges, but does not mandate their preservation.

Specifically, the PA requires the development of the following management tools:

- A contextual study of historic bridges in Indiana.
- A listing of bridges eligible for inclusion in the National Register.
- Criteria to identify Select Bridges.
- A listing of Select and Non-Select Historic Bridges.
- A historic bridge database.

The PA also requires an extensive public involvement program. This program provides on-going opportunities for the public to provide input as management tools are developed in fulfillment of the PA. Public presentations and a project website keep participants and the public informed of progress during program implementation.

As of this report, FHWA and the Indiana SHPO, in cooperation with the Indiana DOT, have agreed upon the final list of Select and Non-Select Bridges. Indiana DOT, in consultation with FHWA, is distributing for review a draft Project Development Process for historic bridges included in the program. The Project Development Process is based on the stipulations and provisions of the PA, and includes steps for initiating early coordination and consultation with the program's parties, identifying a preferred project alternative, and other actions.

Minnesota

Minnesota's PA, executed in 2008, includes a list of 24 National Register eligible historic bridges and a list of selected state-owned National Register eligible bridges. Minnesota DOT, through the PA, has committed to preserving and performing a higher level of maintenance on these selected bridges. The PA also establishes a process for situations were it is determined that preservation of one of these selected bridges is not feasible. The Minnesota PA also includes a stipulation for the use of design exceptions and variances.

Under this stipulation, the DOT is to develop guidelines on how to apply and use design exceptions and variances on historic bridges. These guidelines are to be distributed to the DOT's districts and offices and local agencies. Additional stipulations in the Minnesota PA discuss training of DOT bridge maintenance personnel for the selected state-owned bridges, creating a DOT historic bridge website, maintaining historic bridge expertise within the DOT's Bridge Office, and preservation efforts for locally-owned historic bridges.

Montana

Montana DOT's PA, executed in 2007, establishes a programmatic process for managing both historic roads and historic bridges. This PA stipulates that FHWA and the Montana DOT will consider preservation in place and rehabilitation alternatives early in the planning process, when National Register eligible historic bridges may be affected by an undertaking. The FHWA and DOT will also "encourage use of Community Transportation Enhancement Program ... and Treasure State Endowment Program funds for the preservation and rehabilitation" of the bridge, rather than demolition or removal of the bridge. If after planning and public comment efforts, the bridge will be adversely affected and cannot be preserved in place or rehabilitated, Montana DOT implements a number of actions stipulated in the PA. These actions include recordation of the bridge prior to demolition or removal, and salvaging of historic components of the bridge. The PA also lays out an adopt-a-bridge program for those National Register bridges that cannot be feasibly rehabilitated or preserved in place.

The PA also establishes a bridge rehabilitation program for a select group of National Register bridges and also bridges that are potentially National Register eligible. The program initially includes 25 bridges, and all of these bridges are to be programmed in initial planning as rehabilitation projects rather than replacement projects. If a bridge included in this program cannot be rehabilitated because of a new structural condition or other unforeseen factors, another National Register bridge is selected to replace this bridge in the program. Further, once a bridge in this program is successfully rehabilitated, another National Register bridge is selected to replace this rehabilitated bridge.

Ohio

After completing an inventory of the states historic bridges, Ohio DOT classified the inventoried bridges into four pools: National Register (i.e., listed on the National Register), Select (bridges that are eligible for listing in the National Register), Reserve (are to be evaluated for National Register eligibility if they are part of a federal undertaking), and Non Eligible/Non-Historic/Non-Select. Bridges in the latter category are generally exempt from consideration under Section 106, and if affected by a DOT project, the project is not reviewed by the Ohio SHPO, as stipulated in the state DOT's PA. When bridges in the National Register and Select pools are affected by a federal undertaking, the affects on these bridges are taken into account following the normal Section 106 review process.

The PA, which was executed in 2002, stipulates that the Ohio DOT will notify the SHPO when a National Register, Select, or Reserve Pool bridge is lost through natural disaster, an accident, or through demolition by a local government. When a Select bridge is lost, the

DOT will recommend a Reserve Pool bridge, of the same category (e.g., camelback pony truss and through truss, Pratt double deck truss, swing bridge, etc.), as a replacement for inclusion in the Select Pool. The PA also stipulates that when the total number of bridges in any category previously identified as historic reaches ten or below, the DOT in consultation with the SHPO will develop a Preservation Plan for the category. This plan will include strategies for preserving these bridges. Several stipulations in the PA also lay out a process for addressing impacts to rainbow arch bridges. One of these stipulations states FHWA, the DOT and SHPO will encourage the rehabilitation of a rainbow arch bridge that is programmed for replacement. If rehabilitation is not feasible or prudent, the DOT will recommend bypassing the bridge and reusing the bridge for pedestrian or bicycle traffic.

Vermont

The Vermont Agency of Transportation (VTrans) was one of the earliest states to have a PA on historic bridges. The PA, executed in 1998, establishes a Vermont Historic Bridge Program. All National register eligible and listed historic bridges in the state are included in the program. VTrans' Historic Bridge Program includes the completion of historic bridge preservation plans, developed according to bridge type; the establishment of a bridge maintenance schedule and program for each historic bridge included in the program; the establishment of a rehabilitation and restoration program for each historic bridge included in the program; and implementation of an adaptive use program. Under the latter, VTrans makes an annual appropriation to the program to fund restoration, relocation, and adaptation of all bridges enrolled in the program for alternative transportation uses.

The PA also sets up a process whereby town-owned historic bridges can be included in the program. The PA stipulates:

> as each historic bridge preservation plan is completed, [VTrans and the Vermont SHPO] will jointly undertake to persuade towns to enroll all town-owned bridges identified in said plan into the Program. Enrollment will occur when the governing bodies of any town, cities, or villages execute a document titled "Vermont Historic Bridge Program Participation Agreement" and convey an easement document titled "Historic Bridge Preservation Easement" to [VTrans].

Additional information on all of these and other state PAs can be found in the Center's web site at: http://environment.transportation.org/environmental_issues/historic_cultural/docs_reports.aspx#bookmarkHistoricBridgeResources and in the Center's Programmatic Agreements Library at: http://environment.transportation.org/pal_database/

SUGGESTED RESEARCH AND FUTURE TOPICS

An important future research topic is the examination and evaluation of best practices and lessons learned associated with programmatic approaches to managing historic bridges. This research would also examine how to effectively promote the use of these

programmatic approaches by FHWA, state DOTs, resource agencies, such as State Historic Preservation Officers, and private sector consultants.

A small group of Historic Bridges CoP members will be developing a research problem statement examining these programmatic approaches to managing historic bridges. Once developed, this problem statement will be shared with a larger, targeted group of CoP members for their review and comment. Once the research statement if finalized, it will be submitted to AASHTO, FHWA, TRB, and other organizations, such as the National Conference of State Historic Preservation Officers, for their consideration and advancement.

ACRONYMS AND ABBREVIATIONS

The following acronyms and abbreviations are used in this report:

AASHTO	American Association of Highway and Transportation Officials
ACHP	Advisory Council on Historic Preservation
ARRA	American Recovery and Reinvestment Act
CoP	Community of Practice
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HBA	Historic Bridge Alliance
NCHRP	National Cooperative Highway Research Program
NHPA	National Historic Preservation Act
PA	Programmatic Agreement
VTrans	Vermont Agency of Transportation