



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 18-02 Policy Change

February 5, 2018

TO: All Design, Operations, and District Personnel, and Consultants

FROM: /s/ Elizabeth W. Phillips
Elizabeth W. Phillips
Office of Standards and Policy Manager
Bridges Division

SUBJECT: Historic Bridge Alternatives Analysis (HBAA)

REVISES: *Indiana Design Manual* (IDM) Sections 14-2.04, 14-2.05, 412-2.03, and 412-5.0

EFFECTIVE: Immediately

An alternatives analysis is a requirement of the *Programmatic Agreement for the Management and Preservation of Indiana's Historic Bridges* (Historic Bridges PA) and is an essential to completing the Section 106 process. The development and review of the HBAA has been incorporated into the project development process to ensure that the appropriate analysis and documentation is in place prior to Stage 1 (Bridge Replacement) or Preliminary Plans (Bridge Preservation).

The HBAA should be submitted through ERMS in accordance with IDM 14-1.02(02).

Revisions to the referenced sections are shown below and have been incorporated into the IDM on-line.

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IDM CHAPTER 14 REVISIONS

14-2.04 Bridge Plans, New Construction or Replacement Project

A bridge determined to be historic, whether Select or Non-Select, requires the completion of a Historic Bridge Alternatives Analysis (HBAA). The designer may not commence with the subsequent milestone submittals in this section until the HBAA has been reviewed by Cultural Resources Office and the Bridge Design Office, and each office has provided concurrence. See Chapter 412 for the Historic Bridge Project Development Process and additional information on historic bridges.

14-2.04(02) Stage 1 Review Submission

... (omitted section for clarity)

2. Abbreviated Engineering Assessment. Provide a written scope of the project requirements. This will be a short description of the design criteria proposed for use in the design of the project.

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- c. For a historic bridge, the HBAA may be submitted as the Abbreviated Engineering Assessment. Include documentation of concurrence from the Cultural Resources Office and the Bridge Design Office.

14-2.05(01) Initial Field Check and Bridge Scoping Report

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2. Bridge Scoping Report. For a Preventative Maintenance project meeting minutes are submitted in lieu of the Bridge Scoping Report. See Section 412-2.01(02). For a historic bridge, the Historic Bridge Alternative Analysis is submitted in lieu of the Bridge Scoping Report. See Section 412-5.02.

14-2.05(02) Scope of Work Approval

A bridge determined to be historic, whether Select or Non-Select, will require completion of a Historic Bridge Alternatives Analysis (HBAA) in place of the Bridge Scoping Report or Preventative Maintenance meeting minutes. The designer will not commence with the subsequent milestone submittals in this section until Environmental Services Division Cultural Resources Office and the Bridges Division Office of Bridge Design has reviewed the HBAA and provided concurrence with the proposed project scope. The list of Select and Non-Select bridges is available from the Department's Historic Bridge Inventory Summary & Results webpage at <http://www.in.gov/indot/2531.htm>, under Completed Inventory Documents (Volume 4).

IDM CHAPTER 412 REVISIONS

412-2.03 Historic Bridge Rehabilitation Project

The *Programmatic Agreement among the Federal Highway Administration, the Indiana Department of Transportation, the Indiana State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Management and Preservation of Indiana's Historic Bridges* (Historic Bridges PA) governs the project development process for historic bridges in Indiana. The PA was executed on August 22, 2006, and is available on the Indiana Historic Bridges Inventory website at <http://www.in.gov/indot/2530.htm>.

Historic bridge project development process documents are available on the Historic Bridge Inventory Summary & Results webpage at <http://www.in.gov/indot/2531.htm>.

Where a project involves a historic bridge, the bridge owner must prepare a Historic Bridge Alternatives Analysis for review and concurrence by the Department, after which it will be submitted to consulting parties for review and approval as part of the Section 106 consultation process.

See Section 412-5.0 for additional information on historic bridges and alternatives analysis.

412-2.03(01) Design Criteria

See Section 412-5.0 for design criteria associated with evaluating alternatives.

412-2.03(02) Submittal Process

A Historic Bridge Rehabilitation project should follow the submittal process for a standard Rehabilitation project, except that a Historic Bridge Alternatives Analysis will serve as the Bridge Scoping Report.

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412-5.0 HISTORIC BRIDGES

A historic bridge is one built prior to 1966, and is in, or is eligible for inclusion in, the National Register of Historic Places. The Department has developed a listing of all publicly owned historic bridges that are National Register-eligible or -listed.

Where a project involves a historic bridge, the bridge owner must prepare a Historic Bridge Alternatives Analysis for review and concurrence by the Environmental Services Division Office of Cultural Resources and Bridges Division Office of Bridge Design, after which it will be submitted to consulting parties for review and approval as part of the Section 106 consultation process.

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412-5.02 Historic Bridge Alternatives Analysis

Where a project involves a historic bridge, the bridge owner must complete a Historic Bridge Alternatives Analysis and receive concurrence from the Environmental Services Division Office of Cultural Resources and the Bridges Division Office of Bridge Design prior to proceeding to the Preliminary Plans milestone. The required contents of the analysis, including explanations and tips for discussion of alternatives, is available from the Department's Historic Bridge Inventory Summary & Results webpage at <http://www.in.gov/indot/2531.htm>, under Historic Bridge Project Development Process Documents.

The evaluation of alternatives must address the following alternatives for both Select and Non-Select Bridges. The list is a hierarchy, meaning that the analysis must prove an alternative is either not feasible or prudent prior to proceeding to the next alternative. Note that Select bridges must be preserved as part of the project.

1. No Build/Do Nothing
2. Rehabilitation for continued vehicular use (two-lane or one-lane option), meeting the Secretary of Interiors Standards for Rehabilitation.
3. Rehabilitation for continued vehicular use (two-lane or one-lane option), not meeting the Secretary of Interiors Standards for Rehabilitation
4. Rehabilitation for continued vehicular use (one-way pair option), meeting the Secretary of Interiors Standards for Rehabilitation.
5. Rehabilitation for continued vehicular use (one-way pair option), not meeting the Secretary of Interiors Standards for Rehabilitation.
6. Bypass (non-vehicular use)/Build New Structure
7. Relocation of Historic Bridge and New Bridge Construction
8. Replacement – Demolition of Historic Bridge and New Bridge Construction

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412-5.04 Economic and Other Criteria

412-5.04(01) Select Bridge

The appropriateness of rehabilitating a Select historic bridge should be determined based on the cultural significance of the bridge. The appropriateness of rehabilitating a Select bridge on a low volume road, as defined above, should further be assessed based on the cost effectiveness as follows:

1. if the initial rehabilitation cost is less than 80% of the replacement cost, rehabilitation is warranted; or
2. if the initial rehabilitation cost is equal to or greater than 80% of the replacement cost, the owner may request further consultation with FHWA to determine rehabilitation eligibility.

The above thresholds should not be viewed as absolute, i.e., if the initial rehabilitation cost is above 80% of the replacement cost, rehabilitation may still be considered a viable alternative. A rehabilitation project should result in a 20-year design life for the rehabilitated bridge.

A Select bridge may be rehabilitated and left in place, and a new bridge and new approaches may be built adjacent to it. This effectively creates one bridge and approaches for each direction of travel. For this situation, the new bridge must meet all design standards for a new bridge or obtain a design exception. Where appropriate, the new one-way bridge must be able to accommodate future widening to provide for two-way travel.

412-5.04(02) Non-Select Bridge

The appropriateness of rehabilitating a Non-Select historic bridge should be determined based on the cultural significance of the bridge. A Non-Select bridge on a low-volume road, as defined above, should further be assessed based on the cost-effectiveness of the project and other criteria as follows.

If the initial rehabilitation cost is greater than or equal to 40% of the replacement cost, or the bridge meets two or more of the following criteria that cannot be economically corrected as part of a rehabilitation project, then replacement is warranted.

1. The bridge waterway opening is inadequate (i.e., National Bridge Inventory Item 71 is rated 2 or 3).
2. The bridge has a documented history of catching debris due to inadequate freeboard or due to piers in the stream.
3. The bridge requires special inspection procedures (i.e., the first character of National Bridge Inventory Item 92A or 92C is Y).
4. The bridge is classified as scour-critical (i.e., National Bridge Inventory Item 113 is rated 0, 1, 2, or 3).
5. The bridge has fatigue-prone welded components that are expected to reach the end of their service lives within the next 20 years. See Section 412-4.03(04) for information on conducting a fatigue analysis.
6. The bridge has a Sufficiency Rating of lower than 35.

The above cost thresholds should not be viewed as absolute. If the initial rehabilitation cost is above 40% of the replacement cost, rehabilitation may still be considered a viable

alternative. A rehabilitation project should result in a 20-year design life for the rehabilitated bridge.

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