



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 21-18

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

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SUBJECT: Scour Requirements for Bridge Preventive Maintenance Projects

REVISES: *Indiana Design Manual (IDM) Chapter 14-2.05*
Indiana Design Manual (IDM) Chapter 412-2.0 and Figure 412-2C

EFFECTIVE: Stage 1 Submittals on or after October 1, 2021

This design memo has been revised to include additional consideration of the Scour Analysis Status in the Bridge Inspection Application System (BIAS) when determining the need for scour analysis.

Scour analyses are no longer required for all Bridge Preventive Maintenance projects on INDOT-maintained bridges except in the following circumstances:

1. Projects specifically addressing scour mitigation
2. Bridges with observed scour in the field.
3. Bridge with a Scour Analysis Status equal to 7 in BIAS

Prior to this update, rigid overlay was the only Preventive Maintenance work type which required scour analysis. This was a remnant from a time when rigid overlays were considered a Bridge Rehabilitation treatment.

INDOT recognizes the inherently lower risk associated with these projects given the shorter design life associated with preventive maintenance treatments. Additionally, many of the structures receiving preventive maintenance work are newer structures which were designed for scour. Older structures receiving these treatments are likely planned for more significant work in the near future and scour mitigation measures can be more cost effectively placed at that time.

For questions related to this design memo, please contact the Bridge Engineering Division at Bridgedesignoffice@indot.in.gov.

Chapter 14 Revisions

14-2.05 Bridge Plans, Preservation Project [Rev. Jan. 2013, Mar. 2016, Apr. 2017, Nov. 2017, May 2020, Mar. 2021, Sep. 2021]

A Bridge Preservation project can include work activities classified as either preventive maintenance or rehabilitation. See Chapter 412 for types of preservation treatments considered preventive maintenance and treatments considered rehabilitation. The following may not be applicable to all Bridge Preservation projects and should be evaluated for each project individually.

Historic Bridges

Historic bridges require additional coordination and plan reviews in accordance with 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 (PA)*. The *Historic Bridges PA* and a listing of Select and Non-Select bridges (inventory summary & results) are available on the [Indiana Historic Bridges Inventory website](#).

In accordance with the *Historic Bridges PA*, when any preservation option is selected as the preferred alternative for a historic bridge, the bridge owner is required to provide plans to the Indiana State Historic Preservation Officer (SHPO) when the design is approximately 30% complete (Stage 2 previously Preliminary Plans), approximately 60% complete (Hearing Plans), and when plans are 100% complete (Stage 3). If the project involves a bypass of the historic bridge, then the plan reviews will include a site plan and design of the new bridge and the historic bridge.

The SHPO staff is allotted a 30-day comment period on each plan review. Additionally, each of these submittals are reviewed by Cultural Resources Office staff in the Division of Environmental Service before the plans are submitted to the SHPO staff and consulting parties. See 412-5.02 and the [INDOT Cultural Resources Manual](#), Part IV, Chapter 2 for more information.

***Revisions from Design Memo 21-19.**

Scour Analysis

See Section 412-2.0 for more information concerning scour analysis.

Load Rating

For a Preventive Maintenance project, the need for a load rating should be determined at the field inspection. Utilizing a Latex Modified Concrete (LMC) or other rigid overlays require a load rating, but a polymeric or thin overlay does not. Other treatments that add significant deadload, e.g. replacing an aluminum railing with a concrete railing also require a load rating. For a Rehabilitation project a load rating is required regardless of the preservation treatment proposed.

For bridge preservation work included as part of a design-build or other alternate procurement method, bridge load rating must be included as a hold point in the technical provisions. The bridge load rating should be requested through the Load Rating Request Application (LRRA) upon completion of the design plans. The load rating must be completed prior to the approval of structural member working drawings. Where working drawings are not required, the load rating must be complete prior to work being performed on bridge elements.

Asbestos Report

An Asbestos Report is required for all Bridge Preservation projects. The designer should contact the project manager early in the development of the project to determine if the report is on file or must be completed. It is the responsibility of the District Bridge Inspection Engineer to complete the Asbestos Report for each of the INDOT-maintained bridges within their district. For LPA projects the designer is responsible for coordinating the obtaining of the report with the LPA.

Environmental, Utilities & Railroads, and Right of Way

Each Bridge Preservation project is subject to NEPA and permitting requirements, utility and railroad coordination, and right-of-way acquisition requirements.

Chapter 412 Revisions

412-2.0 PROJECT DEVELOPMENT [REV. MAR. 2021, SEP. 2021]

A Bridge Preservation project should be developed as either a Preventive Maintenance or a Rehabilitation project. The following activities may not be applicable to all Bridge Preservation projects but should be evaluated for each project. The design criteria and submittal process are distinct for each project type and discussed separately.

Scour Analysis

Each project that qualifies as Bridge Rehabilitation crossing a waterway requires a scour analysis to be in the bridge file. Each project that qualifies as Preventive Maintenance on INDOT maintained bridge projects does not require a scour analysis, except for projects specifically addressing scour mitigation or bridges with observed scour. For all projects on LPA-maintained bridges, a scour analysis is required. When a scour analysis is required, the designer should check BIAS and then contact the Hydraulics division at hydraulics@indot.in.gov to determine if a scour analysis has been completed previously or should be completed as part of the current project. The determination should be documented in the Bridge Preventive Maintenance Meeting Minutes or Bridge Rehabilitation Report.

For INDOT-maintained bridges, scour countermeasures deemed necessary will be included in the scope of work for each project. For LPA-maintained bridges, scour countermeasures deemed necessary must be included in the scope of work for each project. A decision flowchart is illustrated in [Figure 412-2C](#), Scour Analysis and Countermeasures.

When a scour analysis is completed as part of the project, it must be signed, sealed, and dated by a professional engineer licensed in Indiana and submitted for review at least 30 days prior to the Preliminary Plans Submission. A template for documenting scour calculations is available from the Department's [Editable Documents webpage](#), under Hydraulics.

Load Rating

For a Preventive Maintenance project, the need for the existing load rating should be determined at the field inspection. Utilizing a Latex Modified Concrete (LMC) or other rigid overlays require a load rating, but a polymeric or other flexible overlay does not. Other treatments that add significant deadload, e.g. replacing an aluminum railing with a concrete railing or otherwise

changing the structural behavior of the bridge also require a load rating. For a Rehabilitation project a load rating is required regardless of the preservation treatment proposed.

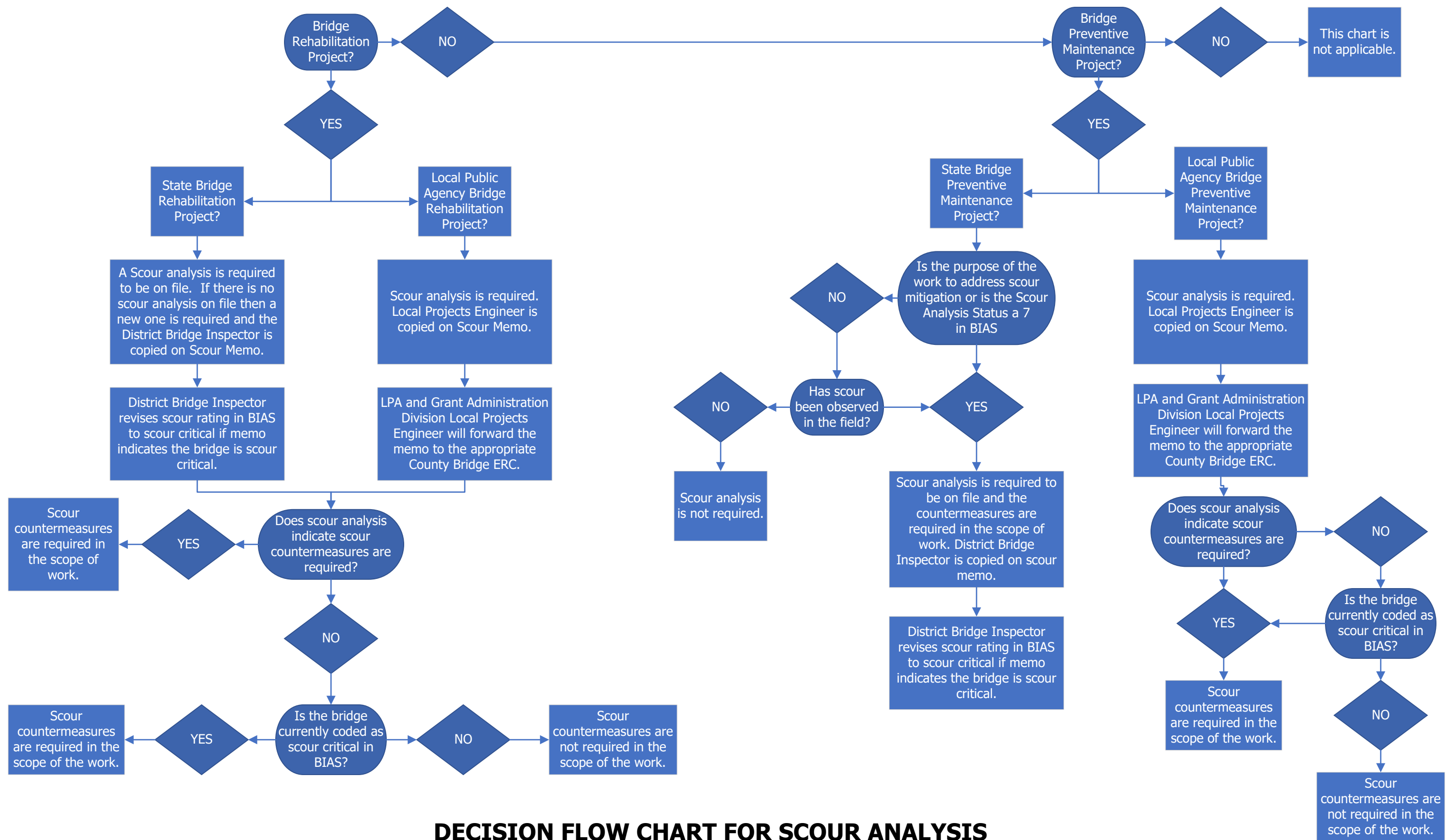
The load rating request should be submitted via email to Coordinator 8 and the Bridge Load Rating Engineer copied. Relevant plan sheets that are too large to email should be uploaded to ERMS. The Load Rating Request Form and Load Rating Summary are available from the Department's [Editable Documents webpage](#), under Bridges.

Asbestos Report

An Asbestos Report is required for all Bridge Preservation projects. The designer should contact the project manager early in the development of the project to determine if the report is on file or it needs to be completed. It is the responsibility of the District Bridge Inspection Engineer to complete the Asbestos Report for each of the INDOT-maintained bridges within their district. For LPA projects the designer is responsible for coordinating the obtaining of the report with the LPA.

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**DECISION FLOW CHART FOR SCOUR ANALYSIS
 AND IMPLEMENTATION OF COUNTERMEASURES**
FIGURE 412-2C
[Rev. Feb. 2022]