

**From:** [Nordholm, Gail \[DOT\]](#)  
**To:** [Nordholm, Gail \[DOT\]](#)  
**Subject:** Evaluating Undetermined Bridge Foundations  
**Date:** Thursday, August 26, 2010 11:01:36 AM

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**TO:** County Engineers, City Representatives, and Consultants

**CC:** District Local Systems Engineers, Service Bureau,  
Office of Local Systems, and Eric Souhrada, Office of Bridges and  
Structures

**FROM:** Office of Local Systems

**SUBJECT:** Evaluating Undetermined Bridge Foundations

**DATE:** August 26, 2010

The following is being sent on behalf of Eric Souhrada, Office of Bridges and Structures. If you have any questions, **please do not reply to this note**. Instead, you may contact the person shown below.

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On January 9, 2008, FHWA sent a memorandum requiring that all bridges with unknown foundations be evaluated for their scour vulnerability by November 2010. In that memorandum, technical guidance was provided that could be used to reduce the number of bridges categorized as having unknown foundations. The use of these procedures in conjunction with risk assessment, standard design practices, engineering judgment, and scour Plans of Action (POA) can be used to reduce the risk of scour induced failures.

This memorandum presents technical guidance on conducting risk-based assessments for bridges over waterways with unknown foundations. Bridges with unknown foundations represent a subset of bridges over waterways that have not been evaluated for scour.

The guidance herein offers a rational approach to determining enough about a bridges foundation to conduct a scour evaluation or appropriately address bridges that will remain coded U. There will be an inventory of bridges that remain coded U because sufficient information could not be obtained to advise recoding.

The following documents are to be used in the evaluation of the bridge structures and can be found on the links that follow each:

1. Procedural and Risk Category Flowcharts

[http://www.iowadot.gov/local\\_systems/mailing/2010/august/procedural\\_risk\\_fc.pdf](http://www.iowadot.gov/local_systems/mailing/2010/august/procedural_risk_fc.pdf)

2. Risk Assessment Worksheet

[http://www.iowadot.gov/local\\_systems/mailing/2010/august/risk\\_assess\\_ws.pdf](http://www.iowadot.gov/local_systems/mailing/2010/august/risk_assess_ws.pdf)

3. USGS Hydrologic Region Map with Region Descriptions

[http://www.iowadot.gov/local\\_systems/mailing/2010/august/usgs\\_hydrologic\\_regions.pdf](http://www.iowadot.gov/local_systems/mailing/2010/august/usgs_hydrologic_regions.pdf)

4. Link "B" Guidance for Developing Risk Based Plans of Action:

[http://www.iowadot.gov/local\\_systems/mailing/2010/august/attachment\\_b.pdf](http://www.iowadot.gov/local_systems/mailing/2010/august/attachment_b.pdf)

The following is the procedure for utilizing the technical guidance provided in this memo:

1. Use the Procedural Flowchart to determine if the foundation type and depth can be determined. If not, then go to Step 2.
2. Complete the Risk Assessment Worksheet utilizing the USGS Hydrologic Region information provided and the Structure Inventory and Appraisal form. Determine the risk category based on the point totals and go to Step 3.
3. Utilize the appropriate Risk Category Flowchart to determine if the structure requires a plan of action. If so, reference to Link "B" for additional guidance on developing the appropriate plan of action.

As stated in the January 9, 2008 memo, all bridges with unknown foundations are to be evaluated for their scour vulnerability by November 2010. Structures with unknown foundations that have not been evaluated by this date are required to have a plan of action developed and implemented.

Local Public Agencies are cautioned that simply developing a POA for each bridge with an unknown foundation without first making every effort to determine the

foundation (by discovery or inference) may not be advisable. The personnel required to implement POA's for a large number of bridges during a widespread rainfall event may overwhelm LPA staff. The LPA's need to review the number of scour critical structures and structures with undetermined foundations within in their jurisdiction that require closure during a flood event as per the plans of action.

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Some of the documents referenced above are in Adobe Acrobat's Portable Document Format (PDF). If you do not have the Adobe Acrobat Reader software, you can download it free of charge at:

<http://www.adobe.com/products/acrobat/readstep.html>.

Mailings are available at the Office of Local Systems Weekly Mailings web page at: [http://www.iowadot.gov/local\\_systems/mailing/main\\_mailing.htm](http://www.iowadot.gov/local_systems/mailing/main_mailing.htm)