



U.S. Department
of Transportation
Federal Highway
Administration

Memorandum

Subject: **INFORMATION**: Frequently Asked
Questions – Bridges Over Waterways with
Unknown Foundations

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In Reply Refer To:
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From: */s/ Original Signed by*
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To: Associate Administrator for RD&T
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This memorandum presents some frequently asked questions (FAQ) regarding the evaluation and elimination from the National Bridge Inventory (NBI) of bridges over waterways with unknown foundations. The FAQ's and answers are provided in Attachment A and should serve to clarify the intent of language and target date set forth in the FHWA January 9, 2008, memorandum titled "Technical Guidance for Bridges over Waterways with Unknown Foundations."

As we develop and disseminate technical guidance on methods for evaluating and eliminating bridges over waterways with unknown foundations, owners are encouraged to begin addressing this inventory of bridges immediately. Bridge owners should be screening and grouping their inventory in accordance with the guidance provided in the January 9, 2008, memorandum. For bridges with unknown foundations that will not be evaluated for vulnerability to scour by November 2010, owners should be developing plans of action for those bridges as currently recommended in the Recording and Coding Guide for the Structure Inventory and Appraisal for the Nation's Bridges (Coding Guide).

The intent of Item 113, Scour Critical Bridges, in the Coding Guide is that the code "U" is for bridges over waterways (riverine or tidal) with unknown foundations. Unknown foundations are those having insufficient details such that they cannot be evaluated for vulnerability to scour. Item 113 is not intended to address the vulnerability of bridge foundations to hazards not related to scour.



A key point of the January 9, 2008, memorandum is the establishment of a target date (November 2010) by which all bridges over waterways with unknown foundations will be eliminated from the NBI. To meet the November 2010 target date, bridge owners were provided with a suggested process for reducing or eliminating the population of bridges over waterways identified as having unknown foundations. The steps included: 1) screening all bridges to ensure that they are coded correctly; 2) providing some criteria for prioritizing bridges based on functional classification; and 3) conduct a scour evaluation for bridges whose foundations are completely and accurately identified after completion of screening. Several States, including North Carolina, Illinois and Florida are, or have implemented a version of this process.

The FAQ's were developed to address some common issues arising from bridge owners as the target deadline nears. Specifically, concerns were related to determining minimum foundation characteristics necessary for conducting an evaluation of a bridge foundation for scour vulnerability, and the requirements for developing and implementing a plan of action.

In addition to the FAQ's, an interdisciplinary FHWA Unknown Foundations team has been assembled to develop a plan for needed direction, provide expert advice, and assist bridge owners with technology and process development and implementation. The interdisciplinary team features Geotechnical, Hydraulics and Structural specialists from the Office of Bridge Technology, the Resource Center, Turner-Fairbank Highway Research Center, and the division offices. The team is currently assessing the progress of States in addressing their inventory of bridges with unknown foundations through a series of formal and informal state visits. The overall objective is to identify and capture successful practices and procedures, better understand bridge owner priorities with respect to bridge hazards, and to provide technical guidance for addressing the inventory of bridges over waterways with unknown foundations.

The expectation of the team is to provide practical and cost-effective technical guidance that can be used by bridge owners to evaluate the scour vulnerability of bridges over waterways with unknown foundations. Another expectation is that the guidance will include a risk-based tool to help bridge owners with coding of Item 113.

The team has set up a Web site where all information related to the Unknown Foundations initiative, including this memorandum will be housed. It is live and can be accessed at <http://www.fhwa.dot.gov/unknownfoundations/>. If you have any questions, please contact Mr. Silas C. Nichols at (202) 366-1554 or by e-mail at silas.nichols@dot.gov.

Attachment

Attachment A
Bridges over Waterways with Unknown Foundations
Frequently Asked Questions

Question: What does the code “U” in Item 113 of the Coding Guide mean?

Answer: Item 113 in the Coding Guide identifies the current status of a bridge regarding its vulnerability to scour, and recommends that an evaluation be made by the hydraulic, geotechnical, and structural engineers. The code “U” in Item 113 means a bridge with an unknown foundation that *has not* been evaluated for scour.

Question: What should bridge owners know to determine when a bridge can be coded as something other than “U”?

Answer: At a minimum, bridge owners should apply a risk-based assessment to the inventory of bridges with unknown foundations. The approach should provide a framework for a bridge owner to responsibly determine vulnerability of a bridge to hydraulic hazards related to scour. The risk-based assessment should consider appropriate factors that would affect the safety of the traveling public. This would include, but not be limited to the likelihood of scour, the possible impacts of scour on the bridge, the ability to monitor scour and impacts to the bridge, and the consequences of bridge closure or restrictions. Some examples of risk-based approaches being implemented by States will be posted on the Unknown Foundations Website.

Question: After November 2010, is the intent of the January 9, 2008, memorandum to default all bridges that are still coded “U” in Item 113 to scour critical?

Answer: The intent is to place emphasis on the need to address this inventory of existing bridges over waterways with unknown foundations. Owners should anticipate that bridges reported as having a code “U” after November 2010 will require development and implementation of a plan of action (POA), until properly designed countermeasures are installed to protect the bridge foundations or until the bridge is replaced. The Coding Guide currently recommends development and implementation of a POA for existing bridges having a code “U.”

Question: Where does the law or regulation specifically address bridges with unknown foundations?

Answer: The law or regulation *does not* specifically address bridges with unknown foundations. However, the National Bridge Inspection Standards (NBIS) do address scour critical bridges and require the preparation of a POA for a bridge identified as scour critical during the national bridge scour evaluation program. Since some bridges with unknown foundations may be scour critical, FHWA policy requires that they be addressed through scour evaluation, risk-based assessment, or development and implementation of a POA.

Question: Should the POA for a bridge coded “U” be the same as for a bridge determined to be scour critical?

Answer: The POA for a bridge coded “U” may be different than for a bridge determined to be scour critical. The minimum requirements for a POA for a bridge over waterways with unknown foundations should ensure a level of safety to the traveling public commensurate with the risk-based evaluation of the structure. Additional guidance is currently being developed by the FHWA Unknown Foundations team.

Question: Is there a recommended process or guidance available for evaluating the inventory of bridges with unknown foundations?

Answer: There is not single recommended process. The FHWA Unknown Foundations team is currently developing guidance to assist owners in conducting an evaluation of bridges over waterways with unknown foundations with the goal of reclassifying structures from code “U” in Item 113. In advance of this, bridge owners should be screening and grouping the inventory of bridges in their State for evaluation.

Question: Is available technology adequate to accurately determine the characteristics of unknown foundations supporting bridges that are necessary for scour evaluation?

Answer: For most cases, available technology (e.g., non-destructive testing methods) is capable of determining the necessary characteristics of an unknown bridge foundation for scour evaluation. However, currently available technology has limitations and the cost in some circumstances may prove prohibitive to many bridge owners. Planned investigations targeting the specific characteristics in question can be successful, but should only be used as a part of any supporting information in the decision to change the rating for a bridge in Item 113.

Question: Can an implemented risk-based evaluation process count toward compliance with the policy memorandum?

Answer: Yes. An implemented risk-based process can count toward compliance with the policy memorandum. However, implementing the process will not be considered as equivalent to having evaluated a bridge for susceptibility to scour. If a bridge has not been reclassified from code “U”, it is anticipated that the owner will be required to implement a POA for the structure.

Question: Does the POA developed for a bridge with unknown foundations require approval by FHWA?

Answer: No. However, 23CFR650.313(e)(3) implies that FHWA may disapprove of a POA that is insufficient for a scour critical bridge. While bridge owners are encouraged to follow the FHWA guidance on POA development and implementation, they may reach their own decisions on what information is included in a POA. The FHWA division offices are strongly

encouraged to review a sample number of plans of action and provide input as part of their annual NBIS review, and as requested by corresponding bridge owners.

Question: If a designed countermeasure has been properly installed, need the code “U” still be indicated in Item 113?

Answer: If a designed countermeasure has been properly installed, the coding “U” need not be indicated in Item 113. A coding other than “U” for Item 113 may be assigned by the bridge owner.

Question: If a bridge coded “U” in Item 113 is considered to be “low risk” or “low priority” to my State, should it still be considered subject to a plan of action?

Answer: Yes, if the bridge is coded “U” it is subject to a POA. It is also recommended that the requirements for the POA meet a minimum level of safety established by the risk-based evaluation of the structure. Additional guidance is currently being developed by the FHWA Unknown Foundations team.

Question: Is FHWA considering changes to the Coding Guide?

Answer: Yes, FHWA is considering changes to the Coding Guide. The intent of changes to the Coding Guide would not be to loosen or remove any requirements set in the January 9, 2008, memorandum, but to clarify language and intent of Item 113, and provide options for evaluation and reclassification of unknown bridge foundations.