

## **ATTACHMENT “B”**

### **Guidance for Developing and Implementing Plans of Action for Bridges with Unknown Foundations**

The National Bridge Inspection Standards (NBIS) regulation, 23 CFR 650.313, requires that bridge owners identify bridges that are scour critical (coded 0, 1, 2, or 3 in Item 113) and to prepare a plan of action (POA) to monitor known and potential deficiencies. Bridge owners have been working on completing evaluations to determine which bridges over waterways are vulnerable to scour.

Bridges coded U for Item 113 represent a unique subset of bridges that were exempted from being evaluated for scour vulnerability due to the lack of a process and guidance that would have allowed owners to determine the necessary foundation characteristics. The FHWA has provided several risk-based methods for assessing bridges with unknown foundations. However, there may still be an inventory of bridges coded U for which a scour evaluation can not be completed.

Owners should anticipate that bridges reported as having a code “U” after November 2010 will require development and implementation of a 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.”

FHWA has previously provided guidance for owners on development and implementation of POA’s for bridges determined to be scour critical. For bridges with unknown foundations, an owner has two options for development of a POA:

1. A bridge coded U in Item 113 can simply be changed to a scour critical code (e.g., 3) for the NBI and subjected to a POA as described for scour critical bridges.
2. A bridge may remain coded U in Item 113 with a POA developed based on a risk assessment, and owner defined criteria considering known information about the bridge.

The POA for a bridge that remains coded U in Item 113 may be different than for a bridge determined to be scour critical. The POA developed should be based on the known information of the bridge and the owner determined risk from scour. The POA for a bridge over waterways with unknown foundations should contain minimum requirements commensurate to the consequences of loss of service of the structure to ensure a reasonable level of safety to the traveling public.

The steps below provide assistance to bridge owners in developing a POA for a bridge coded U in Item 113.

### STEP 1:

Assess bridges with unknown foundations in accordance with guidance provided in this memorandum and examples provided on the [Unknown Foundations Website](#). For bridges that remain coded U in Item 113 after a risk-based assessment, FHWA recommends that a POA be developed based on the risk categories defined by bridge owners during initial categorization and grouping (e.g. A - High Risk, B - Moderate Risk, C - Low Risk).

### STEP 2:

Develop a POA based upon the defined risk category that considers safety to the traveling public and the consequences of loss of service of the structure. The POA may be less detailed than for a scour critical bridge based on the defined risk categories, but it should contain elements that protect users during and after a scour event, and provide a proactive plan for addressing the bridge scour concerns in the future. Examples for lowest and highest risk categories are below.

#### *Lowest Risk Categories*

\*Assumes that the bridge has performed well and has no history of scour related problems

For bridges considered as low risk, plans of action may be as simple as monitoring bridges for scour during routine biennial inspections and after major events.

If scour or a rainfall event has been observed in excess of predetermined monitoring triggers, then the bridge should be considered for an in-depth foundation investigation. Any information on observed or inspected conditions would be identified on the bridge inspection report so that inspectors could monitor the bridge for changes.

#### *Highest Risk Categories*

\*Assumes that the bridge has performed satisfactorily, but because of owner defined criteria, it has been identified as high risk

Plans of actions may be similar to those for bridges determined to be scour critical. At a minimum, the bridge should be monitored on a more frequent basis than a bridge in a moderate to low risk category. Also, a bridge in this category should be considered for an in-depth foundation investigation if any significant changes in streambed occur, and scheduled for timely design and construction of a new bridge or countermeasures to make the bridge safe from scour and stream instability.

### STEP 3:

Coordinate a global action plan for all bridges coded U in Item 113 within a state or region, whether assessed through this guidance or not. The plan should:

- Identify the scour critical and unknown foundation bridges;
- Define major events or a monitoring triggers; and
- Provide information for requesting technical assistance or conducting an in-depth foundation investigation.

Owners should monitor and verify that the process of implementing POAs is working satisfactorily. The global action plan for developing and implementing POAs should be revisited and updated as necessary.