



U.S. Department
of Transportation
**Federal Highway
Administration**

Memorandum

Subject: **ACTION:** Annual Call for Update of the
National Bridge Inventory and NHS
Element Level Collection 2015

Date: January 23, 2015

From: 
Joseph L. Hartmann, Ph.D., P.E.
Director, Office of Bridges and Structures

In Reply Refer To: HIBS-30

To: Federal Lands Highway Division Engineers
Director of Technical Services
Division Administrators

We hereby request that each State and Federal Agency submit to the Office of Bridges and Structures by April 1, 2015, a copy of their most current National Bridge Inventory (NBI) data on highway bridges. We also request that each State and Federal Agency submit to the Office of Bridges and Structures by April 1, 2015, a copy of the element level bridge inspection data they have collected on NHS bridges.

The NBI data items are to be submitted in the 432 character record format defined by the "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," (Coding Guide) December 1995, including its updates <http://www.fhwa.dot.gov/bridge/nbi.cfm>. The data submittal options and specifications are outlined in Attachment 1.

Element data items are to be submitted following the XML schema issued by FHWA in its July 25, 2014, memorandum <http://www.fhwa.dot.gov/bridge/nbi/140725.cfm> and following the Specification for the National Bridge Inventory Elements (SNBIBE) issued in its December 16, 2013, memorandum <http://www.fhwa.dot.gov/bridge/nbi/131216.cfm> and the AASHTO Manual for Bridge Element Inspection, First Edition, 2013. Your transmittal document must indicate if the element data submittal was field collected in accordance with the SNBIBE and AASHTO Manual, migrated from AASHTO Commonly Recognized Elements or other element format, or a combination of collected and migrated.

Error checking and expectations for NBI data:

- NBI data submitted is to be checked for errors prior to submittal. An internet version of the error checking routine is available on FHWA's Website at the following address <http://www.fhwa.dot.gov/bridge/nbi.cfm>. A list of the error checks is listed on the same page as the error check link.
- Files with significant errors will be returned for resolution and a new file submitted in 15 days. Significant errors are defined in Attachment 1, Section 9.

- Files that have not resolved errors in the 3 year error report may also be returned. However, FHWA recognizes that some bridges are on an extended inspection cycle and an inspection may not have occurred.
- Items that are inappropriately left blank or otherwise miscoded will receive an error message. In general, error messages generated in the April 2014 submittal file are expected to have been fixed in the April 2015 submittal; however, the FHWA recognizes that some errors will not be resolved until the next inspection cycle.

Error checking and expectations for element data:

- Element data submitted should be checked for errors prior to submittal. An internet version of the error checking routine is available on FHWA's Website at the following address <http://www.fhwa.dot.gov/bridge/nbi.cfm>. A list of the error checks is listed on the same page as the error check link.
- FHWA will use the error information gathered from the 2015 submittals to develop guidelines on data integrity for element data.
- Items that are inappropriately left blank or otherwise miscoded will receive an error message. A list of the error checks is listed on the same page as the error check link.

Noteworthy items for the NBI data submittal:

1. As part of the annual NBIS review, the April 1, 2015, submittal will be assessed for timeliness as part of Metric 23 – Timely Updating of Data and for data quality as part of Metric 22 – Inventory – Prepare and Maintain <http://www.fhwa.dot.gov/bridge/nbip/metrics.pdf>.
2. Coordination between bridge owners should be conducted to ensure consistency between NBI submittals of border bridges. The reason being is that 2014, 2015, and 2016 NBI data is the initial 3-year period of determination for implementing the NHPP bridge condition penalty provision – 23 USC 119(f)(2) – and as described in the MAP-21 Bridge Q&As <http://www.fhwa.dot.gov/map21/qandas/qabridges.cfm>.
3. Structure number changes are not allowed.
4. Potential safety concerns that are flagged during the error check must be resolved prior to submittal. Also errors that occur for items 58 - Deck Condition Rating, 59 - Superstructure Condition Rating, 60 - Substructure Condition Rating, or 62 - Culvert Condition Rating, must be resolved prior to submittal. See discussion of these checks in Attachment 1, Section 8, Number 1.
5. Each FHWA Division Bridge Engineer has been provided a list of errors that have occurred for 3 consecutive years. These errors must be resolved prior to submittal unless the bridge is on an extended inspection frequency and the error cannot be resolved until the next inspection cycle. When discussing this letter and these repeated errors with the

State, please provide them a copy of the error reports. When the 2014 processing reports were returned to the Division Bridge Engineer a 2-year error report was included. This should have been given to the state along with the processing report to be used as a tool to avoid the error showing up on the 3-year error report generated after the 2015 processing.

6. A very small number of these repeat errors have valid exceptions, for example side hill viaducts. The 2014 file submittal moved these errors to a separate report for validation to their exception and these validation errors are not counted in the error summary.
7. The States' inventory submissions should not include bridges owned by Federal Agencies as mentioned in our January 4, 1995, memorandum unless the State has inspection or maintenance responsibility for the Federal bridge.

Please direct questions Doug Blades at (202) 366-4622 or e-mail to Douglas.Blades@dot.gov. Alternately questions can be directed to Fernando Luna at (202) 366-4621 or e-mail to Fernando.Luna@dot.gov.

Attachments

cc:

Directors of Field Services

Attachment 1
National Bridge Inventory
Specifications for Submitting and Processing of April 2015 NBI Data

This document provides information on the following:

1. Record Format
2. Data Submittal Options
3. Structure Number Changes
4. Error Checking
5. Submittal Processing
6. Sufficiency Rating
7. Reports
8. Safety Related Checks
9. Significant Errors

1. Record Format for NBI and Element Data Submittals

The NBI data and the element data inspection and collection are required by the National Bridge and Tunnel Inventory and Inspection Standards 23 U.S.C.144. Bridge inspection data shall be recorded in accordance with the Coding Guide, including updates <http://www.fhwa.dot.gov/bridge/nbi.cfm> and submitted in the NBI Record Format which is found in Appendix E of the Coding Guide.

Element data items are to be submitted following the XML schema issued by FHWA in its July 25, 2014, memorandum <http://www.fhwa.dot.gov/bridge/nbi/140725.cfm> and following the SNBIBE issued in its December 16, 2013, memorandum <http://www.fhwa.dot.gov/bridge/nbi/131216.cfm>.

2. Data Submittal Options for NBI and Element Data Submittals

All data shall be submitted to the Office of Bridges and Structures in the record format described in the Record Format Section above. Options for submitting the file include:

- Submittal through the web-enabled NBI system by logging on to FHWA User Profile & Access Control System (UPACS). Use the Submittal Button in the NBI system.
- E-mail the submittal file to the Office of Bridges and Structures mailbox BridgeOfficialMailbox.FHWA@dot.gov with a copy to Douglas.Blades@dot.gov and Fernando.Luna@dot.gov.
- If the file is too large for e-mail contact Doug or Fernando for submittal options.

State and Federal Agencies can access the NBI web system via the internet through FHWA's User Profile Access Control System (UPACS) at <https://fhwaapps.fhwa.dot.gov/> after securing a UPACS account. All State users are required to login using credentials issued by Operational

Research Consultants to access FHWA web-based applications. If the State or Federal Agency wishes to establish a UPACS account, please email Douglas.Blades@dot.gov or Fernando.Luna@dot.gov for instructions.

3. Structure Number Changes for NBI Submittal

Structure number changes are not accepted. This policy was initiated in 2012.

4. Error Checking on NBI and Element Data Submittals

All NBI data submitted is to be checked for errors prior to transmittal to the FHWA. There are two ways to error check a file. The first is the Check Data module within the NBI system which is accessible through UPACS. The user logs into the NBI through UPACS, chooses the Check Data button, and uploads the file. The user will receive an email when the error reports are generated. The user then returns to the Check Data section to download the zip file that contains the reports.

The second method is to use an error check module that is now on the FHWA's Internet site <http://www.fhwa.dot.gov/bridge/nbi.cfm>. The file is uploaded and the user waits while the file is being checked (the window can be minimized while the file is being checked). When the procedure is complete a page displays with links to download the error reports. There is a separate link for NBI data file checking and element data file checking.

5. Submittal Processing for NBI and Element Data Submittals

The annual submittals must be a full data submittal. The following options are available for submitting and updating data:

- **Full Data Submittal** - The submitted data file contains a complete data set. During processing of a full data submittal, records in the existing NBI master file which match identification numbers (IDs) with submitted data are updated. Records in the NBI master file that do not have a match in the submitted file are automatically deleted and a list of their ID's are provided. Records on the submitted file which do not exist in the NBI master file are added.
- **Partial Inventory Update** - The partial option is used throughout the year for updating smaller sets of bridge information. The submitted data file contains a partial update to the inventory. During processing of a partial inventory update, records in the existing NBI master file which match ID's with submitted data are updated. If there are records in the NBI master file that do not have a match to the submittal file they are retained in the master file. Records on the submitted file which contain a State code, structure number, and the first digit of item 5a but contain no other data are deleted from the inventory. This option is not available for element data files.

If duplicate records are present on the input file the file will be returned for resolution and resubmittal within 15 days. The system is designed to use the first one encountered, reject any

others, and write an error message displaying rejected records. However, the State should determine which record is correct and should be loaded.

6. Sufficiency Rating and Status for NBI Data Submittal

For the purpose of administering remaining funds from the Highway Bridge Program and various provisions under MAP-21 programs, a sufficiency rating, a status that considers the 10 year rule, and a status that does not consider the 10 year rule are calculated and stored in the NBI for all structures meeting the following criteria:

- The first digit of Item 5 is coded 1
- The bridge must carry highway traffic (first digit of Item 42 must be 1, 4, 5, 6, 7, or 8)
- The bridge must be greater than or equal to 6.1 meters, and
- The bridge must be of NBIS bridge length

An asterisk prefix is used to identify a sufficiency rating that was calculated even though some essential data was missing or coded incorrectly. The program will substitute a value for the unusable/missing data for certain data elements and calculate the sufficiency rating. Note: It is normal that all culverts with Bridge Roadway Width, Curb-to-Curb (Item 51) coded '0000' will have an asterisk prefix sufficiency rating. A value of 10.9 meters is used in the sufficiency rating calculation for culverts with Item 51 coded '0000'.

7. Reports for NBI and Element Data Submittals

Upon loading the State or Federal agencies data into the NBI, reports are prepared detailing all of the transactions, data summaries, and errors. For State file processing, copies of these reports are automatically e-mailed to registered users in that particular State. The FHWA Division Bridge Engineer should forward these reports to the State since not all States maintain a UPACS account. For Federal agency submittals, copies of the reports are e-mailed to the Federal Lands Highway Office to forward to the Federal agency. Federal updates in a State are done separately so Federal bridge information will not necessarily be completed at the same time the State file is processed. After the data is processed, the NBI user can generate reports on the newly loaded data. There is a note on each tab of the processing reports indicating the expectation of the handling or resolution of that information.

It is expected that the State and Federal agencies will review these reports and make necessary corrections to data or plans for correction of the data within 90 days of receipt of the error report.

8. Safety Related Checks for NBI Data Submittal

The following special reports are produced as part of the error check and the data load procedure. These reports will be generated for structures which carry highway traffic only.

1) When the State or Federal Agency runs the error check, any bridges identified as meeting either of the following conditions will be flagged. States and Federal Agencies should ensure these bridges are closed and the data is corrected before submittal. If these errors are

encountered during submittal processing the file will be returned for resolution and a new file expected in 15 days:

- Item 64 less than 2.7 metric tons, and item 41 = A, B, P, or R, and item 103 is blank; or
- Any bridge with item 59 and/or item 60 coded less than 2, and item 41 = A, B, D, P or R, and item 103 is blank.

2) Reports will be produced based on the following criteria in order to identify situations that may reflect an inconsistency in coding, a coding error, or situations that require follow-up.

- Item 64 between 2.7 metric tons and 19.9, Item 41 = A, Item 43b not equal to 19, and Item 103 is blank. Structures on this list likely need posting; further investigation may be needed to verify that posting is actually not required.
- Any bridge with Item 41 coded B. Follow up for these structures is required to make sure that the recommended bridge posting is implemented.

9. Significant Errors

Errors that occur for items 32 – Approach Roadway Width, 49 – Structure Length, 52 – Deck Width, Out-to-Out, 58 - Deck, 59 - Superstructure, 60 – Substructure, and 62 – Culverts must be resolved prior to submittal.