

METRIC 15

Inspection Procedures - Bridge Files

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Metric 15 - Bridge Files

rev 5/1/17

Metric #15: Inspection procedures – Bridge Files

NBIS Reference: 23 CFR 650.313 (d) – Prepare bridge files

Criteria

- Bridge files are prepared and significant bridge file components recorded as described in the AASHTO MBE.

Population: Bridges for the entire State that are open to traffic.

Compliance Levels

Compliance (C): All of the following must be met for C:

- All sampled bridges have files.
- All sampled files have the applicable significant components.

Substantial Compliance (SC): All of the following must be met for SC:

- All sampled bridges have files.
- All sampled bridge files have the applicable significant components.
- At least 85% of sampled bridge files not met.

Non-Compliance (NC): One or more SC criteria not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Assess based on previous review results and the reviewer's knowledge and awareness of State's practices.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Randomly sample bridges to verify that bridge files and significant bridge file components exist; if some components are only referenced, verify the components exist in the referenced location(s) and are readily available.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – Conduct in accordance with national direction and guidelines.

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Metric #15: Commentary

General: As outlined in Section 2 of the AASHTO Manual (MBE), the bridge file contains a wide range of information applicable to bridge inspection which may be located in more than one location. The list of *applicable significant bridge file components* for Metric 15, which is a subset of the larger list provided in the MBE is composed of:

- Inspection reports
- Waterway information – channel cross-sections, soundings, stream profiles
- Special inspection procedures or requirements
- Load rating documentation, including load testing results
- Posting documentation
- Critical findings and actions taken
- Scour assessment
- Scour Plan of Action (POA) (for scour critical bridges and those with unknown foundations) and documentation of post-event inspection or follow-up
- Inventory and evaluation data and collection/verification forms
- Significant correspondence

In addition to the NBIS, bridge files must also contain maintenance records.

Vertical cross-sections must be included in the bridge file per section 4.8.7 of the AASHTO Manual. The FHWA interprets the MBE provision to apply to all bridges, including floorless culverts, bridges, and waterways. Cross sections include vertical measurements from identified points on the bridge and downstream face(s) of the structure to the stream bottom or embankment at each end and at other substructure walls or piers at a minimum. A single cross section at one face is sufficient for historically stable channels and embankments. Cross sections must be updated periodically so that a historical comparison is available in the file to help determine the need for scour, channel shifting, degradation, or aggradation of the stream. A frequency for updating these measurements should be established, depending on an assessment of the stream characteristics, and documented in the bridge file. Evaluate the need for obtaining cross sections for pipes and box culverts that meet the definition of a bridge under the NBIS on a case-by-case basis.

Correspondence: Correspondence refers to correspondence and agreements regarding inspection procedures, ownership, maintenance responsibilities with other agencies, or other issues that have the potential to ensure that thorough and timely inspections are completed.

Significant Information: Information on particular aspects or considerations relating to the significant file components outlined in Section 2 of the AASHTO MBE.

Significant Components: Components require retention of historical information, such as inspection reports, drawings, etc. If the historical aspect of these components is found deficient, such as missing or incomplete information, the remedy of this practice through an improvement plan or corrective action will only change future documentation. Future year assessments should evaluate the improvements and their effectiveness of procedures moving forward in time in the context of these components, and not require full histories that are unrecoverable. If components have been destroyed by a natural disaster, the previous files should be retained. Files should be retrievable from electronic or duplicate copies that may exist elsewhere, and from the original files. The new file contents should be complete.

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Compliance levels: Percentages for determining metric compliance should be calculated by considering each bridge file as one data point. Each of the significant components listed above and relevant maintenance and inspection data are the minimum requirements. Those components that do not apply to that particular bridge do not affect compliance for that bridge. For example, a scour assessment is not necessary if the bridge is not over water; no posting documentation is necessary if the bridge is not over water; calculated load capacities were sufficient, etc.

For another example, when reviewing a sample of 19 bridges at the Int-AL, 1 bridge file is missing a required scour assessment; a second is missing both the load rating calculations and the stream cross-sections for a scour critical bridge; and the remaining bridge files are complete. The compliance percentage would be calculated as 17/19, or 89.5%, yielding a substantial compliance determination for the metric.

Assessment levels: Most of the components of a bridge file should be in the same location; however, if there are items that are not included in the bridge file, the file should reference where the information is located. The bridge file can be electronic, hard-copy, or a combination of both, as determined by the State's policies. Bridge files, or parts thereof, might be located in district or region offices for agencies that have a de-centralized organizational structure. These files may be reviewed electronically, by requesting mailed copies, or by visiting the remote offices.

Background/changes for PY 2018: Minor editorial corrections made, and clarification on channel cross sections and relevant maintenance data.

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GOAL:

“To ensure all bridge owners prepare and maintain a bridge file for all structures, as described in the AASHTO Manual for Bridge Evaluation and the Michigan Structure Inspection Manual.”

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THE FINDING:

The assessment of Metric 15 found that 18 of the 19 structures reviewed had bridge files meeting the requirements of the AASHTO Manual for Bridge Evaluation, and 71% of those bridge files contained the required information.

Bridge file deficiencies included:

- Missing or incomplete load rating data
- Missing or incomplete waterway data
- Missing or incomplete scour information

Metric 15 - Bridge Files - PCA

FY 2019 NBIP Review
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PCA No: PCA_MDOT_2019_M15

SUBJECT: METRIC 15 - Inspection Procedures, Bridge Files

ISSUED BY: Allie Nadjarian, Bridge Inspection Program Manager

REVIEWED BY: Andrew Bouvy, Bridge Inspection Engineer

Metric 15: Inspection Procedures - Bridge Files, 23 CFR 650.313(d)

As a result of the 2019 National Bridge Inspection Program (NBIP) review, FHWA has determined that additional action must be taken by MDOT to meet the requirements of 23 CFR 650.313(d). The intermediate assessment of Metric 15 found that eighteen of the nineteen structures reviewed had bridge files meeting the requirements of the AASHTO Manual for Bridge Evaluation, and 71% of those bridge files contained the required information. Bridge file deficiencies included missing or incomplete load rating, waterway and scour information.

GOAL

To ensure all bridge owners prepare and maintain a bridge file for all structures, as described in the AASHTO Manual for Bridge Evaluation (MBE) and the Michigan Structure Inspection Manual (MSIM).

CORRECTIVE ACTION PLAN

As a result of the bridge file review, MDOT will implement the following corrective actions:

- MDOT will enhance the MiBRIDGE web application to support the upload of xml files. This will provide the ability to upload AASHTOWare Bridge Rating (BR) load rating models.
November 1, 2019
- MDOT will create and implement a policy requiring load rating documentation to be uploaded into MiBRIDGE for all structures. MDOT will notify the Bridge Owners that these documents must be uploaded within the next two inspection cycles. The notification will be sent to all users subscribed to the Bridge Advisory and MiBRIDGE Updates GovDelivery notifications. This includes FHWA, MDOT, and local agency bridge owners, consultants, MDOT bridge inspectors, and other engineers.
November 1, 2019
- MDOT will create and implement a policy requiring bridge plans to be uploaded into MiBRIDGE for all structures. In the event that plans do not exist, the agency must prepare sketches that includes general characteristics and dimensions for the structure with detailed information provided for load path members. MDOT will notify Bridge Owners that these documents must be uploaded within the next two inspection cycles. The notification will be sent to all users subscribed to the Bridge Advisory and MiBRIDGE Updates GovDelivery.

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notifications. This includes FHWA, MDOT and local agency bridge owners, consultants, MDOT bridge inspectors, and other engineers.

Implementation:
November 1, 2019

4. MDOT will continue to verify that bridge files contain the recommended information stated in the Michigan Structure Inspection Manual (MSIM) and AASHTO Manual for Bridge Evaluation (MBE) during MDOT's annual Quality Assurance reviews. MDOT currently completes quality assurance using an annual consultant contract which provides a weekly summary of the agencies reviewed and the issues found.

Dates of Contracts:
July 2018 - July 2020

5. MDOT will create a Bureau of Bridges and Structures Scour Specialist to manage NBI Item 113 for all NBI structures. The Scour Specialist will assist in coding Item 113 and ensure scour Plan of Action (POA) compliance.

Implementation:
April 1, 2019

PERFORMANCE REPORTING:

MDOT will provide a quarterly report detailing the work completed for the implementation of the ability to store bridge file information electronically. The reports will provide an update for the progress of storing bridge file documents in MiB²00-E.

Completion Date:
March 27, 2019
March 15, 2021

Digitally signed by Andrew R Pauly
Date: 2019.03.07 07:20:02 -0500

Andrew R PAULY
Ralph Pauly
Assistant Structures Engineer
Federal Highway Administration

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CORRECTIVE ACTION 1:

MDOT will enhance the MiBRIDGE web application to support the upload of .xml files. This will provide the ability to upload AASHTOWare Bridge Rating (BrR) load rating models.

- Implementation: November 1, 2019

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CORRECTIVE ACTION 2:

MDOT will create and implement a policy requiring load rating documentation to be uploaded into MiBRIDGE for all structures.

Notification will be sent to all users subscribed to the Bridge Advisory and MiBRIDGE Updates GovDelivery notifications. This includes FHWA, MDOT, and local agency bridge owners, consultants, MDOT bridge inspectors, and other engineers.

- Implementation Start: November 1, 2019 (through 2 inspection cycles)

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CORRECTIVE ACTION 3:

MDOT will create and implement a policy requiring bridge plans to be uploaded into MiBRIDGE for all structures. In the event that plans do not exist, the agency must prepare sketches that includes general characteristics and dimensions for the structure with detailed information provided for load path members.

Notification will be sent to all users subscribed to the Bridge Advisory and MiBRIDGE Updates GovDelivery notifications. This includes FHWA, MDOT and local agency bridge owners, consultants, MDOT bridge inspectors, and other engineers.

- Implementation Start: November 1, 2019 (through 2 inspection cycles)

Metric 15 - Bridge Files - PCA

CORRECTIVE ACTION 4:

MDOT will continue to verify that bridge files contain the recommended information stated in the Michigan Structure Inspection Manual and AASHTO Manual for Bridge Evaluation during MDOT's annual Quality Assurance reviews. MDOT currently completes quality assurance using an annual consultant contract which provides a weekly summary of the agencies reviewed and the issues found.

- Dates of Current Contract: July 2018 – July 2020

Metric 15 - Bridge Files - PCA

CORRECTIVE ACTION 5:

MDOT will create a Bureau of Bridges and Structures Scour Specialist to manage NBI Item 113 for all NBI structures (State and Local Agency-Owned). The Scour Specialist will assist in coding Item 113 and ensure scour Plan of Action compliance.

- Implementation: April 1, 2019

QUESTIONS ?

Metric 15 - Inspection Procedures - Bridge Files

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