



Policy for Collection of Bridge Condition Data

The Transportation Asset Management Council adopted this policy on October 6, 2021.

I. Introduction:

The Transportation Asset Management Council (TAMC) was established to expand the practice of asset management statewide to enhance the productivity of investing in Michigan's roads and bridges. Part of the TAMC's mission is to collect physical inventory and condition data on all roads, bridges, traffic signals and culverts in Michigan. This document describes the policy and procedures for collecting the physical inventory and condition data of bridges owned by Public Act 51 agencies within Michigan.

According to Act 51, TAMC shall advise the Michigan Infrastructure Council on a statewide transportation asset management strategy and the processes and tools needed to implement that strategy, beginning with the Federal-aid eligible highway system and infrastructure assets that impact system performance, safety, or risk management, including signals and culverts. This does not prohibit a local road agency from using an asset management process on its Non-Federal-aid eligible system. All quality control standards and protocols shall, at a minimum, be consistent with existing Federal requirements and regulations and existing government accounting standards.

This policy applies to the collection of Bridge data on mileage owned by Act 51 agencies, where "Bridge" includes:

- Bridges as defined by the National Bridge Inspection Standards (NBIS), referred to as NBI Bridges,
- Tunnels as defined by the National Tunnel Inspection Standards (NTIS), referred to as Tunnels,
- Structures that are less than 20-ft and therefore do not fall under the National Bridge Inspection Standards but the agency chooses to inspect as a bridge rather than as a culvert for asset management purposes, referred to as Non-NBI Length Bridges,
- Bridges crossing over a roadway of an Act 51 agency but that do not fall under the National Bridge Inspection Standards as they do not carry highway traffic, referred to as Non-NBI Bridges.

II. Bridge Data Collection Qualifications

Personnel performing inspection or load rating activities on NBI Bridges or Tunnels must meet requirements as specified in the NBIS (23 CFR 650 Subpart C) or NTIS (23 CFR 650 Subpart E) and as further described in the Michigan Structure Inspection Manual (MiSIM) and the Michigan Bridge Analysis Guide.

Personnel performing inspections on Non-NBI Length Bridges and Non-NBI Bridges are recommended to meet the requirements as described in the MiSIM, or to have successfully taken the Safety Inspection of In-Service Bridges course offered by the National Highway Institute.

IV. Data Collection Detail

Local agencies or their designee must use MiBridge for data submission and inventory following the quality assurance and quality control guidelines identified in the MiSIM. The Michigan Department of Transportation will coordinate submitting the data to TAMC.

NBIS Bridge and Tunnel Data Collection

All quality control standards and protocols shall, at a minimum, be consistent with existing federal requirements and regulations and existing government accounting standards. TAMC therefore requires reporting of NBI Bridge and Tunnel inventories and condition data consistent with existing federal requirements, which are those set forth in the NBIS and NTIS (23 CFR 650 Subparts C and E).

The NBIS and NTIS set requirements for items including but not limited to: qualifications of personnel, inspection frequency/intervals, inspection procedures and inventory. Inspection procedures include inspection types, load rating and load posting, bridge file requirements, scour requirements, complex bridge procedures, quality control and quality assurance and critical findings.

The NBIS and NTIS requires the State Department of Transportation to include a bridge inspection organization that is responsible for statewide bridge inspection policies and procedures. The documents that document these policies and procedures for Michigan and which are required by the TAMC for reporting of NBI Bridge and Tunnel data include:

- Michigan Structure Inspection Manual (MiSIM)
- Michigan Structure Inventory and Appraisal Coding Guide (Coding Guide)
- Michigan Bridge Analysis Guide (BAG)
- Michigan Bridge Element Inspection Manual (MiBEIM) (for bridges carrying the National Highway System)

Element Level Inspection

Section 1111 of the Moving Ahead for Progress in the 21st Century Act (MAP-21) modified 23 U.S.C. 144, which requires agencies to report element level data on NBI Bridges carrying the National Highway System (NHS). The TAMC requires element level data collection on NBI Bridges carrying the NHS in accordance with this regulation. Element Level Inspection should be performed according to guidance in the NBIS, the MiSIM, and the Michigan Bridge Element Inspection Manual (MiBEIM). It is recommended that PA 51 agencies and MDOT consider element level data collection on all bridges in their inventory in order to advance asset management best practices.

The most effective tool for proper bridge management is the consistent condition assessment of bridge elements. The element level inspection method breaks the bridge down into several elements, such as the railing, deck, girders, abutments, pier columns, etc. Each element is inspected and assigned a Condition State based on the amount of deterioration. The element level inspection is a quantity-based inspection and each quantity is assigned a Condition State to reflect the differing categories of deterioration that often exist on any bridge element.

One of the end results of performing element level inspections is the generation of a database for a bridge management system. By developing a database over time, bridge deterioration rates based upon material, geographic location, age, usage, type of crossing, prior rehabilitation, or preventive actions, etc. can be estimated. The software modeling capabilities allows comparisons between the effectiveness of preventive and corrective

actions, predictions of estimated future deterioration, and life cycle costs. Decisions can be made regarding prioritizing funds, when (or when not) to take action, and what type of action to take for the maximum benefit of capital spent.

Non-NBI Length Bridges

An agency may choose to inspect structures that are less than 20-ft as a bridge rather than as a culvert for asset management purposes. It is generally recommended that the Non-NBI Length Bridge data collection be obtained on a not to exceed a six-year cycle for the Act 51 road agency's entire network. Non-NBI Length Bridge owners should adopt a risk-based inspection frequency that balances agency's resources and asset management data needs. Factors that can influence this cycle of collection may be determined by severity of condition and size. Data collection of Non-NBI Length Bridges must be consistent with the Coding Guide and routine inspection procedures as defined in the MiSIM. Load Rating, Scour Analysis, and other inspection types are optional. The use of MiBridge for data submittal to TAMC is required. Act 51 agencies with inventories and condition data on Non-NBI Length Bridges are encouraged to incorporate these into their asset management plan.

Non-NBI Bridges

An agency should inspect bridges crossing over a roadway of an Act 51 agency but that do not fall under the National Bridge Inspection Standards as they do not carry highway traffic for asset management purposes. It is generally recommended that the Non-NBI Bridge data collection be obtained on a not to exceed a five-year cycle for the Act 51 road agency's entire network. Non-NBI Bridge owners should adopt a risk-based inspection frequency that balances agency's resources and asset management data needs. Factors that can influence this cycle of collection may be determined by severity of condition and size. Data collection of Non-NBI Bridges must be consistent with the Coding Guide and procedures as defined in the MiSIM. The use of MiBridge for data submittal to TAMC is required. Act 51 agencies with inventories and condition data on Non-NBI Bridges are encouraged to incorporate these into their asset management plan.

IV. RPO/MPO Regional Coordinator Responsibilities

The TAMC has given the responsibility of coordinating the reimbursement and scheduling of data collection elements of the TAMC work program to the Regional Planning Organizations (RPO)/Metropolitan Planning Organizations (MPO). The RPO/MPOs have TAMC work activities included in their annual work programs, which includes facilitation of data collection for bridge inventories and condition assessments. The RPO/MPOs have funds allocated from the TAMC for these annual work program activities. The RPO/MPO will have to allocate those funds among eligible work activities to best complete the priorities of the TAMC. Therefore, the RPO/MPO may need to limit its authorizations for reimbursements to manage its work programs.

Act 51 agencies must submit a written request for reimbursement; the request should include a total estimate of costs (actual costs claimed must not exceed the estimated costs) for the data gathering, trained/certified team members' time, and vehicle use. This request must also clarify which fiscal year the data collection and reimbursement will take place. Requests for bridge data collection reimbursement authorization are required to be received by the RPO/MPO by October 1 of each year.

The RPO/MPO decision on what requests for reimbursement are approved may consider:

1. Available budget
2. Absence or age of the bridge data that is to be collected
3. The last year of reimbursement to the road agency for that bridge data set
4. Rating team members' training and/or certification status

Each RPO/MPO must designate a RPO/MPO Regional Coordinator to be a contact source for the TAMC.

V. Links to References

- NBIS and NTIS - <https://ecfr.federalregister.gov/current/title-23/chapter-I/subchapter-G/part-650>
- MiSIM - https://www.michigan.gov/mdot/0,4616,7-151-87728_87844_87847_70812-562706--,00.html
- BAG – https://www.michigan.gov/mdot/0,4616,7-151-87728_87844_87847_70813-132786--,00.html
- MiBEIM -
- Local Bridge Owner’s Guide - https://www.michigan.gov/documents/mdot/Local+Bridge+Owners+Guide+Final1_649685_7.pdf

If you have any questions relating to this policy as a whole, please contact:

TAMC Asset Management Coordinator
Michigan Department of Transportation
P.O. Box 30050, 425 W. Ottawa Street
Lansing, MI 48909
(517) 230-8192
www.michigan.gov/tamc