

OM-08: Bridge Management System

1-15 points

Goal: Leverage a bridge management system (BMS) to balance activities that extend the life and function of bridges with impacts to the human and natural environment.

Sustainability Linkage

Maintaining and using a bridge management system supports the environmental and economic principles by optimizing the management of bridge structures, including preservation, restoration, and replacement, to maximize their lifetimes. This reduces costs, the environmental impacts of construction, and raw material usage.



Background and Scoring Requirements

Background

Bridge preservation is defined as actions or strategies that prevent, delay, or reduce deterioration of bridges or bridge elements, restore the function of existing bridges, keep bridges in good condition, and extend their life. Preservation actions may be preventive or condition-driven.

Scoring Requirements

Requirement OM-08.1

1 or 2 points. Develop a Bridge Management System and Collect Data

An effective BMS for bridges on and off Federal-aid highways that should be based on the *AASHTO Guidelines for Bridge Management Systems*¹. It supplies analyses and summaries of data, uses mathematical models to make forecasts and recommendations, and provides the means by which alternative policies and programs may be efficiently considered. An effective BMS should include, as a minimum, formal procedures for:

1. Collecting, processing, and updating data;
2. Predicting deterioration;
3. Identifying alternative actions;
4. Predicting costs;
5. Determining optimal policies;
6. Performing short- and long-term budget forecasting; and
7. Recommending programs and schedules for implementation within policy and budget constraints.

One of the following scores applies:

- **0 points.** The agency does not have a BMS or has a BMS but does not collect data.
- **1 point.** The agency has a BMS that includes at least five of the seven procedures noted above and collects system-wide data.
- **2 points.** The agency has a BMS that includes at all seven of the procedures noted above and collects system-wide data.

Requirement OM-08.2

1-4 points. Track Bridge Network Performance

Points are assigned for tracking bridge network performance. Scoring is based on the following, cumulative requirements.

- **Requirement OM-08.2a**

1 point. Track Overall Bridge Network Condition Using Common Metrics

Track overall bridge network condition using common metrics. Create a database of structural health for each bridge managed by the agency. Rate the superstructure, substructure, and deck of each bridge on the ten-point scale defined for reporting to the National Bridge Inventory, or gather more quantified data using an element level inspection approach.

- **Requirement OM-08.2b**

1 point. Report Operational Limits

Report any bridges that are in service with posted weight limits or have functional limitations. This also applies in situations where bridge service loading has been reviewed and no posted limits or functional limitations apply.

- **Requirement OM-08.2c**

2 points. Project Timeliness

Have measures related to project timeliness of rehabilitation, preservation, and maintenance activities. For example, an agency may identify projects and activities to be completed within 3 years that they can later assess to evaluate the timeliness of their actual implementation.

Requirement OM-08.3

1 or 2 points. Set Goals and Monitor Progress

Set bridge system performance goals and monitor progress toward goals.

One of the following scores applies:

- **0 points.** Set quantifiable goals relating to less than two of the three metrics listed above (OM-08.2a, OM-08.2b, and OM-08-2c) for agency bridges; or set quantifiable goals relating to at least two of the three metrics listed above for agency bridges but do not monitor or have not monitored progress towards goals for at least one year after goal establishment.
- **1 point:** Set quantifiable goals relating to at least two of the three metrics listed above for agency bridges, including when these goals are to be achieved, and monitor progress towards goals for at least one year after goal establishment.
- **2 points.** Set quantifiable goals relating to all three of the metrics listed above for agency bridges, including when these goals are to be achieved, and monitor progress towards goals for at least one year after goal establishment.

Requirement OM-08.4

1-7 points. Leverage Data to Demonstrate Sustainable Outcomes

To earn credit for this scoring requirement, the agency must have a Bridge Management System as described in scoring requirement OM-08.1. Scoring is based on the following, cumulative requirements:

- **Requirement OM-08.4a**

2 points. Use BMS to Perform Sophisticated Modeling

Use BMS to perform sophisticated modeling, including forecasting, scenario analyses, trade-off analyses, and system optimization.

- **Requirement OM-08.4b**
2 points. Leverage LCCA to Predict Costs
Leverage life-cycle cost analysis (LCCA) techniques to predict costs and to perform short- and long-term budget forecasting.
- **Requirement OM-08.4c**
1 point. Include Preservation in Annual Plan
Include routine bridge preservation needs in the annual UPWP or STIP/TIP that are based on the condition and timeliness goals set above.
- **Requirement OM-08.4d**
2 points. Link Repair, Preservation and Maintenance to Projects
Leverage BMS to link bridge repair, preservation, and maintenance projects to adjacent capital projects.

Resources

Above-Referenced Resources

The following resources are referenced in this criterion and consolidated here:

1. AASHTO, *Guidelines for Bridge Management Systems*,
https://bookstore.transportation.org/item_details.aspx?id=343

Additional Resources

The following resources provide information on this criterion topic in addition to the sources directly referenced:

2. FHWA, Asset Management website, <http://www.fhwa.dot.gov/asset/>

Scoring Sources

The program is considered to have met this criterion if the requirements above can be reasonably substantiated through the existence of one or more of the following documentation sources (or equal where not available):

1. Existence and use of a BMS.
2. If performance is measured, a chart, table, or spreadsheet that summarizes system performance.
3. Documentation of BMS goals including quantifiable objectives and timeframes.
4. If progress is monitored, a chart, table, or spreadsheet progression towards the above goal over time.
5. Standard specifications or special provisions.