

## History

On December 15, 1967, as holiday and rush hour traffic streamed across the Silver Bridge between Ohio and West Virginia, it collapsed and sent 46 people tumbling to their deaths in the freezing Ohio River. This tragic loss of so many lives focused national attention on the condition of the nation's bridges. In response to that tragedy, the Federal Highway Administration (FHWA) issued the National Bridge Inspection Standards (NBIS).

The NBIS, published April 27, 1971, established a program for regular, comprehensive inspection of all federal highway system bridges. Minimum qualifications were set forth for bridge inspectors, specific types and frequencies for bridge inspection were established, and the reporting of certain standard information about each bridge was required. In 1978, these requirements were extended to all public bridges carrying vehicular traffic.

A national bridge inspection program has been in place ever since, and state and local agencies have performed bridge inspections in accordance with these guidelines. Because these guidelines remained constant for many years with only minor changes, the bridge inspectors in many states became accustomed to certain methods and procedures and developed a certain complacency. In 1987, when the Office of the Inspector General (OIG) conducted a review of the national bridge inspection programs in six states, a number of shortcomings were found. A report, issued in January 1988, summarized the findings as follows:

- Inadequate or nonexistent underwater inspections were being performed.
- Inadequate supervision was being provided for bridge inspectors.
- Written inspection procedures were often not available or were not followed.
- Bridge inspection teams were not periodically reviewed to monitor their compliance with bridge inspection procedures.
- Bridge inventory files were incomplete, lacking such things as photos, completed reports, or history of maintenance activities.
- Proper equipment was not being used to perform bridge inspections so that some bridge elements were not completely inspected.
- Action was not always taken to correct problems or deficiencies identified during an inspection.
- Load rating calculations were not made for all bridges.
- Bridge inspectors did not always meet NBIS requirements.

These findings brought to light a need to improve and enhance the bridge inspection programs in each state. As a result, in August 1988, FHWA issued revisions to the NBIS.

The principal areas changed are listed below.

- An alternate means for bridge inspectors to meet the minimum education and experience requirement was added.
- A means to petition for approval of inspection intervals of up to once every four years was included for certain bridges.
- A requirement to inspect the underwater portions of a bridge which cannot be visually inspected at low water was added. In addition, a requirement to conduct a scour evaluation of bridge piers founded on erodible soils was included.
- A requirement was added to identify and inspect the fracture critical members on a bridge (those members whose failure could cause a portion of or the entire bridge to collapse).
- A requirement was added to inspect all unique elements of a bridge warranting special attention or requiring special equipment to be inspected (i.e., Under Bridge Inspection Truck (UBIT)).
- A requirement was added to develop a master list containing information on each bridge having underwater elements, fracture critical members, or requiring special equipment or procedures to be inspected.
- A requirement was added that load ratings must be determined (in accordance with AASHTO guidelines) for **all** bridges and those bridges not meeting minimum load requirements must be posted.
- The depth and scope of inventory information that must be maintained about each bridge was expanded. In addition, prompt reporting, of any changes in the inventory information, to FHWA is required.
- A requirement to submit formal recommendations for major bridge repair and to ensure that such repairs are accomplished was added.

The effect of these additional requirements on state and local bridge inspection programs was significant, changing the way inspections are performed:

- in the level of information gathered about each bridge,
- in the degree of expertise needed to perform each inspection,
- in the types of tools and equipment required,
- procedures for conducting entirely new types of inspections.

## Purpose

The *Local Agency Bridge Inspection Manual* is superseded by this manual.

The *Washington State Bridge Inspection Manual* has been developed to provide guidance, offer needed technical details, and serve as an information source. Bridge inspectors may also refer to the most current editions of the following:

- *Bridge Inspector's Training Manual 90*
- *Culvert Inspection Manual*
- *Inspection of Fracture Critical Bridge Members*
- *AASHTO Manual for Condition Evaluation of Bridges*
- *Evaluating Scour at Bridges, Hydraulic Engineering Circular (HEC) No. 18*
- *Code of Federal Regulations (23CFR) 650, Subpart C*
- *FHWA Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges*
- *AASHTO Guide Specifications for Strength Evaluation of Existing Steel and Concrete Bridges*
- *Detail Manual for Certification in the Field of Transportation Engineering Technology - Subfield of Bridge Safety Inspection*, contains the requirements for NICET certification. Contact the National Institute for Certification in Engineering Technologies
- M 23-11, *Transportation Structures Preservation Manual*

## Revisions

The *Washington State Bridge Inspection Manual* is not a static document. It will be updated to incorporate periodic revisions based on the practices outlined by FHWA and the state. We encourage the user to submit to the Bridge Inspection Committee any revisions or new material, by using the form provided at the front of this manual.

In the event of conflicting information or requirements between the *Washington State Bridge Inspection Manual* and NBIS, the NBIS will govern. Agencies are not relieved from the responsibility of complying with the NBIS even when a conflict exists. If a conflict is discovered, notify the Washington State Department of Transportation Regional Bridge Inspection Engineer or the Bridge Engineer for Local Agencies at once.

