

BRIDGE INSPECTION GUIDELINES

CHAPTER 1 - INTRODUCTION

1.1 INTRODUCTION

The Arizona Department of Transportation (ADOT) Bridge Inspection Guidelines (BIG) are intended to provide guidance and procedures for state and local agency staff performing inspections of in-service bridges within the state of Arizona. The bridge inspection guidelines are a key part of ADOT's bridge inspection program to ensure:

1. Safety to the traveling public.
2. Compliance with federal and state regulations.
3. Uniform interpretation of the various national bridge inspection and coding guides.

Any deviation from these guidelines requires approval of the ADOT Bridge Inspection Program Manager.

The National Bridge Inspection Standards (NBIS) are published in the Code of Federal Regulations, 23 CFR Part 650, Subpart C. The NBIS set the national standards for the proper safety inspection and evaluation of bridges, and applies to all structures defined as highway bridges located on all public roads.

Tunnels will be covered by the ADOT Tunnel Inspection Guidelines.

These guidelines cover majority of the issues that may be encountered while performing and documenting a bridge inspection in Arizona; however, they are intended neither to be exhaustive nor to replace bridge inspection textbooks and manuals. Adhering to these guidelines does not relieve bridge inspection personnel from the responsibility of applying sound engineering principles and judgment throughout the bridge inspection process. In the event of conflicting information or requirements between these Guidelines and the NBIS, the NBIS will govern. If a conflict is discovered, please notify Bridge Inspection Program Manager immediately.

1.2 APPLICABLE REFERENCE MATERIALS

The proper reference material to be used by the bridge inspection personnel must be the latest editions of the following:

- National Bridge Inspection Standards (NBIS), Code of Federal Regulations, Title 23, Chapter I, Subchapter G, Part 650, Subpart C.
- Specifications of the National Bridge Inventory (SNBI), March 2022 w/ errata #1 (March, 2024)
- FHWA's Bridge Inspector's Reference Manual (BIRM).
- FHWA's Inspection of Fracture Critical Bridge Members.
- FHWA's Culvert Inspection Manual (FHWA).
- FHWA's Manual on Uniform Traffic Control Devices (MUTCD).
- AASHTO LRFD Bridge Design Specifications.
- AASHTO Manual for Bridge Evaluation (MBE).
- AASHTO Manual for Bridge Element Inspection (MBEI).

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1.3 ADOT BRIDGE INSPECTION SECTION

ADOT Bridge Inspection Section (BIS), an organizational unit within the Bridge Group, is responsible for the bridge inspection program in Arizona. It employs in-house and consultant bridge inspection teams to perform safety bridge inspections on most of Arizona's publicly owned bridges. These include all of the bridges on the state highway system and the majority of the bridges that are owned or operated by Arizona Local Public Agencies (LPAs).

1.4 SELF INSPECTING LOCAL PUBLIC AGENCIES (LPAS)

In order for a bridge-owning LPA to conduct its own bridge inspections, whether through in-house or consultant inspectors, it must demonstrate that it complies with the NBIS. Also, it must submit written documentation to ADOT's Bridge Inspection Program Manager, detailing its bridge inspection program, quality control and quality assurance procedures. The documentation will be reviewed by ADOT and the Federal Highway Administration (FHWA) for compliance with national and state requirements prior to granting approval. After the initial submission and approval of this documentation, it shall be updated by the LPAs as needed, and it will be reviewed at least once every five years by ADOT and FHWA. If ADOT and FHWA determine that a LPA is not in compliance with the NBIS and/or the state requirements, the bridge inspection program may be taken over by the state.

Approved self-inspecting agencies shall use ADOT's bridge management database system (AASHTO BrM) for inputting inspection data and multimedia files. In addition, any self-inspecting agency shall submit quarterly progress reports to ADOT's Bridge Inspection Program Manager to ensure the agency is complying with the NBIS. Any changes to the inventory data must be entered into the database within 3 months after the month when the field portion of the inspection is completed. A sample quarterly progress report is available on the Bridge Group Preservation website, under Forms.

1.5 BRIDGE INVENTORY DATABASE

ADOT BIS maintains the bridge inventory database of all NBI qualified bridges and culverts except for federally owned structures in Arizona. Each NBI qualified bridges and culverts in the state requiring an inspection is identified with a unique structure number.

1.5.1 Structure Numbering System

Each structure, defined as a 'bridge' according to the NBIS, has a unique identifying number (B.ID.01 [NBI item 8]) assigned by ADOT's BIS according to the group of numbers shown on the Bridge Group Preservation website, under Tables.

An assigned structure number is permanent and is unique to that structure. Twin or parallel structures are numbered individually unless the open median between such structures is less than 12" and the structures share an abutment.

The structure number will be retired if any of the following situations occur:

- A structure that has been completely demolished.
- If the median is closed by construction between twin or parallel structures resulting in one structure; the structure numbers for the twin or parallel structures will be retired, and one new structure number will be assigned.
- If an ownership transfer occurs between the state and a local public agency. In that case, a new structure number must be assigned to the transferred structure.

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Transfer of structure's ownership or maintenance responsibility between local public agencies will not necessitate the assignment of a new structure number.

A new structure number is not required for a rehabilitated or widened structure.

1.5.2 New Structure Number Request Form and Procedure

The BIS Records Manager will assign a structure number based on the ownership or maintenance responsibility as shown in the Structure Number Assignment table which is available on the Bridge Group Preservation website, under Tables.

When a bridge or culvert is found to not have been assigned a structure number and is eligible to be added to the national bridge inventory database, the structure's owner will be contacted and requested to complete the "Application for Structure Number" form. Once the form is received and is deemed to have been completed correctly, ADOT's BIS Records Manager will assign a new structure number and notify the owner of that information.

The Application for Structure Number form is available on the Bridge Preservation Services website, under Forms.