



MINNESOTA DEPARTMENT OF TRANSPORTATION
Engineering Services Division
Technical Memorandum No. 11-06-B-03
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To: Electronic Distribution Recipients

From: Jon M. Chiglo, P.E. 
Division Director, Engineering Services

Subject: Guidelines for Bridge and Culvert Inspection Frequency: Initial, Routine, Fracture Critical, Underwater and Special Inspections

Expiration

This Memorandum supersedes Technical Memorandum No. 04-08-B-01 and shall remain in effect until August 29, 2016 unless superseded prior to that date.

Implementation

This Memorandum applies to all bridges and culverts as defined in Minnesota Statute 165.03.

Introduction

The fundamental guidelines for bridge safety inspection are established in the National Bridge Inspection Standards (23 CFR §650, Subpart C). Additional state-specific directives are outlined in Minnesota Statute 165.03 and Minnesota Rules 8810.9000 to 8810.9700. These laws establish the authority of the MnDOT Bridge Office to establish and approve bridge and culvert inspection frequencies.

Purpose

This Memorandum describes the procedure for determining the required inspection frequency for individual bridges and culverts. It establishes the process for request and approval of any changes to inspection frequencies.

Guidelines

INITIAL INSPECTION

All newly-constructed bridges and culverts are assigned a routine inspection frequency of 12 months. The initial inspection shall occur within 12 months of the date that the bridge is opened to traffic. Following the initial inspection, bridge owners can request a longer interval for routine inspections in accordance with the provisions of this Memorandum.

ROUTINE INSPECTION

The routine inspection frequency for bridges and culverts shall be established in accordance with the following criteria:

Annual Inspection (12 month frequency)

All bridges and culverts shall be inspected at an interval of 12 months, but not to exceed 15 months, unless a longer interval is authorized in accordance with the criteria listed below for 24- or 48-month inspection frequencies. The following bridges must be inspected annually:

- Fracture critical bridges that carry public roadways
- Railroad bridges over public roadways with non-load path redundant superstructures

Biennial Inspection (24 month frequency)

Bridges and culverts can be inspected at an interval not to exceed 24 months if the following conditions are met:

- NBI Condition and Appraisal Ratings are 5 or greater for;
 - Deck (NBI Item 58)

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- Superstructure (NBI Item 59)
- Substructure (NBI Item 60)
- Culvert (NBI Item 62)
- Structural Evaluation (NBI Item 67)

Quadrennial Inspection (48 month frequency)

Culverts can be inspected at an interval not to exceed 48 months if the following conditions are met:

- NBI Item 43 (Structure Type, Main) must be Code 19 (Culvert)
- NBI Item 41 (Structure Open, Posted, or Closed to Traffic) must be Code A (Open, No Restriction)
- NBI Item 113 (Scour Critical Bridges) must be Codes N, 8, 5, or 9 (MnDOT Scour Code must be A, C, E, H, I, K, L, M, or N)
- NBI Condition and Appraisal Ratings must be 6 or greater for
 - Culvert (NBI Item 62)
 - Channel (NBI Item 61)
 - Structural Evaluation (NBI Item 67)
- The culvert must have a load rating on file
- Inventory load rating must be equal to or greater than HS 20
- The minimum fill height above the top of culvert must be 2 feet or greater
- An initial inspection and at least two subsequent annual inspections have been conducted
- In order to assure adequate access to all components, culvert inspections must not occur during the months of December, January, or February

Bridge owners with bridges or culverts meeting the requirements for 24- or 48-month inspection frequency may submit a request to change of inspection frequency using the form attached to this Memorandum.

If a bridge or culvert no longer meets the condition criteria for 24- or 48-month inspections, it will be assigned the appropriate frequency based on the criteria stated above. District and local agency bridge owners will be notified of these changes to the inspection frequency.

FRACTURE CRITICAL MEMBER INSPECTION

Fracture critical members of non-load path redundant bridges shall receive a hands-on fracture critical inspection at an interval not to exceed 24 months. See Technical Memorandum No. [08-01-B-01](#) for specific guidance on fracture critical member inspections.

UNDERWATER INSPECTION

Underwater inspections are required for bridge elements that cannot be visibly evaluated during periods of low flow or examined by feel for condition, integrity and safe load capacity, due to excessive water depth and turbidity. These elements shall be inspected at an interval not to exceed 60 months. See Technical Memorandum No. [08-01-B-01](#) for specific guidance on underwater inspections.

SPECIAL INSPECTIONS

Special inspections of bridges or bridge elements are scheduled to monitor a known or suspected deficiency. The following special inspection shall be conducted;

- Pin and hanger details and pinned assemblies shall receive an in-depth inspection at an interval not to exceed 60 months.

Other special inspections may be established at the discretion of the State Bridge Inspection Program Manager.

GENERAL NOTES

Severe weather, concern for bridge inspector safety, concern for inspection quality, the need to optimize scheduling with other bridges, or other unique situations may be cause to adjust the scheduled inspection date. The adjusted date should not extend more than 30 days beyond the inspection frequency noted in this memorandum, and subsequent inspections should adhere to the previously established interval.

In addition to the above criteria, bridge owners should consider any other factors which would have a bearing on the appropriate inspection frequency, such as age of structure, rate of critical element deterioration, traffic characteristics, scour susceptibility, experience with similar structure types, or inplace warranties.

Questions

For information on the technical contents of this memorandum, please contact **Tom Styrbicki** at **(651) 366-4507**.

Any questions regarding publication of this Technical Memorandum should be referred to the Design Standards unit, DesignStandards.DOT@state.mn.us. A link to all active and historical Technical Memoranda can be found at <http://techmemos.dot.state.mn.us/techmemo.aspx>.

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Attachments:

Inspection Frequency Change Request Form

