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DEPARTMENT OF  
TRANSPORTATION

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# National Bridge Inspection Standards (2022)

Issued in Washington, DC, under authority delegated in [49 CFR 1.85\(a\)\(1\)](#).  
Stephanie Pollack, Deputy Administrator, Federal Highway Administration.  
In consideration of the foregoing, FHWA amends [title 23, Code of Federal Regulations](#), part 650, as set forth below:

## PART 650—BRIDGES, STRUCTURES, AND HYDRAULICS

1. The authority citation for part 650 continues to read as follows:  
Authority: [23 U.S.C. 119](#), [144](#), and [315](#).

2. Revise subpart C to read as follows:

### Subpart C—National Bridge Inspection Standards (NBIS)

<a href="#"><u>650.301</u></a>	<b><i>Purpose.</i></b>
<a href="#"><u>650.303</u></a>	<b><i>Applicability.</i></b>
<a href="#"><u>650.305</u></a>	<b><i>Definitions.</i></b>
<a href="#"><u>650.307</u></a>	<b><i>Bridge inspection organization responsibilities.</i></b>
<a href="#"><u>650.309</u></a>	<b><i>Qualification of personnel.</i></b>
<a href="#"><u>650.311</u></a>	<b><i>Inspection interval.</i></b>
<a href="#"><u>650.313</u></a>	<b><i>Inspection procedures.</i></b>
<a href="#"><u>650.315</u></a>	<b><i>Inventory.</i></b>
<a href="#"><u>650.317</u></a>	<b><i>Incorporation by reference.</i></b>

### Subpart C—National Bridge Inspection Standards (NBIS)

#### § 650.301 Purpose.

This subpart sets the national minimum standards for the proper safety inspection and evaluation of all highway bridges in accordance with [23 U.S.C. 144\(h\)](#) and the requirements for preparing and maintaining an inventory in accordance with [23 U.S.C. 144\(b\)](#).

#### § 650.303 Applicability.

The National Bridge Inspection Standards (NBIS) in this subpart apply to all structures defined as highway bridges located on all public roads, on and off Federal-aid highways, including tribally-owned and federally-owned bridges, private bridges that are connected to a public road on both ends of the bridge, temporary bridges, and bridges under construction with portions open to traffic.

#### § 650.305 Definitions.

The following terms used in this subpart are defined as follows:

- *AASHTO Manual*. The term “AASHTO Manual” means the American Association of State Highway and Transportation Officials (AASHTO) “Manual for Bridge Evaluation”, including Interim Revisions, excluding the 3rd paragraph in Article 6B.7.1, incorporated by reference in § 650.317.
- *Attribute*. Characteristic of the design, loading, conditions, and environment that affect the reliability of a bridge or bridge member.

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- *Bridge*. A structure including supports erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 feet between under copings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes; it includes multiple pipes, where the clear distance between openings is less than half of the smaller contiguous opening.
- *Bridge inspection experience*. Active participation in bridge inspections in accordance with this subpart, in either a field inspection, supervisory, or management role. Some of the experience may come from relevant bridge design, bridge load rating, bridge construction, and bridge maintenance experience provided it develops the skills necessary to properly perform a NBIS bridge inspection.
- *Bridge inspection refresher training*. The National Highway Institute <sup>[1]</sup> (NHI) “Bridge Inspection Refresher Training Course” or other State, federally, or tribally developed instruction aimed to improve quality of inspections, introduce new techniques, and maintain consistency in the inspection program.
- *Bridge Inspector's Reference Manual or the BIRM*. A comprehensive FHWA manual on procedures and techniques for inspecting and evaluating a variety of in-service highway bridges. This manual is available at the following URL: [www.fhwa.dot.gov/bridge/nbis.cfm](http://www.fhwa.dot.gov/bridge/nbis.cfm). This manual may be purchased from the Government Publishing Office, Washington, DC 20402 and from National Technical Information Service, Springfield, VA 22161.
- *Complex feature*. Bridge component(s) or member(s) with advanced or unique structural members or operational characteristics, construction methods, and/or requiring specific inspection procedures. This includes mechanical and electrical elements of moveable spans and cable-related members of suspension and cable-stayed superstructures.
- *Comprehensive bridge inspection training*. Training that covers all aspects of bridge inspection and enables inspectors to relate conditions observed on a bridge to established criteria (see the BIRM for the recommended material to be covered in a comprehensive training course).
- *Consequence*. A measure of impacts to structural safety and serviceability in a hypothetical scenario where a deterioration mode progresses to the point of requiring immediate action. This may include costs to restore the bridge to safe operating condition or other costs.
- *Critical finding*. A structural or safety related deficiency that requires immediate action to ensure public safety.
- *Damage inspection*. An unscheduled inspection to assess structural damage resulting from environmental factors or human actions.
- *Deterioration mode*. Typical deterioration or damage affecting the condition of a bridge member that may affect the structural safety or serviceability of the bridge.
- *Element level bridge inspection data*. Quantitative condition assessment data, collected during bridge inspections, that indicates the severity and extent of defects in bridge elements.
- *End-of-course assessment*. A comprehensive examination given to students after the completion of the delivery of a training course.
- *Hands-on inspection*. Inspection within arm's length of the member. Inspection uses visual techniques that may be supplemented by nondestructive evaluation techniques.
- *Highway*. The term “highway” is defined in [23 U.S.C. 101](#).
- *In-depth inspection*. A close-up, detailed inspection of one or more bridge members located above or below water, using visual or nondestructive evaluation techniques as required to identify any deficiencies not readily detectable using routine inspection

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procedures. Hands-on inspection may be necessary at some locations. In-depth inspections may occur more or less frequently than routine inspections, as outlined in bridge specific inspection procedures.

- *Initial inspection.* The first inspection of a new, replaced, or rehabilitated bridge. This inspection serves to record required bridge inventory data, establish baseline conditions, and establish the intervals for other inspection types.
- *Inspection date.* The date on which the field portion of the bridge inspection is completed.
- *Inspection due date.* The last inspection date plus the current inspection interval.
- *Inspection report.* The document which summarizes the bridge inspection findings, recommendations, and identifies the team leader responsible for the inspection and report.
- *Internal redundancy.* A redundancy that exists within a primary member cross-section without load path redundancy, such that fracture of one component will not propagate through the entire member, is discoverable by the applicable inspection procedures, and will not cause a portion of or the entire bridge to collapse.
- *Inventory data.* All data reported to the National Bridge Inventory (NBI) in accordance with the § 650.315.
- *Legal load.* The maximum load for each vehicle configuration, including the weight of the vehicle and its payload, permitted by law for the State in which the bridge is located.
- *Legal load rating.* The maximum permissible legal load to which the structure may be subjected with the unlimited numbers of passages over the duration of a specified bridge evaluation period. Legal load rating is a term used in Load and Resistance Factor Rating method.
- *Load path redundancy.* A redundancy that exists based on the number of primary load-carrying members between points of support, such that fracture of the cross section at one location of a member will not cause a portion of or the entire bridge to collapse.
- *Load posting.* Regulatory signs installed in accordance with [23 CFR 655.601](#) and State or local law which represent the maximum vehicular live load which the bridge may safely carry.
- *Load rating.* The analysis to determine the safe vehicular live load carrying capacity of a bridge using bridge plans and supplemented by measurements and other information gathered from an inspection.
- *Nationally certified bridge inspector.* An individual meeting the team leader requirements of § 650.309(b).
- *Nonredundant Steel Tension Member (NSTM).* A primary steel member fully or partially in tension, and without load path redundancy, system redundancy or internal redundancy, whose failure may cause a portion of or the entire bridge to collapse.
- *NSTM inspection.* A hands-on inspection of a nonredundant steel tension member.
- *NSTM inspection training.* Training that covers all aspects of NSTM inspections to relate conditions observed on a bridge to established criteria.
- *Operating rating.* The maximum permissible live load to which the structure may be subjected for the load configuration used in the load rating. Allowing unlimited numbers of vehicles to use the bridge at operating level may shorten the life of the bridge. Operating rating is a term used in either the Allowable Stress or Load Factor Rating method.
- *Private bridge.* A bridge open to public travel and not owned by a public authority as defined in [23 U.S.C. 101](#).

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- *Procedures.* Written documentation of policies, methods, considerations, criteria, and other conditions that direct the actions of personnel so that a desired end result is achieved consistently.
- *Probability.* Extent to which an event is likely to occur during a given interval. This may be based on the frequency of events, such as in the quantitative probability of failure, or on degree of belief or expectation. Degrees of belief about probability can be chosen using qualitative scales, ranks, or categories such as, remote, low, moderate, or high.
- *Professional engineer (PE).* An individual, who has fulfilled education and experience requirements and passed examinations for professional engineering and/or structural engineering license that, under State licensure laws, permits the individual to offer engineering services within areas of expertise directly to the public.
- *Program manager.* The individual in charge of the program, that has been assigned the duties and responsibilities for bridge inspection, reporting, and inventory, and has the overall responsibility to ensure the program conforms with the requirements of this subpart. The program manager provides overall leadership and is available to inspection team leaders to provide guidance.
- *Public road.* The term “public road” is defined in [23 U.S.C. 101](#).
- *Quality assurance (QA).* The use of sampling and other measures to assure the adequacy of QC procedures in order to verify or measure the quality level of the entire bridge inspection and load rating program.
- *Quality control (QC).* Procedures that are intended to maintain the quality of a bridge inspection and load rating at or above a specified level.
- *Rehabilitation.* The major work required to restore the structural integrity of a bridge as well as work necessary to correct major safety defects.
- *Risk.* The exposure to the possibility of structural safety or serviceability loss during the interval between inspections. It is the combination of the probability of an event and its consequence.
- *Risk assessment panel (RAP).* A group of well experienced panel members that performs a rigorous assessment of risk to establish policy for bridge inspection intervals.
- *Routine inspection.* Regularly scheduled comprehensive inspection consisting of observations and measurements needed to determine the physical and functional condition of the bridge and identify changes from previously recorded conditions.
- *Routine permit load.* A live load, which has a gross weight, axle weight, or distance between axles not conforming with State statutes for legally configured vehicles, authorized for unlimited trips over an extended period of time to move alongside other heavy vehicles on a regular basis.
- *Safe load capacity.* A live load that can safely utilize a bridge repeatedly over the duration of a specified inspection interval.
- *Scour.* Erosion of streambed or bank material due to flowing water; often considered as being localized around piers and abutments of bridges.
- *Scour appraisal.* A risk-based and data-driven determination of a bridge's vulnerability to scour, resulting from the least stable result of scour that is either observed, or estimated through a scour evaluation or a scour assessment.
- *Scour assessment.* The determination of an existing bridge's vulnerability to scour which considers stream stability and scour potential.
- *Scour critical bridge.* A bridge with a foundation member that is unstable, or may become unstable, as determined by the scour appraisal.
- *Scour evaluation.* The application of hydraulic analysis to estimate scour depths and determine bridge and substructure stability considering potential scour.

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- *Scour plan of action (POA)*. Procedures for bridge inspectors and engineers in managing each bridge determined to be scour critical or that has unknown foundations.
- *Service inspection*. An inspection to identify major deficiencies and safety issues, performed by personnel with general knowledge of bridge maintenance or bridge inspection.
- *Special inspection*. An inspection scheduled at the discretion of the bridge owner, used to monitor a particular known or suspected deficiency, or to monitor special details or unusual characteristics of a bridge that does not necessarily have defects.
- *Special permit load*. A live load, which has a gross weight, axle weight, or distance between axles not conforming with State statutes for legally configured vehicles and routine permit loads, typically authorized for single or limited trips.
- *State transportation department*. The term “State transportation department” is defined in [23 U.S.C. 101](#).
- *System redundancy*. A redundancy that exists in a bridge system without load path redundancy, such that fracture of the cross section at one location of a primary member will not cause a portion of or the entire bridge to collapse.
- *Team leader*. The on-site, nationally certified bridge inspector in charge of an inspection team and responsible for planning, preparing, performing, and reporting on bridge field inspections.
- *Temporary bridge*. A bridge which is constructed to carry highway traffic until the permanent facility is built, repaired, rehabilitated, or replaced.
- *Underwater bridge inspection diver*. The individual performing the inspection of the underwater portion of the bridge.
- *Underwater Bridge Inspection Manual*. A comprehensive FHWA manual on the procedures and techniques for underwater bridge inspection. This manual is available at the following URL: [www.fhwa.dot.gov/bridge/nbis.cfm](http://www.fhwa.dot.gov/bridge/nbis.cfm). This manual may be purchased from the Government Publishing Office, Washington, DC 20402 and from National Technical Information Service, Springfield, VA 22161.
- *Underwater bridge inspection training*. Training that covers all aspects of underwater bridge inspection to relate the conditions of underwater bridge members to established criteria (see Underwater Bridge Inspection Manual and the BIRM section on underwater inspection for the recommended material to be covered in an underwater bridge inspection training course).
- *Underwater inspection*. Inspection of the underwater portion of a bridge substructure and the surrounding channel, which cannot be inspected visually at low water or by wading or probing, and generally requiring diving or other appropriate techniques.
- *Unknown Foundations*. Foundations of bridges over waterways where complete details are unknown because either the foundation type and depth are unknown, or the foundation type is known, but its depth is unknown, and therefore cannot be appraised for scour vulnerability.

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### § 650.307 Bridge inspection organization responsibilities.

- (a) Each State transportation department must perform, or cause to be performed, the proper inspection and evaluation of all highway bridges that are fully or partially located within the State's boundaries, except for bridges that are owned by Federal agencies or Tribal governments.
- (b) Each Federal agency must perform, or cause to be performed, the proper inspection and evaluation of all highway bridges that are fully or partially located within the respective Federal agency's responsibility or jurisdiction.
- (c) Each Tribal government, in consultation with the Bureau of Indian Affairs (BIA) or FHWA, must perform, or cause to be performed, the proper inspection and evaluation of all highway bridges that are fully or partially located within the respective Tribal government's responsibility or jurisdiction.
- (d) Where a bridge crosses a border between a State transportation department, Federal agency, or Tribal government jurisdiction, all entities must determine through a joint written agreement the responsibilities of each entity for that bridge under this subpart, including the designated lead State for reporting NBI data.
- (e) Each State transportation department, Federal agency, and Tribal government must include a bridge inspection organization that is responsible for the following:
- (1) Developing and implementing written Statewide, Federal agencywide, or Tribal governmentwide bridge inspection policies and procedures;
  - (2) Maintaining a registry of nationally certified bridge inspectors that are performing the duties of a team leader in their State or Federal agency or Tribal government that includes, at a minimum, a method to positively identify each inspector, inspector's qualification records, inspector's current contact information, and detailed information about any adverse action that may affect the good standing of the inspector;
  - (3) Documenting the criteria for inspection intervals for the inspection types identified in these standards;
  - (4) Documenting the roles and responsibilities of personnel involved in the bridge inspection program;
  - (5) Managing bridge inspection reports and files;
  - (6) Performing quality control and quality assurance activities;
  - (7) Preparing, maintaining, and reporting bridge inventory data;
  - (8) Producing valid load ratings and when required, implementing load posting or other restrictions;
  - (9) Managing the activities and corrective actions taken in response to a critical finding;
  - (10) Managing scour appraisals and scour plans of action; and
  - (11) Managing other requirements of these standards.
- (f) Functions identified in paragraphs (e)(3) through (11) of this section may be delegated to other individuals, agencies, or entities. The delegated roles and functions of all individuals, agencies, and entities involved must be documented by the responsible State transportation department, Federal agency, or Tribal government. Except as provided below, such delegation does not relieve the State transportation department, Federal agency, or Tribal government of any of its responsibilities under this subpart. A Tribal government may, with BIA's or FHWA's



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concurrence via a formal written agreement, delegate its functions and responsibilities under this subpart to the BIA or FHWA.

(g) Each State transportation department, Federal agency, or Tribal government bridge inspection organization must have a program manager with the qualifications defined in § 650.309(a). An employee of the BIA or FHWA having the qualification of a program manager as defined in § 650.309(a) may serve as the program manager for a Tribal government if the Tribal government delegates this responsibility to the BIA or FHWA in accordance with paragraph (f) of this section.

### § 650.309 Qualifications of personnel.

(a) A program manager must, at a minimum:

- (1) Be a registered Professional Engineer, or have 10 years of bridge inspection experience;
- (2) Complete an FHWA-approved comprehensive bridge inspection training course as described in paragraph (h) of this section and score 70 percent or greater on an end-of-course assessment (completion of FHWA-approved comprehensive bridge inspection training under FHWA regulations in this subpart in effect before June 6, 2022, satisfies the intent of the requirement in this paragraph (a));
- (3) Complete a cumulative total of 18 hours of FHWA-approved bridge inspection refresher training over each 60 month period;
- (4) Maintain documentation supporting the satisfaction of paragraphs (a)(1) through (3) of this section; and
- (5) Satisfy the requirements of this paragraph (a) within 24 months from June 6, 2022, if serving as a program manager who was qualified under prior FHWA regulations in this subpart.

(b) A team leader must, at a minimum:

- (1) Meet one of the four qualifications listed in paragraphs (b)(1)(i) through (iv) of this section:
  - (i) Be a registered Professional Engineer and have 6 months of bridge inspection experience;
  - (ii) Have 5 years of bridge inspection experience;
  - (iii) Have all of the following:
    - (A) A bachelor's degree in engineering or engineering technology from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology; and
    - (B) Successfully passed the National Council of Examiners for Engineering and Surveying Fundamentals of Engineering examination; and
    - (C) Two (2) years of bridge inspection experience; or
  - (iv) Have all of the following:
    - (A) An associate's degree in engineering or engineering technology from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology; and
    - (B) Four (4) years of bridge inspection experience;

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- (2) Complete an FHWA-approved comprehensive bridge inspection training course as described in paragraph (h) of this section and score 70 percent or greater on an end-of-course assessment (completion of FHWA-approved comprehensive bridge inspection training under FHWA regulations in this subpart in effect before June 6, 2022, satisfies the intent of the requirement in this paragraph (b));
  - (3) Complete a cumulative total of 18 hours of FHWA-approved bridge inspection refresher training over each 60 month period;
  - (4) Provide documentation supporting the satisfaction of paragraphs (b)(1) through (3) of this section to the program manager of each State transportation department, Federal agency, or Tribal government for which they are performing bridge inspections; and
  - (5) Satisfy the requirements of this paragraph (b) within 24 months from June 6, 2022, if serving as a team leader who was qualified under prior FHWA regulations in this subpart.
- (c) Team leaders on NSTM inspections must, at a minimum:
- (1) Meet the requirements in paragraph (b) of this section;
  - (2) Complete an FHWA-approved training course on the inspection of NSTMs as defined in paragraph (h) of this section and score 70 percent or greater on an end-of-course assessment (completion of FHWA-approved NSTM inspection training prior to June 6, 2022, satisfies the intent of the requirement in this paragraph (c)); and
  - (3) Satisfy the requirements of this paragraph (c) within 24 months from June 6, 2022.
- (d) Load ratings must be performed by, or under the direct supervision of, a registered professional engineer.
- (e) An Underwater Bridge Inspection Diver must complete FHWA-approved underwater bridge inspection training as described in paragraph (h) of this section and score 70 percent or greater on an end-of-course assessment (completion of FHWA-approved comprehensive bridge inspection training or FHWA-approved underwater bridge inspection training under FHWA regulations in this subpart in effect before June 6, 2022, satisfies the intent of the requirement in this paragraph (e)).
- (f) State transportation departments, Federal agencies, and Tribal governments must establish documented personnel qualifications for Damage and Special Inspection types.
- (g) State transportation departments, Federal agencies, and Tribal governments that establish risk-based routine inspection intervals that exceed 48 months under § 650.311(a)(2) must establish documented personnel qualifications for the Service Inspection type.
- (h) The following are considered acceptable bridge inspection training:
- (1) *National Highway Institute training*. Acceptable NHI courses include:
    - (i) Comprehensive bridge inspection training, which must include topics of importance to bridge inspection; bridge mechanics and terminology; personal and public safety issues associated with bridge inspections; properties and deficiencies of concrete, steel, timber, and masonry; inspection equipment needs

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for various types of bridges and site conditions; inspection procedures, evaluations, documentation, data collection, and critical findings for bridge decks, superstructures, substructures, culverts, waterways (including underwater members), joints, bearings, drainage systems, lighting, signs, and traffic safety features; nondestructive evaluation techniques; load path redundancy and fatigue concepts; and practical applications of the concepts listed in this paragraph (h)(1)(i);

(ii) Bridge inspection refresher training, which must include topics on documentation of inspections, commonly miscoded items, recognition of critical inspection findings, recent events impacting bridge inspections, and quality assurance activities;

(iii) Underwater bridge inspection training, which must include topics on the need for and benefits of underwater bridge inspections; typical defects and deterioration in underwater members; inspection equipment needs for various types of bridges and site conditions; inspection planning and hazard analysis; and underwater inspection procedures, evaluations, documentation, data collection, and critical findings; and

(iv) NSTM inspection training, which must include topics on the identification of NSTMs and related problematic structural details; the recognition of areas most susceptible to fatigue and fracture; the evaluation and recording of defects on NSTMs; and the application of nondestructive evaluation techniques.

(2) *FHWA approval of alternate training.* A State transportation department, Federal agency, or Tribal government may submit to FHWA a training course as an alternate to any of the NHI courses listed in paragraph (h)(1) of this section. An alternate must include all the topics described in paragraph (h)(1) and be consistent with the related content. FHWA must approve alternate course materials and end-of-course assessments for national consistency and certification purposes. Alternate training courses must be reviewed by the program manager every 5 years to ensure the material is current. Updates to approved course materials and end-of-course assessments must be resubmitted to FHWA for approval.

(3) *FHWA-approved alternate training under prior regulations.* Agencies that have alternate training courses approved by FHWA prior to June 6, 2022, have 24 months to review and update training materials to satisfy requirements as defined in § 650.305 and paragraph (h)(1) of this section and resubmit to FHWA for approval.

### § 650.311 Inspection interval.

(a) *Routine inspections.* Each bridge must be inspected at regular intervals not to exceed the interval established using one of the risk-based methods outlined in paragraph (a)(1) or (2) of this section.

(1) *Method 1.* Inspection intervals are determined by a simplified assessment of risk to classify each bridge into one of three categories with an inspection interval as described below.

(i) *Regular intervals.* Each bridge must be inspected at regular intervals not to exceed 24 months, except as required in paragraph (a)(1)(ii) of this section and allowed in paragraphs (a)(1)(iii) of this section.

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(ii) *Reduced intervals.* (A) State transportation departments, Federal agencies, or Tribal governments must develop and document criteria used to determine when intervals must be reduced below 24 months. Factors to consider include structure type, design, materials, age, condition ratings, scour, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle impact damage, loads and safe load capacity, and other known deficiencies.

(B) Certain bridges meeting any of the following criteria as recorded in the National Bridge Inventory (NBI) (see § 650.315) must be inspected at intervals not to exceed 12 months:

( 1 ) One or more of the deck, superstructure, or substructure, or culvert components is rated in serious or worse condition, as recorded by the Deck, Superstructure, or Substructure Condition Rating items, or the Culvert Condition Rating item, coded three (3) or less; or

( 2 ) The observed scour condition is rated serious or worse, as recorded by the Scour Condition Rating item coded three (3) or less.

(C) Where condition ratings are coded three (3) or less due to localized deficiencies, a special inspection limited to those deficiencies, as described in § 650.313(h), can be used to meet this requirement in lieu of a routine inspection. In such cases, a complete routine inspection must be conducted in accordance with paragraph (a)(1)(i) of this section.

(iii) *Extended intervals.* (A) Certain bridges meeting all of the following criteria as recorded in the NBI (see § 650.315) may be inspected at intervals not to exceed 48 months:

( 1 ) The deck, superstructure, and substructure, or culvert, components are all rated in satisfactory or better condition, as recorded by the Deck, Superstructure, and Substructure Condition Rating items, or the Culvert Condition Rating item coded six (6) or greater;

( 2 ) The channel and channel protection are rated in satisfactory or better condition, as recorded by the Channel Condition and Channel Protection Condition items coded six (6) or greater;

( 3 ) The inventory rating is greater than or equal to the standard AASHTO HS-20 or HL-93 loading and routine permit loads are not restricted or not carried/issued, as recorded by the Inventory Load Rating Factor item coded greater than or equal to 1.0 and the Routine Permit Loads item coded A or N;

( 4 ) A steel bridge does not have Category E or E' fatigue details, as recorded by the Fatigue Details item coded N;

( 5 ) All roadway vertical clearances are greater than or equal to 14'-0", as recorded in the Highway Minimum Vertical Clearance item;

( 6 ) All superstructure materials limited to concrete and steel and all superstructure types limited to certain arches, box girders/beams, frames, girders/beams, slabs, and culverts, as recorded by the Span Material items coded C01-C05 or S01-S05, and the Span Type items coded A01, B02-B03, F01-F02, G01-G08, S01-S02, or P01-P02; and

( 7 ) Stable for potential scour and observed scour condition is rated satisfactory or better, as recorded by the Scour Vulnerability item coded A or B and the Scour Condition Rating item coded six (6) or greater.

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(B) State transportation departments, Federal agencies, or Tribal governments that implement paragraph (a)(1)(iii)(A) of this section must develop and document an extended interval policy and must notify FHWA in writing prior to implementation. Factors to consider include structure type, design, materials, age, condition ratings, scour, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle impact damage, loads and safe load capacity, and other known deficiencies.

(2) *Method 2.* Inspection intervals are determined by a more rigorous assessment of risk to classify each bridge, or a group of bridges, into one of four categories, with inspection intervals not to exceed 12, 24, 48, or 72 months. The risk assessment process must be developed by a Risk Assessment Panel (RAP) and documented as a formal policy. The RAP must be comprised of not less than four people, at least two of which are professional engineers, with collective knowledge in bridge design, evaluation, inspection, maintenance, materials, and construction, and include the NBIS program manager. The policy and criteria which establishes intervals, including subsequent changes, must be submitted by the State transportation department, Federal agency, or Tribal government for FHWA approval. The request must include the items in paragraphs (a)(2)(i) through (vi) of this section:

- (i) Endorsement from a RAP, which must be used to develop a formal policy.
- (ii) Definitions for risk factors, categories, and the probability and consequence levels that are used to define the risk for each bridge to be assessed.
- (iii) Deterioration modes and attributes that are used in classifying probability and consequence levels, depending on their relevance to the bridge being considered. A system of screening, scoring, and thresholds are defined by the RAP to assess the risks. Scoring is based on prioritizing attributes and their relative influence on deterioration modes.

(A) A set of screening criteria must be used to determine how a bridge should be considered in the assessment and to establish maximum inspection intervals. The screening criteria must include:

- (1) Requirements for flexure and shear cracking in concrete primary load members;
- (2) Requirements for fatigue cracking and corrosion in steel primary load members;
- (3) Requirements for other details, loadings, conditions, and inspection findings that are likely to affect the safety or serviceability of the bridge or its members;
- (4) Bridges classified as in poor condition cannot have an inspection interval greater than 24 months; and
- (5) Bridges classified as in fair condition cannot have an inspection interval greater than 48 months.

(B) The attributes in each assessment must include material properties, loads and safe load capacity, and condition.

(C) The deterioration modes in each assessment must include:

- (1) For steel members: Section loss, fatigue, and fracture;
- (2) For concrete members: Flexural cracking, shear cracking, and reinforcing and prestressing steel corrosion;
- (3) For superstructure members: Settlement, rotation, overload, and vehicle/vessel impact; and
- (4) For substructure members: Settlement, rotation, and scour.

## National Bridge Inspection Standards (2022)

- (D) A set of criteria to assess risk for each bridge member in terms of probability and consequence of structural safety or serviceability loss in the time between inspections.
  - (iv) A set of risk assessment criteria, written in standard logical format amenable for computer programming.
  - (v) Supplemental inspection procedures and data collection that are aligned with the level of inspection required to obtain the data to apply the criteria.
  - (vi) A list classifying each bridge into one of four risk categories with a routine inspection interval not to exceed 12, 24, 48, or 72 months.
- (3) *Service inspection.* A service inspection must be performed during the month midway between routine inspections when a risk-based, routine inspection interval exceeds 48 months.
- (4) *Additional routine inspection interval eligibility.* Any new, rehabilitated, or structurally modified bridge must receive an initial inspection, be in service for 24 months, and receive its next routine inspection before being eligible for inspection intervals greater than 24 months.
- (b) *Underwater inspections.* Each bridge must be inspected at regular intervals not to exceed the interval established using one of the risk-based methods outlined in paragraph (b)(1) or (2) of this section.
- (1) *Method 1.* Inspection intervals are determined by a simplified assessment of risk to classify each bridge into one of three categories for an underwater inspection interval as described in this section.
- (i) *Regular intervals.* Each bridge must be inspected at regular intervals not to exceed 60 months, except as required in paragraph (b)(1)(ii) of this section and allowed in paragraph (b)(1)(iii) of this section.
  - (ii) *Reduced intervals.*
    - (A) State transportation departments, Federal agencies, or Tribal governments must develop and document criteria used to determine when intervals must be reduced below 60 months. Factors to consider include structure type, design, materials, age, condition ratings, scour, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle/vessel impact damage, loads and safe load capacity, and other known deficiencies.
    - (B) Certain bridges meeting at least any of the following criteria as recorded in the NBI (see § 650.315) must be inspected at intervals not to exceed 24 months:
      - (1) The underwater portions of the bridge are in serious or worse condition, as recorded by the Underwater Inspection Condition item coded three (3) or less;
      - (2) The channel or channel protection is in serious or worse condition, as recorded by the Channel Condition and Channel Protection Condition items coded three (3) or less; or
      - (3) The observed scour condition is three (3) or less, as recorded by the Scour Condition Rating item.
    - (C) Where condition ratings are coded three (3) or less due to localized deficiencies, a special inspection of the underwater portions of the bridge limited to those deficiencies, as described in § 650.313(h), can be used to meet this requirement in lieu of a complete underwater inspection. In such

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cases, a complete underwater inspection must be conducted in accordance with paragraph (b)(1)(i) of this section.

(iii) *Extended intervals.*

(A) Certain bridges meeting all of the following criteria as recorded in the NBI (see § 650.315) may be inspected at intervals not to exceed 72 months:

- (1) The underwater portions of the bridge are in satisfactory or better condition, as recorded by the Underwater Inspection Condition item coded six (6) or greater;
- (2) The channel and channel protection are in satisfactory or better condition, as indicated by the Channel Condition and Channel Protection Condition items coded six (6) or greater;
- (3) Stable for potential scour, Scour Vulnerability item coded A or B, and Scour Condition Rating item is satisfactory or better, coded six (6) or greater.

(B) State transportation departments, Federal agencies, or Tribal governments that implement paragraph (b)(1)(iii)(A) of this section must develop and document an underwater extended interval policy and must notify FHWA in writing prior to implementation. Factors to consider include structure type, design, materials, age, condition ratings, scour, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle/vessel impact damage, loads and safe load capacity, and other known deficiencies.

(2) *Method 2.* Inspection intervals are determined by a more rigorous assessment of risk. The policy and criteria which establishes intervals, including subsequent changes, must be submitted by the State transportation department, Federal agency, or Tribal government for FHWA approval. The process and criteria must be similar to that outlined in paragraph (a)(2) of this section except that each bridge must be classified into one of three risk categories with an underwater inspection interval not to exceed 24, 60, and 72 months.

(c) *NSTM inspections.* NSTM must be inspected at regular intervals not to exceed the interval established using one of the risk-based methods outlined in paragraph (c)(1) or (2) of this section.

(1) *Method 1.* Inspection intervals are determined by a simplified assessment of risk to classify each bridge into one of three risk categories with an interval not to exceed 12, 24, or 48 months.

(i) *Regular intervals.* Each NSTM must be inspected at intervals not to exceed 24 months except as required in paragraph (c)(1)(ii) of this section and allowed in paragraph (c)(1)(iii) of this section.

(ii) *Reduced intervals.*

(A) State transportation departments, Federal agencies, or Tribal governments must develop and document criteria to determine when intervals must be reduced below 24 months. Factors to consider include structure type, design, materials, age, condition, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle impact damage, loads and safe load capacity, and other known deficiencies.

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(B) Certain NSTMs meeting the following criteria as recorded in the NBI (see § 650.315) must be inspected at intervals not to exceed 12 months:

- (1) The NSTMs are rated in poor or worse condition, as recorded by the NSTM Inspection Condition item, coded 4 or less; or
- (2) [Reserved].

(iii) *Extended intervals.*

(A) Certain NSTMs meeting all of the following criteria may be inspected at intervals not to exceed 48 months:

- (1) Bridge was constructed after 1978 as recorded in the NBI (see § 650.315) Year Built item and fabricated in accordance with a fracture control plan;
- (2) All NSTMs have no fatigue details with finite life;
- (3) All NSTMs have no history of fatigue cracks;
- (4) All NSTMs are rated in satisfactory or better condition, as recorded in the NBI (see § 650.315) by the NSTM Inspection Condition item, coded 6 or greater; and
- (5) The bridge's inventory rating is greater than or equal to the standard AASHTO HS-20 or HL-93 loading and routine permit loads are not restricted or not carried/issued, as recorded in the NBI ( see § 650.315) by the Inventory Load Rating Factor item coded greater than or equal to 1.0 and the Routine Permit Loads item coded A or N;
- (6) All NSTMs do not include pin and hanger assemblies.

(B) State transportation departments, Federal agencies, or Tribal governments that implement paragraph (c)(1)(iii)(A) of this section must develop and document an extended interval policy, and notify FHWA in writing prior to implementation. Factors to consider include structure type, design, materials, age, condition, environment, annual average daily traffic and annual average daily truck traffic, history of vehicle impact damage, loads and safe load capacity, and other known deficiencies.

(2) *Method 2.* Inspection intervals are determined by a more rigorous assessment of risk. The policy and criteria which establishes intervals, including subsequent changes must be submitted by the State transportation department, Federal agency, or Tribal government for FHWA approval. The process and criteria must be similar to that outlined in paragraph (a)(2) of this section except that each bridge must be classified into one of three risk categories with a NSTM inspection interval not to exceed 12, 24, or 48 months.

(d) *Damage, in-depth, and special inspections.* A State transportation department, Federal agency, or Tribal government must document the criteria to determine the level and interval for these inspections in its bridge inspection policies and procedures.

(e) *Bridge inspection interval tolerance.*

- (1) The acceptable tolerance for intervals of less than 24 months for the next inspection is up to two (2) months after the month in which the inspection was due.
- (2) The acceptable tolerance for intervals of 24 months or greater for the next inspection is up to three (3) months after the month in which the inspection was due.



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(3) Exceptions to the inspection interval tolerance due to rare and unusual circumstances must be approved by FHWA in advance of the inspection due date plus the tolerance in paragraphs (e)(1) and (2) of this section.

(f) *Next inspection.* Establish the next inspection interval for each inspection type based on results of the inspection and requirements of this section.

(g) *Implementation.*

(1) The requirements of paragraphs (a)(1)(ii), (b)(1)(ii), and (c)(1)(ii) of this section must be satisfied within 24 months from June 6, 2022.

(2) Prior FHWA approved extended inspection interval policies will be rescinded 24 months after June 6, 2022.

### § 650.313 Inspection procedures.

(a) *General.* Inspect each bridge to determine condition, identify deficiencies, and document results in an inspection report in accordance with the inspection procedures in Section 4.2, AASHTO Manual (incorporated by reference, see § 650.317). Special equipment or techniques, and/or traffic control are necessary for inspections in circumstances where their use provide the only practical means of accessing and/or determining the condition of the bridge. The equipment may include advanced technologies listed in the BIRM.

(b) *Initial inspection.* Perform an initial inspection in accordance with Section 4.2, AASHTO Manual (incorporated by reference, see § 650.317) for each new, replaced, rehabilitated, and temporary bridge as soon as practical, but within 3 months of the bridge opening to traffic.

(c) *Routine inspection.* Perform a routine inspection in accordance with Section 4.2, AASHTO Manual (incorporated by reference, see § 650.317).

(d) *In-depth inspection.* Identify the location of bridge members that need an in-depth inspection and document in the bridge files. Perform in-depth inspections in accordance with the procedures developed in paragraph (g) of this section.

(e) *Underwater inspection.* Identify the locations of underwater portions of the bridge in the bridge files that cannot be inspected using wading and probing during a routine inspection. Perform underwater inspections in accordance with the procedures developed in paragraph (g) of this section. Perform the first underwater inspection for each bridge and for each bridge with portions underwater that have been rehabilitated as soon as practical, but within 12 months of the bridge opening to traffic.

(f) *NSTM inspection.* (1) Identify the locations of NSTMs in the bridge files.

(i) A State transportation department, Federal agency, or Tribal government may choose to demonstrate a member has system or internal redundancy such that it is not considered an NSTM. The entity may develop and submit a formal request for FHWA approval of procedures using a nationally recognized method to determine that a member has system or internal redundancy. FHWA will review the procedures for approval based upon conformance with the nationally recognized method. The request must include:

(A) Written policy and procedures for determining system or internal redundancy.

(B) Identification of the nationally recognized method used to determine system or internal redundancy. Nationally recognized means developed, endorsed and

## National Bridge Inspection Standards (2022)

disseminated by a national organization with affiliates based in two or more States; or currently adopted for use by one or more State governments or by the Federal Government; and is the most current version.

(C) Baseline condition of the bridge(s) to which the policy is being applied.

(D) Description of design and construction details on the member(s) that may affect the system or internal redundancy.

(E) Routine inspection requirements for bridges with system or internally redundant members.

(F) Special inspection requirements for the members with system or internal redundancy.

(G) Evaluation criteria for when members should be reviewed to ensure they still have system and internal redundancy.

(ii) Inspect the bridge using the approved methods outlined in paragraphs (f)(1)(i)(E) and (F) of this section.

(2) Perform hands-on inspections of NSTMs in accordance with the procedures developed in paragraph (g) of this section.

(3) Perform the first NSTM inspection for each bridge and for each bridge with rehabilitated NSTMs as soon as practical, but within 12 months of the bridge opening to traffic.

(g) *NSTM, underwater, in-depth, and complex feature inspection procedures.* Develop and document inspection procedures for bridges which require NSTM, underwater, in-depth, and complex feature inspections in accordance with Section 4.2, AASHTO Manual (incorporated by reference, see § 650.317). State transportation departments, Federal agencies, and Tribal governments can include general procedures applicable to many bridges in their procedures manual. Specific procedures for unique and complex structural features must be developed for each bridge and contained in the bridge file.

(h) *Special inspection.* For special inspections used to monitor conditions as described in paragraphs (a)(1)(ii) and (b)(1)(ii) of this section, develop and document procedures in accordance with Section 4.2, AASHTO Manual (incorporated by reference, see § 650.317).

(i) *Service inspection.* Perform a service inspection when the routine inspection interval is greater than 48 months. Document the inspection date and any required follow up actions in the bridge file.

(j) *Team leader.* Provide at least one team leader at the bridge who meets the minimum qualifications stated in § 650.309 and actively participates in the inspection at all times during each initial, routine, in-depth, NSTM, underwater inspection, and special inspection described in paragraph (h) of this section.

(k) *Load rating.*

(1) Rate each bridge as to its safe load capacity in accordance with the incorporated articles in Sections 6 and 8, AASHTO Manual (incorporated by reference, see § 650.317).

(2) Develop and document procedures for completion of new and updated bridge load ratings. Load ratings must be completed as soon as practical, but no later than 3 months after the initial inspection and when a change is identified that warrants a re-rating such as, but not limited to, changes in condition, reconstruction, new construction, or changes in dead or live loads.

## National Bridge Inspection Standards (2022)

(3) Analyze routine and special permit loads for each bridge that these loads cross to verify the bridge can safely carry the load.

(l) *Load posting.*

(1) Implement load posting or restriction for a bridge in accordance with the incorporated articles in Section 6, AASHTO Manual (incorporated by reference, see § 650.317), when the maximum unrestricted legal loads or State routine permit loads exceed that allowed under the operating rating, legal load rating, or permit load analysis.

(2) Develop and document procedures for timely load posting based upon the load capacity and characteristics such as annual average daily traffic, annual average daily truck traffic, and loading conditions. Posting shall be made as soon as possible but not later than 30 days after a load rating determines a need for such posting. Implement load posting in accordance with these procedures.

(3) Missing or illegible posting signs shall be corrected as soon as possible but not later than 30 days after inspection or other notification determines a need.

(m) *Closed bridges.* Develop and document criteria for closing a bridge which considers condition and load carrying capacity for each legal vehicle. Bridges that meet the criteria must be closed immediately. Bridges must be closed when the gross live load capacity is less than 3 tons.

(n) *Bridge files.* Prepare and maintain bridge files in accordance with Section 2.2, AASHTO Manual (incorporated by reference, see § 650.317).

(o) *Scour.*

(1) Perform a scour appraisal for all bridges over water, and document the process and results in the bridge file. Re-appraise when necessary to reflect changing scour conditions. Scour appraisal procedures should be consistent with Hydraulic Engineering Circulars (HEC) 18 and 20. Guidance for scour evaluations is located in HEC 18 and 20, and guidance for scour assessment is located in HEC 20.

(2) For bridges which are determined to be scour critical or have unknown foundations, prepare and document a scour POA for deployment of scour countermeasures for known and potential deficiencies, and to address safety concerns. The plan must address a schedule for repairing or installing physical and/or hydraulic scour countermeasures, and/or the use of monitoring as a scour countermeasure. Scour plans of actions should be consistent with HEC 18 and 23.

(3) Execute action in accordance with the plan.

(p) *Quality control and quality assurance.*

(1) Assure systematic QC and QA procedures identified in Section 1.4, AASHTO Manual (incorporated by reference, see § 650.317) are used to maintain a high degree of accuracy and consistency in the inspection program.

(2) Document the extent, interval, and responsible party for the review of inspection teams in the field, inspection reports, NBI data, and computations, including scour appraisal and load ratings. QC and QA reviews are to be performed by personnel other than the individual who completed the original report or calculations.

(3) Perform QC and QA reviews and document the results of the QC and QA process, including the tracking and completion of actions identified in the procedures.

(4) Address the findings of the QC and QA reviews.

## National Bridge Inspection Standards (2022)

### (q) *Critical findings.*

(1) Document procedures to address critical findings in a timely manner. Procedures must:

(i) Define critical findings considering the location and the redundancy of the member affected and the extent and consequence of a deficiency. Deficiencies include, but are not limited to scour, damage, corrosion, section loss, settlement, cracking, deflection, distortion, delamination, loss of bearing, and any condition posing an imminent threat to public safety. At a minimum, include findings which warrant the following:

(A) Full or partial closure of any bridge;

(B) An NSTM to be rated in serious or worse condition, as defined in the NBI ( see § 650.315) by the NSTM Inspection item, coded three (3) or less;

(C) A deck, superstructure, substructure, or culvert component to be rated in critical or worse condition, as defined in the NBI ( see § 650.315) by the Deck, Superstructure, or Substructure Condition Rating items, or the Culvert Condition Rating item, coded two (2) or less;

(D) The channel condition or scour condition to be rated in critical or worse condition as defined in the NBI ( see § 650.315) by the Channel Condition Rating or Scour Condition Rating items, coded critical (2) or less; or

(E) Immediate load restriction or posting, or immediate repair work to a bridge, including shoring, in order to remain open.

(ii) Develop and document timeframes to address critical findings identified in paragraph (q)(1)(i) of this section.

(2) State transportation departments, Federal agencies, and Tribal governments must inform FHWA of all critical findings and actions taken, underway, or planned to resolve critical findings as follows:

(i) Notify FHWA within 24 hours of discovery of each critical finding on the National Highway System (NHS) as identified in paragraphs (q)(1)(i)(A) and (B) of this section;

(ii) Provide monthly, or as requested, a written status report for each critical finding as identified in paragraph (q)(1)(i) of this section until resolved. The report must contain:

(A) Owner;

(B) NBI Structure Number;

(C) Date of finding;

(D) Description and photos (if available) of critical finding;

(E) Description of completed, temporary and/or planned corrective actions to address critical finding;

(F) Status of corrective actions: Active/Completed;

(G) Estimated date of completion if corrective actions are active; and

(H) Date of completion if corrective actions are completed.

(r) *Review of compliance.* Provide information annually or as required in cooperation with any FHWA review of compliance with this subpart.

## National Bridge Inspection Standards (2022)

### § 650.315 Inventory.

(a) Each State transportation department, Federal agency, or Tribal government must prepare and maintain an inventory of all bridges subject to this subpart. Inventory data, as defined in § 650.305, must be collected, updated, and retained by the responsible State transportation department, Federal agency, or Tribal government and submitted to FHWA on an annual basis or whenever requested. For temporary bridges open to traffic greater than 24 months, inventory data must be collected and submitted per this section. Inventory data must include element level bridge inspection data for bridges on the NHS collected in accordance with the “Manual for Bridge Element Inspection” (incorporated by reference, see § 650.317). Specifications for collecting and reporting this data are contained in the “Specifications for the National Bridge Inventory” (incorporated by reference, see § 650.317).

(b) For all inspection types, enter changes to the inventory data into the State transportation department, Federal agency, or Tribal government inventory within 3 months after the month when the field portion of the inspection is completed.

(c) For modifications to existing bridges that alter previously recorded inventory data and for newly constructed bridges, enter the inventory data into the State transportation department, Federal agency, or Tribal government inventory within 3 months after the month of opening to traffic.

(d) For changes in load restriction or closure status, enter the revised inventory data into the State transportation department, Federal agency, or Tribal government inventory within 3 months after the month the change in load restriction or closure status of the bridge is implemented.

(e) Each State transportation department, Federal agency, or Tribal government must establish and document a process that ensures the time constraint requirements of paragraphs (b) through (d) of this section are fulfilled.

### § 650.317 Incorporation by reference.

Certain material is incorporated by reference (IBR) into this subpart with the approval of the Director of the Federal Register under [5 U.S.C. 552\(a\)](#) and [1 CFR part 51](#). All approved material is available for inspection at the U.S. Department of Transportation (DOT) and the National Archives and Records Administration (NARA). Contact DOT at: U.S. Department of Transportation Library, 1200 New Jersey Avenue SE, Washington, DC 20590 in Room W12-300, (800) 853-1351, [www.ntl.bts.gov/ntl](http://www.ntl.bts.gov/ntl). For information on the availability of this material at NARA email: [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov) or go to: [www.archives.gov/federal-register/cfr/ibr-locations.html](http://www.archives.gov/federal-register/cfr/ibr-locations.html). The material may be obtained from the following sources:

(a) AASHTO. American Association of State Highway and Transportation Officials, 555 12th Street NW, Suite 1000, Washington, DC 20004; 1-800-231-3475;  
<https://store.transportation.org>.

(1) MBE-3. “The Manual for Bridge Evaluation,” Third Edition, 2018; IBR approved for § 650.305 and 650.313.:

(2) MBE-3-I1-OL. The Manual for Bridge Evaluation, 2019 Interim Revisions [to 2018 Third Edition], copyright 2018; IBR approved for § 650.305 and 650.313.

(3) MBE-3-I2. The Manual for Bridge Evaluation, 2020 Interim Revisions [to 2018 Third Edition], copyright 2020; IBR approved for § 650.305 and 650.313.

(4) MBEI-2: Manual for Bridge Element Inspection, Second Edition, 2019, IBR approved for § 650.315.

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(b) FHWA. Federal Highway Administration, 1200 New Jersey Avenue SE, Washington, DC 20590; 1-202-366-4000; [www.fhwa.dot.gov/bridge/nbi.cfm](http://www.fhwa.dot.gov/bridge/nbi.cfm).

(1) FHWA-HIF-22-017: Specifications for the National Bridge Inventory, March, 2022, IBR approved for § 650.315.

(2) [Reserved].

### Subpart D—[Removed and Reserved]

3. Remove and reserve subpart D.

### Subpart G—[Removed and Reserved]

4. Remove and reserve subpart G.

### Footnotes

1. The NCHRP Report 782 may be found at the following URL: <http://www.trb.org/Publications/Blurbs/171448.aspx>

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2. The Frequently Asked Questions—Bridges Over Waterways with Unknown Foundations may be found at the following URL: <https://www.fhwa.dot.gov/unknownfoundations/090603.cfm>, and Determination of Unknown Subsurface Bridge Foundations can be found at the following URL: <https://www.fhwa.dot.gov/unknownfoundations/090603.cfm>.

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3. The NCHRP Report 782 may be found at the following URL: <http://www.trb.org/Publications/Blurbs/171448.aspx>.

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4. The NCHRP Report 782 may be found at the following URL: <http://www.trb.org/Publications/Blurbs/171448.aspx>.

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5. The NCHRP Report 782 may be found at the following URL: <http://www.trb.org/Publications/Blurbs/171448.aspx>

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6. Michael J. Parr; Robert J. Connor; and Mark Bowman, M.ASCE, Proposed Method for Determining the Interval for Hands-on Inspection of Steel Bridges with Fracture Critical Members, may be found at the following URL: <https://ascelibrary.org/doi/10.1061/%28ASCE%29BE.1943-5592.0000057>.

[Back to Citation](#)

7. *Ibid.*

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8. The AASHTO Guide Specifications for Internal Redundancy of Mechanically-Fastened Built-Up Steel Members, 1st Edition may be found at the following URL:

<https://store.transportation.org/Item/PublicationDetail?ID=4149>.

[Back to Citation](#)

9. *Ibid.*

[Back to Citation](#)

10. FHWA July 10, 2001, memorandum on the subject of the Hoan Bridge Investigation may be found at the following URL: <https://www.fhwa.dot.gov/bridge/steel/010710.cfm>.

[Back to Citation](#)

11. Clause 12 of the AASHTO/AWS D1.5M/D1.5, *Bridge Welding Code*, 6th Edition.

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12. The AASHTO Guide Specifications for Internal Redundancy of Mechanically-Fastened Built-Up Steel Members, 1st Edition may be found at the following URL:

<https://store.transportation.org/Item/PublicationDetail?ID=4149>.

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13. AASHTO Guide Specifications for Analysis and Identification of Fracture Critical Members and System Redundant Members, 1st Edition may be found at the following URL:

<https://store.transportation.org/Item/PublicationDetail?ID=41491>.

[Back to Citation](#)

14. The NCHRP Report 782 may be found at the following URL: <http://www.trb.org/Publications/Blurbs/171448.aspx>.

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15. Additional Guidance for Assessment of Bridges Over Waterways with Unknown Foundations may be found at the following URL: <https://www.fhwa.dot.gov/unknownfoundations/091029.cfm>.

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16. Under existing NBIS policies, an agency may request that a bridge may be inspected under a 48-month inspection interval based on relatively stringent requirements which excludes bridges: (a) with any condition rating of 5 or less; (b) that have inventory ratings less than the State's legal load; (c) with spans greater than 100' in length; (d) without load path redundancy; (e) that are very susceptible to vehicular damage, e.g., structures with vertical over or underclearances less than 14'-0", narrow thru or pony trusses. The requirements for a 48-month inspection frequency policy are described in the FHWA Technical Advisory T 5140.21 dated September 16, 1988. This document is available on-line at: <https://www.fhwa.dot.gov/reports/techadvs.cfm>.

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17. The total cost of inspection used in the NPRM RIA was estimated using the average loaded wage rate for civil engineers in 2016 from BLS (\$64.19) and an assumption of 4 hours per inspection (4 hours × \$64.19 = \$257.76 in 2016 dollars).

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18. Comments from NYSDOT. FHWA-2017-0047-0138. Accessible from:

<https://www.regulations.gov/document?D=FHWA-2017-0047-0138> .

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19. National Academies of Sciences, Engineering, and Medicine 2014. Proposed Guideline for Reliability-Based Bridge Inspection Practices. Washington, DC: The National Academies Press. <https://doi.org/10.17226/22277>.

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20. <https://flh.fhwa.dot.gov/programs/tp/bridges/bip.htm> .

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1. The NHI training may be found at the following URL: [www.nhi.fhwa.dot.gov/](http://www.nhi.fhwa.dot.gov/).

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### #800: Critical Findings or Safety Hazards (Each)

A critical finding is a structural or safety related deficiency that requires immediate action to ensure public safety. The determination of a critical finding considers the location, redundancy, and consequences of the deficiency. Deficiencies include but not limited to scour, damage, corrosion, section loss, settlement, cracking, deflection, distortion, delamination, loss of bearing, and any condition posing an imminent threat to public safety. Critical findings include the following:

- A. Full or partial closure of bridge including lanes, shoulders, or sidewalks.
- B. The NSTM inspection item coded as 3 (serious condition) or lower.
- C. The deck, superstructure, substructure, or culvert component items coded as 2 (critical condition) or lower.
- D. The channel or scour component items coded as 2 (critical condition) or lower.
- E. Immediate load restriction or posting, immediate repair work, or installation of shoring to keep the bridge open.
- F. Per a FHWA Memo dated 11/15/2023, the discovery of flammable, explosive, or hazardous materials stored under a bridge should be treated as a critical finding.

Critical findings are not limited to findings observed during a scheduled inspection and can include traffic impact damage or flood damage.

The Program Administrator and/or Bridge Owner must be notified immediately upon the discovery of a critical finding. To comply with NBIS 650.313(q)(2)(i), the Team Leader must create a Critical Finding report in SIMS within 24 hours after the discovery of the finding. *If the Critical Finding is discovered during the annual SIMS shutdown (from approximately February 15<sup>th</sup> to April 1<sup>st</sup>), the Team Leader must notify the Minnesota Bridge Inspection Program Manager (via phone or email) within 24 hours.*

The determination of a critical finding might not always be made immediately when the deficiencies are observed. Examples might include bridge impacts, high water events, or severe deterioration which needs to be analyzed to determine safety risk. In situations where an evaluation is ongoing, the 24-hour reporting deadline begins when the Program Administrator has enough information to make Critical Finding determination. If a subsequent evaluation determines no full or partial closures are required for safety reasons, a Critical Finding does not need to be submitted.

The Critical Finding report must be completed within 3 months of the discovery. The critical finding should be thoroughly documented (with photos). The main objective of the report is to describe how the critical conditions were addressed on a permanent or temporary basis.

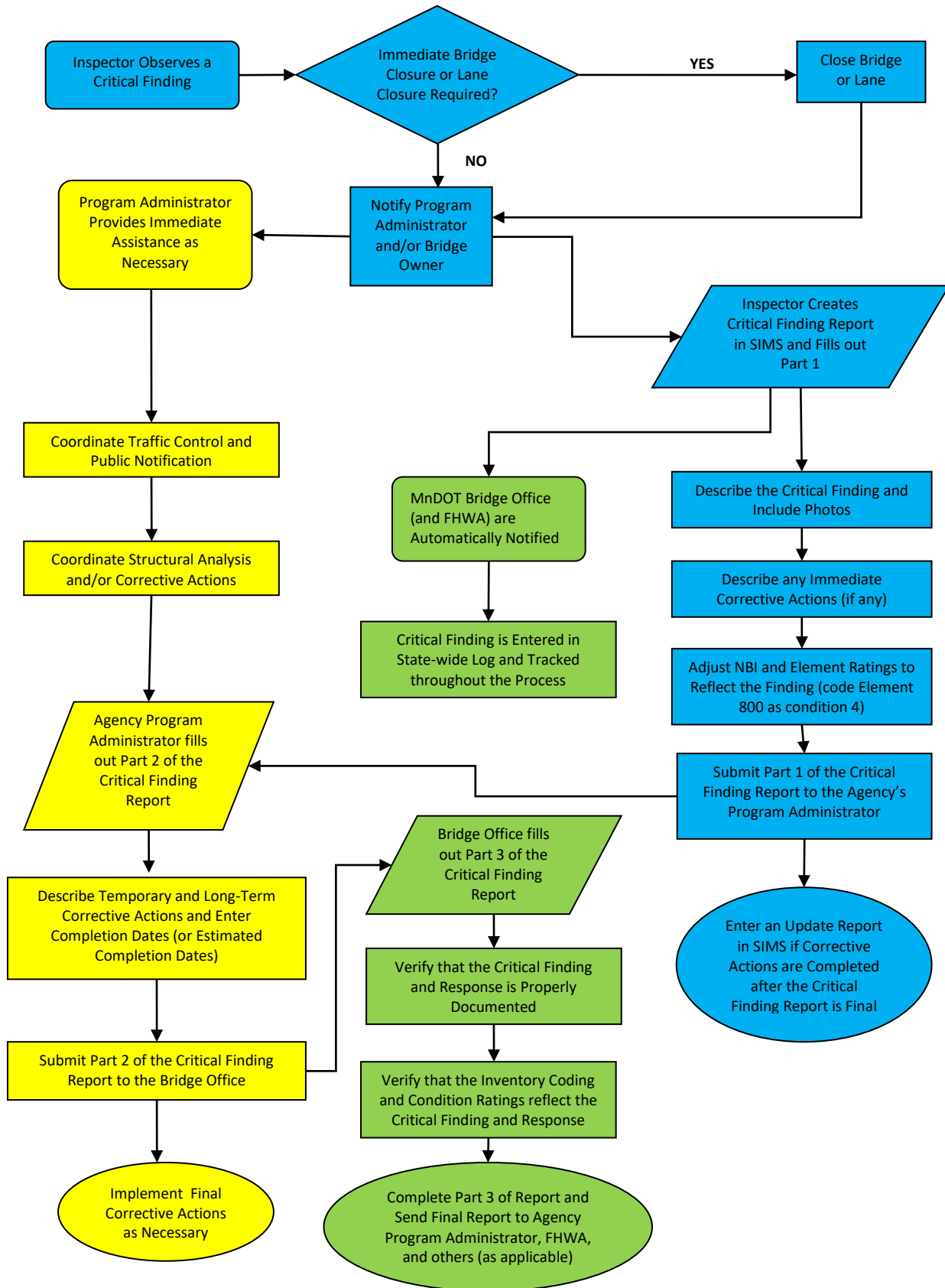
A serious safety hazard refers to a non-structural condition that poses a significant safety hazard and must be addressed immediately. Examples include severely damaged railings (which don't require shoulder or lane closures), severely damaged guardrails, or loose concrete above traffic or a pedestrian walkway. Serious safety hazards should be immediately reported to the Inspection Program Administrator and Bridge Owner, but do not need to be reported to the MnDOT Bridge Office (a separate report in SIMS is not required).

If a critical finding (or serious safety hazard) is present, refer to the reporting procedures outlined in Chapter A of the Minnesota Bridge and Structure Inspection Program Manual.

Defect or Item	Condition States			
	1 Good	2 Fair	3 Poor	4 Severe
<b>Critical Finding</b>	None	* Previously reported critical finding has been addressed.	NA	A critical finding is present.
<b>Serious Safety Hazard</b>	None	NA	A serious safety hazard is present.	NA

\*After a critical finding has been addressed or resolved, the condition state rating should be changed from condition state 4 to condition state 2. The element notes should briefly describe the critical finding, note when it occurred, and explain how it was resolved.

# Minnesota Critical Finding Flow Chart (2024)





U.S. Department  
of Transportation

**Federal Highway  
Administration**

# Memorandum

Subject: **ACTION**: Documentation and  
Treatment of Materials Stored Under a  
Highway Bridge

Date: 11/15/2023

From: Emily Biondi  
Associate Administrator  
Office of Environment and Planning

In Reply Refer To:  
HEPR-1 and HIBS-1

Hari Kalla  
Associate Administrator  
Office of Infrastructure

To: Division Administrators and Division  
Directors

The recent fire that resulted in the closure of a bridge on the Santa Monica Freeway section of Interstate 10 (I-10) in Los Angeles, California, has caused the detour of approximately 290,000 vehicles a day, adversely affecting the lives of local travelers, the movement of goods and services, and the local and regional economies. Although the investigation is still ongoing, this incident appears to be very similar to the fire that resulted in the 2017 collapse of the Interstate 85 (I-85) bridge over Piedmont Avenue in Atlanta, Georgia. This event in California again raises serious concerns about storing materials, including flammable, explosive, or hazardous materials, under bridges and other elevated structures.

After the investigation of the I-85 bridge collapse, FHWA issued information to remind the State Departments of Transportation (SDOT) of the pertinent Federal regulations on the storage of materials in the right-of-way (ROW) (23 CFR 710.403 and 710.405). Specifically, 23 CFR 710.403 requires that any alternative use of the ROW must be “[c]onsistent with the . . . safety of the facility, and such use must not impair the highway or interfere with the free and safe flow of traffic.” Also, should an alternative use of the ROW be allowed, 23 CFR 710.405 requires the development and execution of a Right-of-Way Use Agreement ensuring, among other things, the safety of the facility. FHWA guidance concerning 23 CFR 710.405 ([Frequently Asked Questions \(FAQs\) – Right-of-Way \(ROW\) – Policy and Guidance – Real Estate – FHWA \(dot.gov\)](#)) provides:

**32. Q: § 710.405. Are there fundamental restrictions on ROW use agreements?**

**A:** The real property cannot be used for non-highway purposes if the real property is necessary, either currently or in the foreseeable future, for safe and secure operation and maintenance of the highway facility. If such conflicts exist, the real property would be considered unavailable. The only exception may be for interim uses, which are terminated when the real property is needed for highway purposes.

The proposed non-highway use must meet the conditions in 23 CFR 710.405(a), including preservation of safety of the facility and its users. ***The FHWA views the manufacture or storage of flammable, explosive, or hazardous material on the ROW as presumptively a safety hazard.*** [Emphases added] This presumption does not preclude the transverse or longitudinal installation of such items as petroleum pipelines that have been approved in accordance with the regulations.

Similarly, within the scope of the proposed non-highway use of the facility, there is a presumption that ***any structures, buildings, or facilities which utilize combustible materials (such as wood, wood fiber, plastic etc.) that may be fire hazards do not satisfy 23 CFR 710.405(a). Such non-highway uses cannot be allowed under or adjacent to overpasses and bridges, absent a showing that such uses would provide for the safe and secure operation and maintenance of the highway facility.*** [Emphasis added]

Although the FHWA has not defined flammable as used in the FAQ cited above, FHWA considers the plain language definition of flammable—“capable of being easily ignited and of burning quickly”—as being consistent with the direction and intent of the response.

Additionally, in April 2018, the National Transportation Safety Board issued a Safety Alert ([SA-073](#)) on “Protecting Bridges from Fire Damage and Collapse.” The Safety Alert recommended that SDOTs remove materials from beneath bridges if they pose a risk of a fire event, improve surveillance and lock storage areas to restrict entry.

In light of the I-85 and I-10 fires, bridge owners should continue to direct inspectors, during their routine inspections, to be observant of materials, including flammable, explosive, or hazardous materials, stored under bridges, document any such materials stored in the ROW in the inspection report, and, if concerns exist, to communicate those concerns appropriately to the SDOT bridge inspection program manager. The discovery of such materials stored underneath a highway bridge should be treated as a critical finding requiring immediate follow-up action in accordance with our regulations and guidance ([NBIS Regulations and Guidance](#)) to ensure public safety, and must be reported to the FHWA (23 CFR 650.313(q)).

Please share this memorandum with the appropriate officials and staff from the highway-bridge-owning State, Federal, and Tribal agencies in your State. In doing so, remind them of the requirements of the pertinent Federal regulations, and of the

direction to treat the discovery of materials, including flammable, explosive, or hazardous materials, stored in the ROW underneath bridges as an inspection critical finding.

If you have any questions or need additional information related to right of way, please contact Nic Thornton at (202)366-1352 or [Nicholas.Thornton@dot.gov](mailto:Nicholas.Thornton@dot.gov), or issues related to bridges or structures, please contact Joey Hartmann at (202)366-4599 or [Joey.Hartmann@dot.gov](mailto:Joey.Hartmann@dot.gov).

*Except for the statutes and regulations cited, the contents of this document do not have the force and effect of law and are not meant to bind the States or the public in any way. This document is intended only to provide information regarding existing requirements under the law or agency policies.*



# Bridge Inspection Field Manual

May 2023 (Timber Element Revisions)

Chapter B of the Bridge and Structure Inspection Program Manual



DEPARTMENT OF  
TRANSPORTATION



**B.2.1.2 Deck Condition Rating (NBI Item 58)**

<b>Deck Condition Rating (NBI Item 58)</b>	
<b>Code</b>	This rating should reflect the overall general condition of the deck (or slab). This includes the underside of the deck and the wearing surface. The condition of railings, sidewalks, curbs, expansion joints, and deck drains are not considered in this rating.
<b>N</b>	<b>Not Applicable:</b> Use for culverts, roadway tunnels, or filled spandrel arch bridges.
<b>9</b>	<b>Excellent Condition:</b> Deck is in new condition (recently constructed).
<b>8</b>	<b>Very Good Condition:</b> Deck has very minor (and isolated) deterioration. <ul style="list-style-type: none"> <li>• Concrete: minor cracking, leaching, scale, or wear (no delamination or spalling)</li> <li>• Timber: minor weathering and/or isolated (minor) splitting</li> <li>• Steel: no corrosion (paint/protection system remains sound)</li> </ul>
<b>7</b>	<b>Good Condition:</b> Deck has minor (or isolated) deterioration. <ul style="list-style-type: none"> <li>• Concrete: minor cracking, leaching, scale, or wear (isolated spalling/delamination)</li> <li>• Timber: minor splitting (no decay or crushing) – planks are secure</li> <li>• Steel: minor paint failure or corrosion (no section loss) – connections are secure</li> </ul>
<b>6</b>	<b>Satisfactory Condition:</b> Deck has minor (or isolated) deterioration. <ul style="list-style-type: none"> <li>• Concrete: moderate cracking, leaching, scale, or wear (minor spalling and/or delamination)</li> <li>• Timber: moderate splitting (isolated decay or crushing) – some planks may be slightly loose</li> <li>• Steel: moderate paint failure and/or surface corrosion (minor section loss) – some connections may have worked loose</li> </ul>
<b>5</b>	<b>Fair Condition:</b> Deck has moderate deterioration (repairs may be necessary). <ul style="list-style-type: none"> <li>• Concrete: extensive cracking, leaching, scale, or wear (moderate delamination or spalling)</li> <li>• Timber: extensive splitting (moderate decay or crushing) – some planks may be loose, broken, or require replacement</li> <li>• Steel: extensive paint failure and/or surface corrosion (moderate section loss) – several connectors may be loose or missing (primary components remain secure)</li> </ul>
<b>4</b>	<b>Poor Condition:</b> Deck has advanced deterioration (replacement or overlay should be planned). <ul style="list-style-type: none"> <li>• Concrete: advanced cracking, leaching, scale, or wear (extensive delamination or spalling) – isolated full-depth failures may be imminent</li> <li>• Timber: advanced splitting or decay - numerous planks may be loose, broken, or require replacement</li> <li>• Steel: advanced corrosion (significant section loss) – deck components may be loose or slightly out of alignment</li> </ul>
<b>3</b>	Deck has severe deterioration. Immediate repairs may be necessary. <ul style="list-style-type: none"> <li>• Concrete: severe cracking, leaching, delamination, or spalling – full-depth failures may be present</li> <li>• Timber: severe splitting, crushing or decay – majority of planks need replacement</li> <li>• Steel: severe and section loss – deck components may be severely misaligned</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Deck has failed. Emergency repairs are required.
<b>1</b>	<b>"Imminent" Failure Condition:</b> Bridge is closed. Corrective action is required to open to restricted service.
<b>0</b>	<b>Failed Condition:</b> Bridge is closed. Deck replacement is necessary.



**B.2.1.3 Superstructure Condition Rating (NBI Item 59)**

<b>Superstructure Condition Rating (NBI Item 59)</b>	
<b>Code</b>	This rating should reflect the overall general condition of the superstructure – this includes all primary structural components located above (and including) the bearings.
<b>N</b>	<b>Not Applicable:</b> Use for culverts.
<b>9</b>	<b>Excellent Condition:</b> Superstructure is in new condition (recently constructed).
<b>8</b>	<b>Very Good Condition:</b> Superstructure has very minor (and isolated) deterioration.
<b>7</b>	<p><b>Good Condition:</b> Superstructure has minor (or isolated) deterioration.</p> <ul style="list-style-type: none"> <li>• Steel: minor corrosion, little or no section loss</li> <li>• Concrete: minor scale or non-structural cracking (isolated spalling/delamination)</li> <li>• Timber: minor splitting (no decay)</li> <li>• Masonry: minor scaling or cracking (joints have little or no deterioration)</li> </ul>
<b>6</b>	<p><b>Satisfactory Condition:</b> Superstructure has minor to moderate deterioration. Members may be slightly bent or misaligned. Connections may have minor distress. Bearings may be slightly restricted.</p> <ul style="list-style-type: none"> <li>• Steel: moderate corrosion (section loss or cracks in non-critical areas)</li> <li>• Concrete: moderate scale or cracking (minor spalling/delamination)</li> <li>• Timber: moderate splitting (minor decay)</li> <li>• Masonry: moderate scaling or cracking (joints may have minor deterioration)</li> </ul>
<b>5</b>	<p><b>Fair Condition:</b> Superstructure has moderate deterioration. Members may be bent, bowed, or misaligned. Bolts/rivets may be loose/missing, but connections remain intact. Bearings may be moderately restricted.</p> <ul style="list-style-type: none"> <li>• Steel: extensive corrosion (initial section loss in critical stress areas); cracks have been arrested or are not likely to propagate into critical stress areas</li> <li>• Concrete: extensive scaling or cracking (structural cracks may be present), moderate spalling or delamination (reinforcement may have some section loss)</li> <li>• Timber: extensive splitting (moderate decay)</li> <li>• Masonry: extensive scaling or cracking (slight joint separation or offset)</li> </ul>
<b>4</b>	<p><b>Poor Condition:</b> Superstructure has advanced deterioration. Members significantly bent or misaligned. Connection failure may be imminent. Bearings severely restricted.</p> <ul style="list-style-type: none"> <li>• Steel: significant section loss in critical stress areas; un-arrested cracks exist that may likely propagate into critical stress areas</li> <li>• Concrete: advanced scaling, cracking, or spalling (significant structural cracks may be present – exposed reinforcement may have significant section loss)</li> <li>• Timber: advanced splitting (significant decay, crushing may be evident)</li> <li>• Masonry: advanced scaling, spalling, or cracking (joint separation or offset)</li> </ul>
<b>3</b>	<p><b>Serious Condition:</b> Superstructure has severe deterioration – immediate repairs or structural evaluation may be required. Members may be severely bent or misaligned - connections or bearings may have failed.</p> <ul style="list-style-type: none"> <li>• Steel: severe section loss or cracks in critical stress areas</li> <li>• Concrete: severe structural cracking or spalling</li> <li>• Timber: severe splitting, decay, or crushing</li> <li>• Masonry: severe cracking, offset or misalignment</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Superstructure has critical damage or deterioration. Primary structural elements may have failed (severed, detached, or critically misaligned). Immediate repairs may be required to prevent collapse or closure.
<b>1</b>	<b>"Imminent" Failure Condition:</b> Bridge is closed. Superstructure is no longer stable (corrective action might return the structure to restricted service).
<b>0</b>	<b>Failed Condition:</b> Bridge is closed due to superstructure failure and is beyond corrective action (replacement required).




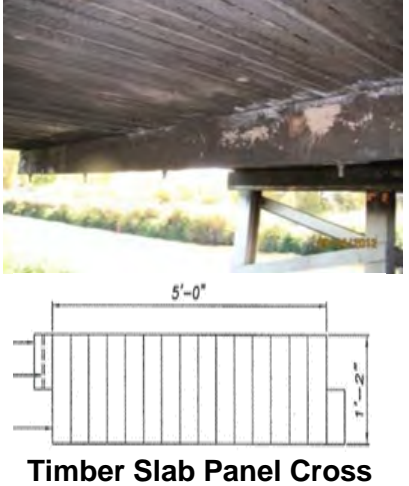
**B.2.1.4 Substructure Condition Rating (NBI Item 60)**

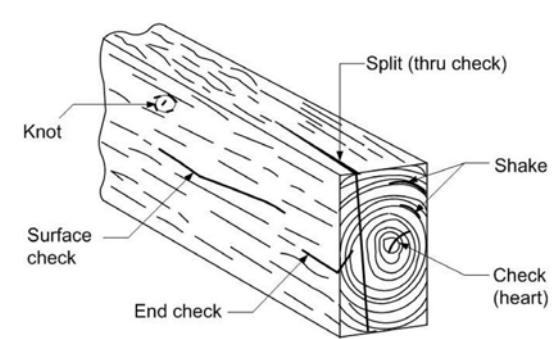
<b>Substructure Condition Rating (NBI Item 60)</b>	
<b>Code</b>	This rating should reflect the overall general condition of the substructure – this includes all structural components located below the bearings. Integral wingwalls or retaining walls (up to the first expansion or construction joint) may be considered in this rating.
<b>N</b>	<b>Not Applicable:</b> Use for culverts.
<b>9</b>	<b>Excellent Condition:</b> Substructure is in new condition (recently constructed).
<b>8</b>	<b>Very Good Condition:</b> Substructure has very minor (and isolated) deterioration.
<b>7</b>	<p><b>Good Condition:</b> Substructure has minor (or isolated) deterioration.</p> <ul style="list-style-type: none"> <li>• Concrete: minor cracking, leaching, or scale (isolated delaminations or spalls)</li> <li>• Steel: minor paint failure and/or surface corrosion (little or no section loss)</li> <li>• Timber: minor splitting (no decay)</li> <li>• Masonry: minor scaling or cracking (joints have little or no deterioration)</li> </ul>
<b>6</b>	<p><b>Satisfactory Condition:</b> Substructure has minor to moderate deterioration. Scour or erosion is minor and isolated (there may be slight movement or misalignment).</p> <ul style="list-style-type: none"> <li>• Concrete: moderate scaling, cracking, or leaching (minor spalling/delamination)</li> <li>• Steel: moderate paint failure and/or surface corrosion (minor section loss)</li> <li>• Timber: moderate splitting (minor decay)</li> <li>• Masonry: moderate scaling or cracking (joints may have minor deterioration)</li> </ul>
<b>5</b>	<p><b>Fair Condition:</b> Substructure has moderate deterioration. Repairs may be necessary. There may be moderate scour, erosion, or undermining. There may be minor settlement, movement, misalignment, or loss of bearing area.</p> <ul style="list-style-type: none"> <li>• Concrete: extensive scaling, cracking, or leaching (isolated structural cracks may be present) – there may be moderate delamination or spalling</li> <li>• Steel: extensive paint failure and/or surface corrosion (moderate section loss)</li> <li>• Timber: extensive splitting (moderate decay)</li> <li>• Masonry: extensive scaling or cracking (slight joint separation or offset)</li> </ul>
<b>4</b>	<p><b>Poor Condition:</b> Substructure has advanced deterioration. Repairs may be necessary to maintain stability. There may be extensive scour, erosion, or undermining. There may be significant settlement, movement, misalignment, or loss of bearing area.</p> <ul style="list-style-type: none"> <li>• Concrete: advanced scaling, cracking, or leaching (significant structural cracks may be present) – there may be extensive delamination or spalling</li> <li>• Steel: advanced corrosion (significant section loss)</li> <li>• Timber: advanced splitting (significant decay, crushing may be evident)</li> <li>• Masonry: advanced scaling, spalling, or cracking (joints separation or offset)</li> </ul>
<b>3</b>	<p><b>Serious Condition:</b> Substructure has severe deterioration. Immediate corrective action may be required. Scour, erosion, or undermining may have resulted in severe settlement, movement, misalignment, or loss of bearing area.</p> <ul style="list-style-type: none"> <li>• Concrete: severe spalling or structural cracking</li> <li>• Steel: severe section loss</li> <li>• Timber: severe decay or crushing</li> <li>• Masonry: severe cracking, offset or misalignment</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Substructure has critical damage or deterioration (near the point of collapse). It may be necessary to close the bridge until corrective action is completed. Scour may have removed substructure support.
<b>1</b>	<b>Imminent Failure Condition:</b> Bridge is closed. Substructure is no longer stable (corrective action might return the structure to restricted service).
<b>0</b>	<b>Failed Condition:</b> Bridge is closed due to substructure failure and is beyond corrective action (replacement required).

**B.2.1.6 Culvert Condition Rating (NBI Item 62)**

<b>Culvert Condition Rating (NBI Item 62)</b>	
<b>Code</b>	This rating should reflect the overall general condition of the culvert. If this item is rated, the NBI deck, superstructure, and substructure ratings must all be "N".
<b>N</b>	<b>Not Applicable:</b> Structure is not a culvert.
<b>9</b>	<b>Excellent Condition:</b> Culvert is new condition (recently constructed).
<b>8</b>	<b>Very Good Condition:</b> Culvert has very minor (and isolated) deterioration.
<b>7</b>	<b>Good Condition:</b> Culvert has minor (or isolated) deterioration. Joints are sound and properly aligned (no backfill infiltration). Footings have no undermining. <ul style="list-style-type: none"> <li>• Concrete/Masonry: minor scaling, cracking, or leaching (isolated spalling)</li> <li>• Steel: minor corrosion (little or no section loss) - barrel has no distortion</li> <li>• Timber: minor splitting (no decay, crushing, or sagging)</li> </ul>
<b>6</b>	<b>Satisfactory Condition:</b> Culvert has minor to moderate deterioration. Joints may have minor separation or misalignment (slight backfill infiltration). <ul style="list-style-type: none"> <li>• Concrete/Masonry: moderate scaling, cracking, or leaching (minor spalling)</li> <li>• Steel: moderate corrosion (minor section loss) – barrel may have minor distortion (seams may have minor distress, but no cracking)</li> <li>• Timber: moderate splitting (minor decay, crushing, or sagging)</li> </ul>
<b>5</b>	<b>Fair Condition:</b> Culvert has moderate deterioration – repairs may be required, but the culvert is structurally sound and functioning as intended. Joints may have moderate separation or misalignment (moderate backfill infiltration). Footings may be partially undermined (minor settlement). <ul style="list-style-type: none"> <li>• Concrete/Masonry: extensive scaling, cracking, or leaching (moderate spalling)</li> <li>• Steel: extensive corrosion (any significant section loss is isolated) – barrel may have moderate distortion (seams may have missing bolts or isolated cracking)</li> <li>• Timber: extensive splitting (moderate decay, crushing, or sagging)</li> </ul>
<b>4</b>	<b>Poor Condition:</b> Culvert has advanced deterioration – structural evaluation or repairs may be necessary (structural integrity or functional capacity of the culvert may be slightly reduced). Footings may have significant undermining or settlement. <ul style="list-style-type: none"> <li>• Concrete/Masonry: advanced cracking, leaching, or scaling (significant spalling). Joints may have significant separation or misalignment.</li> <li>• Steel: advanced corrosion (significant section loss) – barrel may have significant distortion (seams may have extensive cracking or isolated failures)</li> <li>• Timber: advanced splitting (significant decay, crushing, or sagging)</li> </ul>
<b>3</b>	<b>Serious Condition:</b> Culvert has serious deterioration – immediate repairs or corrective action may be required (structural integrity or functional capacity of the culvert has been significantly reduced). Joints may have severe deterioration, misalignment, offset, or separation. Loss of backfill may have resulted in significant settlement or undermining of the roadway or embankment. Severe undermining or settlement. <ul style="list-style-type: none"> <li>• Concrete/Masonry: severe scaling, cracking, or spalling</li> <li>• Steel: severe section loss or severe barrel distortion (seams may have failed)</li> <li>• Timber: severe decay, crushing, or sagging</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Culvert has critically advanced deterioration (near collapse) – it may be necessary to close the roadway until corrective action is completed.
<b>1</b>	<b>"Imminent" Failure Condition:</b> Culvert is closed – corrective action may restore to light service.
<b>0</b>	<b>Failed Condition:</b> Culvert is closed – replacement is necessary.

**B.3.3.4 Timber Decks and Slabs (Elements #31 and #54)**

<b>Timber Deck &amp; Slab Elements</b>	
<b>#31: Timber Deck (SF)</b> <b>#54: Timber Slab (SF)</b>	
<p>These elements describe the condition of timber decks (or slabs). This includes timber plank decks, glue-lam timber deck panels, and nail laminated timber decks or slabs. The rating will typically reflect the underside condition but should also consider the top condition on bare timber decks or slabs. If a wearing surface (bituminous overlay, gravel, timber wearing planks, or other material) is present, Element #510 (Wearing Surface) must also be rated.</p>	
	<p><b>Timber Plank Decks</b> Plank decks are comprised of transverse timber planks (wide dimension in the horizontal plane). The planks are typically clipped to the top flange of steel beams and nailed (or bolted) to timber beams. Timber plank decks are found primarily on low-volume roads or pedestrian bridges. Timber plank decks are typically bare (no overlay), but longitudinal wearing planks are sometimes present along the wheel tracks.</p>
	<p><b>Nail-Laminated Timber Decks</b> Nailed-laminated timber decks consist of transverse timbers (wide dimension in the vertical position) that are nailed to the adjacent timbers. These are often installed in pre-nailed sections, with overlap joints between adjacent sections. Nailed-laminated decks may have a bituminous overlay, longitudinal timber wearing planks, or a gravel wearing surface.</p>
	<p><b>Glulam Timber Decks</b> Glulam decks are like nail-laminated decks, except the individual timbers are bonded together with waterproof structural adhesive. The panels are typically around 4 ft. wide and are installed transversely across the deck. Glulam timber decks are often used on temporary bridges (with a bituminous overlay). When used in new construction, they may have timber wearing planks.</p>
 <p style="text-align: center;"><b>Timber Slab Panel Cross Section</b></p>	<p><b>Timber Slabs</b> Timber slabs are comprised of adjacent timber planks set vertically – the timbers run longitudinally and serve as the primary superstructure element (as well as the deck). Most timber slabs are nail-laminated, newer timber slabs may be glulam or stress-laminated. Timber slabs are typically comprised of prefabricated panels – there will often be a transverse beam running below the slab at the center of each span – these help to tie the panels together and distribute load and deflection across the width of the slab. Transverse beams below timber slabs should be rated using Element #156 (Timber Floorbeam). Timber slabs often have a bituminous or gravel wearing surface.</p>

Timber Deck & Slab Elements				
#31: Timber Deck (SF)				
#54: Timber Slab (SF)				
Defects	Condition States			
	1 Good	2 Fair	3 Poor	4 Severe
<b>Structural Review</b>	Structural review is not required.	Structural review is not required.	Structural review is not required <b>or</b> structural review has determined that strength or serviceability has not been impacted.	Condition warrants structural review <b>or</b> structural review has determined that the defects impact strength or serviceability.
<b>Repairs</b>	No repairs are present.	Existing repair in sound condition.	Repairs are recommended <b>or</b> existing repair is deteriorated.	Immediate repairs are required (failures present or imminent).
<b>Decay or Fire Damage</b>	No evidence of decay (no section loss).	Less than 10% section loss. Staining. Soot (superficial charring).	10% to 20% section loss. Negative camber. Significant charring.	More than 20% section loss. Crushing or severe sagging. Severe charring.
<b>Delamination (Glulam)</b>	None	Minor	Significant	Severe
<b>Weathering, or Abrasion</b>	Minor surface deterioration (no section loss).	Section loss less than 10% of the member thickness.	Section loss 10% - 20% of the member thickness.	Section loss more than 20% of the member thickness.
<b>Connection or Misalignment</b>	Components are properly aligned and securely connected.	Loose fasteners or slight misalignment of components.	Fasteners broken or missing. Components loose or significantly misaligned.	Failed connections. Components severely misaligned or missing.
<b>Shakes, Checks, or Splits</b>	Less than 5% of the member thickness.	5% to 50% of the member thickness and not in a tension zone.	More than 50% of the thickness (or more than 5% of the member thickness in a tension zone).	Severe splitting that impacts the stability or capacity of the deck/slab.
<ul style="list-style-type: none"> <li>• <b>Shake:</b> A separation along the grain (between the growth rings). Usually forms within a standing tree or during felling.</li> <li>• <b>Check:</b> A separation perpendicular to the grain (across the growth rings). Usually results from stress due to drying shrinkage.</li> <li>• <b>Split (or Thru Check):</b> A check extending further through the timber member due to tearing apart of wood cells.</li> </ul>			 <p>The diagram illustrates a timber member with several defects labeled: Knot, Surface check, End check, Split (thru check), Shake, and Check (heart).</p>	

<b>Timber Deck &amp; Slab Elements</b>	
#31: Timber Deck (SF)	
#54: Timber Slab (SF)	
<b>Condition Rating Examples (Timber Decks &amp; Slabs)</b>	
	
<p><b>Condition State 2</b> Weathering (less than 10% section loss) on a timber plank</p>	<p><b>Condition State 2</b> Staining on the underside of a timber slab</p>
	
<p><b>Condition State 3</b> Fire damage (significant charring with 10%-20% section loss) on a timber slab</p>	<p><b>Condition State 4</b> Hole in a timber plank deck</p>

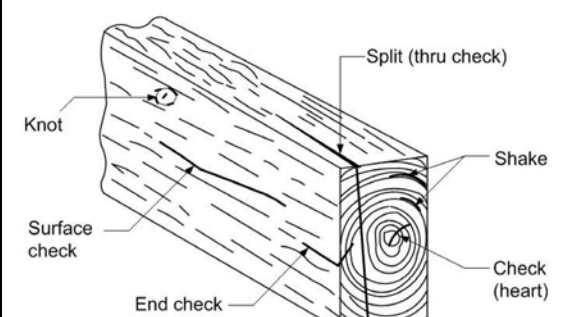
**B.3.6.3 Timber Bridge Railing (Element #332)**

<b>#332: Timber Bridge Railing (LF)</b>				
This element applies all types and shapes of timber railing. This includes railings constructed primarily of timber (the connections are typically steel), as well as the timber portions of combination railings. The other components of a combination railing should be rated separately using the appropriate railing element (metal, concrete, or masonry).				
Item or Defect	<b>Structural Element Condition States</b>			
	<b>1</b> <b>Good</b>	<b>2</b> <b>Fair</b>	<b>3</b> <b>Poor</b>	<b>4</b> <b>Severe</b>
<b>Structural Review</b>	Structural review is not required.	Structural review is not required.	Structural review is not required <b>or</b> review of existing defects has determined that strength or serviceability has not been impacted.	Condition warrants structural review <b>or</b> review has determined that the defects impact strength or serviceability.
<b>Repairs</b>	No repairs are present.	Existing repairs in sound condition.	Repairs recommended <b>or</b> existing repair is unsound.	Immediate repairs are required.
<b>Decay, Weathering, Abrasion, or Fire Damage</b>	Minor deterioration (no section loss).	Less than 10% section loss. Staining. Soot (superficial charring).	10% to 20% section loss. Negative camber. Significant charring.	More than 20% section loss. Crushing or severe sagging. Severe charring.
<b>Connection or Misalignment</b>	Components are properly aligned and securely connected.	Loose fasteners or slight misalignment of components.	Fasteners broken or missing. Components loose or significantly misaligned.	Failed connections. Components severely misaligned or missing.
<b>Impact Damage</b>	Superficial damage.	Minor to moderate impact damage.	Significant impact damage.	Members severely damaged, detached, or missing.
<b>Shakes, Checks, or Splits</b>	Penetrating less than 5% of the member thickness.	Penetrates 5% to 50% of the member thickness (not in a tension zone).	Penetrates more than 50% of the member thickness or more than 5% of member thickness in a tension zone.	Severe splitting that impacts the stability or capacity of the element.
<ul style="list-style-type: none"> <li>• <b>Shake:</b> A separation along the grain (between the growth rings). Usually forms within a standing tree or during felling.</li> <li>• <b>Check:</b> A separation perpendicular to the grain (across the growth rings). Usually results from stress due to drying shrinkage.</li> <li>• <b>Split (or Thru Check):</b> A check extending further through the timber member due to tearing apart of wood cells.</li> </ul>			<p>The diagram illustrates a timber member with several defects labeled: Knot (a circular inclusion), Surface check (a crack on the top surface), End check (a crack at the end of the member), Split (thru check) (a crack running through the length of the member), Shake (a separation along the grain), and Check (heart) (a crack perpendicular to the grain near the center).</p>	

<b>#332: Timber Bridge Railing (LF)</b>	
<b>Condition Rating Examples (Timber Bridge Railing)</b>	
	
<p><b>Condition State 2</b> Checks in a timber rail post (less than 50% of thickness)</p>	<p><b>Condition State 3</b> Weathering on a timber rail beam (less than 10% section loss)</p>
	
<p><b>Condition State 4</b> Timber rail post missing (adjacent post is severely damaged)</p>	<p><b>Condition State 4</b> Timber rail beam with severe decay (more than 20% section loss)</p>



**B.3.8.10 Timber Superstructure Elements**

Timber Superstructure Elements				
		#111: Timber Girder or Beam (LF) #117: Timber Stringer (LF) #135: Timber Truss (LF)		#146: Timber Arch (LF) #156: Timber Floorbeam (LF)
These elements apply to timber superstructure members of any type or shape. This includes sawn or glue-lam timber members. Connections on timber elements will typically include steel components (bolts, nuts, washers, connection plates, Etc.).				
<ul style="list-style-type: none"> <li>If impact damage is present, Element #880 (Impact Damage) must be added and rated.</li> </ul>				
Item or Defect	Condition States			
	1 Good	2 Fair	3 Poor	4 Severe
<b>Structural Review</b>	Structural review is not required.	Structural review is not required.	Structural review is not required <u>or</u> structural review has determined that the strength of the element has not been impacted.	Condition warrants structural review <u>or</u> structural review has determined that the strength of the element has been reduced.
<b>Repairs</b>	No repairs are present.	Existing repair in sound condition.	Repairs are recommended <u>or</u> existing repair is unsound.	Immediate repairs are required.
<b>Decay, Weathering, Abrasion, or Fire Damage</b>	Minor deterioration (no section loss).	Less than 10% section loss. Staining or soot (superficial charring).	10% to 20% section loss. Negative camber. Significant charring.	More than 20% section loss. Crushing or severe sagging. Severe charring.
<b>Delamination (Glulam)</b>	None	Minor	Significant	Severe
<b>Connection or Misalignment</b>	Components are properly aligned and securely connected.	Loose fasteners or slight misalignment of components.	Fasteners broken or missing. Components loose or significantly misaligned.	Failed connections. Components severely misaligned.
<b>Shakes, Checks, or Splits</b>	Penetrating less than 5% of the member thickness.	Penetrates 5% to 50% of the member thickness (not in a tension zone).	Penetrates more than 50% of the member thickness or more than 5% of the member thickness in a tension zone.	Severe splitting that impacts the stability or capacity of the element.
<ul style="list-style-type: none"> <li><b>Shake:</b> A separation along the grain (between the growth rings). Usually forms within a standing tree or during felling.</li> <li><b>Check:</b> A separation perpendicular to the grain (across the growth rings). Usually results from stress due to drying shrinkage.</li> <li><b>Split (or Thru Check):</b> A check extending further through the timber member due to tearing apart of wood cells.</li> </ul>				



<b>Timber Superstructure Elements</b>	
<b>Condition Rating Examples (Timber Superstructure Elements)</b>	
	
<p><b>Condition State 2</b> Horizontal surface check on a sawn timber beam (penetrating less than 50% of the beam thickness)</p>	<p><b>Condition State 2</b> Minor impact damage on a Glulam timber beam</p>
	
<p><b>Condition State 3</b> Horizontal surface check on a sawn timber beam (penetrating more than 50% of the beam thickness)</p>	<p><b>Condition State 3</b> Horizontal surface check on a sawn timber beam with internal decay (plant growth with 10-20% section loss)</p>

<b>Timber Superstructure Elements</b>	
<b>Condition Rating Examples (Timber Superstructure Elements)</b>	
 <p><b>Condition State 3</b> Sawn timber beam fractured at pier bearing</p>	 <p><b>Condition State 4</b> Fire damage on a sawn timber beam (severe charring with more than 20% section loss)</p>
 <p><b>Condition State 4</b> Severe internal decay (more than 20% section loss) on a sawn timber beam</p>	 <p><b>Condition State 4</b> Severe crushing (failure) of a sawn timber beam</p>

**B.3.8.11 Timber Substructure Elements**

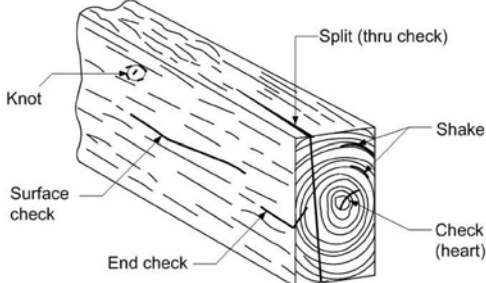
<b>Timber Substructure Elements</b>				
<b>#208: Timber Trestle Tower (LF)</b> <b>#216: Timber Abutment (LF)</b>		<b>#235: Timber Pier/Bearing Cap (LF)</b>		
These elements apply to timber substructure members of any type or shape. <ul style="list-style-type: none"> <li>• If impact damage is present, Element #880 (Impact Damage) must be added and rated.</li> <li>• If settlement is evident, Element #884 (Settlement) must be added and rated.</li> <li>• If scour is present, Element #885 (Scour) must be added and rated.</li> </ul>				
Item or Defect	<b>Condition States</b>			
	<b>1</b> <b>Good</b>	<b>2</b> <b>Fair</b>	<b>3</b> <b>Poor</b>	<b>4</b> <b>Severe</b>
<b>Structural Review</b>	Structural review is not required.	Structural review is not required.	Structural review is not required <b>or</b> structural review has determined that the strength of the element has not been impacted.	Condition warrants structural review <b>or</b> structural review has determined that the strength of the element has been reduced.
<b>Repairs</b>	No repairs are present.	Existing repair in sound condition.	Repairs are recommended <b>or</b> existing repair is unsound.	Immediate repairs are required.
<b>Decay, Weathering, Abrasion, or Fire Damage</b>	Minor deterioration (no section loss).	Less than 10% section loss. Staining. Soot (superficial charring).	10% to 20% section loss. Negative camber. Significant charring.	More than 20% section loss. Crushing or severe sagging. Severe charring.
<b>Connection or Misalignment</b>	Components are properly aligned and securely connected.	Loose fasteners or slight misalignment of components.	Fasteners broken or missing. Components loose or significantly misaligned.	Failed connections. Components severely misaligned or missing.
<b>Settlement, Scour, or Undermining</b>	None	Slightly tipped or undermined. Within tolerable limits or arrested.	Significantly tipped or undermined. Exceeds tolerable limits.	Severely tipped or undermined. Stability of element has been reduced.
<b>Shakes, Checks, or Splits</b>	Penetrates less than 5% of member thickness.	Penetrates 5% to 50% of member thickness in a non-tension zone.	Penetrates more than 50% of member thickness (or more than 5% in a tension zone).	Severe splitting that impacts the stability or capacity of the element.
<ul style="list-style-type: none"> <li>• <b>Shake:</b> A separation along the grain (between the growth rings). Usually forms within a standing tree or during felling.</li> <li>• <b>Check:</b> A separation perpendicular to the grain (across the growth rings). Usually results from stress due to drying shrinkage.</li> <li>• <b>Split (or Thru Check):</b> A check extending further through the timber member due to tearing apart of wood cells.</li> </ul>			<p>The diagram illustrates a cross-section of a timber member with several defects labeled: Knot (a dark circular inclusion), Surface check (a crack on the top surface), End check (a crack at the end of the member), Split (thru check) (a crack running through the length of the member), Shake (a separation along the grain), and Check (heart) (a crack across the grain near the center).</p>	

<b>Timber Substructure Elements</b>	
<b>Condition Rating Examples (Timber Substructure Elements)</b>	
	
<p><b>Condition State 2</b>                      Checking on a timber abutment bearing cap                      (less than 50% of member thickness)</p>	<p><b>Condition State 2</b>                      Timber pier cap with checking, staining, and                      internal decay (less than 10%)</p>
	
<p><b>Condition State 3</b>                      Split on the end of a timber abutment bearing cap                      (more than 50% of member thickness)</p>	<p><b>Condition State 3</b>                      Fire damage on timber abutment                      (significant charring with 10% to 20% section                      loss)</p>


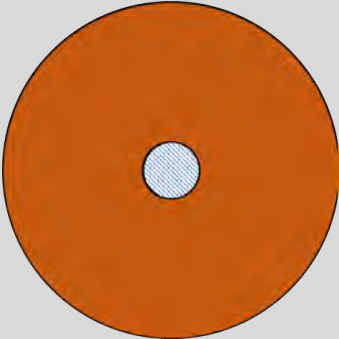
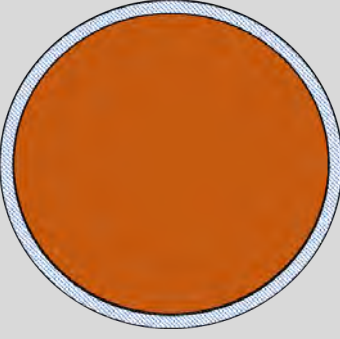
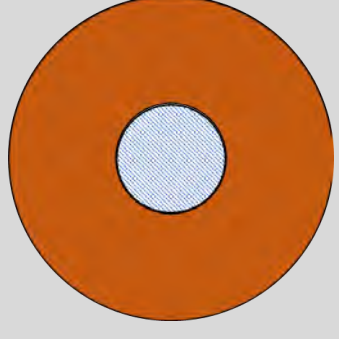
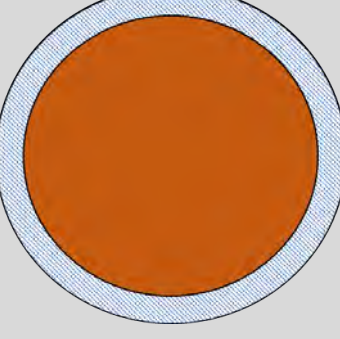
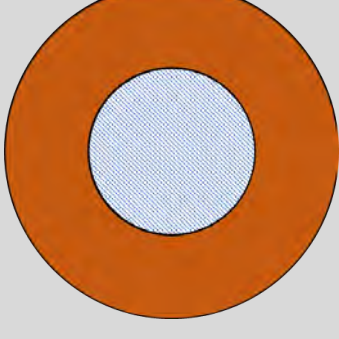
<b>Timber Substructure Elements</b>	
<b>Condition Rating Examples (Timber Substructure Elements)</b>	
	
<p><b>Condition State 3</b> Timber cap with significant misalignment (tipped) - not bearing fully on the timber pile</p>	<p><b>Condition State 3</b> Timber abutment significantly undermined</p>
	
<p><b>Condition State 4</b> Failure of abutment backing planks</p>	<p><b>Condition State 4</b> Timber pier cap with severe decay and crushing</p>

**B.3.8.12 Timber Piling and Column Elements**

<b>Timber Piling and Column Elements</b>	
<b>#206: Timber Column (Each)</b>	<b>#228: Timber Piling (Each)</b>
<p>The element quantity should include all timber piling or timber columns present on the bridge that serve as a primary support on a pier or abutment, or resist backfill (such as wingwall piling).</p>	
<p>Element #206 (timber column) refers to vertical timber members bearing on a footing or other support. Columns are not driven into the ground with a pile hammer. Timber columns are typically sawn timbers with a square cross-section. Timber columns are only present on a handful of bridges in Minnesota.</p> <p>Element #228 (timber piling) refers to vertical timber members that have been driven into the ground using a pile hammer. Timber pilings typically have a round cross-section.</p>	 <p style="text-align: center;"><b>Square Timber Columns on the Pier of a Railroad Bridge</b></p>
<p>On pressure treated timber members, the preservative doesn't penetrate through the entire cross-section. The center core is typically left untreated. Untreated timber will decay when it is exposed to both moisture and oxygen. Checks, splits, and drilled field connections allow water and air to penetrate into the untreated core.</p> <p>Timber pilings are sawn off in the field to get a level bearing surface, making the exposed end grain on the top of the pile susceptible to decay. Zinc-coated steel sheets are often placed on top of cut-off timber piling to protect the exposed end grain.</p> <p>Locations to inspect timber pilings for decay include the waterline, ground line, the sawed off top, and bracing connections. Hammer sounding or probing can determine if internal cavities are present. If decay is evident, advanced inspection techniques such as a timber resistance drill are recommended.</p>	 <p style="text-align: center;"><b>Severe Internal Decay on a Timber Pier Piling (the outer portion was treated with preservative and remains intact)</b></p>
<p>Timber pier piling have poor durability and should be closely inspected for decay. Shell damage near the waterline due to ice or flood debris is common on timber pier piling. Widely spaced pier piling, and end pier piling are of particular concern. If the end piling on a pier were to fail, the timber cap might not be capable of supporting a cantilever load.</p> <p>By the 1980's, the use of timber piling on bridge piers was strongly discouraged, and use of timber piling was limited to abutments and wingwalls. Since the 1990's, timber pilings are no longer used for bridge pier or abutment supports and are only allowed for wingwalls.</p>	 <p style="text-align: center;"><b>Timber Pier Piling with Shell Damage near the Waterline</b></p>

<b>Timber Piling and Column Elements</b>				
		<b>#206: Timber Column (Each)</b>		<b>#228: Timber Piling (Each)</b>
<p>These elements apply to timber columns or pilings. Element #206 refers to vertical members bearing on a footing or support. Element #228 refers to piling that are driven into the ground. These are “Each” quantities, so a condition state rating must be determined for each column or piling.</p> <ul style="list-style-type: none"> <li>• If impact damage is present, Element #880 (Impact Damage) must be added and rated.</li> <li>• If tipping is evident, Element #884 (Settlement/Movement) must be added and rated.</li> <li>• If scour is present, Element #885 (Scour) must be added and rated.</li> </ul>				
Item or Defect	Condition States			
	1 Good	2 Fair	3 Poor	4 Severe
<b>Structural Review</b>	Structural review is not required.	Structural review is not required.	Structural review is not required <u>or</u> structural review has determined that the strength has not been impacted.	Condition warrants structural review <u>or</u> structural review has determined that the strength has been reduced.
<b>Repairs</b>	No repairs are present.	Existing repair is in sound condition.	Repair is recommended <u>or</u> existing repair is unsound.	Immediate repair is required.
<b>Decay, Abrasion, or Fire Damage</b>	Minor deterioration (no section loss).	Less than 10% section loss. Staining or soot (superficial charring).	10% to 20% section loss. Significant charring.	More than 20% section loss. Crushing. Severe charring.
<b>Connection or Misalignment</b>	Components are properly aligned and securely connected.	Loose fasteners or slight misalignment of components.	Fasteners broken or missing. Components loose or significantly misaligned.	Failed connections. Components severely misaligned.
<b>Distortion or Settlement</b>	None	Slightly tipped, bowed, settled, or misaligned.	Significantly tipped, bowed, settled, or misaligned.	Severely tipped, bowed, or misaligned. Stability has been reduced.
<b>Scour</b>	None	Within tolerable limits or arrested.	Exceeds tolerable limits but less than critical scour limits.	Exceeds the critical scour limits.
<b>Shakes, Checks, or Splits</b>	Penetrates less than 5% of member thickness.	Penetrates 5% to 50% of member thickness.	Penetrates more than 50% of member thickness.	Severe splitting that impacts the stability or capacity of the element.
<ul style="list-style-type: none"> <li>• <b>Shake:</b> A separation along the grain (between the growth rings). Usually forms within a standing tree or during felling.</li> <li>• <b>Check:</b> A separation perpendicular to the grain (across the growth rings). Usually results from stress due to drying shrinkage.</li> <li>• <b>Split (or Thru Check):</b> A check extending further through the timber member due to tearing apart of wood cells.</li> </ul>			 <p>The diagram illustrates a cross-section of a timber member with several defects labeled: Knot (a dark circular inclusion), Surface check (a crack on the top surface), End check (a crack at the end of the member), Split (thru check) (a crack running through the length of the member), Shake (a separation along the grain), and Check (heart) (a crack across the grain near the center).</p>	



<b>Timber Piling and Column Elements</b>	
<b>Condition Rating Examples (Timber Piling and Column Elements)</b>	
<p>The diagrams below show round timber piling with varying degrees of external shell damage or internal decay, and are intended to assist inspectors in estimating section loss and determining the element condition state. These are all based on a 12" diameter pile. The hatched areas represent decayed areas (section loss). The actual pile diameter should be verified in the field and noted in the inspection report.</p>	
	
<p><b>Condition State 2 (9% section loss)</b> 12" diameter timber pile with 1/4" section loss around the perimeter (11.5" diameter remains)</p>	<p><b>Condition State 2 (3% section loss)</b> 12" diameter timber pile with a 2" diameter void in the center of pile</p>
	
<p><b>Condition State 3 (15% section loss)</b> 12" diameter timber pile with 1/2" section loss around the perimeter (11" diameter remains)</p>	<p><b>Condition State 3 (11% section loss)</b> 12" diameter timber pile with a 4" diameter void in the center of pile</p>
	
<p><b>Condition State 4 (31% section loss)</b> 12" diameter timber pile with 1" section loss around the perimeter (10" diameter remains)</p>	<p><b>Condition State 4 (25% section loss)</b> 12" diameter timber pile with a 6" diameter void in the center of pile</p>

**Timber Piling and Column Elements**

**Condition Rating Examples (Timber Piling and Column Elements)**



**Condition State 2**  
 Timber piling with decay at waterline  
 (less than 10% section loss)



**Condition State 2**  
 Surface check extending less than 50% through  
 the pile diameter



**Condition State 3**  
 Shell damage (1/2" deep) on a timber piling  
 (approximately 15% section loss)



**Condition State 3**  
 Surface check extending more than 50% through  
 the pile diameter

**Timber Piling and Column Elements**

**Condition Rating Examples (Timber Piling and Column Elements)**



**Condition State 4**  
Severe internal decay (more than 20% section loss) on a timber abutment pile



**Condition State 4**  
Fire damage on a timber pile (severe charring approximately 1" deep - 30% section loss)

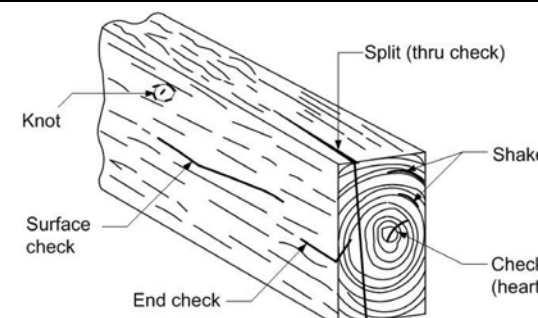


**Condition State 4**  
Shell damage (1" deep) on a timber abutment pile (approximately 30% section loss)



**Condition State 4**  
Timber pier pile is bulging due to crushing (failure may be imminent)

**B.3.10.4 Timber Culvert (Element #242)**

<b>#242: Timber Culvert (LF)</b>				
This element applies to timber box culverts. There are about 40 timber box culverts on the Minnesota bridge inventory, constructed from 1936 to 1987. The longest span is 10 ft. (most have multiple barrels). The LF quantity is measured along the length of the culvert barrel (and multiplied by the number of barrels).				
Item or Defect	Structural Element Condition States			
	1 Good	2 Fair	3 Poor	4 Severe
<b>Structural Review or Repairs</b>	No structural repairs are present.	Structural review or repairs are not required. Existing repairs are in sound condition.	Repairs recommended (structural review not required) <b>or</b> structural review has determined that strength or serviceability has not been impacted.	Condition warrants structural review <b>or</b> structural review has determined that the defects impact strength or serviceability.
<b>Decay, Weathering, Abrasion, or Fire Damage</b>	Minor deterioration (no section loss).	Less than 10% section loss. Staining or soot (superficial charring).	10% to 20% section loss. Negative camber. Significant charring.	More than 20% section loss. Crushing or severe sagging. Severe charring.
<b>Connection or Misalignment</b>	Components properly aligned and securely connected.	Loose fasteners or slight misalignment of components.	Fasteners broken or missing. Components loose or significantly misaligned.	Failed connections. Components severely misaligned.
<b>Joint Separation or Backfill Infiltration</b>	None	Minor joint separation or backfill infiltration.	Moderate joint separation or backfill infiltration.	Severe joint separation or backfill infiltration.
<b>Distortion or Settlement (Longitudinal Deflection)</b>	None	Slight distortion or deflection (within tolerable limits).	Significant distortion or longitudinal deflection (exceeds tolerable limits).	Severe distortion or deflection. Stability of culvert has been reduced.
<b>Scour</b>	None	Within tolerable limits or counter measures installed.	Exceeds tolerable limits but less than critical scour limits.	Exceeds the critical scour limits.
<b>Shakes, Checks, or Splits</b>	Less than 5% of the member thickness.	5% to 50% of the member thickness (not in a tension zone).	More than 50% of member thickness (or more than 5% in a tension zone).	Severe splitting that impacts the stability or capacity of the element.
<ul style="list-style-type: none"> <li>• <b>Shake:</b> A separation along the grain (between the growth rings). Usually forms within a standing tree or during felling.</li> <li>• <b>Check:</b> A separation perpendicular to the grain (across the growth rings). Usually results from stress due to drying shrinkage.</li> <li>• <b>Split (or Thru Check):</b> A check extending further through the timber member due to tearing apart of wood cells.</li> </ul>				

**#242: Timber Culvert (LF)**

**Condition Rating Examples (Timber Culverts)**



**Condition State 2**  
Separation between timber members on a timber box culvert (no backfill infiltration)



**Condition State 2**  
Evidence of decay along the waterline of a timber box culvert



**Condition State 3**  
Wall section misaligned on a timber box culvert



**Condition State 4**  
Separation (connection failure) between wall and ceiling on a timber box culvert



# MnDOT Bridge Safety Inspection Certification Information

(Effective June 6, 2024)

Certification in Bridge Safety Inspection (the inspection of in-service bridges and culverts) is coordinated by the MnDOT Bridge Office. It is separate from other MnDOT technical certifications. The requirements listed below have been developed by the MnDOT Bridge Office to comply with Section 650.309 of the National Bridge Inspection Standards (NBIS), as outlined in the Federal Code of Regulations.

## MnDOT Bridge Inspection Team Leader Qualifications

The NBIS outlines four methods to qualify as a Bridge Inspection Team Leader, all of them require the successful completion of a FHWA approved comprehensive bridge inspection training course (see below). MnDOT recognizes all four certification options but requires an additional field proficiency test for all Bridge Inspection Team Leaders.

1. Be a registered professional engineer in the state of Minnesota, have six months of bridge inspection experience, successfully complete a FHWA approved comprehensive bridge inspection training course, **and pass a field proficiency test** administered by the MnDOT Bridge Office.
2. Have five years of bridge inspection experience, successfully complete a FHWA approved comprehensive bridge inspection training course, **and pass a field proficiency test** administered by the MnDOT Bridge Office.
3. Have a bachelor's degree in engineering from an accredited college or university, successfully pass the Fundamentals of Engineering (FE or EIT) Examination, have two years of bridge inspection experience, successfully complete an FHWA approved comprehensive bridge inspection training course, and **pass a field proficiency test** administered by the MnDOT Bridge Office.
4. Have an associate degree in engineering or engineering technology from an accredited college or university, have four years of bridge inspection experience, successfully complete an FHWA approved comprehensive bridge inspection training course, **and pass a field proficiency test** administered by the MnDOT Bridge Office.

## Bridge Inspection Experience Requirements

The NBIS defines bridge inspection experience as follows. *Active participation in bridge inspections in accordance with the NBIS, in either a field inspection, supervisory, or management role. A combination of bridge design, bridge maintenance, bridge construction and bridge inspection experience, with the predominant amount in bridge inspection, is acceptable.*

When determining if an individual meets the NBIS bridge inspection requirements, the MnDOT Bridge Office will also consider experience in bridge design, bridge maintenance, or bridge construction. Past experience in these areas should be described when filling out the application for the MnDOT Bridge Inspection Field Proficiency Test. Please contact the MnDOT Bridge Office for any questions regarding bridge inspection experience requirements.

## NHI Bridge Safety Inspection Training

To qualify as a Bridge Inspection Team leader, the National Bridge Inspection Standards require the completion of an FHWA approved comprehensive bridge inspection training course. Two such courses are offered by the National Highway Institute (NHI). For certification in the state of Minnesota, either of these two courses (taken in any state) is acceptable, as long as the course was officially sanctioned by the NHI/FHWA. A completion certificate must be presented to the MnDOT Bridge Office.

- **NHI 130055 - Safety Inspection of In-Service Bridges**
- **NHI 130056 - Safety Inspection of In-Service Bridges for Professional Engineers**

MnDOT offers the NHI Training Course 130055 - Safety Inspection of In-Service Bridges once a year (typically in February or March) at the [Shoreview Training and Conference Center](#). This 10-day course was developed by the National Highway Institute (NHI), and provides detailed instruction on the inspection, evaluation, and condition rating of in-service bridges. This course is based upon the FHWA Bridge Inspectors Reference Manual (BIRM) and the AASHTO Manual for Bridge Element Inspection. 2023 cost was \$2,300 per participant. Please keep in mind that there is high demand for this course. It usually fills up shortly after registration opens.

- MnDOT employees should register through their Employee Development Specialist (EDS) Training Representative.
- Non-MnDOT employees must register directly through the [National Highway Institute](#) web site.

## NHI Prerequisite Training Requirements

In 2012, the FHWA and NHI added new prerequisite requirements for course 130055 “Safety Inspection of In-Service Bridges”. Two free online prerequisite course options are available through the [National Highway Institute](#) web site. You will need to register on the NHI site and get a password. To find these training courses, click on “Register for a Course”, then click on “Find Training Courses”, enter the course number, and click “Search”. **Note: these prerequisite courses are only considered valid for two years. You must bring a copy of your completion certificate to the first day of the 10-day course.**

1. **NHI Course 130101A** (Prerequisite Assessment for Safety Inspection of In-Service Bridges): This is an online assessment divided into three sections. You need to pass each section with a score of 70% or higher. This assessment should take about 1 hour. *Note: you should only take this 1 hour assessment if you feel confident in your knowledge of the topics listed in the “outcomes for NHI Course 13101” (see course description on the NHI web site). If you do not pass this course, you will need to take the NHI Course 130101.*
2. **NHI Course 130101** (Introduction to Safety Inspection of In-Service Bridges): This is an online tutorial and assessment that takes about 14 hours to complete. It includes the same assessment format as NHI Course 130101A (three sections). You need to pass each section with a score of 70% or higher.

Note: while the 5-day NHI Course 130054 “Engineering Concepts for Bridge Inspectors” is also considered to be a valid prerequisite option, this course is no longer offered by MnDOT. Like the other prerequisite options, this course is only considered to be valid for 2 years.



## **MnDOT Bridge Inspection Field Proficiency Test**

In addition to the training and experience requirements outlined in the NBIS, MnDOT requires a separate field proficiency test to become certified as a Bridge Inspection Team Leader. The purpose of this test is to ensure compliance with the NBIS standards, to improve the quality of bridge inspections, and to increase the statewide consistency of bridge condition ratings. To schedule a field proficiency test, an application form must be submitted to MnDOT Bridge Office. Field tests are typically scheduled between May and October due to weather issues.

The test consists of a routine inspection of an in-service bridge (based upon the MnDOT Bridge Inspection Manual and Inspection Report Format). The inspector is given 3 hours to examine a bridge, take notes, and determine the NBI & structural element condition ratings.

Grading of the field proficiency test is determined by comparing the candidate's inspection report to a reference inspection report. Emphasis is placed on the overall completeness and accuracy of the report, and on the proper documentation of any critical structural or safety conditions. Scoring is based on a percentage scale of 0-100, with a passing score being **75%** or higher. Applicants who fail the field proficiency test may apply again after 6 months. The score is weighted using the following criteria:

- NBI condition ratings 30%
- Structural element condition ratings 30%
- Defect & Other element ratings 10%
- Inspection Notes 30%

## **Bridge Inspection Team Leader Expiration & Re-certification**

Certification as a Bridge Inspection Team Leader must be renewed every 5 years. The 5-year certification period ends on March 31<sup>st</sup> of the 5<sup>th</sup> year. Per the NBIS, Bridge Inspection Team Leaders must complete a cumulative total of 18 hours of bridge inspection refresher training over each 5-year period. There are two refresher training options:

- Successfully complete a minimum of three one-day Bridge Safety Inspection Refresher Training Seminars during the five-year certification period.
- Attend the 18-hour NHI bridge inspection refresher training course (NHI 130053) during the five-year certification period.



## BSIPM Chapter D - Bridge Signage Revisions (2024)

### D.7.8.5 Posted Load (MnDOT Item)

This item indicates the presence and type of load posting signage at the bridge site. The actual limit in tons to be used on signs is specified in section [D.7.6.6](#) (Bridge Posting).

[Minnesota Statute 165.03](#), Subdivision 6a(c) requires that a bridge must be posted if the "maximum legal load under state law exceeds the load permitted on the structure under the operating rating stress level assigned". Guidance for load posting signage is in the MnMUTCD Section 2B.59.1 and the MnDOT Traffic Engineering Manual (6-5.7).

If a load rating determines that a weight restriction is required on a bridge or culvert, the type of load posting sign (as well as the specific posting limits) will be displayed on the header of the Minnesota Bridge Inspection Report and in the bottom-right corner of the Minnesota Structure Inventory Report. The load posting sign should be the same as that displayed on these reports. The load posting sign types and codes are displayed as follows.

ITEM	DISPLAY	DESCRIPTION
0	NOT REQUIRED	No Load Posting Signs are Required
1	VEHICLE ONLY	Vehicle Limit Only (Type R12-1)
2	VEHICLE & SEMI	Vehicle and Semi-Trailer Limits (Type R12-5)
3	BRIDGE CLOSED	Bridge Closed (Type R11-2A)
4	PERMIT	Permit Weight Limit (Type R12-X11)
5	SHV	Specialized Hauling Vehicle Weight Limit (Type R12-5A)
6	SHV	Specialized Hauling Vehicle Weight Limit (Type R12-5M)

- When a restriction on a bridge applies to the gross load of a vehicle, the Bridge Weight Limit sign (R12-1) shall be installed immediately in advance of the bridge.
- When a bridge is restricted for specific load limits, the Weight Limit Sign (R12-5) shall be installed immediately in advance of the bridge.
- The R12-5M sign is used when only the single unit truck (SHV - Specialized Hauling Vehicle) needs posting.

Advanced signs (such as R12-5 Supplement, R12-X2, R12-X2a, or R12-X4) should also be placed at the nearest intersecting road, or at a wide point in the roadway, so that the motorist can turn around to avoid the restriction.

When a load rating is completed and indicates a bridge is to be posted, **the posting signs must be erected within 30 days after notification of their requirement**. If there are significant changes in the bridge condition or in the posted weight, temporary signs should be erected in the interim. When a load rating is completed and indicates a bridge is to be posted, it is mandatory that the bridge be posted unless the Bridge Owner elects to provide expedited repairs to strengthen the bridge to carry legal loads.

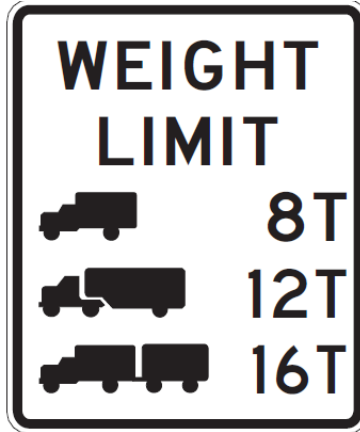
Inspectors should confirm that load posting signs are present either on or immediately in front of the bridge and note if advanced signs are present. If the load posting signs are missing, or the posting differs from what is shown on the inspection report, rate Element #890 in Condition State 4 and notify the PA and bridge owner immediately.

# BSIPM Chapter D - Bridge Signage Revisions (2024)

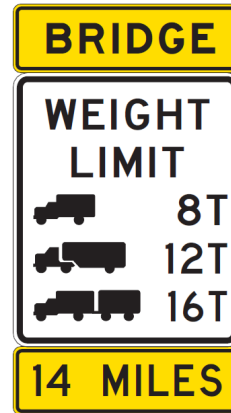
## Weight Restriction Sign Types



R12-1



R12-5



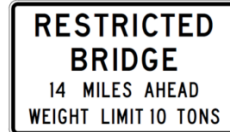
R12-5 with Supplements



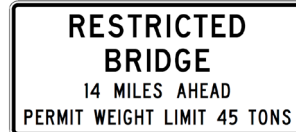
R12-5M (MN Design)



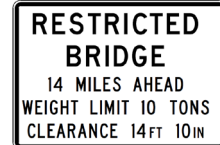
R12-X11 (MN Design)



R12-X2 (MN Design)



R12-X2a (MN Design)



R12-X4 (MN Design)

## BSIPM Chapter D - Bridge Signage Revisions (2024)

### D.7.8.6 Traffic Signs (MnDOT Item)

This item identifies bridges that require regulatory traffic control signs that may or may not be related to weight restrictions. Requirements for traffic control signs are coded and displayed as follows.

CODE	DISPLAY	DESCRIPTION
0	NOT REQUIRED	No Traffic Restriction Signs Required
1	SPEED LIMIT	Bridge Speed Limit (Type R2-X5)
2	ONLY 1 TRUCK	Lane Restriction (Trucks/Vehicles Must Not Meet On Bridge)
3	SPEED LIMIT & 1 TRUCK	Combination of 1 & 2
4	NO STOPPING	No stopping on bridge

#### Bridge Speed Limit Sign




If it is determined that a "Bridge Speed Limit" sign (R2-X5) is required, they shall be placed 100 ft. before each end of the structure. See Section 2B.13.1 of the [MN MUTCD](#).

#### Trucks/Vehicles Must Not Meet on Bridge Signs

As outlined in Section 2B.59.1 of the [MN MUTCD](#), a "Trucks Must Not Meet on Bridge" sign (R12-X3) should be installed in advance of bridges carrying two-way traffic if it meets at least one of the following conditions:

- The bridge roadway width is more than 18 ft. and less than 20 ft., the approach alignment is poor, and the structure type is such that commercial vehicles cannot pass safely on the bridge; or
- Where a restriction on the meeting or passing of commercial vehicles would increase the load capacity of the structure.

As outlined in Section 2B.59.1 of the [MN MUTCD](#), a "Vehicles Must Not Meet on Bridge" sign (R12-X3a) should be installed in advance of bridges carrying two-way traffic if the bridge roadway clear opening width is 16 ft. or less.

Traffic Sign Types		
 <p><b>R2-X5</b></p>	 <p><b>R12-X3 (MN Design)</b></p>	 <p><b>R12-X3a (MN Design)</b></p>

### D.7.8.7 Horizontal Clearance Signs (MnDOT Item)

This item identifies bridges that require horizontal restriction signage (Narrow Bridge or One Lane Bridge) due to limited horizontal clearance or bridges that present a roadway obstruction that requires object markers.

## BSIPM Chapter D - Bridge Signage Revisions (2024)

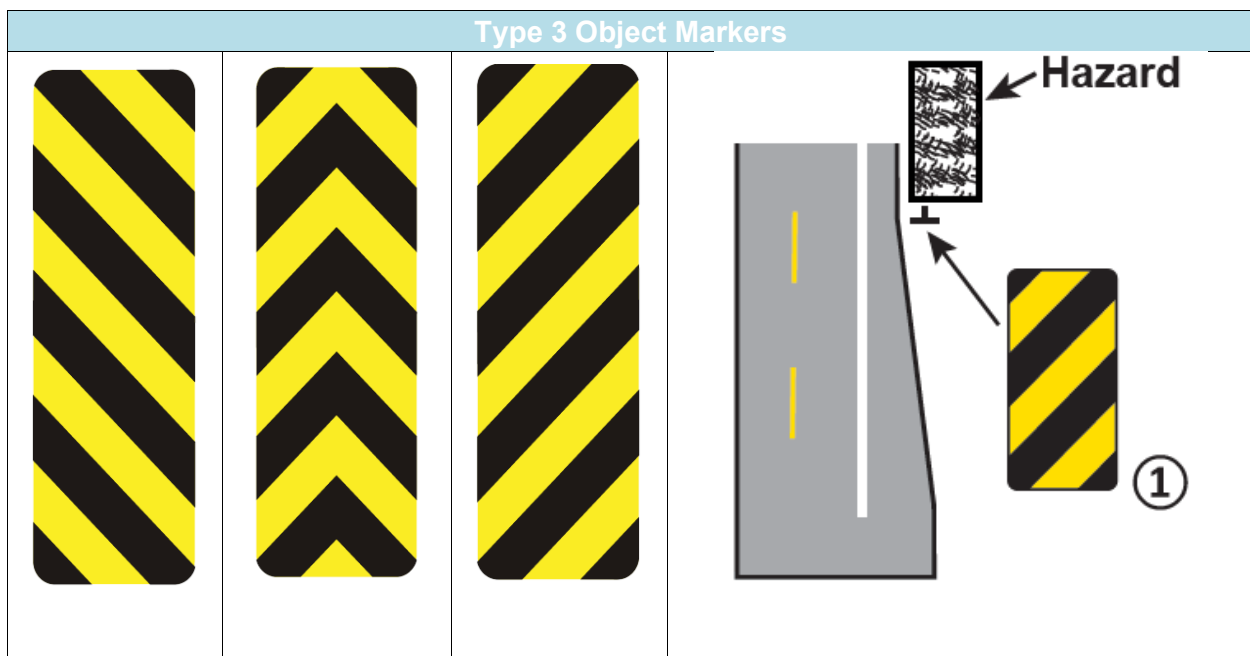
CODE	DISPLAY	DESCRIPTION
0	NOT REQUIRED	No Horizontal Clearance Signs Required
1	OBJECT MARKERS	Type 3 Object Markers
2	WIDTH RESTRICTION	Width Restrictions (Narrow Bridge or One Lane Bridge Sign)
3	OBJECT MARKERS & WIDTH	Combination of 1 & 2

### Type 3 Object Markers

Obstructions such as bridge abutments, piers, or railings located within the width of the approach shoulders should be delineated by Type 3 Object Marker. See Section 2C.63 - 2C.64 of the [MN MUTCD](#) and Section 6-14.3.1 of the MnDOT Traffic Engineering Manual.

A Type 3 Object Marker is not required at a bridge abutment if guardrail is upstream of and attached to the bridge abutment and has a crash attenuator with an object marker sticker.

Type 3 Object Markers (OM-3L, OM-3C, or OM-3R) have alternating black and yellow stripes sloping downward toward the side of the obstruction on which traffic is to pass. The inside edge of the object marker should be in line with the inner edge of the obstruction.



### Narrow Bridge and One Lane Bridge Signs

As outlined in Section 2C.20 of the [MN MUTCD](#), a "Narrow Bridge" sign (type W5-2) should be placed in advance of a bridge (or culvert) if it meets at least one of the following conditions:

- The structure carries two-way traffic and has a roadway width greater than 18 feet, but this width is less than the approach roadway width; or
- The roadway clearance on the bridge is less than the width of the approach travel lanes (the approach shoulder width is not included).

## BSIPM Chapter D - Bridge Signage Revisions (2024)

A Narrow Bridge sign may be used in advance of a bridge or culvert if the approach shoulders are narrowed or eliminated.

As outlined in Section 2C.21 of the [MN MUTCD](#), a "One Lane Bridge" sign (W5-3) should be placed in advance of bridges (or culverts) carrying two-way traffic if it meets at least one of the following conditions:

- The clear roadway width is less than 16 feet.
- The clear roadway width is less than 18 feet, and commercial vehicles constitute a high proportion of traffic.
- The clear roadway width is less than 18 feet, and the sight distance is limited on the approach to a structure.



## BSIPM Chapter D - Bridge Signage Revisions (2024)

### D.7.8.8 Vertical Clearance Signs (MnDOT Item)

This item identifies bridges that require signing due to limited vertical clearances.




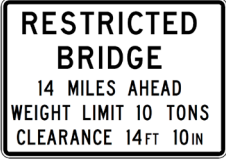
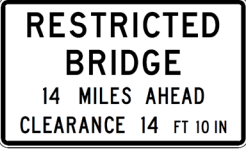
CODE	DISPLAY	DESCRIPTION
N	NOT APPLICABLE	Not applicable (No Vertical Restriction)
0	NOT REQUIRED	No Vertical Clearance Signs Required (Vertical Clearance is 14'-6" or greater)
1	ROADWAY RESTRICTION	Vertical Clearance Restriction on Roadway (Type W12-2 or W12-2a)
2	SHOULDER RESTRICTION	Vertical Clearance Restriction on Shoulder (Arch Bridges - Type W12-X2)

The maximum vehicle height in the state of Minnesota is 13'-6". Based upon Section 2C.27 of the [MN MUTCD](#), the "Low Clearance" (W12-2) sign shall be installed if vertical clearance under a bridge is less than 14'-6". Low clearance signs should be installed on and in advance of the structure. If the sign is mounted on the bridge, it should be the rectangular (W12-2a) sign. On arch bridges, or when the clearance varies greatly, the W12-X2 Vertical Clearance sign shall be used. The arrow indicates the location of the height specified on the sign.

If the vertical clearance is less than 13'-6", advanced warning signs (W12-2 with a supplemental distance plaque, R12-X4, or R12-X4a) should be placed at the nearest intersecting road or at a wide point in the road at which an over height vehicle can detour or turn around.

Low clearance signs should display the vertical clearance to the nearest 1 inch (not exceeding the actual clearance). In areas where roadways are subjected to frost heave, an allowance of up 3 inches may be reflected in the signing. For example, if the actual clearance is 13'-9", the signs might read 13'-6".

Bridge clearance measurements should be performed periodically, especially if the roadway has been resurfaced. The posted clearance should be noted on the inspection report to verify that it correlates with the structure inventory.

Low Vertical Clearance Sign Types		
 <p><b>W12-2</b></p>	 <p><b>W12-2a</b></p>	 <p><b>W12-X2</b></p>
	 <p><b>W12-X4 (MN Design)</b></p>	 <p><b>W12-X4a (MN Design)</b></p>



## SNBI BRIDGE CONDITION AND APPRAISAL RATINGS

The NBI bridge condition and appraisal ratings were introduced in 1971 with the National Bridge Inspection Standards (NBIS). They were substantially revised and expanded with the 2022 FHWA Specifications for the National Bridge Inventory (SNBI). Minnesota will begin using the SNBI condition and appraisal ratings in 2025.

### B.2.1 SNBI BRIDGE COMPONENT CONDITION RATINGS

The 13 SNBI condition ratings are rated on a numerical scale of 0 to 9, with "9" being new condition and "0" being failed condition. The applicable SNBI condition ratings should be reviewed and adjusted (if necessary) during each inspection.

- Deck Condition Rating (SNBI Item B.C.01)
- Superstructure Condition Rating (SNBI Item B.C.02)
- Substructure Condition Rating (SNBI Item B.C.03)
- Culvert Condition Rating (SNBI Item B.C.04)
- Bridge Railing Condition Rating (SNBI Item B.C.05)
- Bridge Railing Transitions Condition Rating (SNBI Item B.C.06)
- Bridge Bearing Condition Rating (SNBI Item B.C.07)
- Bridge Joint Condition Rating (SNBI Item B.C.08)
- Channel Condition Rating (SNBI Item B.C.09)
- Channel Protection Condition Rating (SNBI Item B.C.10)
- Scour Condition Rating (SNBI Item B.C.11)
- NSTM Inspection Condition (SNBI Item B.C.14)
- Underwater Inspection Condition (SNBI Item B.C.15)

The general overall condition of a bridge is rated using three primary components - Deck (B.C.01), Superstructure (B.C.02), and Substructure (B.C.03). The Bridge Railing (B.C.05), Bridge Transitions (B.C.06), Bridge Bearing (B.C.07), and Bridge Joint (B.C.08) items must be rated if they are applicable.

- On filled spandrel arch bridges (or rigid frame bridges under fill), the SNBI Superstructure and Substructure items are be rated, but the SNBI Deck item should be entered as "N".
- For slab span bridges, the SNBI Deck and Superstructure ratings should be the same.

The general overall condition of a culvert is rated using a single component (SNBI Item B.C.04). This rating should consider the condition of the culvert barrel, joints, and seams, as well as any deflection, distortion, misalignment, settlement, scour, or voiding of backfill. Headwalls, wingwalls or aprons (up to the first construction joint) should be included in this rating. The Bridge Railing (B.C.05) and Bridge Transitions (B.C.06) must be rated if they are applicable.

If a bridge spans over a waterway (or if water flows through a culvert), the SNBI Channel (B.C.09), Channel Protection (B.C.10), and Scour (B.C.11) items must be rated. In some instances, SNBI Channel Protection item may be coded as "N" if not applicable.

The NSTM Inspection Condition (SNBI Item B.C.14) is typically rated only during NSTM (Nonredundant Steel Tension Members) inspections. The Underwater Inspection Condition (SNBI Item B.C.15) is typically rated only during Underwater inspections.

Temporary supports (shoring, bracing, or underpinning) should generally not improve the SNBI condition rating. The load carrying capacity should not be considered when determining SNBI condition ratings.

MnDOT has created a table for each component condition rating in an effort to maintain consistent condition ratings. The component condition tables in this manual are based on the general guidance in SNBI Table 20, specific component guidance in SNBI section 7.1, and the defect tables in SNBI Appendix C. The guidance in the MnDOT tables is organized with bullet points for specific each materials, so an inspector can clearly see the distinction between each condition level. The MnDOT tables are limited to one page per item, so all possible defects could not be included. If conditions are present that are not described in the tables, the inspector should use their best judgment when determining the component condition rating.

SNBI condition ratings and are used to calculate the Bridge Performance Index (BPI) and Local Planning Index (LPI). The BPI and LPI are used to prioritize bridge replacement and repair funding in our Bridge Management System (BMS). SNBI condition ratings can impact required inspection intervals.

SNBI Table 20 - General Guidelines for Bridge Component Condition Ratings		
Code	Display	General Guidance
N	Not Applicable	Component does not exist.
9	Excellent	Isolated inherent defects.
8	Very Good	Some inherent defects.
7	Good	Some minor defects.
6	Satisfactory	Widespread minor or isolated moderate defects.
5	Fair	Some moderate defects. Strength and performance of the component is not affected.
4	Poor	Widespread moderate or isolated major defects. Strength and/or performance of the component is affected.
3	Serious	Major defects. Strength and/or performance of the component is seriously affected. Corrective actions, structural analysis, frequent monitoring, or load restrictions are typically required.
2	Critical	Major defects. Component is severely compromised. Frequent monitoring, significant load restrictions, or corrective actions required to keep the bridge open. Specific reporting and follow-up procedures are required for critical findings.
1	Imminent Failure	Bridge is closed to traffic due to component condition. Repair or rehabilitation may return the bridge to service.
0	Failed	Bridge is closed due to component condition and is beyond corrective action. Replacement is required to restore service.

**SNBI Defect Definitions:** SNBI Table 20) is based on a 4-level defect system similar to the AASHTO element-level defects.

- **Inherent Defect:** Superficial defect that is not indicative of damage or deterioration. An inherent defect is a normal characteristic of the material or results from standard fabrication or construction practices. Examples include a patched form hole in a concrete abutment, a ground out rolling defect on a steel beam, or a knot in a sawn timber beam.
- **Minor Defect:** Damage or deterioration has initiated but is not yet considered significant. Examples include shrinkage cracks in concrete, surface corrosion in steel, or checking in timber.
- **Moderate Defect:** Damage or deterioration are significant, but the strength and performance of the component are not affected. Examples include moderate spalling in concrete, flaking rust on steel, or decay in timber.
- **Major Defect:** A major defect affects the strength and/or performance of the component. Examples include severe spalling in concrete, severe section loss in steel, or crushing of timber. For joints, bearings, railings, and railing transitions, a major defect prevents the component from functioning as intended.

**B.2.1.1 Deck Condition Rating (SNBI Item B.C.01)**

<b>Deck Condition Rating (SNBI Item B.C.01)</b>	
<b>Code</b>	This rating describes the overall general condition of the deck (or slab). Per the SNBI, this item <u>does not</u> consider the condition of non-integral wearing surfaces (such as low slump or bituminous overlays). The condition of railings, sidewalks, curbs, expansion joints, or deck drains are not considered in this item.
<b>N</b>	<b>Not Applicable:</b> Use for culverts, buried frames, or filled spandrel arch bridges.
<b>9</b>	<b>Excellent (New) Condition:</b> Deck has isolated inherent defects.
<b>8</b>	<b>Very Good Condition:</b> Deck has some inherent defects.
<b>7</b>	<p><b>Good Condition:</b> Deck has some minor defects.</p> <ul style="list-style-type: none"> <li>• Concrete: Medium width cracks, light leaching, light scale/abrasion, small delamination/spall (no exposed rebar), or sound patches.</li> <li>• Timber: Minor weathering or checking (no splitting or decay).</li> <li>• Steel: Surface corrosion. No section loss. Minor (superficial) impact damage.</li> <li>• Deck components are secure and properly positioned (no loose fasteners).</li> </ul>
<b>6</b>	<p><b>Satisfactory Condition:</b> Deck has widespread minor or isolated moderate defects.</p> <ul style="list-style-type: none"> <li>• Concrete: Widespread medium width cracks, light leaching, light scale/abrasion small delamination, or spall. Isolated wide cracks, heavy leaching, heavy scale/abrasion, rust staining, loose delamination, large spalls (exposed rebar), or unsound patch.</li> <li>• Timber: Widespread checking. Isolated splitting, abrasion, or decay. Slight negative camber.</li> <li>• Steel: Extensive surface corrosion. Isolated flaking rust, pack rust, or section loss. Isolated impact damage (broken welds or torn grid members).</li> <li>• Components slightly loose or misaligned. Isolated loose or missing fasteners.</li> </ul>
<b>5</b>	<p><b>Fair Condition:</b> Deck has some moderate defects.</p> <ul style="list-style-type: none"> <li>• Concrete: Wide cracks, heavy leaching, heavy scale/abrasion, rust staining, loose delamination, large spalls (exposed rebar), or unsound patches.</li> <li>• Timber: Moderate checks, splits, abrasion, or decay. Moderate negative camber.</li> <li>• Steel: Moderate flaking rust, pack rust, or section loss. Moderate impact damage (broken welds or torn grid members).</li> <li>• Components moderately loose or misaligned. Loose or missing fasteners.</li> </ul>
<b>4</b>	<p><b>Poor Condition:</b> Deck has widespread moderate or isolated major defects.</p> <ul style="list-style-type: none"> <li>• Concrete: Widespread wide cracks, heavy leaching, heavy scale/abrasion rust staining, loose delamination, large spalls (exposed rebar), or unsound patch. Isolated severe cracks, deep spalls, or exposed rebar with significant section loss.</li> <li>• Timber: Widespread splitting, abrasion, or decay. Isolated significant decay or crushing. Significant negative camber.</li> <li>• Steel: Widespread (moderate) section loss or isolated (significant) section loss. Significant impact damage (broken welds or torn grid members).</li> <li>• Components significantly loose or misaligned. Numerous loose/missing fasteners.</li> </ul>
<b>3</b>	<p><b>Serious Condition:</b> Deck has major defects. Strength or performance is seriously affected. Monitoring, load restrictions, or corrective actions may be required.</p> <ul style="list-style-type: none"> <li>• Concrete: Severe cracking, leaching, delamination, or spalling. Exposed rebar with severe section loss. Full-depth failures.</li> <li>• Timber: Severe splitting, decay, or crushing. Severe negative camber.</li> <li>• Steel: Severe section loss or impact damage.</li> <li>• Components severely loose, severely misaligned, or missing.</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Deck is severely compromised. Emergency repairs are required.
<b>1</b>	<b>"Imminent" Failure Condition:</b> Bridge is closed due to deck condition. Repair or rehabilitation may return the bridge to service.
<b>0</b>	<b>Failed Condition:</b> Bridge closed due to deck condition. Deck replacement required.

**B.2.1.2 Superstructure Condition Rating (SNBI Item B.C.02)**

<b>Superstructure Condition Rating (SNBI Item B.C.02)</b>	
<b>Code</b>	This rating describes the overall general condition of the superstructure. This includes all primary structural members located above the bearings. This includes girders, beams, floorbeams, stringers, arches, slabs, top flanges on integral superstructures, K-frame legs, and diaphragms on curved steel bridges. Do not consider bearings, secondary elements, or protective coatings.
<b>N</b>	<b>Not Applicable:</b> Use for culverts.
<b>9</b>	<b>Excellent (New) Condition:</b> Superstructure has isolated inherent defects.
<b>8</b>	<b>Very Good Condition:</b> Some inherent defects. No impact damage present.
<b>7</b>	<b>Good Condition:</b> Minor defects. Superficial impact damage or distortion. <ul style="list-style-type: none"> <li>• Steel: Minor surface corrosion. No section loss on primary members.</li> <li>• Concrete/Masonry: Minor cracking, leaching, scale, spalling (no exposed rebar), delamination, or mortar breakdown.</li> <li>• Timber: Minor weathering or checking (no decay or sagging).</li> </ul>
<b>6</b>	<b>Satisfactory Condition:</b> Widespread minor or isolated moderate defects. Primary members slightly bent, distorted, or misaligned. Connections have minor distress. <ul style="list-style-type: none"> <li>• Steel: Extensive surface corrosion. Isolated flaking rust, pack rust, or section loss. Cracks have been arrested or pose no structural concern.</li> <li>• Concrete/Masonry: Widespread (minor) scale, cracking, leaching, sound patches, or mortar breakdown. Isolated (moderate) spall, delamination, rust staining, unsound patch, or block misalignment. Isolated or minor structural cracks.</li> <li>• Timber: Widespread checking. Isolated splitting, abrasion, or decay. Slight negative camber.</li> </ul>
<b>5</b>	<b>Fair Condition:</b> Some moderate defects. Strength and performance are not affected. Members moderately bent, distorted, or misaligned. Loose or missing fasteners. <ul style="list-style-type: none"> <li>• Steel: Moderate section loss. Un-arrested cracks that are unlikely to propagate.</li> <li>• Concrete/Masonry: Moderate scale, cracking, structural cracks, leaching, spall, delamination, rust staining, unsound patch, voided mortar, or block misalignment.</li> <li>• Timber: Moderate checks, splits, abrasion, or decay. Moderate negative camber.</li> </ul>
<b>4</b>	<b>Poor Condition:</b> Widespread moderate or isolated major defects. Strength or performance is affected. Members significantly bent, distorted, or misaligned. Connections are significantly distressed (numerous loose or missing fasteners). <ul style="list-style-type: none"> <li>• Steel: Widespread section loss or significant section loss in critical stress areas. Un-arrested cracks that could propagate into a critical stress area.</li> <li>• Concrete/Masonry: Widespread moderate scale, cracking, leaching, spall, delamination, rust staining, unsound patch, voided mortar, or block misalignment. Significant structural cracks. Exposed reinforcement with significant section loss.</li> <li>• Timber: Widespread splitting, abrasion, or decay. Isolated significant decay and/or crushing. Significant negative camber.</li> </ul>
<b>3</b>	<b>Serious Condition:</b> Major defects. Strength and/or performance of the superstructure is seriously affected. Members severely bent or misaligned. Failed connections. <ul style="list-style-type: none"> <li>• Steel: Severe section loss. Un-arrested cracks in critical stress areas.</li> <li>• Concrete/Masonry: Severe structural cracking, spalling, or block misalignment.</li> <li>• Timber: Severe splitting, decay, or crushing. Severe negative camber.</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Superstructure is severely compromised. Structural elements have critical deterioration, damage, or misalignment. Elements may be severed or detached. Immediate repairs may be required to prevent collapse or closure.
<b>1</b>	<b>Imminent Failure:</b> Bridge is closed due to superstructure condition. Repair or rehabilitation may return the bridge to service.
<b>0</b>	<b>Failed:</b> Bridge is closed due to superstructure condition and is beyond corrective action. Replacement is required to restore service.

**B.2.1.3 Substructure Condition Rating (SNBI Item B.C.03)**

<b>Substructure Condition Rating (SNBI Item B.C.03)</b>	
<b>Code</b>	This rating describes the overall general condition of the substructure. This item includes all structural components located below the bearings. Integral wingwalls or retaining walls (up to the first construction joint) are considered in this item.
<b>N</b>	<b>Not Applicable:</b> Use for culverts.
<b>9</b>	<b>Excellent (New) Condition:</b> Substructure is in new condition. Isolated inherent defects.
<b>8</b>	<b>Very Good Condition:</b> Some inherent defects. No scour.
<b>7</b>	<b>Good Condition:</b> Minor defects. Minor (and isolated) scour or mitigated scour. Settlement, movement, or misalignment has been arrested or isn't a concern. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Minor cracking, leaching, scale, spalling (no exposed rebar), delamination, sound patches, or mortar breakdown.</li> <li>• Timber: Minor weathering or checking (no decay).</li> <li>• Steel: Minor surface corrosion. No section loss on primary members.</li> </ul>
<b>6</b>	<b>Satisfactory Condition:</b> Widespread minor or isolated moderate defects. Minor scour and/or isolated undermining. Minor settlement, movement, or misalignment. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Widespread (minor) scale, cracking, leaching, or mortar breakdown. Isolated (moderate) spall, delamination, rust staining, unsound patch, or block misalignment. Isolated or minor structural cracks.</li> <li>• Timber: Widespread checking. Isolated splitting, abrasion, or decay.</li> <li>• Steel: Extensive surface corrosion. Isolated flaking rust, pack rust, or section loss. Cracks have been arrested or pose no structural concern.</li> </ul>
<b>5</b>	<b>Fair Condition:</b> Some moderate defects. Strength and performance are not affected. Moderate scour, undermining, settlement, movement, or misalignment. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Moderate scale, cracking, structural cracks, leaching, spall, delamination, rust staining, unsound patch, voided mortar, or block misalignment.</li> <li>• Timber: Moderate checks, splits, abrasion, or decay.</li> <li>• Steel: Moderate section loss. Un-arrested cracks that are unlikely to propagate.</li> </ul>
<b>4</b>	<b>Poor Condition:</b> Widespread moderate or isolated major defects. Strength or performance is affected. Extensive scour or undermining. Significant settlement, movement, or misalignment. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Widespread moderate scale, cracking, leaching, spall, delamination, rust staining, unsound patch, voided mortar, or block misalignment. Significant structural cracks. Exposed reinforcement with significant section loss.</li> <li>• Timber: Widespread splitting, abrasion, or decay. Isolated significant decay or crushing.</li> <li>• Steel: Widespread (moderate) section loss or significant section loss in critical stress areas. Un-arrested cracks that could propagate into a critical stress area.</li> </ul>
<b>3</b>	<b>Serious Condition:</b> Major defects. Strength and/or performance of the substructure is seriously affected. Monitoring, load restrictions, or corrective actions may be required. Severe scour, undermining, settlement, movement, or misalignment. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Severe structural cracking, spalling, or block misalignment.</li> <li>• Timber: Severe splitting, decay, or crushing.</li> <li>• Steel: Severe section loss. Un-arrested cracks in critical stress areas.</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Substructure is severely compromised. Structural elements have critical deterioration, damage, or misalignment. Substructure is unstable due to scour, settlement, or movement. Immediate repairs required to prevent collapse or closure.
<b>1</b>	<b>Imminent Failure:</b> Bridge is closed due to substructure condition. Repair or rehabilitation may return the bridge to service.
<b>0</b>	<b>Failed:</b> Bridge is closed due to substructure failure and is beyond corrective action (replacement required).

**B.2.1.4 Culvert Condition Rating (SNBI Item B.C.04)**

<b>Culvert Condition Rating (SNBI Item B.C.0.4)</b>	
<b>Code</b>	This rating should reflect the overall general condition of culvert structures. If this item is rated, the SNBI deck, superstructure, and substructure ratings must all be "N".
<b>N</b>	<b>Not Applicable:</b> Structure is not a culvert.
<b>9</b>	<b>Excellent (New) Condition:</b> Culvert is in new condition. Isolated inherent defects.
<b>8</b>	<b>Very Good Condition:</b> Culvert has some inherent defects. No scour or settlement.
<b>7</b>	<p><b>Good Condition:</b> Culvert has minor defects. Joints are sound and properly aligned. Scour or settlement has been mitigated or doesn't require mitigation.</p> <ul style="list-style-type: none"> <li>• Concrete/Masonry: Minor cracking, leaching, scale, spalling (no exposed rebar), delamination, sound patches, or mortar breakdown.</li> <li>• Steel: Minor surface corrosion (no flaking rust or section loss). No barrel distortion.</li> <li>• Timber: Minor weathering or checking (no decay, bowing, or sagging).</li> </ul>
<b>6</b>	<p><b>Satisfactory Condition:</b> Culvert has widespread minor or isolated moderate defects. Minor joint separation, misalignment, or backfill infiltration. Minor scour or settlement.</p> <ul style="list-style-type: none"> <li>• Concrete/Masonry: Widespread (minor) scale, cracking, leaching, or mortar breakdown. Isolated (moderate) spall, delamination, rust staining, unsound patch, or block misalignment.</li> <li>• Steel: Extensive surface corrosion. Isolated flaking rust, pack rust, or section loss. Minor barrel distortion. Seams have minor distress, but no cracking.</li> <li>• Timber: Widespread checking. Isolated splitting, abrasion, or decay. Minor bowing or sagging.</li> </ul>
<b>5</b>	<p><b>Fair Condition:</b> Culvert has some moderate defects. Strength and performance are not affected. Moderate joint separation, misalignment, or backfill infiltration. Moderate settlement, scour, or undermining.</p> <ul style="list-style-type: none"> <li>• Concrete/Masonry: Moderate scale, cracking, structural cracks, leaching, spall, delamination, rust staining, unsound patch, voided mortar, or block misalignment.</li> <li>• Steel: Moderate flaking rust, pack rust, or section loss. Moderate barrel distortion. Seams have moderate distress (isolated cracking or missing bolts).</li> <li>• Timber: Moderate checks, splits, abrasion, or decay. Moderate bowing or sagging.</li> </ul>
<b>4</b>	<p><b>Poor Condition:</b> Culvert has widespread moderate or isolated major defects. Strength or performance is affected. Significant joint separation, misalignment, or backfill infiltration. Significant or extensive settlement, scour, or undermining.</p> <ul style="list-style-type: none"> <li>• Concrete/Masonry: Widespread scale, cracking, leaching, spall, delamination, rust staining, unsound patch, voided mortar, or block misalignment. Significant fractures. Exposed reinforcement with significant section loss.</li> <li>• Steel: Widespread flaking rust or section loss. Isolated through corrosion. Significant barrel distortion. Seams have significant distress (extensive cracking, missing bolts, or isolated failures).</li> <li>• Timber: Widespread splitting, abrasion, or decay. Isolated significant decay or crushing. Significant bowing or sagging.</li> </ul>
<b>3</b>	<p><b>Serious Condition:</b> Culvert has major defects. Strength and/or performance is seriously affected. Monitoring, load restrictions, or repairs may be required. Severe joint separation, misalignment, loss of backfill, settlement, scour, or undermining.</p> <ul style="list-style-type: none"> <li>• Concrete/Masonry: Severe cracking, spalling, scale, or block misalignment.</li> <li>• Steel: Severe section loss, severe barrel distortion, or failed seams.</li> <li>• Timber: Severe splitting, decay, crushing, bowing, or sagging</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Culvert is severely compromised (near collapse). Immediate repairs or significant load restrictions required to prevent collapse or closure.
<b>1</b>	<b>"Imminent" Failure Condition:</b> Culvert is closed. Repair or rehabilitation may return the culvert to service.
<b>0</b>	<b>Failed Condition:</b> Culvert is closed and beyond repair - replacement is necessary.

**B.2.1.5 Bridge Railing Condition Rating (SNBI Item B.C.05)**

<b>Bridge Railing Condition Rating (SNBI Item B.C.05)</b>	
<b>Code</b>	This rating reflects the overall condition of the <u>vehicular</u> railings/barriers on the bridge. This includes all components (beams, parapets, posts, connections, and curbs). <ul style="list-style-type: none"> <li>• This item includes guardrail above culverts that is not directly connected.</li> <li>• Do not consider pedestrian railing unless it is integral with the vehicular railing.</li> <li>• Do not consider the condition of protective coatings in this rating.</li> <li>• This rating should not consider if the railings meet current crash standards, that is coded separately under SNBI Item B.H.01 (Bridge Railings).</li> </ul>
<b>N</b>	<b>Not Applicable:</b> Bridge doesn't carry vehicular traffic or has no vehicular railings.
<b>9</b>	<b>Excellent (New) Condition:</b> Railings are in new condition (isolated inherent defects).
<b>8</b>	<b>Very Good Condition:</b> Railings have some inherent defects (no impact damage).
<b>7</b>	<b>Good Condition:</b> Railings have some minor defects. Minor impact damage. Connections are secure. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Minor cracking, leaching, scale, spalling (no exposed rebar), delamination, sound patches, or mortar breakdown.</li> <li>• Steel: Minor surface corrosion (no section loss).</li> <li>• Timber: Minor weathering or checking (no decay).</li> </ul>
<b>6</b>	<b>Satisfactory Condition:</b> Railings have widespread minor or isolated moderate defects. Minor to moderate impact damage. Isolated loose connections. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Widespread (minor) scale, cracking, leaching, sound patches, or mortar breakdown. Isolated spall, delamination, rust staining, voided mortar, or block misalignment.</li> <li>• Steel: Extensive surface corrosion. Isolated flaking rust, pack rust, or section loss.</li> <li>• Timber: Widespread (minor) checking. Isolated splitting, abrasion, or decay.</li> </ul>
<b>5</b>	<b>Fair Condition:</b> Railings have moderate defects. Moderate impact damage. Some loose connections. Strength and performance of the railing is not affected. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Moderate scale, cracking, leaching, spall, delamination, rust staining unsound patch, voided mortar, or block misalignment.</li> <li>• Steel: Moderate flaking rust, pack rust, or section loss.</li> <li>• Timber: Moderate checks, splits, abrasion, or decay.</li> </ul>
<b>4</b>	<b>Poor Condition:</b> Railings have widespread moderate or isolated major defects. Moderate impact damage. Isolated failed connections. Strength and/or performance of the railing has been affected. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Widespread scale, cracking, leaching, spall, delamination, rust staining, unsound patch, voided mortar, or block misalignment. Significant fractures. Exposed reinforcement with significant section loss.</li> <li>• Steel: Widespread flaking rust or pack rust. Significant section loss.</li> <li>• Timber: Widespread splitting, abrasion, or decay. Isolated significant decay or crushing.</li> </ul>
<b>3</b>	<b>Serious Condition:</b> Railings have major defects. Severe impact damage or failed connections. Strength and/or performance of the railing has been seriously affected. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Severe cracking, spalling, scale, or block misalignment.</li> <li>• Steel: Severe section loss.</li> <li>• Timber: Severe decay or crushing.</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Railings have major defects and are severely compromised (critical impact damage or deterioration).
<b>1</b>	<b>Imminent Failure Condition:</b> Bridge is closed due to railing condition (corrective action might return the structure to restricted service).
<b>0</b>	<b>Failed Condition:</b> Bridge is closed due railing condition and is beyond corrective action (replacement required).

**B.2.1.6 Bridge Railing Transition Condition Rating (SNBI Item B.C.06)**

<b>Bridge Railing Transition Condition Rating (SNBI Item B.C.06)</b>	
<b>Code</b>	<p>This rating describes the condition of the transition from the vehicular bridge railing to the approach guardrail. This typically extends about 20-25 ft. from the bridge ends.</p> <ul style="list-style-type: none"> <li>This item must be rated for culverts with guardrail along the roadway above. The rating should consider the portion of the guardrail 3 posts from the culvert ends.</li> <li>This item includes the portions of the railings, end posts, guardrail, crash cushions, blocking, guardrail posts, and curbs within the railing transitions.</li> <li>SNBI Item B.H.02 (Transitions) should be coded to indicate the specific crash standards that the guardrail design meets.</li> </ul>
<b>N</b>	<b>Not Applicable:</b> Bridge doesn't carry vehicular traffic or has no approach guardrail.
<b>9</b>	<b>Excellent (New) Condition:</b> Transitions have isolated inherent defects.
<b>8</b>	<b>Very Good Condition:</b> Transitions have some inherent defects (no impact damage).
<b>7</b>	<p><b>Good Condition:</b> Transitions have some minor defects. Minor impact damage. Connections are secure.</p> <ul style="list-style-type: none"> <li>Concrete/Masonry: Minor cracking, leaching, scale, spalling (no exposed rebar), delamination, sound patches, or mortar breakdown.</li> <li>Steel: Minor surface corrosion (no section loss).</li> <li>Timber: Minor weathering or checking (no decay).</li> </ul>
<b>6</b>	<p><b>Satisfactory Condition:</b> Transitions have widespread minor or isolated moderate defects. Minor to moderate impact damage. Isolated loose connections.</p> <ul style="list-style-type: none"> <li>Concrete/Masonry: Widespread (minor) scale, cracking, leaching, or mortar breakdown. Isolated spall, delamination, rust staining, voided mortar, or block misalignment.</li> <li>Steel: Extensive surface corrosion. Isolated flaking rust, pack rust, or section loss.</li> <li>Timber: Widespread (minor) checking. Isolated splitting, abrasion, or decay.</li> </ul>
<b>5</b>	<p><b>Fair Condition:</b> Transitions have moderate defects. Moderate impact damage. Some loose connections. Strength and performance of the transitions are not affected.</p> <ul style="list-style-type: none"> <li>Concrete/Masonry: Moderate scale, cracking, leaching, spall, delamination, rust staining, voided mortar, or block misalignment.</li> <li>Steel: Moderate flaking rust, pack rust, or section loss.</li> <li>Timber: Moderate checks, splits, abrasion, or decay.</li> </ul>
<b>4</b>	<p><b>Poor Condition:</b> Transitions have widespread moderate or isolated major defects. Moderate impact damage. Isolated connection failure. Strength and/or performance of the transitions has been affected.</p> <ul style="list-style-type: none"> <li>Concrete/Masonry: Widespread scale, cracking, leaching, spall, delamination, rust staining, voided mortar, or block misalignment. Significant fractures. Exposed reinforcement with significant section loss.</li> <li>Steel: Widespread flaking rust or pack rust. Significant section loss.</li> <li>Timber: Widespread splitting, abrasion, or decay. Isolated significant decay or crushing.</li> </ul>
<b>3</b>	<p><b>Serious Condition:</b> Transitions have major defects. Severe impact damage or failed connections. Strength and/or performance have been seriously affected.</p> <ul style="list-style-type: none"> <li>Concrete/Masonry: Severe cracking, spalling, scale, or block misalignment.</li> <li>Steel: Severe section loss.</li> <li>Timber: Severe decay or crushing</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Transitions have major defects and are severely compromised (critical impact damage or deterioration).
<b>1</b>	<b>Imminent Failure Condition:</b> Bridge is closed due to railing transition condition (corrective action might return the structure to restricted service).
<b>0</b>	<b>Failed Condition:</b> Bridge is closed due railing transition condition and is beyond corrective action (replacement required).



**B.2.1.7 Bridge Bearing Condition Rating (SNBI Item B.C.07)**

<b>Bridge Bearing Condition Rating (SNBI Item B.C.07)</b>	
<b>Code</b>	This item rates the overall condition of the bridge bearings. This includes elastomeric, expansion, fixed, pot, disc, and hinge bearings. Do not consider the condition of protective coatings on steel bearing components.
<b>N</b>	<b>Not Applicable:</b> Use for culverts or bridges without bearing elements.
<b>9</b>	<b>Excellent (New) Condition:</b> Bearings have isolated inherent defects.
<b>8</b>	<b>Very Good Condition:</b> Bearings have some inherent defects.
<b>7</b>	<p><b>Good Condition:</b> Bearings have some minor defects.</p> <ul style="list-style-type: none"> <li>• Minor and isolated restriction or misalignment.</li> <li>• Minor and isolated pad deterioration.</li> <li>• Bearing components have surface corrosion or minor wear.</li> <li>• Connections are secure.</li> <li>• Anchorages, connections, guides, or restraints have minor deterioration.</li> <li>• Some bearings have a minor loss of bearing area (less than 5%).</li> </ul>
<b>6</b>	<p><b>Satisfactory Condition:</b> Widespread minor or isolated moderate defects.</p> <ul style="list-style-type: none"> <li>• Minor restriction or misalignment (within limits of expansion/contraction).</li> <li>• Minor pad deterioration. Isolated bulging or splitting of pad covering.</li> <li>• Bearing components have minor to moderate wear or deterioration.</li> <li>• Widespread surface corrosion. Isolated flaking rust, pack rust, or section loss.</li> <li>• Isolated loose/missing fasteners or broken welds.</li> <li>• Anchorages, guides, or restraints have minor to moderate deterioration.</li> <li>• Some bearings have a minor loss of bearing area (5% - 10%).</li> </ul>
<b>5</b>	<p><b>Fair Condition:</b> Some moderate defects.</p> <ul style="list-style-type: none"> <li>• Moderate restriction or misalignment (near limits of expansion/contraction).</li> <li>• Moderate pad deterioration (bulging or splitting of pad covering).</li> <li>• Bearing components have moderate wear or deterioration.</li> <li>• Moderate flaking rust, pack rust, or section loss.</li> <li>• Some missing/loose fasteners or broken welds.</li> <li>• Anchorages, guides, or restraints have moderate deterioration (still functioning).</li> <li>• Some bearings have a moderate loss of bearing area (10% - 25%).</li> </ul>
<b>4</b>	<p><b>Poor Condition:</b> Widespread moderate or isolated major defects.</p> <ul style="list-style-type: none"> <li>• Significant restriction or misalignment (at limits of expansion/contraction).</li> <li>• Significant pad deterioration (bulging, splitting, or corroded internal plates)</li> <li>• Bearing components have significant wear or deterioration.</li> <li>• Widespread flaking rust or pack rust. Significant section loss.</li> <li>• Numerous missing/loose fasteners or broken welds.</li> <li>• Anchorages have significant damage or deterioration (isolated anchorage failure).</li> <li>• Guides or restraints are not functioning as intended.</li> <li>• Some bearings have a significant loss or bearing area (25%-50%).</li> </ul>
<b>3</b>	<p><b>Serious Condition:</b> Major defects. Bearing capacity or function is seriously affected. Frequent monitoring, load restrictions, or corrective actions may be required.</p> <ul style="list-style-type: none"> <li>• Severely restricted (frozen) or misaligned (beyond limits of expansion/contraction).</li> <li>• Bearing components severely deteriorated, failed, or missing.</li> <li>• Bearing anchorage failure or guide/restraint system failure.</li> <li>• Some bearings have a severe loss of bearing area (more than 50%).</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Critical bearing issue requiring immediate corrective action.
<b>1</b>	<b>Imminent Failure Condition:</b> Bridge is closed due to bearing issues. Repair or rehabilitation may return the bridge to service.
<b>0</b>	<b>Failed Condition:</b> Bridge is closed due to bearing issues and is beyond corrective action (replacement required).

**B.2.1.8 Bridge Joints Condition Rating (SNBI Item B.C.08)**

<b>Bridge Joints Condition Rating (SNBI Item B.C.08)</b>	
<b>Code</b>	<p>This item reflects the overall condition of deck joints on the bridge. The rating includes all joint components, such as seals, glands, extrusions, plates, cover plates (sidewalk, curb, or railing), protection angles, headers, supports, and connections.</p> <ul style="list-style-type: none"> <li>Do not consider poured joints in this rating unless they are designed to accommodate bridge expansion/contraction (most do not).</li> <li>Do not consider approach relief joints in this rating.</li> <li>Leakage should be considered if it is impacting the structure below the joint.</li> <li>If the joint is not visible (covered by bituminous or gravel), the condition should be assessed based on indirect indicators of the condition (such as leakage).</li> </ul>
<b>N</b>	<b>Not Applicable:</b> Bridge does not have any deck joints.
<b>9</b>	<b>Excellent (New) Condition:</b> Joints have isolated inherent defects.
<b>8</b>	<b>Very Good Condition:</b> Joints have some inherent defects. No leakage.
<b>7</b>	<p><b>Good Condition:</b> Joints have some minor defects.</p> <ul style="list-style-type: none"> <li>No joint restriction or misalignment. Gaps are within design limits.</li> <li>Seal/Gland: Minimal leakage.</li> <li>Steel Plates/Extrusions: Minor surface corrosion (no section loss). Minor damage.</li> <li>Header: Minor spalling, delamination, or sound patches.</li> </ul>
<b>6</b>	<p><b>Satisfactory Condition:</b> Joints have widespread minor or isolated moderate defects.</p> <ul style="list-style-type: none"> <li>Minor joint restriction or misalignment. Gaps are within design limits.</li> <li>Minor to moderate leakage. Glands/seals have isolated partial pullouts.</li> <li>Steel Plates/Extrusions: Extensive surface corrosion. Isolated flaking rust, pack rust, section loss, or damage. Loose curb or rail plates.</li> <li>Supports or equalizers have minor deterioration or misalignment.</li> <li>Header: Widespread minor or isolated moderate spalling/delamination.</li> </ul>
<b>5</b>	<p><b>Fair Condition:</b> Joints have moderate defects.</p> <ul style="list-style-type: none"> <li>Moderate joint restriction or misalignment. Gaps are near the design limits.</li> <li>Moderate leakage. Glands/seals have isolated punctures, tears, or pullouts.</li> <li>Steel Plates/Extrusions: Moderate flaking rust, pack rust, section loss, or damage. Roadway or sidewalk plates slightly loose. Missing curb or rail plates.</li> <li>Supports or equalizers moderately deteriorated, loose, or misaligned.</li> <li>Header: Moderate deterioration. Spalls more than 1" deep or with exposed rebar.</li> </ul>
<b>4</b>	<p><b>Poor Condition:</b> Joints have widespread moderate or isolated major defects.</p> <ul style="list-style-type: none"> <li>Significant joint restriction or misalignment. Gaps are at the design limits.</li> <li>Significant leakage. Glands/seals punctured, torn, or pulled out.</li> <li>Steel Plates/Extrusions: Significant section loss or impact damage. Extrusion loose, fractures, or separated. Roadway or sidewalk plates significantly loose.</li> <li>Joint supports or equalizers significantly deteriorated, loose, or misaligned.</li> <li>Header: Significant deterioration. Deep spalls. Loss of joint anchorage.</li> </ul>
<b>3</b>	<p><b>Serious Condition:</b> Joints have some major defects.</p> <ul style="list-style-type: none"> <li>Severe joint restriction or misalignment (tightly closed or open beyond limits).</li> <li>Severe joint leakage. Glands/seals completely pulled out or missing.</li> <li>Steel Plates/Extrusions: Extrusions, angles, or roadway/sidewalk plates severely loose, rusted through, fractured, damaged, or missing.</li> <li>Joint supports or equalizers severely deteriorated, loose, or misaligned.</li> <li>Header: Severe deterioration. Severe spalls or full depth failures.</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Joints have widespread major defects.
<b>1</b>	<b>Imminent Failure Condition:</b> Joints have failed and are ineffective.
<b>0</b>	<b>Failed Condition:</b> Joints have failed and present a safety hazard.

**B.2.1.9 Channel Condition Rating (SNBI Item B.C.9)**

<b>Channel Condition Rating (SNBI Item B.C.9)</b>	
<b>Code</b>	<p>This rating reflects the overall general condition of the waterway under the bridge (or running through the culvert), even if the channel is occasionally dry. This includes the channel immediately upstream and downstream from the bridge (typically those areas visible from the bridge). This rating may be based upon findings from routine inspections, soundings, or underwater inspections.</p> <ul style="list-style-type: none"> <li>• Changes in the channel (aggradation, degradation, or lateral stream migration) that might adversely affect the bridge should be considered in this rating.</li> <li>• The presence of debris or sediment in the channel, debris lodged against the bridge, or sediment inside culvert barrels should be considered in this rating.</li> <li>• The channel protection is addressed separately under Item B.C.11.</li> </ul>
<b>N</b>	<b>Not Applicable:</b> Bridge is not over a waterway (culverts cannot be coded “N”).
<b>9</b>	<b>Excellent Condition:</b> No defects.
<b>8</b>	<p><b>Very Good Condition:</b> Inherent defects only.</p> <ul style="list-style-type: none"> <li>• Channel banks have little or no bank erosion.</li> <li>• Channel is properly aligned (parallel to substructure).</li> <li>• Debris or sediment in the channel is incidental.</li> </ul>
<b>7</b>	<p><b>Good Condition:</b> Some minor defects.</p> <ul style="list-style-type: none"> <li>• Minor bank erosion. Any channel movement is minor and isolated.</li> <li>• Channel flow angle is within 15° of the substructure (5° for pier walls).</li> <li>• Minor debris or sediment in the channel.</li> </ul>
<b>6</b>	<p><b>Satisfactory Condition:</b> Widespread minor or isolated moderate defects.</p> <ul style="list-style-type: none"> <li>• Isolated erosion or sloughing of banks.</li> <li>• Minor channel aggradation, degradation, or lateral movement.</li> <li>• Channel flow angle diverges 15°- 30° from the substructure (5°- 15° for pier walls).</li> <li>• Channel is slightly restricted by debris or sediment deposits.</li> </ul>
<b>5</b>	<p><b>Fair Condition:</b> Moderate defects. Bridge and approach roadway are not threatened.</p> <ul style="list-style-type: none"> <li>• Moderate bank erosion or sloughing,</li> <li>• Moderate channel aggradation, degradation, or lateral movement.</li> <li>• Channel flow angle diverges 30°- 45° from the substructure (15°- 30° for pier walls).</li> <li>• Channel is moderately restricted by debris or sediment deposits.</li> </ul>
<b>4</b>	<p><b>Poor Condition:</b> Widespread moderate or isolated major defects. Bridge and/or approach roadway is threatened.</p> <ul style="list-style-type: none"> <li>• Significant bank erosion or sloughing.</li> <li>• Significant channel aggradation, degradation, or lateral movement.</li> <li>• Channel flow angle diverges more than 45° from the substructure (30° for pier walls).</li> <li>• Channel is significantly restricted by debris or sediment deposits.</li> </ul>
<b>3</b>	<p><b>Serious Condition:</b> Major defects. Bridge or approach roadway is severely threatened. Monitoring or corrective actions may be required.</p> <ul style="list-style-type: none"> <li>• Severe bank erosion or sloughing.</li> <li>• Severe channel aggradation, degradation, or lateral movement.</li> <li>• Channel is severely restricted by debris or sediment deposits.</li> </ul>
<b>2</b>	<p><b>Critical Condition:</b> Major defects. Immediate corrective action is required.</p> <ul style="list-style-type: none"> <li>• Bank erosion or channel aggradation, degradation, or lateral movement are critically threatening the structure or approaches.</li> <li>• Channel is critically restricted by debris or sediment deposits.</li> </ul>
<b>1</b>	<b>Bridge closed due to channel condition:</b> Rehabilitation required to restore service.
<b>0</b>	<b>Bridge closed due to channel condition:</b> Bridge replacement is necessary.

**B.2.1.10 Channel Protection Condition Rating (SNBI Item B.C.10)**

<b>Channel Protection Condition Rating (SNBI Item B.C.10)</b>	
<b>Code</b>	<p>This item describes the condition of channel protection devices installed on banks or in the stream to mitigate channel issues that may impact the bridge. Channel protection devices are considered countermeasures that control, inhibit, delay, or minimize stream instability and scour problems, including river training and armoring countermeasures. When rating this item, consider erosion, scour, displacement, separation, settlement, and material defects.</p> <ul style="list-style-type: none"> <li>• Armoring countermeasures may consist of loose riprap, partially or fully grouted riprap, concrete paving, stone or concrete blocks, flood walls, gabion mattresses, grout-filled mats, or other materials. This includes protection along channel banks, in the stream, around piers, on abutment slopes, or on culvert embankments.</li> <li>• River training countermeasures may include spurs, check dams, guide banks, or other structures intended to arrest channel migration, degradation, or scour.</li> </ul>
<b>N</b>	<b>Not Applicable:</b> Bridge does not cross over water <u>or</u> channel protection is not required and has never existed.
<b>9</b>	<b>Excellent Condition:</b> Channel protection has isolated inherent defects.
<b>8</b>	<b>Very Good Condition:</b> Channel protection has some inherent defects. <ul style="list-style-type: none"> <li>• No scour or erosion.</li> </ul>
<b>7</b>	<b>Good Condition:</b> Channel protection has some minor defects. <ul style="list-style-type: none"> <li>• Riprap (or other protection) has minor settlement, displacement, or deterioration. Minor scour or erosion. No undermining of the channel/slope protection.</li> <li>• River training countermeasures (if present) have minor deterioration.</li> </ul>
<b>6</b>	<b>Satisfactory Condition:</b> Channel protection has widespread minor defects or isolated moderate defects. <ul style="list-style-type: none"> <li>• Riprap (or other protection) has minor to moderate settlement, displacement, or deterioration. Minor to moderate scour or erosion. Isolated (minor) undermining of channel protection or isolated area(s) of missing channel protection.</li> <li>• River training countermeasures (if present) have minor to moderate deterioration.</li> </ul>
<b>5</b>	<b>Fair Condition:</b> Channel protection has some moderate defects. Performance of the channel protection is not affected. <ul style="list-style-type: none"> <li>• Riprap (or other protection) has moderate settlement, displacement, or deterioration. Moderate scour or erosion. Moderate undermining of channel protection or moderate area(s) of missing channel protection.</li> <li>• River training countermeasures (if present) have moderate deterioration but are still functioning as intended.</li> </ul>
<b>4</b>	<b>Poor Condition:</b> Widespread moderate or isolated major defects. Performance of channel protection is affected. <ul style="list-style-type: none"> <li>• Riprap (or other protection) has significant settlement, displacement, or deterioration. Significant scour or erosion. Significant undermining of channel protection or large area(s) of missing channel protection.</li> <li>• River training countermeasures (if present) have deteriorated to the extent that the function has been affected.</li> </ul>
<b>3</b>	<b>Serious Condition:</b> Major defects. Performance of channel protection or river training countermeasures is seriously affected. Monitoring or corrective action may be required. Severe scour or erosion. Severe deterioration of channel protection or large area(s) of missing protection. Severe damage to river training countermeasures.
<b>2</b>	<b>Critical Condition:</b> Major defects. Channel protection is severely compromised. Condition typically necessitates more frequent monitoring or corrective actions.
<b>1</b>	<b>Imminent Failure:</b> Channel protection has failed, but corrective action could restore it to working condition.
<b>0</b>	<b>Failed:</b> Channel protection is beyond repair and must be replaced.

**B.2.1.11 Scour Condition Rating (SNBI Item B.C.11)**

<b>Scour Condition Rating (SNBI Item B.C.11)</b>	
<b>Code</b>	<p>This rating should reflect the presence and severity of scour at the bridge (or culvert), based on observed conditions or measurements. This rating is focused on the presence of local scour adjacent to the structure (abutments, piers, or culverts).</p> <p>This item must be rated for all bridges over water, even if the channel is occasionally dry. This item must be rated for all culvert structures (do not code culverts as “N”). This rating can be based upon findings from routine inspections or underwater inspections.</p> <p>Refer to Item B.AP.03 (Scour Vulnerability) to verify if the bridge has been determined to be stable or unstable for appraised scour conditions. Consider design scour depth and critical scour depth when determining the scour condition rating. When observed conditions are not consistent with the scour design or the assumptions used in the scour appraisal (POA), this indicates a need to reevaluate Item B.AP.03 (Scour Vulnerability).</p>
<b>N</b>	<b>Not Applicable:</b> Bridge is not over a waterway (do not use for culverts).
<b>9</b>	<b>Excellent Condition:</b> No scour.
<b>8</b>	<b>Very Good Condition:</b> Insignificant scour.
<b>7</b>	<b>Good Condition:</b> Some minor scour.
<b>6</b>	<b>Satisfactory Condition:</b> Widespread minor or isolated moderate scour. <ul style="list-style-type: none"> <li>• Localized scour holes may be present (no footing exposure).</li> </ul>
<b>5</b>	<b>Fair Condition:</b> Moderate scour. Strength and stability of the bridge are not affected. <ul style="list-style-type: none"> <li>• Localized scour holes have partially exposed footings (no undermining).</li> </ul>
<b>4</b>	<b>Poor Condition:</b> Widespread moderate or isolated major scour. Strength and/or stability of the bridge is affected. <ul style="list-style-type: none"> <li>• Localized scour holes have exposed footings (isolated undermining).</li> </ul>
<b>3</b>	<b>Serious Condition:</b> Major scour. Strength and/or stability of the bridge is seriously affected. Condition typically necessitates more frequent monitoring, load restrictions, and/or corrective actions. <ul style="list-style-type: none"> <li>• Localized scour holes have resulted in significant undermining.</li> </ul>
<b>2</b>	<b>Critical Condition:</b> Major scour. Strength and/or stability of the bridge is severely compromised. Condition typically necessitates frequent monitoring, significant load restrictions, and/or corrective actions to keep the bridge open. <ul style="list-style-type: none"> <li>• Localized scour holes have resulted in severe undermining.</li> </ul>
<b>1</b>	<b>Bridge closed due to scour:</b> Channel rehabilitation may return the bridge to service.
<b>0</b>	<b>Bridge closed due to scour (beyond corrective action):</b> Bridge replacement is needed to restore service.

**B.2.1.12 NSTM Inspection Rating (SNBI Item B.C.14)**

<b>NSTM Inspection Rating (SNBI Item B.C.14)</b>	
<b>Code</b>	<p>This item describes the condition of non-redundant steel tension members identified to be inspected using NSTM inspection procedures. The condition of the NSTM's should also be considered in the superstructure or substructure condition ratings (as applicable). This item must be reviewed rated during all NSTM inspections.</p> <ul style="list-style-type: none"> <li>• Per the NBIS, if this item is rated 4 or lower, NSTM inspections must be conducted at intervals not to exceed 12 months.</li> <li>• Per the NBIS, a rating of 3 or less for this item is considered to be a critical finding.</li> </ul>
<b>N</b>	<b>Not Applicable:</b> Structure has no non-redundant steel structural members.
<b>9</b>	<b>Excellent (New) Condition:</b> NSTM's have isolated inherent defects.
<b>8</b>	<b>Very Good Condition:</b> NSTM's have some inherent defects.
<b>7</b>	<p><b>Good Condition:</b> NSTM's have some minor defects.</p> <ul style="list-style-type: none"> <li>• Minor surface corrosion. No section loss (or section loss has been reinforced).</li> <li>• Cracking has been arrested.</li> <li>• Distortion is superficial or has been mitigated.</li> <li>• Connections are secure.</li> </ul>
<b>6</b>	<p><b>Satisfactory Condition:</b> NSTM's have widespread minor or isolated moderate defects.</p> <ul style="list-style-type: none"> <li>• Extensive surface corrosion. Minor section loss, flaking rust, or pack rust.</li> <li>• Cracks have been arrested or pose no structural concern.</li> <li>• Members slightly bent, distorted, or misaligned.</li> <li>• Some connections distressed or loose.</li> </ul>
<b>5</b>	<p><b>Fair Condition:</b> NSTM's have some moderate defects. Strength and performance of the NSTM's are not affected.</p> <ul style="list-style-type: none"> <li>• Moderate section loss, flaking rust, or pack rust.</li> <li>• Un-arrested cracks that are unlikely to propagate.</li> <li>• Members bent, distorted, or misaligned.</li> <li>• Bolts/rivets loose or missing, but connections remain intact.</li> </ul>
<b>4</b>	<p><b>Poor Condition:</b> NSTM's have widespread moderate or isolated major defects. Strength and/or performance of an NSTM is affected.</p> <ul style="list-style-type: none"> <li>• Widespread section loss, flaking rust, or pack rust.</li> <li>• Significant section loss in critical stress areas.</li> <li>• Un-arrested cracks that could propagate into a critical stress area.</li> <li>• Members significantly bent or misaligned.</li> <li>• Connections are significantly distressed.</li> </ul>
<b>3</b>	<p><b>Serious Condition:</b> NSTM's have major defects. Strength and/or performance of an NSTM is seriously affected. Condition typically necessitates more frequent monitoring, load restrictions, and/or corrective actions.</p> <ul style="list-style-type: none"> <li>• Severe section loss.</li> <li>• Un-arrested cracks in critical stress areas.</li> <li>• Members severely bent or misaligned.</li> <li>• Failed connections.</li> </ul>
<b>2</b>	<p><b>Critical Condition:</b> NSTM's have major defects. An NSTM is severely compromised. Condition typically necessitates frequent monitoring, significant load restrictions, and/or corrective actions in order to keep the bridge open.</p>
<b>1</b>	<p><b>"Imminent" Failure Condition:</b> Bridge is closed to traffic due to NSTM condition. Repair or rehabilitation may return the bridge to service.</p>
<b>0</b>	<p><b>Failed Condition:</b> Bridge is closed to traffic due to NSTM condition and is beyond corrective action. Bridge replacement is required.</p>

**B.2.1.13 Underwater Inspection Rating (SNBI Item B.C.15)**

<b>Underwater Inspection Rating (SNBI Item B.C.15)</b>	
This item describes the condition of submerged (or partially submerged) elements observed during underwater inspections. Submerged elements should also be considered in the substructure (or culvert) condition rating. If this item has previously been rated as part of an underwater inspection, it should be rated during periodic low water levels when underwater inspection isn't required. If long-term changes in site conditions negate the need for underwater inspections, this item would no longer need to be reported.	
<b>Code</b>	<b>Description</b>
<b>N</b>	<b>Not Applicable:</b> Underwater inspections are not required. Item B.IR.03 (Underwater Inspection Required) is coded as "N".
<b>9</b>	<b>Excellent (New) Condition:</b> Submerged elements have isolated inherent defects.
<b>8</b>	<b>Very Good Condition:</b> Submerged elements have some inherent defects.
<b>7</b>	<b>Good Condition:</b> Submerged elements have some minor defects. Settlement, movement, or misalignment has been arrested or isn't a concern. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Minor cracking, leaching, scale, spalling (no exposed rebar), delamination, sound patches, or mortar breakdown.</li> <li>• Timber: Minor checking or splitting (no decay).</li> <li>• Steel: Minor surface corrosion. No section loss on primary members.</li> </ul>
<b>6</b>	<b>Satisfactory Condition:</b> Submerged elements have widespread minor or isolated moderate defects. Minor settlement, movement, or misalignment. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Widespread minor scale, cracking, leaching, or mortar breakdown. Isolated moderate delamination, spall, rust staining, or misalignment.</li> <li>• Timber: Widespread minor checks or splits. Isolated moderate decay.</li> <li>• Steel: Extensive surface corrosion. Isolated flaking rust, pack rust, or section loss.</li> </ul>
<b>5</b>	<b>Fair Condition:</b> Submerged elements have some moderate defects. Strength and performance are not affected. Moderate settlement, movement, or misalignment. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Moderate delamination, scale/spall, cracking, leaching, rust staining, voided mortar, or block misalignment.</li> <li>• Timber: Moderate splitting, abrasion, or decay.</li> <li>• Steel: Moderate flaking rust, pack rust, or section loss.</li> </ul>
<b>4</b>	<b>Poor Condition:</b> Submerged elements have widespread moderate or isolated major defects. Strength and/or performance is affected. Significant settlement, movement, or misalignment. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Widespread moderate delamination, scale/spall, cracking, leaching, rust staining, voided mortar, or misalignment. Reinforcement with significant section loss.</li> <li>• Timber: Widespread splitting, abrasion, or decay. Isolated decay with crushing.</li> <li>• Steel: Widespread flaking rust or pack rust. Significant section loss.</li> </ul>
<b>3</b>	<b>Serious Condition:</b> Submerged elements have major defects. Strength and/or performance is seriously affected. Severe settlement, movement, or misalignment. <ul style="list-style-type: none"> <li>• Concrete/Masonry: Severe cracking, spalling, or block misalignment.</li> <li>• Timber: Severe splitting, decay, or crushing.</li> <li>• Steel: Severe section loss.</li> </ul>
<b>2</b>	<b>Critical Condition (Critical Finding):</b> Submerged elements are critically compromised or have failed. Immediate repairs are required to prevent collapse or closure.
<b>1</b>	<b>Imminent Failure Condition:</b> Bridge is closed to traffic due to submerged element condition. Repair or rehabilitation may return the bridge to service.
<b>0</b>	<b>Failed Condition:</b> Bridge is closed due to submerged element failure and is beyond corrective action (replacement required).

## B.2.2 NBI BRIDGE APPRAISAL RATINGS

The SNBI has five appraisal ratings that identify potential bridge vulnerabilities. The coding of these items typically remains static once a bridge has been initially inventoried and inspected. The coding for these items may occasionally need to be revised if there are significant changes to the site conditions.

- B.AP.01: Approach Roadway Alignment
- B.AP.02: Overtopping Likelihood
- B.AP.03: Scour Vulnerability
- B.AP.04: Scour Plan of Action
- B.AP.05: Seismic Vulnerability

SNBI Items B.AP.01 (Approach Roadway Alignment) and B.AP.02 (Overtopping Likelihood) are displayed on the header of the Minnesota Bridge Inspection Report. The coding for these two items must be determined by the inspector and entered in SIMS.

The coding for SNBI Items B.AP.03 (Scour Vulnerability) and B.AP.04 (Scour Plan of Action) are determined by the engineer performing the hydraulic analysis of the structure. See guidance in the MnDOT [Bridge Scour Evaluation Procedures](#).

SNBI Item B.AP.05 (Seismic Vulnerability) is coded as “N” for all bridges in Minnesota.

### B.2.2.1 Approach Roadway Alignment Appraisal Rating (SNBI Item B.AP.01)

<b>Approach Roadway Alignment Appraisal Rating (NBI Item B.AP.01)</b>	
This item identifies bridges that do not function adequately due to the horizontal or vertical alignment of the bridge and approach roadway. This rating only applies to the roadway passing over the bridge or culvert (not the roadway passing below). The rating is based the operating speed at the bridge compared to the posted speed limit for the highway segment that the bridge carries.	
<ul style="list-style-type: none"> <li>• Do not consider speed reductions due to the bridge width or intersecting highways.</li> <li>• Rating should be reviewed if the approaches have been reconstructed or reconfigured.</li> <li>• If advisory speed limit signs are present, they should be used as the “operating speed”.</li> <li>• Railroad or pedestrian bridges crossing over a roadway should be coded as “N”.</li> </ul>	
<b>Code</b>	<b>Description</b>
<b>N - NA</b>	Not Applicable (use for railroad or pedestrian bridges).
<b>Blank</b>	<b><i>New Structure – an appropriate rating code should be determined.</i></b>
<b>G- Good</b>	The operating speed is no different at the bridge than the rest of the highway segment that crosses the bridge. Minor sight distance or alignment issues. Less than 5% speed reduction (less than 5 MPH on a 55 MPH roadway)
<b>F - Fair</b>	The operating speed is noticeably different at the bridge than the rest of the highway segment that crosses the bridge. Moderate sight distance or alignment issues. 5% to 20% speed reduction (5-10 MPH on a 55 MPH roadway)
<b>P - Poor</b>	The operating speed is substantially different at the bridge than the rest of the highway segment that crosses the bridge. Severe sight distance or alignment issues. More than 20% speed reduction (More than 10 MPH on a 55 MPH roadway).



**B.2.2.2 Overtopping Likelihood Appraisal Rating (SNBI Item B.AP.02)**

<b>Overtopping Likelihood Appraisal Rating (NBI Item B.AP.02)</b>	
<p>This item describes the likelihood of the bridge deck (or roadway over a culvert) being overtopped during high water events. This item <u>does not</u> apply to the likelihood of the waterway overtopping approach roadways.</p> <p>The overtopping likelihood is typically determined from historical bridge inspection or maintenance records, hydraulic studies, local residents/landowners, and/or site indicators including highwater marks on the bridge or its surroundings, debris remains on bridge upper members, etc. When coding newer bridges with limited historical inspection or maintenance information, hydraulic design information can be used to establish an overtopping likelihood.</p> <ul style="list-style-type: none"> <li>• Do not report this item if the bridge does not cross over a waterway, as indicated by the coding of SNBI B.F.01 (Feature Type).</li> <li>• This item must be rated for all culverts.</li> </ul>	
<b>Code</b>	<b>Description</b>
<b>N</b>	Not Applicable (bridge does not cross over a waterway).
<b>0</b>	Never
<b>1</b>	Remote - once every 100 years or less frequently
<b>2</b>	Very Low - once every 51 to 99 years
<b>3</b>	Low - once every 26 to 50 years
<b>4</b>	Moderate - once every 11 to 25 years
<b>5</b>	High - once every 3 to 10 years
<b>6</b>	Very High - once every 2 years or more frequently



**NEW AASHTO “Big Bridge” Elements (for 2025)**

#	Name	Description	Type	Units
163	Steel Primary Cable Bands/Splay Castings	Steel primary cable bands and splay castings regardless of protective system. Each quantity is the sum of the individual cable bands and splay castings.	BME	Each
164	Steel Primary Cable Saddles	Steel primary cable saddles and anchors regardless of protective system. Each quantity is the sum of the individual primary cable saddles.	NBE	Each
165	Steel Cable Anchorage Socket or Assembly	Steel cable anchorage sockets or assemblies for primary or secondary cables regardless of protective system. Each quantity is the sum of individual cable anchorage sockets or assemblies.	NBE	Each
166	Post-Tensioning Assembly	Internal and external post-tensioning assemblies, including respective ducts and embedment materials, regardless of protective system. This element is intended for post-tensioned strengthening systems applied to primary bridge elements of any material. This element is not intended to be applied for primary elements defined as PSC elements. Each quantity is the sum of individual post-tensioning assemblies.	NBE	Each
221	Concrete Anchorage Chamber Walls	Primary load-path walls on the exterior or interior of concrete anchorage chambers for suspension cables regardless of protective or reinforcing system. LF quantity is the total length of the interior and exterior (perimeter) walls.	NBE	LF
222	Steel Anchorage Chamber Walls	Exterior walls of steel anchorage chambers for suspension cables regardless of protective or reinforcing system. LF quantity is the total length of the exterior walls (perimeter).	NBE	LF
223	Masonry Anchorage Chamber Walls	Primary load-path walls on the exterior or interior of masonry anchorage chambers for suspension cables regardless of protective system. LF quantity is the total length of the interior and exterior (perimeter) walls.	NBE	LF
224	Concrete Anchorage Block	Concrete anchorage block for suspension cables regardless of protective or reinforcing system. Each quantity is the sum of the individual anchor blocks.	NBE	Each
237	Reinforced Concrete Pier Tower	Reinforced concrete pier towers or pylons supporting suspension or cable-stayed bridge spans, regardless of reinforcing system. LF quantity is the sum of the heights of individual legs or walls of concrete pier towers. Height may be measured from the top of footing or top of deck depending on configuration.	NBE	LF
238	Masonry Pier Tower	Masonry pier towers supporting suspension bridge spans. LF quantity is the sum of the heights of individual legs or walls of masonry pier towers. Height may be measured from the top of footing or top of deck depending on configuration.	NBE	LF
308	Vibration Damper	Vibration damper systems present on primary cables of cable-stayed bridges, secondary suspender ropes of suspension bridges, or other cables to limit vibration. Each quantity is the sum of the individual damper assemblies.	BME	Each
340	Deck Drainage	All elements which facilitate drainage of runoff from the deck, including troughs beneath open joints, scuppers, and deck drainage basins and the connected drainage pipes. Collector pipes to which numerous drainpipes connect may be considered an additional separate drainage element. Each quantity is number of individual drainage devices or assemblies.	BME	Each
350	Substructure Impact Protection	All elements which protect substructure elements from direct collision and resulting damages, including placed riprap, crash walls, dolphins, and fenders of all material types, regardless of protective system. LF quantity is the sum of the length of the crash protection devices.	BME	LF
518	Cable Protective System	Weatherproofing protective systems on primary cables of suspension or cable-stayed structures. Does not include additional conventional paint coatings. SF quantity includes the entire outer surface area of the protective system on the cable element.	BME	SF

## 2023 AASHTO BRIDGE COMMITTEE AGENDA ITEM:

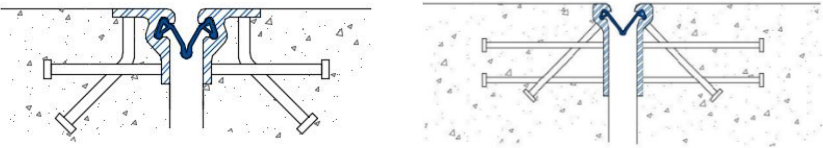
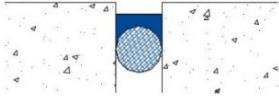
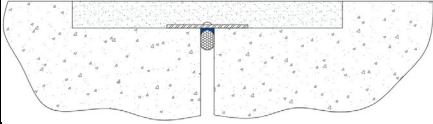
### 2.2.1—Joints



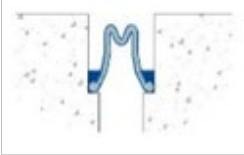
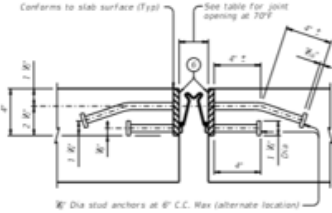
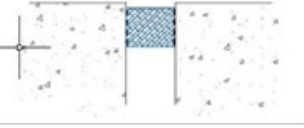


Element	Units	Element Number
Strip Seal Joint	length, ft	300
Pourable Joint Seal	length, ft	301
Poured-In-Place Plug Joint System	length, ft	301A
Compression Joint Seal	length, ft	302
Bonded Preformed Joint Seal	length, ft	302A
Bonded Foam Joint Seal	length, ft	302B
Assembly Joint with Seal	length, ft	303
Segmental Joint System	length, ft	303A
Modular Joint Assembly	length, ft	303B
Open Joint	length, ft	304
Assembly Joint without Seal	length, ft	305
Sliding Plate Joint Assembly	length, ft	305A
Finger (Tooth) Joint Assembly	length, ft	305B
Other Joint	length, ft	306



These elements are bridge joints of various design characteristics. The elements cover joint movement types as described below. Non-movement deck joints (for example, joints used for crack control or construction staging) are not an element defined in this section. Pavement expansion joints between pavement and a bridge approach slab are also excluded from these elements. Depending on design, some joints allow for beam/girder rotation only and not longitudinal movement.

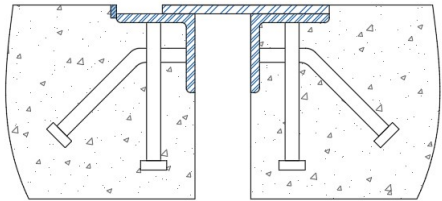
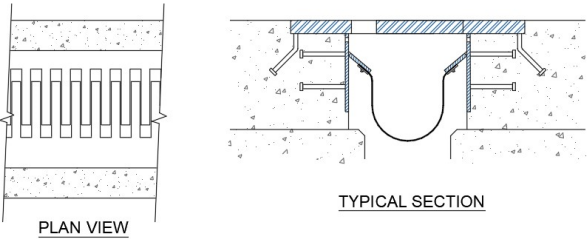
Bridge Joint Types are defined as follows:

- SMJ – A Small Movement Joint is defined as a seal and system that can accommodate movements less than or equal to 2 inches.
- MMJ – A Medium Movement Joint is defined as a seal and system that can accommodate movements greater than 2 inches and less than or equal to 4 inches.
- LMJ – A Large Movement Joint is defined as a system that can accommodate movements greater than 4 inches.

<b>300</b>	<b>Strip Seal Joint</b>	<b>Classification</b>	<b>BME</b>	<b>Unit of measure:</b>	<b>ft</b>
	<b>Description:</b>	Systems comprised of a cast-in structural steel shape that is designed with a cavity to accept a continuously extruded elastomeric seal with corresponding ears on each side that fit into steel cavities. This is a Medium Movement Joint (MMJ).			
					
	<b>Quantity Calculation:</b>	Sum of all the lengths of the joint measured along the skew angle.			
<b>301</b>	<b>Pourable Joint Seal</b>	<b>Classification</b>	<b>BME</b>	<b>Unit of measure:</b>	<b>ft</b>
	<b>Description:</b>	Poured-in-place expansion joint seal installed with or without a backer rod designed to accommodate compression and tension throughout movement range. This is a Small Movement Joint (SMJ).			
					
	<b>Quantity Calculation:</b>	Sum of all the lengths of the joint measured along the skew angle.			
<b>301A</b>	<b>Poured-In-Place Plug Joint System</b>	<b>Classification</b>	<b>BME</b>	<b>Unit of measure:</b>	<b>ft</b>
	<b>Description:</b>	Poured-in-place expansion joint system designed to accommodate compression and tension throughout movement range. System can be installed with or without a centering/spanning traffic plate. This is a Small Movement Joint (SMJ).			
					
	<b>Quantity Calculation:</b>	Sum of all the lengths of the joint measured along the skew angle.			

302	Compression Joint Seal	Classification	BME	Unit of measure:	ft
	<p><b>Description:</b></p>	<p>Elastomeric preformed polychloroprene expansion joint seal installed with an adhesive designed to stay in compression throughout movement range. Seal can be installed with or without structural steel armor. This is a Small Movement Joint (SMJ).</p> 			
	<p><b>Quantity Calculation:</b></p>	<p>Sum of all the lengths of the joint measured along the skew angle.</p>			
302A	Bonded Preformed Joint Seal	Classification	BME	Unit of measure:	ft
	<p><b>Description:</b></p>	<p>Preformed elastomeric or preformed silicone expansion joints seal designed to accommodate compression and tension throughout the movement range and installed with an adhesive. Seal can be installed with or without structural steel armor. This can be a Small Movement Joint (SMJ) or a Medium Movement Joint (MMJ).</p>   			
	<p><b>Quantity Calculation:</b></p>	<p>Sum of all the lengths of the joint measured along the skew angle.</p>			
302B	Bonded Foam Joint Seal	Classification	BME	Unit of measure:	ft
	<p><b>Description:</b></p>	<p>Uncompressed closed-cell foam joint seal or pre-compressed open cell foam supported silicone joint seals with an adhesive designed to accommodate compression and tension throughout movement range. Seal can be installed with or without structural steel armor. This can be a Small Movement Joint (SMJ) or a Medium Movement Joint (MMJ).</p>   			
	<p><b>Quantity Calculation:</b></p>	<p>Sum of all the lengths of the joint measured along the skew angle.</p>			

<b>303</b>	<b>Assembly Joint with Seal</b>	<b>Classification</b>	<b>BME</b>	<b>Unit of measure:</b>	<b>ft</b>
	<b>Description:</b>	Those joints filled with an assembly mechanism that has a seal.			
	<b>Quantity</b>	Sum of all the lengths of the joint measured along the skew angle.			
	<b>Calculation:</b>				
	<b>Note:</b> This element is intended to encompass all other assembly joints with seals that are not covered by element 303A and 303B.				
<b>303A</b>	<b>Segmental Joint System</b>	<b>Classification</b>	<b>BME</b>	<b>Unit of measure:</b>	<b>ft</b>
	<b>Description:</b>	Systems comprised of low-height monolithic segmental rubber panels spanning the joint opening and anchored rigidly to the bridge deck on both sides of the gap through the use of threaded rods or other mechanical means. Panels are steel reinforced. This can be a Medium Movement Joint (MMJ) or a Large Movement Joint (LMJ).			
					
	<b>Quantity</b>	Sum of all the lengths of the joint measured along the skew angle.			
	<b>Calculation:</b>				
<b>303B</b>	<b>Modular Joint Assembly</b>	<b>Classification</b>	<b>BME</b>	<b>Unit of measure:</b>	<b>ft</b>
	<b>Description:</b>	Systems comprised of a series of steel shapes that are rigidly connected to a series of neoprene glands which are mechanically locked to steel side extrusions. The system must be rigidly anchored or cast into the bridge deck and supported longitudinally by at least one support bar that rests inside of a support box structure that is rigidly anchored or cast into the bridge deck. This is a Large Movement Joint (LMJ).			
					
	<b>Quantity</b>	Sum of all the lengths of the joint measured along the skew angle.			
	<b>Calculation:</b>				
<b>304</b>	<b>Open Joint</b>	<b>Classification</b>	<b>BME</b>	<b>Unit of measure:</b>	<b>ft</b>
	<b>Description:</b>	Those joints that are open and not sealed, with or without structural steel armor. Note: This element is intended for joints designed as open joints, not for those joints that were designed to have a seal that is currently missing. This is a Small Movement Joint (SMJ).			
	<b>Quantity</b>	Sum of all the lengths of the joint measured along the skew angle.			
	<b>Calculation:</b>				
<b>305</b>	<b>Assembly Joint Without Seal</b>	<b>Classification</b>	<b>BME</b>	<b>Unit of measure:</b>	<b>ft</b>
	<b>Description:</b>	Those assembly joints that are open and not sealed.			
	<b>Quantity</b>	Sum of all the lengths of the joint measured along the skew angle.			
	<b>Calculation:</b>				
	<b>Note:</b> This element is intended for joints designed as open joints; not for those joints that were designed to have a seal that is currently missing. This element is intended to encompass all other assembly joints without seals that are not covered by element 305A and 305B.				

<b>305A</b>	<b>Sliding Plate Joint Assembly</b>	<b>Classification</b>	<b>BME</b>	<b>Unit of measure:</b>	<b>ft</b>
	<b>Description:</b>	Systems comprised of a plate sliding across the joint opening. The plate is attached to one side of the assembly which is rigidly anchored or cast into the bridge deck. The assembly may or may not require a drainage trough system. This can be a Small Movement Joint (SMJ) or a Medium Movement Joint (MMJ).			
					
	<b>Quantity Calculation:</b>	Sum of all the lengths of the joint measured along the skew angle.			
<b>305B</b>	<b>Finger (Tooth) Joint Assembly</b>	<b>Classification</b>	<b>BME</b>	<b>Unit of measure:</b>	<b>ft</b>
	<b>Description:</b>	An open steel plate expansion joint system with interlocking steel fingers that are rigidly anchored or cast into the bridge deck, which typically require a drainage trough system. This can be a Medium Movement Joint (MMJ) or a Large Movement Joint (LMJ).			
					
	<b>Quantity Calculation:</b>	Sum of all the lengths of the joint measured along the skew angle.			
<b>306</b>	<b>Other Joint</b>	<b>Classification</b>	<b>BME</b>	<b>Unit of measure:</b>	<b>ft</b>
	<b>Description:</b>	Those joints that are not defined by any other joint element. Note: Include detail description and photos of the joint in the inspection report.			
	<b>Quantity Calculation:</b>	Sum of all the lengths of the joint measured along the skew angle.			





U.S. Department  
of Transportation

Federal Highway  
Administration

# Memorandum

Subject: **ACTION**: Inspection Finding Follow-up Actions for  
Uncoated Weathering Steel Bridges

Date: July 19, 2023

From: Joseph L. Hartmann, Ph.D., P.E.  
Director, Office of Bridges and Structures

In Reply Refer To:  
HIBS-1

To: Division Administrators  
Directors of Field Services

The purpose of this memorandum is to provide direction regarding the in-service inspection, inventory, and evaluation of bridges and bridge components fabricated from uncoated weathering steel.

Constructed between 1972 and 1973, the Forbes Avenue Bridge over Fern Hollow in Pittsburgh, Pennsylvania, suffered a complete structural collapse on January 28, 2022. The Fern Hollow Bridge was a 442'-8" long rigid frame bridge consisting of three spans (138'-4" – 166'-0" – 138'-4") and fabricated from uncoated weathering steel. Investigation of the collapse by the National Transportation Safety Board (NTSB) is ongoing and **the probable cause of the failure has yet to be determined.**

On May 18, 2023, the NTSB issued an interim report and recommendation related to the Fern Hollow Bridge collapse titled "Improving the Identification, Prioritization, and Completion of Follow-up Actions on Bridges with Uncoated Weathering Steel Components" (NTSB/HIR-23-07). That report detailed three findings related to the condition of the legs of the Fern Hollow Bridge rigid frames, incomplete maintenance items on the Fern Hollow Bridge and other bridges in Pennsylvania, and the potential for corrosion and deterioration of uncoated weathering steel bridges associated with a lack of maintenance. The report made the following recommendation to the Federal Highway Administration (FHWA):

*Develop a risk-based, data-driven process and encourage its use by state Departments of Transportation, as well as highway-bridge-owning federal agencies and tribal governments, to help them identify, prioritize, and perform follow-up actions documented in inspections of bridges with uncoated weathering steel components. (H-23-13)*

In 1989, FHWA issued [Technical Advisory 5140.22](#) "Uncoated Weathering Steel in Structures" (TA5140.22) that provides guidelines for the proper application of uncoated weathering steel (UWS) and recommendations for maintenance to ensure continued successful performance of UWS bridges. The Fern Hollow Bridge was not located in a marine, high rainfall and humidity, or industrial environment where TA5140.22 recommended that owners exercise caution in using UWS. However, being constructed prior to the technical advisory, the bridge did incorporate deleterious design details, such as deck drainage that allowed runoff to flow onto to the legs and numerous debris traps,

that TA5140.22 later recommended that bridge owners avoid in order to eliminate conditions where excessive oxidation could occur in UWS bridge components and where corrosion could occur in both uncoated and coated steel. Lastly, regardless of the environmental and detailing considerations made in the design and fabrication of a UWS bridge, TA5140.22 urges owners to implement routine inspection and maintenance actions to ensure that UWS bridges remain safe and serviceable. The NTSB interim report noted that maintenance actions identified in inspection reports for the Fern Hollow Bridge during an 11-year period leading up to the collapse were not performed.

Four vehicle occupants were injured, two seriously, in the Fern Hollow Bridge collapse, and a National Highway System route was placed out of service for 11 months. As a result, to best ensure a similar event does not again occur elsewhere, pursuant to 23 CFR 650.313 and 650.315, the State DOTs shall take the following actions:

1. Identify all bridges in their inventory, regardless of ownership, with uncoated weathering steel components in the primary load path.
2. Categorize the identified bridges with uncoated weathering steel components into the following groups:
  - a. Group 1, including:
    - i. Bridges with uncoated weathering steel components in the substructure, or that are a rigid frame, and have a condition rating of 4 or less for the component (superstructure or substructure) containing the uncoated weathering steel element(s); and
    - ii. Bridges with uncoated weathering steel nonredundant steel tension members in the superstructure that have a superstructure condition rating of 4 or less; and
    - iii. Bridges on the National Highway System with any uncoated weathering steel National Bridge Element (except bridge railings) with quantities in Condition State 4.
  - b. Group 2: All bridges with uncoated weathering steel components not categorized into Group 1.
3. By October 31, 2023, report the National Bridge Inventory structure numbers of all bridges in Group 1 to FHWA.
4. By December 31, 2024, for each bridge in Group 1, perform the following actions:
  - a. Review inspection and maintenance records to confirm that bridge inspector-recommended or otherwise recommended work items have been completed that address deficiencies resulting from poor performance of uncoated weathering steel, and that the current load rating for the bridge adequately and appropriately considers the documented deterioration and any completed work.
  - b. Where completion of the recommended work items can be confirmed, but the load rating for the bridge does not adequately and appropriately consider the documented deterioration and completed work, update the load rating accordingly.
  - c. Where completion of the recommended work items has not occurred or cannot be confirmed:
    - i. Review the inspection records for the bridge to ensure that all deterioration of the uncoated weathering steel is documented in sufficient detail to support a

- load rating, and that the current load rating for the bridge adequately and appropriately considers the documented deterioration.
    - ii. Where the deterioration is sufficiently documented but the load rating for the bridge does not adequately and appropriately consider the documented deterioration, update the load rating accordingly.
    - iii. Where the inspection records do not show sufficient documentation, conduct an additional one-time special inspection to document the severity and extent of the deterioration, and update the load rating considering the documented deterioration.
  - d. Work with their FHWA Division Office to update the inventory data reported in paragraph 3 on a quarterly basis until all follow-up actions and documentation are completed, to include:
    - i. If completion of the work has been confirmed, the month and year when the bridge inspector-recommended or otherwise recommended work items addressing deficiencies resulting from poor uncoated weathering steel performance were completed in accordance with paragraph 4.a,
    - ii. If completion of the work has not been confirmed, the month and year when the extent of deterioration was documented in accordance with paragraph 4.c.
    - iii. The month and year when the bridge load rating was updated considering the severity and extent of the documented deterioration and any completed work.
5. For each bridge in Group 2:
- a. During the next scheduled inspection, confirm that all preventative maintenance or preservation activities necessary to ensure the satisfactory performance of the uncoated weathering steel, as described in Technical Advisory 5140.22, are identified and communicated to the appropriate authority.
  - b. Notify FHWA when this task is complete for all bridges in Group 2.

Attachment A includes a flow chart of the above requirements.

Please convey the important requirements of this memorandum to your respective State DOT to ensure they take the actions listed by the required deadlines. These actions are critical to maintaining safety and serviceability of bridges for the traveling public.

Should you or your staff have any questions, please contact Derek Soden at (202) 493-0341 or [derek.soden@dot.gov](mailto:derek.soden@dot.gov), or Samantha Lubkin at (202) 366-1575 or [samantha.lubkin@dot.gov](mailto:samantha.lubkin@dot.gov).

Attachment

cc:

Hari Kalla, HIF-1

Directors of Field Services

Associate Administrator, Office of Innovation and Workforce Solutions

HIBS-10

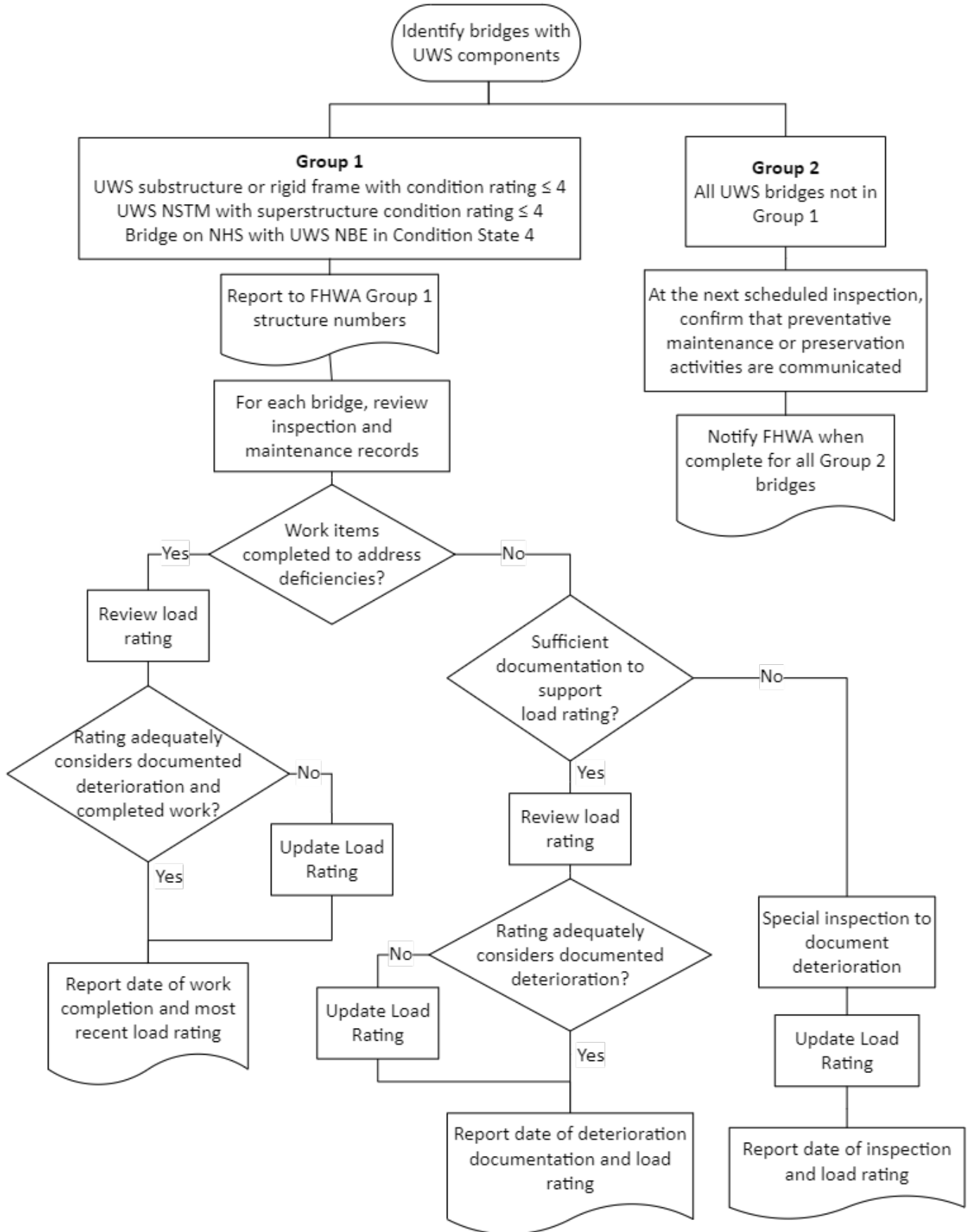
HIBS-30

HIBS-40

Peter Stephanos, HISM-1

Brian Hogge, HICP-1

## Attachment A Process Flow Chart



# Unpainted Weathering Steel Checklist

Bridge owners must fill out the following checklist during either the 2024 or 2025 inspection season (depending on the bridge inspection due date) and submit it with the bridge inspection report for all bridges with uncoated or unpainted weathering steel elements in the primary load path (superstructure or substructure). This checklist will only need to be completed once.

<b>Presence and Location of Weathering Steel</b>	
Does the bridge have primary superstructure elements constructed of uncoated or unpainted weathering steel?	
Does the bridge have primary substructure elements constructed of uncoated or unpainted weathering steel?	
<b>General Weathering Steel Condition</b>	
Have the high corrosion areas of the weathering steel (beam ends at the abutments, areas below deck joints, or fascia's) been painted, galvanized, or otherwise coated?	
Have site conditions negatively impacted the performance of the uncoated or unpainted weathering steel?	
Do any of the weathering steel elements have flaking rust or section loss?	
<b>Recommended Action:</b> Are there any areas of flaking rust or section loss that require additional testing or evaluation?	
<b>Recommended Action:</b> Is painting of some areas of the unpainted weathering steel (or re-painting of previously coated areas) recommended?	
<b>Joints</b>	
Does the weathering steel below deck joints have flaking rust or section loss?	
<b>Recommended Action:</b> Is resealing, repair, or replacement of deck joints recommended?	
<b>Drainage</b>	
Does the weathering steel below or adjacent to deck drains or drainage system components have flaking rust or section loss?	
<b>Recommended Action:</b> Should the deck drainage system be flushed, repaired, retrofit or modified to prevent or reduce deterioration of the weathering steel?	
<b>Dirt and Debris</b>	
Are specific locations or details on the weathering steel collecting dirt or debris?	
<b>Recommended Action:</b> Is cleaning or flushing of the weathering steel recommended?	
<b>Recommended Action:</b> Should countermeasures or retrofits be installed to prevent the build-up of dirt or debris on the weathering steel?	
Program Administrator Review	<input type="checkbox"/>



Vehicular Bridges with Unpainted Weathering Steel

Inspection Agency	Bridge #	MN Main Span Material	MN Main Span Design	NBI 007: Facility Carried by Structure
City > Bemidji	<a href="#">04515</a>	4 - Steel Continuous	01 - Beam Span	MSAS 108
City > Bloomington	<a href="#">27552</a>	4 - Steel Continuous	08 - Rigid Frame	MSAS 407
City > Crookston	<a href="#">60011</a>	4 - Steel Continuous	01 - Beam Span	MSAS 115
City > Crookston	<a href="#">60527</a>	4 - Steel Continuous	01 - Beam Span	MSAS 117
City > East Grand Forks	<a href="#">60019</a>	4 - Steel Continuous	01 - Beam Span	MSAS 119
City > Eden Prairie	<a href="#">27663</a>	3 - Steel	01 - Beam Span	MSAS 107
City > Faribault (City)	<a href="#">66513</a>	4 - Steel Continuous	01 - Beam Span	MSAS 103
City > Faribault (City)	<a href="#">66523</a>	4 - Steel Continuous	01 - Beam Span	MSAS 125
City > Hastings	<a href="#">19010</a>	4 - Steel Continuous	01 - Beam Span	MSAS 145
City > Minneapolis	<a href="#">27B97</a>	3 - Steel	03 - High Truss	MSAS 454
City > Moorhead	<a href="#">14511</a>	4 - Steel Continuous	01 - Beam Span	1st AVE N.
City > Moorhead	<a href="#">14531</a>	4 - Steel Continuous	01 - Beam Span	34th ST.
City > New Ulm	<a href="#">08520</a>	4 - Steel Continuous	01 - Beam Span	MSAS 110
City > Owatonna	<a href="#">74550</a>	3 - Steel	02 - Low Truss	SERVICE RD
City > Owatonna	<a href="#">R0268</a>	3 - Steel	02 - Low Truss	UNDETERMINED RD
City > Owatonna	<a href="#">R0269</a>	3 - Steel	02 - Low Truss	M 125
City > Owatonna	<a href="#">R0270</a>	3 - Steel	02 - Low Truss	M 555
City > Red Wing	<a href="#">25547</a>	4 - Steel Continuous	01 - Beam Span	MSAS 128
City > Red Wing	<a href="#">25560</a>	4 - Steel Continuous	01 - Beam Span	MSAS 122
City > Robbinsdale	<a href="#">27081</a>	4 - Steel Continuous	01 - Beam Span	MSAS 125
City > Rochester	<a href="#">55522</a>	4 - Steel Continuous	01 - Beam Span	MSAS 210
City > St Louis Park	<a href="#">27621</a>	4 - Steel Continuous	01 - Beam Span	MSAS 276
City > St Paul	<a href="#">62091</a>	3 - Steel	01 - Beam Span	MN 5
City > St Paul	<a href="#">62523</a>	4 - Steel Continuous	01 - Beam Span	CSAH 53
City > St Paul	<a href="#">62526</a>	4 - Steel Continuous	01 - Beam Span	CSAH 31
City > St Paul	<a href="#">62527</a>	4 - Steel Continuous	01 - Beam Span	CSAH 33
City > St Paul	<a href="#">62528</a>	3 - Steel	01 - Beam Span	MSAS 194
City > St Paul	<a href="#">62530</a>	3 - Steel	01 - Beam Span	CSAH 65
City > St Paul	<a href="#">62531</a>	3 - Steel	01 - Beam Span	CSAH 36
City > St Paul	<a href="#">62532</a>	4 - Steel Continuous	01 - Beam Span	CON 3739
City > St Paul	<a href="#">62541</a>	3 - Steel	01 - Beam Span	CSAH 32
City > St Paul	<a href="#">90408</a>	4 - Steel Continuous	01 - Beam Span	CSAH 55
County > Beltrami	<a href="#">04511</a>	4 - Steel Continuous	01 - Beam Span	CSAH 12
County > Beltrami	<a href="#">04512</a>	4 - Steel Continuous	01 - Beam Span	CSAH 7
County > Benton	<a href="#">05521</a>	4 - Steel Continuous	01 - Beam Span	CSAH 2
County > Blue Earth	<a href="#">07024</a>	4 - Steel Continuous	01 - Beam Span	CSAH 38
County > Blue Earth	<a href="#">07035</a>	4 - Steel Continuous	08 - Rigid Frame	CSAH 57
County > Blue Earth	<a href="#">07531</a>	4 - Steel Continuous	01 - Beam Span	CSAH 13
County > Blue Earth	<a href="#">07533</a>	4 - Steel Continuous	01 - Beam Span	CSAH 10

## Vehicular Bridges with Unpainted Weathering Steel

County > Blue Earth	<a href="#">07534</a>	4 - Steel Continuous	01 - Beam Span	CSAH 10
County > Blue Earth	<a href="#">07538</a>	4 - Steel Continuous	01 - Beam Span	CSAH 20
County > Blue Earth	<a href="#">07540</a>	4 - Steel Continuous	01 - Beam Span	CR 172
County > Blue Earth	<a href="#">07541</a>	4 - Steel Continuous	01 - Beam Span	T 326
County > Blue Earth	<a href="#">07542</a>	4 - Steel Continuous	01 - Beam Span	CSAH 9
County > Blue Earth	<a href="#">07550</a>	4 - Steel Continuous	01 - Beam Span	CSAH 35
County > Blue Earth	<a href="#">R0753</a>	4 - Steel Continuous	01 - Beam Span	CR 147
County > Brown	<a href="#">08519</a>	4 - Steel Continuous	01 - Beam Span	CSAH 22
County > Brown	<a href="#">08524</a>	4 - Steel Continuous	01 - Beam Span	CSAH 24
County > Brown	<a href="#">08527</a>	4 - Steel Continuous	01 - Beam Span	CSAH 14
County > Carlton	<a href="#">09505</a>	4 - Steel Continuous	01 - Beam Span	CSAH 61
County > Carlton	<a href="#">09539</a>	3 - Steel	01 - Beam Span	T 175
County > Carlton	<a href="#">L1230</a>	3 - Steel	01 - Beam Span	CR 131
County > Carver	<a href="#">10507</a>	4 - Steel Continuous	01 - Beam Span	CSAH 23
County > Carver	<a href="#">10515</a>	4 - Steel Continuous	01 - Beam Span	CSAH 33
County > Chippewa	<a href="#">12519</a>	4 - Steel Continuous	01 - Beam Span	CSAH 9
County > Chippewa	<a href="#">12522</a>	4 - Steel Continuous	01 - Beam Span	CR 3
County > Clay	<a href="#">14503</a>	4 - Steel Continuous	01 - Beam Span	CSAH 8
County > Clay	<a href="#">14510</a>	4 - Steel Continuous	01 - Beam Span	CSAH 12
County > Clay	<a href="#">14515</a>	4 - Steel Continuous	01 - Beam Span	CSAH 5
County > Clay	<a href="#">14520</a>	4 - Steel Continuous	01 - Beam Span	CSAH 26
County > Clay	<a href="#">14525</a>	4 - Steel Continuous	01 - Beam Span	CSAH 26
County > Clay	<a href="#">14539</a>	4 - Steel Continuous	01 - Beam Span	CSAH 22
County > Cottonwood	<a href="#">17521</a>	4 - Steel Continuous	01 - Beam Span	CR 14
County > Dakota	<a href="#">19512</a>	4 - Steel Continuous	01 - Beam Span	CSAH 31
County > Douglas	<a href="#">21504</a>	3 - Steel	01 - Beam Span	CSAH 11
County > Faribault	<a href="#">22540</a>	4 - Steel Continuous	01 - Beam Span	CSAH 5
County > Faribault	<a href="#">22553</a>	4 - Steel Continuous	01 - Beam Span	CSAH 4
County > Faribault	<a href="#">22554</a>	4 - Steel Continuous	01 - Beam Span	CSAH 10
County > Faribault	<a href="#">22577</a>	4 - Steel Continuous	01 - Beam Span	T 92
County > Faribault	<a href="#">22579</a>	4 - Steel Continuous	01 - Beam Span	CSAH 12
County > Faribault	<a href="#">L6344</a>	3 - Steel	01 - Beam Span	T 85
County > Fillmore	<a href="#">23512</a>	4 - Steel Continuous	01 - Beam Span	CSAH 12
County > Fillmore	<a href="#">23516</a>	4 - Steel Continuous	01 - Beam Span	CSAH 5
County > Fillmore	<a href="#">23521</a>	4 - Steel Continuous	01 - Beam Span	CSAH 21
County > Fillmore	<a href="#">23522</a>	4 - Steel Continuous	01 - Beam Span	CSAH 5
County > Fillmore	<a href="#">23524</a>	4 - Steel Continuous	01 - Beam Span	T 422
County > Fillmore	<a href="#">23526</a>	4 - Steel Continuous	01 - Beam Span	T 441
County > Fillmore	<a href="#">23534</a>	4 - Steel Continuous	01 - Beam Span	T 259
County > Fillmore	<a href="#">23537</a>	4 - Steel Continuous	01 - Beam Span	M 60
County > Fillmore	<a href="#">23539</a>	4 - Steel Continuous	01 - Beam Span	CSAH 38
County > Fillmore	<a href="#">23541</a>	4 - Steel Continuous	01 - Beam Span	CSAH 11
County > Fillmore	<a href="#">23546</a>	4 - Steel Continuous	01 - Beam Span	CSAH 12



## Vehicular Bridges with Unpainted Weathering Steel

County > Fillmore	<a href="#">23558</a>	4 - Steel Continuous	01 - Beam Span	CSAH 12
County > Freeborn	<a href="#">24517</a>	4 - Steel Continuous	01 - Beam Span	T 266
County > Freeborn	<a href="#">24518</a>	4 - Steel Continuous	01 - Beam Span	CR 84
County > Freeborn	<a href="#">24519</a>	4 - Steel Continuous	01 - Beam Span	T 44
County > Freeborn	<a href="#">24523</a>	4 - Steel Continuous	01 - Beam Span	CSAH 25
County > Freeborn	<a href="#">24526</a>	4 - Steel Continuous	01 - Beam Span	T 137
County > Freeborn	<a href="#">24528</a>	4 - Steel Continuous	01 - Beam Span	CSAH 13
County > Goodhue	<a href="#">25513</a>	4 - Steel Continuous	01 - Beam Span	CSAH 5
County > Goodhue	<a href="#">25520</a>	4 - Steel Continuous	01 - Beam Span	CSAH 30
County > Goodhue	<a href="#">25521</a>	4 - Steel Continuous	01 - Beam Span	CSAH 4
County > Goodhue	<a href="#">25522</a>	4 - Steel Continuous	01 - Beam Span	CSAH 7
County > Goodhue	<a href="#">25526</a>	4 - Steel Continuous	01 - Beam Span	M 37
County > Goodhue	<a href="#">25528</a>	4 - Steel Continuous	01 - Beam Span	T 792
County > Goodhue	<a href="#">25531</a>	4 - Steel Continuous	01 - Beam Span	CSAH 7
County > Goodhue	<a href="#">25532</a>	4 - Steel Continuous	01 - Beam Span	CSAH 6
County > Goodhue	<a href="#">25535</a>	4 - Steel Continuous	01 - Beam Span	CSAH 2
County > Goodhue	<a href="#">25538</a>	4 - Steel Continuous	01 - Beam Span	CSAH 27
County > Goodhue	<a href="#">25540</a>	3 - Steel	01 - Beam Span	CSAH 17
County > Goodhue	<a href="#">25541</a>	4 - Steel Continuous	01 - Beam Span	CSAH 9
County > Goodhue	<a href="#">25554</a>	4 - Steel Continuous	01 - Beam Span	CSAH 24
County > Hennepin	<a href="#">27241</a>	4 - Steel Continuous	01 - Beam Span	CSAH 152
County > Hennepin	<a href="#">27532</a>	4 - Steel Continuous	01 - Beam Span	CSAH 19
County > Hennepin	<a href="#">27542</a>	4 - Steel Continuous	01 - Beam Span	CSAH 1
County > Hennepin	<a href="#">27565</a>	4 - Steel Continuous	01 - Beam Span	CSAH 15
County > Hennepin	<a href="#">27570</a>	4 - Steel Continuous	01 - Beam Span	CSAH 2
County > Hennepin	<a href="#">27576</a>	4 - Steel Continuous	08 - Rigid Frame	CSAH 61
County > Hennepin	<a href="#">27606</a>	3 - Steel	01 - Beam Span	
County > Hennepin	<a href="#">27608</a>	4 - Steel Continuous	01 - Beam Span	
County > Hennepin	<a href="#">27639</a>	4 - Steel Continuous	01 - Beam Span	M 33
County > Hennepin	<a href="#">27641</a>	4 - Steel Continuous	01 - Beam Span	CSAH 116
County > Houston	<a href="#">28505</a>	4 - Steel Continuous	01 - Beam Span	CSAH 4
County > Houston	<a href="#">28506</a>	4 - Steel Continuous	01 - Beam Span	CSAH 18
County > Houston	<a href="#">28508</a>	4 - Steel Continuous	01 - Beam Span	CSAH 15
County > Houston	<a href="#">28512</a>	4 - Steel Continuous	01 - Beam Span	CSAH 6
County > Houston	<a href="#">28513</a>	4 - Steel Continuous	01 - Beam Span	CSAH 20
County > Houston	<a href="#">28519</a>	4 - Steel Continuous	01 - Beam Span	T 185
County > Houston	<a href="#">28521</a>	4 - Steel Continuous	01 - Beam Span	CSAH 6
County > Isanti	<a href="#">30508</a>	4 - Steel Continuous	01 - Beam Span	CSAH 10
County > Jackson	<a href="#">32527</a>	4 - Steel Continuous	01 - Beam Span	T 131
County > Jackson	<a href="#">32540</a>	4 - Steel Continuous	01 - Beam Span	M 15
County > Koochiching	<a href="#">36507</a>	4 - Steel Continuous	01 - Beam Span	CSAH 22
County > Koochiching	<a href="#">36517</a>	4 - Steel Continuous	01 - Beam Span	CSAH 75
County > Koochiching	<a href="#">36528</a>	4 - Steel Continuous	01 - Beam Span	CSAH 1

## Vehicular Bridges with Unpainted Weathering Steel

County > Lac Qui Parle	<a href="#">37512</a>	4 - Steel Continuous	01 - Beam Span	210TH ST
County > Lake	<a href="#">38505</a>	4 - Steel Continuous	01 - Beam Span	CSAH 16
County > Lake	<a href="#">38535</a>	3 - Steel	01 - Beam Span	CSAH 34
County > LeSueur	<a href="#">40513</a>	4 - Steel Continuous	01 - Beam Span	CR 165
County > Lyon	<a href="#">42539</a>	4 - Steel Continuous	01 - Beam Span	CSAH 33
County > Marshall	<a href="#">45519</a>	4 - Steel Continuous	01 - Beam Span	CSAH 1
County > Marshall	<a href="#">45540</a>	4 - Steel Continuous	01 - Beam Span	CR 115
County > McLeod	<a href="#">43509</a>	4 - Steel Continuous	01 - Beam Span	CSAH 9
County > McLeod	<a href="#">43517</a>	4 - Steel Continuous	01 - Beam Span	T 107
County > McLeod	<a href="#">43519</a>	4 - Steel Continuous	01 - Beam Span	CSAH 14
County > McLeod	<a href="#">43520</a>	4 - Steel Continuous	01 - Beam Span	CSAH 25
County > Mille Lacs	<a href="#">48513</a>	4 - Steel Continuous	01 - Beam Span	CSAH 13
County > Morrison	<a href="#">4558</a>	4 - Steel Continuous	01 - Beam Span	CSAH 20
County > Morrison	<a href="#">49528</a>	4 - Steel Continuous	01 - Beam Span	CSAH 26
County > Mower	<a href="#">50521</a>	4 - Steel Continuous	01 - Beam Span	T 107
County > Mower	<a href="#">50523</a>	4 - Steel Continuous	01 - Beam Span	MSAS 117
County > Mower	<a href="#">50524</a>	4 - Steel Continuous	01 - Beam Span	CSAH 2
County > Mower	<a href="#">50526</a>	4 - Steel Continuous	01 - Beam Span	CR 61
County > Mower	<a href="#">50529</a>	4 - Steel Continuous	01 - Beam Span	M 418
County > Mower	<a href="#">50540</a>	4 - Steel Continuous	01 - Beam Span	CSAH 12
County > Mower	<a href="#">50543</a>	4 - Steel Continuous	01 - Beam Span	T 159
County > Mower	<a href="#">50553</a>	4 - Steel Continuous	01 - Beam Span	T 257
County > Mower	<a href="#">50557</a>	4 - Steel Continuous	01 - Beam Span	T 141
County > Mower	<a href="#">50559</a>	4 - Steel Continuous	01 - Beam Span	T 266
County > Mower	<a href="#">50560</a>	4 - Steel Continuous	01 - Beam Span	T 48
County > Mower	<a href="#">50566</a>	4 - Steel Continuous	01 - Beam Span	590TH AVE
County > Mower	<a href="#">50567</a>	4 - Steel Continuous	01 - Beam Span	T 279
County > Mower	<a href="#">50568</a>	4 - Steel Continuous	01 - Beam Span	T 61
County > Nicollet	<a href="#">52504</a>	4 - Steel Continuous	01 - Beam Span	CSAH 24
County > Norman	<a href="#">54511</a>	4 - Steel Continuous	01 - Beam Span	CSAH 19
County > Norman	<a href="#">54519</a>	4 - Steel Continuous	01 - Beam Span	CSAH 25
County > Norman	<a href="#">54520</a>	4 - Steel Continuous	01 - Beam Span	CSAH 24
County > Norman	<a href="#">54525</a>	4 - Steel Continuous	01 - Beam Span	T 84
County > Norman	<a href="#">54532</a>	4 - Steel Continuous	01 - Beam Span	CSAH 29
County > Norman	<a href="#">54533</a>	4 - Steel Continuous	01 - Beam Span	CSAH 3
County > Norman	<a href="#">54536</a>	4 - Steel Continuous	01 - Beam Span	CSAH 4
County > Norman	<a href="#">54537</a>	4 - Steel Continuous	01 - Beam Span	CSAH 21
County > Norman	<a href="#">54543</a>	4 - Steel Continuous	01 - Beam Span	CSAH 10
County > Norman	<a href="#">54549</a>	4 - Steel Continuous	01 - Beam Span	CSAH 3
County > Norman	<a href="#">54550</a>	4 - Steel Continuous	01 - Beam Span	CSAH 39
County > Olmsted	<a href="#">55520</a>	4 - Steel Continuous	01 - Beam Span	CSAH 12
County > Olmsted	<a href="#">55526</a>	4 - Steel Continuous	01 - Beam Span	CR 150
County > Olmsted	<a href="#">55527</a>	4 - Steel Continuous	01 - Beam Span	CSAH 5

## Vehicular Bridges with Unpainted Weathering Steel

County > Olmsted	<a href="#">55534</a>	4 - Steel Continuous	01 - Beam Span	T 13
County > Olmsted	<a href="#">55543</a>	4 - Steel Continuous	01 - Beam Span	CSAH 3
County > Olmsted	<a href="#">55544</a>	4 - Steel Continuous	01 - Beam Span	CR 139
County > Olmsted	<a href="#">89182</a>	4 - Steel Continuous	01 - Beam Span	CR 125
County > Pine	<a href="#">58513</a>	4 - Steel Continuous	01 - Beam Span	CSAH 25
County > Pine	<a href="#">58517</a>	4 - Steel Continuous	01 - Beam Span	CSAH 11
County > Polk	<a href="#">60507</a>	4 - Steel Continuous	01 - Beam Span	CSAH 11
County > Polk	<a href="#">60561</a>	4 - Steel Continuous	01 - Beam Span	CSAH 9
County > Red Lake	<a href="#">63503</a>	4 - Steel Continuous	01 - Beam Span	CSAH 12
County > Red Lake	<a href="#">63507</a>	4 - Steel Continuous	01 - Beam Span	CSAH 3
County > Redwood	<a href="#">64541</a>	4 - Steel Continuous	01 - Beam Span	CSAH 8
County > Renville	<a href="#">65532</a>	4 - Steel Continuous	01 - Beam Span	CSAH 6
County > Rice	<a href="#">66510</a>	4 - Steel Continuous	01 - Beam Span	CSAH 19
County > Rice	<a href="#">66511</a>	4 - Steel Continuous	01 - Beam Span	CSAH 12
County > Rice	<a href="#">66515</a>	4 - Steel Continuous	01 - Beam Span	CSAH 1
County > Rice	<a href="#">66518</a>	4 - Steel Continuous	01 - Beam Span	CSAH 1
County > Rice	<a href="#">66520</a>	4 - Steel Continuous	01 - Beam Span	T 51
County > Rock	<a href="#">67553</a>	4 - Steel Continuous	01 - Beam Span	CSAH 4
County > Roseau	<a href="#">68520</a>	4 - Steel Continuous	01 - Beam Span	CSAH 72
County > Roseau	<a href="#">90770</a>	3 - Steel	01 - Beam Span	CR 113
County > Roseau	<a href="#">92166</a>	3 - Steel	01 - Beam Span	CR 115
County > Roseau	<a href="#">93068</a>	3 - Steel	01 - Beam Span	CSAH 28
County > Roseau	<a href="#">93984</a>	3 - Steel	01 - Beam Span	CR 126
County > Roseau	<a href="#">L2931</a>	3 - Steel	01 - Beam Span	T 502
County > Roseau	<a href="#">L5986</a>	3 - Steel	01 - Beam Span	T 338
County > Sherburne	<a href="#">71514</a>	4 - Steel Continuous	01 - Beam Span	CR 61
County > St Louis	<a href="#">69510</a>	4 - Steel Continuous	01 - Beam Span	CSAH 95
County > St Louis	<a href="#">69554</a>	3 - Steel	01 - Beam Span	CR 958
County > St Louis	<a href="#">69567</a>	3 - Steel	01 - Beam Span	UT 9218
County > St Louis	<a href="#">69576</a>	4 - Steel Continuous	01 - Beam Span	CSAH 5
County > St Louis	<a href="#">69578</a>	4 - Steel Continuous	01 - Beam Span	M 53
County > St Louis	<a href="#">69579</a>	4 - Steel Continuous	01 - Beam Span	CR 923
County > St Louis	<a href="#">69582</a>	3 - Steel	01 - Beam Span	T 5
County > St Louis	<a href="#">69587</a>	3 - Steel	01 - Beam Span	UT 9223
County > St Louis	<a href="#">69588</a>	4 - Steel Continuous	01 - Beam Span	CR 444
County > St Louis	<a href="#">69596</a>	7 - Timber	12 - Arch	CR 565
County > St Louis	<a href="#">93600</a>	3 - Steel	01 - Beam Span	CR 958
County > St Louis	<a href="#">69A07</a>	3 - Steel	01 - Beam Span	LOC 2
County > St Louis	<a href="#">69A17</a>	3 - Steel	01 - Beam Span	CR 356
County > St Louis	<a href="#">69A23</a>	3 - Steel	01 - Beam Span	SFR 293
County > Stearns	<a href="#">73021</a>	4 - Steel Continuous	01 - Beam Span	CSAH 85
County > Stearns	<a href="#">73518</a>	4 - Steel Continuous	01 - Beam Span	M 10
County > Stearns	<a href="#">73526</a>	4 - Steel Continuous	01 - Beam Span	CR 139

## Vehicular Bridges with Unpainted Weathering Steel

County > Stearns	<a href="#">73527</a>	4 - Steel Continuous	01 - Beam Span	CSAH 10
County > Stearns	<a href="#">73528</a>	4 - Steel Continuous	01 - Beam Span	CSAH 1
County > Stearns	<a href="#">73530</a>	4 - Steel Continuous	01 - Beam Span	CSAH 34
County > Stearns	<a href="#">73533</a>	4 - Steel Continuous	01 - Beam Span	CSAH 71
County > Stearns	<a href="#">73534</a>	4 - Steel Continuous	01 - Beam Span	CR 111
County > Stearns	<a href="#">73538</a>	4 - Steel Continuous	01 - Beam Span	CSAH 65
County > Steele	<a href="#">74007</a>	4 - Steel Continuous	01 - Beam Span	CSAH 45
County > Steele	<a href="#">74529</a>	4 - Steel Continuous	01 - Beam Span	CR 98
County > Steele	<a href="#">74530</a>	4 - Steel Continuous	01 - Beam Span	T 80
County > Stevens	<a href="#">75504</a>	4 - Steel Continuous	01 - Beam Span	CR 58
County > Swift	<a href="#">76503</a>	4 - Steel Continuous	01 - Beam Span	CSAH 10
County > Swift	<a href="#">76505</a>	4 - Steel Continuous	01 - Beam Span	CSAH 6
County > Swift	<a href="#">76509</a>	4 - Steel Continuous	01 - Beam Span	T 99
County > Swift	<a href="#">76510</a>	4 - Steel Continuous	01 - Beam Span	CR 62
County > Swift	<a href="#">76511</a>	4 - Steel Continuous	01 - Beam Span	CR 51
County > Swift	<a href="#">76512</a>	4 - Steel Continuous	01 - Beam Span	CSAH 19
County > Swift	<a href="#">76515</a>	4 - Steel Continuous	01 - Beam Span	CR 56
County > Swift	<a href="#">76517</a>	4 - Steel Continuous	01 - Beam Span	CR 75
County > Todd	<a href="#">77517</a>	4 - Steel Continuous	01 - Beam Span	T 357
County > Todd	<a href="#">77521</a>	4 - Steel Continuous	01 - Beam Span	CSAH 7
County > Traverse	<a href="#">78505</a>	3 - Steel	01 - Beam Span	CSAH 106
County > Wabasha	<a href="#">79506</a>	4 - Steel Continuous	01 - Beam Span	CSAH 1
County > Wabasha	<a href="#">79508</a>	4 - Steel Continuous	01 - Beam Span	CSAH 7
County > Wabasha	<a href="#">79514</a>	4 - Steel Continuous	01 - Beam Span	CR 86
County > Wabasha	<a href="#">79516</a>	4 - Steel Continuous	01 - Beam Span	CSAH 21
County > Wabasha	<a href="#">79523</a>	4 - Steel Continuous	01 - Beam Span	CSAH 11
County > Wabasha	<a href="#">79537</a>	4 - Steel Continuous	01 - Beam Span	CSAH 8
County > Wabasha	<a href="#">79543</a>	4 - Steel Continuous	01 - Beam Span	CSAH 30
County > Wadena	<a href="#">11513</a>	4 - Steel Continuous	01 - Beam Span	CSAH 30
County > Wadena	<a href="#">80002</a>	4 - Steel Continuous	01 - Beam Span	CSAH 12
County > Wadena	<a href="#">80003</a>	4 - Steel Continuous	01 - Beam Span	CSAH 12
County > Waseca	<a href="#">81518</a>	4 - Steel Continuous	01 - Beam Span	CSAH 4
County > Watonwan	<a href="#">83515</a>	4 - Steel Continuous	01 - Beam Span	CR 103
County > Winona	<a href="#">85510</a>	4 - Steel Continuous	01 - Beam Span	CSAH 37
County > Wright	<a href="#">86504</a>	4 - Steel Continuous	01 - Beam Span	CSAH 3
County > Wright	<a href="#">86505</a>	4 - Steel Continuous	01 - Beam Span	T 258
County > Wright	<a href="#">86506</a>	4 - Steel Continuous	01 - Beam Span	T 258
County > Wright	<a href="#">86507</a>	4 - Steel Continuous	01 - Beam Span	T 296
County > Wright	<a href="#">86508</a>	4 - Steel Continuous	01 - Beam Span	CSAH 4
County > Yellow Medicine	<a href="#">87511</a>	4 - Steel Continuous	01 - Beam Span	CSAH 19
County > Yellow Medicine	<a href="#">87512</a>	4 - Steel Continuous	01 - Beam Span	CSAH 4
County > Yellow Medicine	<a href="#">87513</a>	4 - Steel Continuous	01 - Beam Span	CSAH 22
County > Yellow Medicine	<a href="#">87542</a>	4 - Steel Continuous	01 - Beam Span	T 156

## Vehicular Bridges with Unpainted Weathering Steel

County > Yellow Medicine	<a href="#">87557</a>	4 - Steel Continuous	01 - Beam Span	CSAH 4
County > Yellow Medicine	<a href="#">87573</a>	4 - Steel Continuous	01 - Beam Span	CSAH 7
State > District 1	<a href="#">01014</a>	4 - Steel Continuous	01 - Beam Span	MN 65
State > District 1	<a href="#">6554</a>	4 - Steel Continuous	01 - Beam Span	MN 73
State > District 1	<a href="#">09006</a>	4 - Steel Continuous	01 - Beam Span	MN 210
State > District 1	<a href="#">16001</a>	3 - Steel	01 - Beam Span	MN 61
State > District 1	<a href="#">31023</a>	4 - Steel Continuous	01 - Beam Span	US 169
State > District 1	<a href="#">31024</a>	4 - Steel Continuous	01 - Beam Span	US 169
State > District 1	<a href="#">36009</a>	4 - Steel Continuous	01 - Beam Span	MN 6
State > District 1	<a href="#">36010</a>	4 - Steel Continuous	01 - Beam Span	MN 6
State > District 1	<a href="#">36011</a>	3 - Steel	01 - Beam Span	US 71
State > District 1	<a href="#">36012</a>	3 - Steel	01 - Beam Span	US 71
State > District 1	<a href="#">36025</a>	4 - Steel Continuous	01 - Beam Span	MN 65
State > District 1	<a href="#">38002</a>	3 - Steel	01 - Beam Span	MN 1
State > District 1	<a href="#">58002</a>	4 - Steel Continuous	01 - Beam Span	MN 23
State > District 1	<a href="#">58004</a>	4 - Steel Continuous	01 - Beam Span	MN 70
State > District 1	<a href="#">69021</a>	4 - Steel Continuous	01 - Beam Span	US 53
State > District 1	<a href="#">69083</a>	3 - Steel	01 - Beam Span	US 169
State > District 1	<a href="#">69084</a>	3 - Steel	01 - Beam Span	US 169
State > District 1	<a href="#">69101</a>	4 - Steel Continuous	01 - Beam Span	US 2 WB Off Ramp
State > District 1	<a href="#">69102</a>	4 - Steel Continuous	01 - Beam Span	US 2 EB on Ramp
State > District 1	<a href="#">69107</a>	4 - Steel Continuous	01 - Beam Span	MN 37
State > District 1	<a href="#">69108</a>	4 - Steel Continuous	01 - Beam Span	MN 37
State > District 1	<a href="#">69109</a>	4 - Steel Continuous	01 - Beam Span	CON 1248
State > District 1	<a href="#">69112</a>	4 - Steel Continuous	01 - Beam Span	MN 1
State > District 1	<a href="#">69129</a>	4 - Steel Continuous	01 - Beam Span	US 53
State > District 1	<a href="#">69865</a>	4 - Steel Continuous	01 - Beam Span	I-35
State > District 1	<a href="#">99200</a>	3 - Steel	01 - Beam Span	MN 210
State > District 2	<a href="#">04007</a>	4 - Steel Continuous	01 - Beam Span	MN 210
State > District 2	<a href="#">04008</a>	4 - Steel Continuous	01 - Beam Span	US 71
State > District 2	<a href="#">04019</a>	4 - Steel Continuous	01 - Beam Span	CSAH 11
State > District 2	<a href="#">04021</a>	4 - Steel Continuous	01 - Beam Span	CSAH 15
State > District 2	<a href="#">5327</a>	4 - Steel Continuous	01 - Beam Span	US 59
State > District 2	<a href="#">5401</a>	3 - Steel	01 - Beam Span	MN 92
State > District 2	<a href="#">5760</a>	4 - Steel Continuous	01 - Beam Span	US 2
State > District 2	<a href="#">5814</a>	4 - Steel Continuous	01 - Beam Span	MN 11
State > District 2	<a href="#">15002</a>	3 - Steel	01 - Beam Span	MN 200
State > District 2	<a href="#">35006</a>	4 - Steel Continuous	01 - Beam Span	MN 175
State > District 2	<a href="#">35010</a>	4 - Steel Continuous	01 - Beam Span	MN 171
State > District 2	<a href="#">35011</a>	4 - Steel Continuous	01 - Beam Span	MN 11
State > District 2	<a href="#">39016</a>	4 - Steel Continuous	01 - Beam Span	MN 72
State > District 2	<a href="#">45003</a>	4 - Steel Continuous	01 - Beam Span	MN 220
State > District 2	<a href="#">54002</a>	4 - Steel Continuous	01 - Beam Span	MN 9

## Vehicular Bridges with Unpainted Weathering Steel

State > District 2	<a href="#">54004</a>	4 - Steel Continuous	01 - Beam Span	MN 200
State > District 2	<a href="#">54006</a>	4 - Steel Continuous	01 - Beam Span	US 75
State > District 2	<a href="#">54010</a>	3 - Steel	01 - Beam Span	US 75
State > District 2	<a href="#">60021</a>	4 - Steel Continuous	01 - Beam Span	US 75
State > District 2	<a href="#">60518</a>	4 - Steel Continuous	01 - Beam Span	MN 220
State > District 2	<a href="#">60523</a>	4 - Steel Continuous	01 - Beam Span	US 75
State > District 2	<a href="#">68005</a>	4 - Steel Continuous	01 - Beam Span	MN 89
State > District 3	<a href="#">01005</a>	4 - Steel Continuous	01 - Beam Span	MN 210
State > District 3	<a href="#">01006</a>	4 - Steel Continuous	01 - Beam Span	MN 210
State > District 3	<a href="#">5443</a>	4 - Steel Continuous	01 - Beam Span	MN 55
State > District 3	<a href="#">5444</a>	4 - Steel Continuous	01 - Beam Span	US 10
State > District 3	<a href="#">6574</a>	4 - Steel Continuous	01 - Beam Span	US 10
State > District 3	<a href="#">34021</a>	4 - Steel Continuous	01 - Beam Span	MN 55
State > District 3	<a href="#">48011</a>	4 - Steel Continuous	01 - Beam Span	US 169
State > District 3	<a href="#">48012</a>	4 - Steel Continuous	01 - Beam Span	US 169
State > District 3	<a href="#">49010</a>	4 - Steel Continuous	01 - Beam Span	US 10
State > District 3	<a href="#">49011</a>	4 - Steel Continuous	01 - Beam Span	US 10
State > District 3	<a href="#">49012</a>	4 - Steel Continuous	01 - Beam Span	US 10
State > District 3	<a href="#">71007</a>	4 - Steel Continuous	01 - Beam Span	US 169
State > District 3	<a href="#">71008</a>	4 - Steel Continuous	01 - Beam Span	US 169
State > District 3	<a href="#">73019</a>	4 - Steel Continuous	01 - Beam Span	CSAH 137
State > District 3	<a href="#">73020</a>	4 - Steel Continuous	01 - Beam Span	MN 55
State > District 3	<a href="#">73855</a>	4 - Steel Continuous	01 - Beam Span	I 94
State > District 3	<a href="#">73856</a>	4 - Steel Continuous	01 - Beam Span	I 94
State > District 3	<a href="#">73868</a>	4 - Steel Continuous	01 - Beam Span	I 94
State > District 3	<a href="#">73873</a>	4 - Steel Continuous	01 - Beam Span	CON 4476
State > District 4	<a href="#">5854</a>	4 - Steel Continuous	01 - Beam Span	US 10
State > District 4	<a href="#">14005</a>	3 - Steel	01 - Beam Span	MN 9
State > District 4	<a href="#">76007</a>	4 - Steel Continuous	01 - Beam Span	MN 119
State > District 4	<a href="#">76008</a>	4 - Steel Continuous	01 - Beam Span	MN 119
State > District 4	<a href="#">76009</a>	4 - Steel Continuous	01 - Beam Span	MN 9
State > District 4	<a href="#">84002</a>	4 - Steel Continuous	01 - Beam Span	MN 210
State > District 4	<a href="#">84009</a>	4 - Steel Continuous	01 - Beam Span	US 75
State > District 6	<a href="#">23008</a>	4 - Steel Continuous	01 - Beam Span	US 52
State > District 6	<a href="#">25012</a>	4 - Steel Continuous	01 - Beam Span	MN 20
State > District 6	<a href="#">28004</a>	4 - Steel Continuous	01 - Beam Span	MN 26
State > District 6	<a href="#">28012</a>	4 - Steel Continuous	01 - Beam Span	MN 16
State > District 6	<a href="#">50004</a>	4 - Steel Continuous	01 - Beam Span	MN 16
State > District 6	<a href="#">50006</a>	4 - Steel Continuous	01 - Beam Span	US 218
State > District 6	<a href="#">55005</a>	4 - Steel Continuous	01 - Beam Span	US 52
State > District 6	<a href="#">55006</a>	4 - Steel Continuous	01 - Beam Span	US 52
State > District 6	<a href="#">55029</a>	4 - Steel Continuous	01 - Beam Span	US 63
State > District 6	<a href="#">55530</a>	4 - Steel Continuous	01 - Beam Span	US 63

## Vehicular Bridges with Unpainted Weathering Steel

State > District 6	<a href="#">66509</a>	3 - Steel	01 - Beam Span	MN 19
State > District 6	<a href="#">74843</a>	4 - Steel Continuous	01 - Beam Span	I 35
State > District 6	<a href="#">74844</a>	4 - Steel Continuous	01 - Beam Span	I 35
State > District 6	<a href="#">84014</a>	4 - Steel Continuous	01 - Beam Span	US 61 to I-90 Ramp
State > District 6	<a href="#">85015</a>	4 - Steel Continuous	01 - Beam Span	US 61
State > District 6	<a href="#">85016</a>	4 - Steel Continuous	01 - Beam Span	US 61
State > District 6	<a href="#">85023</a>	4 - Steel Continuous	01 - Beam Span	US 14
State > District 6	<a href="#">85805</a>	4 - Steel Continuous	01 - Beam Span	I-90 Ramp
State > District 6	<a href="#">85849</a>	4 - Steel Continuous	01 - Beam Span	I 90
State > District 6	<a href="#">85850</a>	4 - Steel Continuous	01 - Beam Span	I-90 EB
State > District 7	<a href="#">5467</a>	4 - Steel Continuous	01 - Beam Span	MN 60
State > District 7	<a href="#">6504</a>	4 - Steel Continuous	01 - Beam Span	MN 4
State > District 7	<a href="#">07011</a>	4 - Steel Continuous	01 - Beam Span	US 14
State > District 7	<a href="#">07017</a>	4 - Steel Continuous	01 - Beam Span	US 14
State > District 7	<a href="#">07018</a>	4 - Steel Continuous	01 - Beam Span	US 14
State > District 7	<a href="#">07038</a>	4 - Steel Continuous	01 - Beam Span	MN 30
State > District 7	<a href="#">07042</a>	4 - Steel Continuous	01 - Beam Span	UNU 169
State > District 7	<a href="#">9685</a>	4 - Steel Continuous	01 - Beam Span	I 90
State > District 7	<a href="#">9686</a>	4 - Steel Continuous	01 - Beam Span	I 90
State > District 7	<a href="#">17002</a>	4 - Steel Continuous	01 - Beam Span	MN 62
State > District 7	<a href="#">22002</a>	4 - Steel Continuous	01 - Beam Span	US 169
State > District 7	<a href="#">22803</a>	4 - Steel Continuous	01 - Beam Span	I 90
State > District 7	<a href="#">22804</a>	4 - Steel Continuous	01 - Beam Span	I 90
State > District 7	<a href="#">40001</a>	4 - Steel Continuous	01 - Beam Span	MN 19
State > District 7	<a href="#">40001</a>	4 - Steel Continuous	01 - Beam Span	MN 19
State > District 7	<a href="#">72005</a>	4 - Steel Continuous	01 - Beam Span	MN 93
State > District 7	<a href="#">72007</a>	4 - Steel Continuous	01 - Beam Span	MN 93
State > District 8	<a href="#">5678</a>	4 - Steel Continuous	01 - Beam Span	MN 23
State > District 8	<a href="#">5679</a>	4 - Steel Continuous	01 - Beam Span	MN 23
State > District 8	<a href="#">12000</a>	4 - Steel Continuous	01 - Beam Span	US 212
State > District 8	<a href="#">12007</a>	4 - Steel Continuous	01 - Beam Span	MN 7
State > District 8	<a href="#">12010</a>	4 - Steel Continuous	01 - Beam Span	MN 7
State > District 8	<a href="#">41002</a>	4 - Steel Continuous	01 - Beam Span	MN 68
State > District 8	<a href="#">41003</a>	4 - Steel Continuous	01 - Beam Span	US 14
State > District 8	<a href="#">42012</a>	4 - Steel Continuous	01 - Beam Span	MN 68
State > District 8	<a href="#">43010</a>	4 - Steel Continuous	01 - Beam Span	US 212
State > District 8	<a href="#">87007</a>	4 - Steel Continuous	01 - Beam Span	MN 23
State > District 8	<a href="#">87020</a>	4 - Steel Continuous	01 - Beam Span	MN 68
State > DNR	<a href="#">58549</a>	3 - Steel	02 - Low Truss	SPR 19
State > DNR	<a href="#">68536</a>	3 - Steel	02 - Low Truss	T 382
State > DNR	<a href="#">69657</a>	3 - Steel	02 - Low Truss	PVT 487
State > DNR	<a href="#">79557</a>	3 - Steel	01 - Beam Span	SFR 1
State > Metro District	<a href="#">2440</a>	1 - Concrete	12 - Arch	MN 65

## Vehicular Bridges with Unpainted Weathering Steel

State > Metro District	<a href="#">5891</a>	4 - Steel Continuous	01 - Beam Span	MN 55
State > Metro District	<a href="#">6600</a>	4 - Steel Continuous	01 - Beam Span	CSAH 31
State > Metro District	<a href="#">9318</a>	4 - Steel Continuous	01 - Beam Span	US 212
State > Metro District	<a href="#">9319</a>	4 - Steel Continuous	01 - Beam Span	US 212
State > Metro District	<a href="#">19075</a>	4 - Steel Continuous	01 - Beam Span	US 61
State > Metro District	<a href="#">19077</a>	4 - Steel Continuous	08 - Rigid Frame	MN 13
State > Metro District	<a href="#">19811</a>	4 - Steel Continuous	01 - Beam Span	I 35E
State > Metro District	<a href="#">19812</a>	4 - Steel Continuous	01 - Beam Span	I 35E
State > Metro District	<a href="#">19866</a>	4 - Steel Continuous	01 - Beam Span	CSAH 38
State > Metro District	<a href="#">19889</a>	4 - Steel Continuous	01 - Beam Span	MSAS 101
State > Metro District	<a href="#">19893</a>	3 - Steel	01 - Beam Span	I 35E
State > Metro District	<a href="#">27060</a>	4 - Steel Continuous	01 - Beam Span	MSAS 129
State > Metro District	<a href="#">27062</a>	4 - Steel Continuous	01 - Beam Span	CSAH 1
State > Metro District	<a href="#">27586</a>	5 - Prestress or Precast	01 - Beam Span	US 169
State > Metro District	<a href="#">62028</a>	4 - Steel Continuous	01 - Beam Span	MN 5
State > Metro District	<a href="#">62050</a>	4 - Steel Continuous	01 - Beam Span	MN 3
State > Metro District	<a href="#">62090</a>	4 - Steel Continuous	24 - Tied Arch	MN 149
State > Metro District	<a href="#">62838</a>	4 - Steel Continuous	01 - Beam Span	I 94
State > Metro District	<a href="#">62861</a>	4 - Steel Continuous	01 - Beam Span	MSAS 128
State > Metro District	<a href="#">62870</a>	4 - Steel Continuous	01 - Beam Span	US 61
State > Metro District	<a href="#">62924</a>	4 - Steel Continuous	01 - Beam Span	I-35E NB
State > Metro District	<a href="#">62925</a>	4 - Steel Continuous	01 - Beam Span	I-35E SB
State > Metro District	<a href="#">72012</a>	4 - Steel Continuous	01 - Beam Span	MN 25
State > Metro District	<a href="#">82800</a>	4 - Steel Continuous	01 - Beam Span	I 94
State > Metro District	<a href="#">27624A</a>	4 - Steel Continuous	01 - Beam Span	US 169
State > Metro District	<a href="#">27624B</a>	4 - Steel Continuous	01 - Beam Span	US 169
State > Metro District	<a href="#">27V92</a>	4 - Steel Continuous	01 - Beam Span	US 169 Off Ramp
State > Metro District	<a href="#">27V97</a>	4 - Steel Continuous	01 - Beam Span	US 169 Off Ramp
State > Metro District	<a href="#">27W02</a>	4 - Steel Continuous	01 - Beam Span	MSAS 241
State > Metro District	<a href="#">27W38</a>	4 - Steel Continuous	01 - Beam Span	I 35W
State > Metro District	<a href="#">27W39</a>	4 - Steel Continuous	01 - Beam Span	I 35W
State > Metro District	<a href="#">9217E</a>	4 - Steel Continuous	01 - Beam Span	I 494
State > Metro District	<a href="#">9217W</a>	4 - Steel Continuous	01 - Beam Span	I 494
State > Metro District	<a href="#">9600N</a>	3 - Steel	24 - Tied Arch	MN 77
State > Metro District	<a href="#">9600S</a>	3 - Steel	24 - Tied Arch	MN 77



## Bridge Inspection Program Administrator (PA) Checklist - Report Review

Refer to the [Minnesota Bridge and Structure Inspection Program Manual \(BSIPM\)](#) Section A.8.4 Role of Inspection Program Administrator for more information.

Bridge Inspection Report Review Checklist	Verified
<b>General Requirements</b>	
<ul style="list-style-type: none"> <li>• Grammar and Spelling</li> </ul>	<input type="checkbox"/>
<b>Element Notes (BSIPM B.4.1)</b>	
<ul style="list-style-type: none"> <li>• Notes include the following:               <ul style="list-style-type: none"> <li>○ Date (year)</li> <li>○ Location</li> <li>○ Quantity and unit</li> <li>○ Deficiency description (reason for element condition state quantity)</li> </ul> </li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Appropriate notes provided for all elements with quantities in Condition States 2 or lower.</li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Condition state quantities match the documentation provided in the element notes. <i>Note: Documentation from previous inspections may need to be cleaned up to match new element rating requirements in order to avoid confusion.</i></li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Condition state quantities and element note descriptions match the Bridge Inspection Field Manual descriptions.</li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Concrete element deficiencies are properly documented:               <ul style="list-style-type: none"> <li>○ Crack width measurements. Cracking is documented according to width, spacing, location, orientation and structural nature.</li> <li>○ Spall dimensions (length, width and depth).</li> <li>○ Delamination dimensions (length and width).</li> <li>○ Exposed reinforcing steel is noted, if present.</li> <li>○ Section loss on reinforcing steel is noted, if present.</li> </ul> </li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Concrete Cracking and Sealing (Wearing Surface, Approach Slabs, Sidewalks and Median)               <ul style="list-style-type: none"> <li>○ Cracking is documented in <b>SF</b> units on the concrete wearing surface (Element 510) and concrete approach slabs (Element 321).</li> <li>○ <b>SF</b> cracking quantities from the concrete wearing surface (Element 510) and concrete approach slabs (Element 321) are converted appropriately to <b>LF</b> cracking quantities and combined with any additional <b>LF</b> cracking quantities documented on the sidewalks and median (Element 895) to create a combined <b>LF</b> total in Element 810 Cracking and Sealing.</li> </ul> </li> </ul>	<input type="checkbox"/> <input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Steel element deficiencies are properly documented:               <ul style="list-style-type: none"> <li>○ Extent of corrosion is noted, if present.</li> <li>○ Section loss is noted, if present.                   <ul style="list-style-type: none"> <li>▪ Section loss is expressed as a percentage of the original cross-sectional area. <i>Note: It is important that the extent of section loss not be misrepresented. If the original cross-section has not been determined, it may be better to describe the area and the dimensions of the area with section loss instead. Refer to BSIPM B.4.1.2 for guidance.</i></li> </ul> </li> <li>○ Crack width and length measurements.</li> <li>○ Method of non-destructive testing method is documented, if necessary.</li> </ul> </li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Protective coating (Element 515) is properly documented for all steel elements. <i>Note: If there is corrosion on a steel element, the protective coating in that area should be rated a Condition State 4 because the coating has failed and steel is exposed.</i></li> </ul>	<input type="checkbox"/>



Bridge Inspection Report Review Checklist	Verified
<ul style="list-style-type: none"> <li>• Photos are labeled correctly:               <ul style="list-style-type: none"> <li>○ Major words are capitalized.</li> <li>○ Element number and/or description is included.</li> <li>○ Deficiency description is included.</li> <li>○ Direction and/or orientation of photo is included.</li> </ul> </li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>Load Posting Signs (Element 890)</b>	
<ul style="list-style-type: none"> <li>• Load posting signs (if required) are in place, correct and readable.</li> </ul>	<input type="checkbox"/>
<b>NBI Condition Ratings (BSIPM B2.1.1)</b>	
<ul style="list-style-type: none"> <li>• NBI ratings are consistent with the element condition state ratings.</li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• NBI note describing the condition of the component is provided for all NBI ratings of 5 or lower. <i>Note: it is a good practice to include an NBI note for all NBI ratings (even if they are higher than a 5). This will help to track the deterioration of the component and be useful when planning repair.</i></li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• NBI note is provided when an NBI rating is changed. The note describes the condition or reason that led to the decision to change the NBI rating.</li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• PA comment is included for all NBI ratings of 4 or lower.</li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• NBI condition history <a href="#">Bridge Condition History Report</a></li> </ul>	<input type="checkbox"/>
<b>NBI Appraisal Ratings (BSIPM B2.2)</b>	
<ul style="list-style-type: none"> <li>• Waterway Adequacy Appraisal Rating (NBI 71)               <ul style="list-style-type: none"> <li>○ Appropriate rating and comment is included (BSIPM B.2.2.2).</li> </ul> </li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Approach Roadway Alignment Rating (NBI 72)               <ul style="list-style-type: none"> <li>○ Appropriate rating and comment is included (BSIPM B.2.2.1). <i>Note: Approach Roadway Alignment should never equal 9 after an inspection; this rating is ONLY for brand new structures entered into the inventory prior to an inspection.</i></li> </ul> </li> </ul>	<input type="checkbox"/>
<b>Traffic Safety Features – NBI Item 36 (BSIPM D.7.5.1)</b>	
<ul style="list-style-type: none"> <li>• Bridge Railing, Guardrail Transition, Approach Guardrail and Guardrail Termini are rated as either 1 – Meets Standards, 0 – Substandard or N – Not Required <i>Note: For pedestrian and railroad bridges, all four NBI 36 items should be coded as N – Not Required.</i></li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Safety Feature ratings are consistent. <i>For example, if the Approach Guardrail is not required, then the Guardrail Transition and Guardrail Termini must also be coded as not required.</i></li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Note is included for safety features rated as 0 – Substandard.</li> </ul>	<input type="checkbox"/>
<b>Review and Approval (BSIPM D.6)</b>	
<ul style="list-style-type: none"> <li>• Sufficient documentation and supporting information is provided in the inspection report to assess the change in condition of the bridge.</li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Inspection report is reviewed and approved within <b>90</b> days of the inspection for state and federal bridges and within <b>180</b> days for all other bridges.</li> </ul>	<input type="checkbox"/>