



National Bridge Inspection Standards—Part 2, Recent Updates

by Samantha Lubkin and Tom Drda, Federal Highway Administration

Since 1971, the National Bridge Inspection Standards (NBIS) have been at the core of bridge safety in the United States. Part 1 of this article series (see the Fall 2022 issue of *ASPIRE*®) presented a brief history of the NBIS and discussed bridge inspection practices and technologies.

The Federal Highway Administration (FHWA) recently updated the NBIS to address statutory requirements, provide flexibility, and address ambiguities identified since the previous update to the regulation in 2009 (Table 1). These changes, many of which were required by the Moving Ahead for Progress in the 21st Century Act (MAP-21),¹ will strengthen the main safety program for highway bridges and bring the NBIS into closer alignment with the National Tunnel Inspection Standards. In addition, the changes will result in improved choices for bridge projects, programs, and policies, and will help focus the Federal-Aid Highway Program to achieve improved bridge performance outcomes. The updates complement the focus of the bipartisan Infrastructure Investment and Jobs Act on bridge improvement and safety, including dedicated funding of more than \$27 billion under the Bridge Formula Program and \$12.5 billion under the Bridge Investment Program.

Where possible, FHWA has already implemented some of the requirements of MAP-21

through policy or practice. These changes aim primarily to ensure national uniformity for inspections and evaluations as well as clarify responsibilities. Specific changes to the NBIS are described in this article.

Section 650.303 – Applicability

MAP-21 requires that applicability of the NBIS be extended to public highway bridges owned by tribal governments. Applicability has also been extended to temporary bridges, bridges under construction with portions open to traffic, and privately owned bridges that carry public roadways. This update closes a previous loophole.

Section 650.305 – Definitions

The updated regulation includes new terms such as “in-depth inspection,” “load path redundancy,” and several scour-related terms to provide consistency and clarity in the implementation of the regulations. This revision also renames some existing terms in a more descriptive way; for example, “fracture critical member” is now “nonredundant steel tension member (NSTM).” Several added terms, such as “risk assessment panel (RAP),” are associated with the new risk-based processes for inspection intervals that are required by MAP-21.

Section 650.307 – Bridge Inspection Organization Responsibilities

In some instances, inspection and data submittal responsibilities for bridges that cross a border between states have not been clearly delineated. These situations have led to undue delays in required inspections, inaccuracies in data submittals, and issues with the overall management of border bridges. Consequently, written agreements that document each state’s roles and responsibilities are now required. Similarly, any delegated roles or functions (for example, from a state department of transportation to a local agency) must be documented. Any such delegation does not relieve the delegating organization of its responsibilities, as it is accountable for all aspects of the program.

The NBIS now also require all states, federal agencies, and tribal governments to maintain a registry of nationally certified bridge inspectors. It is important for each entity to maintain its own specific registry of certified bridge inspectors, as many agencies have additional requirements beyond those specified by the NBIS.

Section 650.309 – Qualifications of Personnel

The updated NBIS more clearly define the comprehensive bridge inspection training required for program managers and team leaders,

Table 1. National Bridge Inspection Standards (NBIS) timeline for implementation

Date	Action
May 6, 2022	Regulation published in <i>Federal Register</i>
May 2022	Internal and external webinars on the NBIS and the <i>Specifications for the National Bridge Inventory</i>
June 6, 2022	Regulation effective 30 days after publication in <i>Federal Register</i> unless noted otherwise in regulation
June 6, 2024	Sections that allow up to 24 months to implement: <ul style="list-style-type: none"> 650.309(a), (b)(5), and (c)(3) – qualification requirements for program managers, team leaders, and nonredundant steel tension member (NSTM) team leaders who were in the position prior to the May 2022 regulation update; 650.309(h)(3) – approval of alternate training that was approved prior to the May 2022 regulation update; and 650.311(g) – the requirements of 650.311(a)(1)(ii), 650.311(b)(1)(ii), and 650.311(c)(1)(ii) must be satisfied within 24 months (reduced inspection intervals for routine, underwater, and NSTM inspections).

Source: Federal Highway Administration.

Table 2. Specifications for the National Bridge Inventory (SNBI) timeline for implementation

Target Date	Action
May 2022	Internal and external webinars on the National Bridge Inspection Standards and the SNBI
July 2022	Data crosswalk available (logic/mapping to transition from legacy National Bridge Inventory [NBI] data to SNBI data)
October 2022	Data submittal schema and data submittal validation logic available
Early 2023	Free training on the SNBI, developed by the Federal Highway Administration, available to inspection staff
April 2023	Transition tool available online
October 2024	NBI NextGen available online for data validation only
March 2025	Last submittal in 1995 Coding Guide ⁵ format
March 2026	First submittal of SNBI data; 1995 Coding Guide ⁵ data no longer accepted
June 2026	Transition tool sunsets
March 2028	100% populated and verified SNBI data submittal

Source: Federal Highway Administration.

and training participants are now required to score 70% or higher on end-of-course assessments. Additionally, the regulation requires a specific amount of refresher training for program managers and team leaders, and describes the training required to become a team leader for an NSTM inspection or a diver for an underwater inspection.

Professional engineers are now required to have six months of bridge inspection experience to be a qualified team leader, assuming other requirements are met. This requirement was added to ensure that all team leaders have some experience and familiarity with the collection and recording of bridge inspection information, as well as the processes and procedures associated with bridge inspection activities.

Section 650.311 – Inspection Interval

One of the more significant changes to the regulation moves the program to a risk-based approach for determining inspection intervals.² This change requires reduced inspection intervals for bridges determined to be at risk based on specific bridge condition criteria. However, it also provides simplified options for establishing extended inspection intervals of up to four years for bridges that are considered low risk.

Alternatively, an agency may choose to employ more rigorous risk-based methods to determine intervals for each inspection type (routine, NSTM, or underwater). Using these methods, a routine or underwater inspection interval could be extended to 72 months for some bridges, but an NSTM inspection interval cannot exceed 48 months. Additionally, agencies will have some flexibility for completing inspections when delays occur, as tolerance windows of up to three months are allowed.

This new approach provides bridge owners the flexibility needed to optimize limited resources to maintain their inventories more efficiently. It may also create cost savings that can

potentially be used for maintenance, repair, and reconstruction.

Section 650.313 – Inspection Procedures

To maintain the safety of the traveling public, the NBIS require that agencies establish documented procedures for timely completion of load ratings, load postings, and bridge closures within defined maximum allowances. The regulation also establishes maximum timelines for the initial inspection of a bridge after construction or rehabilitation.

The updated NBIS require hands-on inspection for primary steel components in tension without load path redundancy. However, the “hands-on” requirement may be waived where system redundancy, internal redundancy, or low risk of fracture can be demonstrated through an FHWA-approved procedure.³

Previously considered a best practice, quality assurance must now be performed by individuals other than those who completed the initial work. The importance of documenting quality assurance activities is emphasized through the new language in this section. A prevalent theme in this updated regulation is the importance of documentation to ensure consistency and uniformity of inspections, timely follow-up actions, and identification and implementation of improvement opportunities.

The new NBIS update the procedures for reporting critical findings and provide minimum criteria to determine critical findings, for national consistency. A critical finding is a structural or safety-related deficiency that requires immediate follow-up action to ensure public safety.

Section 650.315 – Inventory

Finally, the new *Specifications for the National Bridge Inventory*⁴ (SNBI) are incorporated by reference in the new NBIS, superseding the *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges*⁵

(Coding Guide). The FHWA has established a transition timeline (Table 2) and will provide specific training on the new specifications. In addition, all bridge-related courses at the National Highway Institute are being updated to incorporate the changes to the NBIS and the adoption of the SNBI.

Information on the NBIS can be found at www.fhwa.dot.gov/bridge/inspection. Questions can be emailed to NBIS_SNBI_Questions@dot.gov.

References

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