

SNBI Overview: From the Coding Guide to the New Inventory

The Specifications for the National Bridge Inventory (SNBI), published by FHWA in March 2022 alongside the updated NBIS, replace the 1995 Recording and Coding Guide as the specification for reporting bridge data to FHWA. This course explains why the change was made, how the SNBI is organized, what it means for owners, inspectors and data managers, and how the multi-year transition works.

Learning objectives

- Explain why FHWA replaced the 1995 Coding Guide
- Describe the SNBI organization and data philosophy
- Identify impacts on owners and inspectors
- Plan for transition

Why the Coding Guide was replaced

For decades, bridge data reported to the National Bridge Inventory (NBI) followed the *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges* (the Coding Guide), last fully revised in 1995. The Coding Guide used fixed-width, single-value items designed for the data systems of its time. Over the years, practice moved on: element-level inspection became standard, risk-based inspection intervals were developed, national performance measures for bridge condition were adopted under 23 CFR 490, and owners needed to record multiple span types, multiple features and multiple inspection events for a single bridge.

The updated NBIS final rule was published in the Federal Register on May 6, 2022, and the SNBI was developed in coordination with it, with the AASHTO Manual for Bridge Evaluation (MBE), the AASHTO Manual for Bridge Element Inspection (MBEI), and the FHWA Bridge Inspector's Reference Manual (BIRM). The SNBI is incorporated by reference in 23 CFR 650.317 and, per FHWA's implementation memorandum, supersedes the Coding Guide. Under 650.315(a), inventory data must be collected and reported per the SNBI, and must include element-level data for NHS bridges per the MBEI.

FHWA's implementation memorandum lists the purposes the SNBI serves, including ensuring highway bridge safety, enabling oversight of the National Bridge Inspection Program, consistency with the updated NBIS, reporting to Congress, emergency response, administering risk-based, data-driven asset and performance management programs under 23 U.S.C. 150, 23 CFR 490 Subpart D and 23 CFR 515, and providing quality data through clarity and ease of use, thereby reducing the need for interpretation.

How the SNBI is organized

The SNBI groups data items into seven sections with subsections:

1. **Bridge Identification:** Identification (ID), Location (L), Classification (CL).
2. **Bridge Material and Type:** Span Material and Type (SP), Substructure Material and Type (SB), Roadside Hardware (RH).
3. **Bridge Geometry** (G).

4. **Features:** Feature Identification (F), Routes (RT), Highways (H), Railroads (RR), Navigable Waterways (N).
5. **Loads, Load Rating, and Posting:** Loads and Load Rating (LR), Load Posting Status (PS), Load Evaluation and Posting (EP).
6. **Inspections:** Inspection Requirements (IR), Inspection Events (IE).
7. **Bridge Condition:** Component Condition Ratings (C), Element Identification (E), Element Conditions (CS), Appraisal (AP), Work Events (W).

Every item has an ID of the form B.X.Y, where B indicates a bridge item, X is the section or subsection letter code, and Y is the order of the item within it. For example, B.C.01 is Deck Condition Rating, B.IE.01 is Inspection Type and B.LR.05 is Inventory Load Rating Factor.

Frequency codes

Each SNBI item carries a frequency code that tells who records it and when:

- **I (Initial):** recorded initially and updated when necessary, but not typically changed from inspection to inspection; recorded by the inspector or other agency personnel.
- **EI (Each Inspection):** verified and/or updated by the inspector during each inspection.
- **C (Calculated):** calculated and stored by FHWA, not recorded during inspections or reported. Examples are B.C.12 (Bridge Condition Classification), B.C.13 (Lowest Condition Rating Code) and B.IE.06 (Inspection Due Date).

Part A — From fixed fields to related data sets

The most important conceptual change from the Coding Guide to the SNBI is the shift from a single flat record per bridge to a set of related records. Under the Coding Guide, a bridge was described by one fixed-width record with a single value per item. A bridge with a concrete approach span and a steel main span had to be described by "main" and "approach" fields, a bridge over a highway and a creek had to choose which feature to describe, and an inspection history beyond the most recent dates lived only in the owner's files.

The SNBI introduction explains that in most subsections each data item has a single value per bridge, a **one-to-one** relationship. Even if the value changes several times between submittals, only the value that applies at the time of submittal is reported. A few one-to-one items may legitimately hold several values in one instance, delimited by the pipe character (|) with no extra spaces. The SNBI lists these: B.ID.02 (Bridge Name), B.L.12 (Metropolitan Planning Organization), B.CL.03 (Federal or Tribal Land Access), B.F.03 (Feature Name), B.IE.12 (Inspection Equipment) and B.W.03 (Work Performed).

Other subsections have a **many-to-one** relationship with the bridge, reported as separate sub-records. The SNBI divides these into two categories.

Event-based records

The first category records events, and FHWA maintains a historical record of all events reported over the life of the bridge:

- **Load Posting Status (Subsection 5.2):** for each posting status change, a record with B.PS.01 (Load Posting Status) and B.PS.02 (Posting Status Change Date).
- **Inspection Events (Subsection 6.2):** for each inspection event, a record with B.IE.01 (Inspection Type), B.IE.02 (Inspection Begin Date) and the other applicable items.

- **Work Events (Subsection 7.5):** for each year with work, a record with B.W.02 (Year Work Performed) and one or more values of B.W.03 (Work Performed).

Configuration records

The second category records multiple non-event values, where the first item in the subsection defines a sub-record. Examples are Span Material and Type, where each unique span configuration is identified in B.SP.01 (Span Configuration Designation); Substructure Material and Type, identified in B.SB.01 (Substructure Configuration Designation); and Feature Identification, where every feature carried on, passing above or passing below the bridge is identified in B.F.01 (Feature Type), so that a bridge always has multiple feature records. Routes, highways, railroads and navigable waterways hang off those feature records, and elements and load evaluations have their own data sets.

For owners this means the bridge record is now a small relational database rather than a line of text. For inspectors it means the inspection itself is recorded as an event with its own dates, team leader, interval and quality review dates, rather than as a couple of date fields that are overwritten each cycle.

Part B — A walk through the seven sections

Section 1: Bridge Identification

Identification items include B.ID.01 (Bridge Number) and B.ID.02 (Bridge Name). Location items place the bridge geographically and administratively. Classification items include B.CL.01 (Owner) and other items that describe ownership, maintenance responsibility and access. These are mostly initial (I) items that do not change between inspections, but they still need verification during the transition.

Section 2: Bridge Material and Type

The Span Material and Type subsection lets an owner describe each unique span configuration separately, with its own material, type and related items. The Substructure subsection does the same for substructure configurations, and the Roadside Hardware subsection covers railing and transition hardware descriptions. This replaces the Coding Guide's "main span" and "approach span" approach with as many configurations as the bridge actually has.

Section 3: Bridge Geometry

Geometry items record lengths, widths, clearances and related dimensions. Some geometry items are calculated by FHWA; the SNBI notes, for example, that B.G.16 (Calculated Deck Area) is calculated from data in other items.

Section 4: Features

Every feature on, above or below the bridge gets a feature record, with route, highway, railroad and navigable waterway subsections as applicable. This allows a single bridge to describe the highway it carries, the highway below it, a railroad and a creek, each with appropriate clearance and classification data.

Section 5: Loads, Load Rating, and Posting

The Loads and Load Rating subsection includes B.LR.01 (Design Load), B.LR.02 (Design Method), B.LR.03 (Load Rating Date), B.LR.04 (Load Rating Method), B.LR.05 (Inventory Load Rating Factor), B.LR.06 (Operating Load Rating Factor), B.LR.07 (Controlling Legal Load Rating Factor) and B.LR.08 (Routine Permit Loads). The Load Posting Status subsection records posting status change events, and the Load Evaluation and Posting subsection records, for each legal load

configuration evaluated (B.EP.01), the legal load rating factor (B.EP.02), and, where the rating factor is less than 1.0, the posting type and value (B.EP.03 and B.EP.04).

Section 6: Inspections

Inspection Requirements items flag whether a bridge needs particular inspection types or has particular risk features: B.IR.01 (NSTM Inspection Required), B.IR.02 (Fatigue Details), B.IR.03 (Underwater Inspection Required) and B.IR.04 (Complex Feature). Inspection Events items describe each inspection: B.IE.01 (Inspection Type) through B.IE.12 (Inspection Equipment), including begin and completion dates, the Nationally Certified Bridge Inspector, interval, calculated due date, risk-based interval method, QC and QA dates, data update date and a note.

Section 7: Bridge Condition

Component Condition Ratings cover B.C.01 through B.C.15, including the familiar deck, superstructure, substructure and culvert ratings, the channel, channel protection and scour ratings, and new ratings for bridge railings, railing transitions, bearings and joints, plus the NSTM and underwater inspection condition items. B.C.12 and B.C.13 are calculated by FHWA. Element Identification and Element Conditions carry element-level data. Appraisal includes B.AP.01 (Approach Roadway Alignment), B.AP.02 (Overtopping Likelihood), B.AP.03 (Scour Vulnerability), B.AP.04 (Scour Plan of Action) and B.AP.05 (Seismic Vulnerability). Work Events include B.W.01 (Year Built), B.W.02 (Year Work Performed) and B.W.03 (Work Performed).

Part C — Reading an SNBI item page

Each SNBI item is presented on a standardized page. Understanding the layout makes the specification much faster to use:

- **Item name and ID**, such as Inspection Completion Date, B.IE.03.
- **Format**: for example YYYYMMDD for dates, AN(n) for alphanumeric fields of length n, or N(p,s) for numeric fields with precision and scale. B.IE.05 (Inspection Interval) is N(2,0), a whole number of months.
- **Frequency**: I, EI or C.
- **Specification**: the requirement, written in active voice for items an inspector or agency reports.
- **Commentary**: the intent of the item and guidance on applying it.
- **Examples**: worked cases showing what to report.

The commentary and examples are not filler. They frequently resolve questions that would otherwise produce inconsistent coding. For example, the B.IE.03 examples show that when a routine and an NSTM inspection begin the same day but finish on different days, each inspection type gets its own completion date. The B.IE.05 examples show that an interval reported after an inspection reflects any adjustment made because of what was found, such as a routine inspection previously on a 48-month interval reported as 24 months after worsening deterioration. The SNBI notes that calculated items such as B.C.12 and B.C.13 are written in passive voice because they are presented for reference and not reported by an inspector.

The SNBI also notes that all possible combinations of bridge characteristics may not be addressed and directs users to consult the local FHWA division office for an acceptable solution when a special situation is not addressed.

Part D — What is new for inspectors

Inspectors will notice several practical changes in the field and in reporting.

More condition ratings

In addition to deck, superstructure, substructure and culvert, the SNBI asks for condition ratings for bridge railings (B.C.05), bridge railing transitions (B.C.06), bridge bearings (B.C.07) and bridge joints (B.C.08). The SNBI directs that ratings for B.C.01 through B.C.07 be determined by correlating field observations with its Table 20, while B.C.08 through B.C.11 use tables embedded in the item descriptions, which define ratings in terms of defect severity, extent and effect on strength or performance. The SNBI states that a condition rating must consider the type, location and severity of defects, their extent throughout the item, and the degree to which they affect strength and/or performance.

The railing item shows how much the commentary matters. B.C.05 covers all types and shapes of bridge railings, including the posts, blocking and curbs that are part of the railing system. Pedestrian railings are not considered except where integral to the traffic barrier, and protective coating condition is not considered except where coating problems indicate problems with the underlying material. N is reported when there are no bridge railings.

Inspection events recorded in detail

Each inspection type performed is its own record with:

- **B.IE.01 Inspection Type**, coded 1 Initial, 2 Routine, 3 Underwater, 4 NSTM, 5 Damage, 6 In-Depth, 7 Special, 8 Service or 9 Scour Monitoring.
- **B.IE.02 and B.IE.03**, begin and completion dates. For multi-day inspections, the begin date is the first day of field inspection.
- **B.IE.04 Nationally Certified Bridge Inspector**, the unique code, assigned by the agency, of the team leader responsible for that inspection type.
- **B.IE.05 Inspection Interval** in months, with 0 reported for damage inspections, scour monitoring inspections, or special inspections without a defined interval.
- **B.IE.06 Inspection Due Date**, calculated by FHWA, by default as the completion date plus the interval.
- **B.IE.07 Risk-Based Inspection Interval Method**: N, 1 or 2.
- **B.IE.08 and B.IE.09**, the QC and QA review dates, reported only when a review was performed.
- **B.IE.10 Inspection Data Update Date**, **B.IE.11 Inspection Note** and **B.IE.12 Inspection Equipment**.

The SNBI commentary on inspection type clarifies some subtle cases. Code 2 is used when all portions of the substructure and channel have been inspected to the mudline at low water visually or by wading or probing during routine inspection. Code 3 is used when a substructure flagged as requiring underwater inspection (B.IR.03 = Y) is inspected by wading and probing during unusually low flow; if done during a routine inspection, both a routine and underwater inspection are recorded. Code 9 is used for scour monitoring required by a scour plan of action for a triggering storm event, including periodic remote electronic readings where the POA requires them. Code 8 is used when a service inspection is performed for a bridge with a risk-based routine interval exceeding 48 months.

Team leader identity

B.IE.04 ties each inspection to a specific team leader. The SNBI commentary explains that the intent is to indicate the team leader present at the inspection for each inspection type required by the NBIS, consistent with the team leader requirement in 650.313. Agencies assign the identifier code.

Quality review dates

B.IE.08 and B.IE.09 put QC and QA activity into national data for the first time. The commentary notes that inspections may be selected for QC based on representative bridge types or other agency-defined methods, and that QA procedures vary in review period and sampling. Agencies that do not document QC and QA dates consistently will find gaps in their data.

Part E — What is new for load rating and posting data

The load rating items are more explicit than the Coding Guide's. The SNBI reports design load, design method, load rating date and method, inventory and operating rating factors, the controlling legal load rating factor, and routine permit load status.

B.LR.08 (Routine Permit Loads) uses codes A (carries routine permit loads, adequate for all), B (carries routine permit loads, adequate for some but some are restricted), C (agency issues routine permits but all are restricted from the bridge) and N (agency does not issue routine permits). The commentary explains that the item identifies bridges where State routine permit loads must be considered in load rating and posting evaluations.

The Load Evaluation and Posting subsection records each legal load configuration evaluated. B.EP.02 (Legal Load Rating Factor) is reported truncated to the hundredth; the SNBI example reports 0.92 for a calculated factor of 0.926 for the Type 3S2 load. The commentary explains that for LRFR this is the legal load rating, while for allowable stress and load factor rating it is the operating rating factor for the AASHTO legal load as part of a posting analysis. Where temporary or supported conditions exist, as indicated in B.PS.01, the factor includes those conditions. Posting type and value (B.EP.03, B.EP.04) are reported only for configurations with a rating factor below 1.0.

Because posting status changes are events, the history of a bridge's postings, closures and reopenings is retained nationally, which supports oversight of the NBIS posting requirements in 650.313(k) and the inventory update requirement for load restriction and closure changes in 650.315(d).

Part F — What is new in appraisal

The SNBI appraisal subsection is short and focused: B.AP.01 Approach Roadway Alignment, B.AP.02 Overtopping Likelihood, B.AP.03 Scour Vulnerability, B.AP.04 Scour Plan of Action and B.AP.05 Seismic Vulnerability.

Overtopping likelihood is a good example of the SNBI's more explicit coding. Codes range from 0 (Never) through 1 Remote (once every 100 years or less frequently), 2 Very low (once every 51 to 99 years), 3 Low (once every 26 to 50 years), 4 Moderate (once every 11 to 25 years), 5 High (once every 3 to 10 years) and 6 Very High (once every 2 years or more frequently). The commentary notes the likelihood is typically determined from inspection and maintenance records, hydraulic studies, local residents, and site indicators such as high-water marks and debris on upper members, and that for newer bridges hydraulic design information can be used. It applies to overtopping of the riding surface on the bridge, not the approaches, and is not reported for bridges not over a waterway.

Scour vulnerability and the scour POA items connect directly to the NBIS scour requirements in 650.313(o) and to the underwater interval criteria in 650.311, which rely on scour vulnerability coding for extended intervals.

Part G — Calculated items and national performance measures

Two calculated items illustrate how inspection data roll up nationally. B.C.12 (Bridge Condition Classification) is the minimum of the deck, superstructure, substructure and culvert condition ratings (B.C.01 through B.C.04), classified as Good

for 7, 8 or 9; Fair for 5 or 6; and Poor for 4, 3, 2, 1 or 0. The commentary notes this is the method of assessment for national performance measures. B.C.13 (Lowest Condition Rating Code) records the lowest of the relevant ratings.

The SNBI examples are worth studying. A reinforced concrete closed-spandrel arch with superstructure 7 and substructure 8 is classified Good. A corrugated metal pipe culvert rated 5 is Fair. A steel box girder bridge with deck 4, superstructure 6 and substructure 7 is Poor, because the deck controls.

This has a practical consequence. A single-point change in a deck rating from 5 to 4 moves a bridge from Fair to Poor in national measures, which affects reporting under 23 CFR 490 and may affect the owner's investment planning under its asset management plan. Inspectors should rate carefully and consistently; the stakes of a rating are not just local.

Part H — The transition timeline

FHWA's May 2022 implementation memorandum described an approximately six-year transition, developed after consulting database experts and the bridge community and considering the annual data submittal deadline of March 15 and comments on the NBIS proposed rule. The key target dates were:

- **May 2022:** NBIS and SNBI published.
- **July 2022:** FHWA publishes the Data Crosswalk.
- **October 2022:** FHWA publishes the Data Submittal Schema and initial Data Submittal Validation Logic.
- **April 2023:** Transition Tool made available online.
- **October 2024:** NBI NextGen available online for data validation only.
- **March 15, 2025:** last NBI data submittal in accordance with the 1995 Coding Guide.
- **January 1, 2026:** last date to begin verification of transitioned data and collection of SNBI-based data for inspected bridges. Agencies could begin earlier to meet the 2028 deadline. NBI NextGen available for data submittals with full functionality.
- **March 15, 2026:** first SNBI submittal, a transitioned/hybrid dataset in which all bridges are submitted with transitioned data except specified fields needed to manage FHWA programs, which must have collected or verified SNBI data.
- **June 2026:** transition tool sunset.
- **March 15, 2027:** second SNBI submittal, still transitioned/hybrid.
- **March 15, 2028:** third SNBI submittal, 100% populated and verified with no temporary codes permitted, the first complete SNBI dataset with collected and verified data for all bridges.

FHWA's SNBI questions and answers state that transitioned data will be accepted only for the 2026 and 2027 submittals, and that "verified data" means transitioned data validated by inspection or review. As of this course's date, the first two hybrid submittals have passed and the complete dataset is due March 15, 2028. For most owners, that means every bridge must have had its SNBI data collected or verified, typically through at least one inspection or office review, before that submittal.

Part I — Crosswalk, transition tool and validation

Data crosswalk

FHWA published a data crosswalk describing the logic for transitioning data from the Coding Guide to the SNBI, including the crosswalk for "over" and "under" records and a detailed code mapping for individual items. Some SNBI items map

directly from Coding Guide items; others map only partly, and some new items have no Coding Guide equivalent and must be collected. Owners should treat every transitioned value as provisional until verified.

Submittal schema

FHWA's NBI submittal file schema uses JavaScript Object Notation (JSON). FHWA explains that JSON uses attribute-value pairs and arrays to describe the many-to-one relationships in the SNBI, and supports integration of inventory and element data in a single submittal. This replaces the separate fixed-width NBI file and element XML of the past.

Validation

FHWA's data validation logic identifies critical errors, general (non-critical) errors and flags. FHWA states that when critical errors are found in the annual submittal, the data must be corrected and resubmitted within 15 business days. Minor or isolated general errors may be corrected at any time but not later than the following year's submittal, while widespread errors of a similar type may require further analysis to set a correction timeline. Flags should be reviewed to determine whether they are true errors. For the 2026 and 2027 submittals, datasets could contain temporary codes and null values for items not collected under the Coding Guide; temporary codes are not accepted for 2028 or after.

Running the validation logic internally before submittal, and fixing errors as part of routine QC rather than in a rush in March, is the most effective way to avoid resubmittals.

Part J — Border bridges

The SNBI includes specific rules for bridges crossing state borders. The Designated Lead State, determined by agreement between the bordering states, submits a full bridge record including all features regardless of which side of the border they are on. The Neighboring State submits an abbreviated record with feature records for highway features carried on or passing above the bridge, and does not report non-highway features; features passing below are reported only by the lead state. The states must concur on the accuracy of the shared items before submittal, and submittal signifies concurrence. Feature type values must be assigned consistently by both states so features match. When a Federal agency or Tribal government submits a border bridge, it determines which is the lead and neighboring state and submits both records. For a bridge on an international border, the bordering state is the lead state and reports a full record.

Part K — Impacts on owners and program managers

The SNBI is not just a data format change. It touches people, procedures, systems and budgets.

- **Systems.** Bridge management and inspection software must support many-to-one data, new items and the JSON submittal. Owners using vendor systems need to confirm configuration and testing well before submittal deadlines.
- **Procedures.** Inspection manuals must be updated for new items, coding rules and the data that inspectors must now collect, such as railing, transition, bearing and joint ratings, inspection equipment and team leader identifiers.
- **Training.** Inspectors, QC reviewers and data managers all need training on the SNBI. FHWA provided implementation training and recordings for division bridge engineers and program managers.
- **Data verification.** Every transitioned value must be verified by inspection or review by 2028. Owners need a plan to touch every bridge, often by scheduling verification into routine inspections and doing office verification for items not observable in the field.
- **Local agencies and consultants.** Where local agencies or consultants inspect bridges, the owner must make sure their reports produce SNBI-compliant data.

- **Quality.** The QC and QA requirements of 650.313(p) apply to NBI data, and the SNBI QC and QA date items make that activity visible.

Part L — Impacts on inspectors in the field

- Expect more items to verify each inspection and more structure in the data: separate span and substructure configurations, separate feature records, and separate inspection event records for each inspection type performed.
- Rate railings, transitions, bearings and joints using the SNBI tables and commentary.
- Record the inspection type correctly, including the distinction between routine and underwater when wading and probing at low water.
- Record intervals as months, adjusted after the inspection as required, and know that FHWA calculates the due date.
- Record team leader identity for each inspection type.
- Check transitioned values against field conditions. Many Coding Guide values were carried forward for years; the transition is an opportunity to correct them.

Part M — Worked examples

Example 1 — Routine and NSTM inspections on overlapping days

A team begins a routine and an NSTM inspection on the same day. The routine inspection is finished the next day; the NSTM inspection takes two more days. *How is it recorded?* Two inspection event records. Both have the same begin date. The routine record's completion date is the second day and the NSTM record's completion date is the fourth day, as in the SNBI B.IE.03 example. Each record carries the team leader responsible for that inspection type, which may be different people.

Example 2 — Interval adjusted after inspection

A bridge on a 48-month extended routine interval shows worsening deterioration. The owner reduces the interval to 24 months. *How is it recorded?* B.IE.05 for the routine inspection record is 24, reflecting the planned interval to the next inspection, as in the SNBI B.IE.05 example. FHWA calculates the due date.

Example 3 — Vehicle impact and repair

A bridge is struck by an over-height vehicle, a damage inspection is done the same day, the damage is repaired, and a one-time special inspection of the repair follows. *How is it recorded?* A damage inspection record (type 5) with interval 0, and a special inspection record (type 7) with interval 0 because it has no defined interval. If no QC review was done on these, B.IE.08 is not reported for them, as in the SNBI examples.

Example 4 — Low water lets divers stay home

A bridge flagged as requiring underwater inspection is inspected during unusually low flow by wading and probing as part of a routine inspection. *How is it recorded?* Both a routine (type 2) and an underwater (type 3) inspection record, per the SNBI commentary on B.IE.01, assuming owner procedures accept the low-water inspection as satisfying the underwater requirement.

Example 5 — Classification sensitivity

A steel girder bridge has deck 5, superstructure 6, substructure 6. A new inspection lowers the deck to 4. *Effect:* B.C.12 changes from Fair to Poor because the minimum of B.C.01 to B.C.04 is now 4. The narrative should document the reason for

the change clearly, since it affects national performance reporting.

Example 6 — Legal load rating factor

A load rating computes a legal load rating factor of 0.926 for the Type 3S2 vehicle. *Reported value:* 0.92 in B.EP.02, truncated to the hundredth, and because it is below 1.0, posting type and value are also reported for that configuration.

Example 7 — Multiple span types

A bridge has three continuous concrete slab spans and three continuous steel beam spans. *How is it recorded?* Two span configuration records under Subsection 2.1, each with its own material and type items, instead of forcing a single "main span" description.

Part N — A transition readiness checklist

1. Confirm the inventory system supports SNBI data sets, items, codes and the JSON submittal schema.
2. Run FHWA's validation logic on internal data well before March 15 each year and track critical errors to zero.
3. Identify every item that was transitioned rather than collected, and schedule verification for each bridge before the 2028 submittal.
4. Update the inspection manual, field forms and software with SNBI items and commentary, including the new condition ratings.
5. Train inspectors, QC reviewers and data managers, including consultants and local agency staff.
6. Assign team leader identifier codes for B.IE.04 and make sure they are recorded for each inspection type.
7. Record QC and QA review dates consistently in B.IE.08 and B.IE.09.
8. Coordinate border bridge records and concurrence with neighboring states.
9. Check load rating and posting data against the new EP and PS subsections, including legal load configurations and routine permit status.
10. Confirm scour vulnerability, scour POA and overtopping data are consistent with the bridge file and current appraisals.
11. Plan resources: verification adds time to inspections and office work during the transition.

Part O — Frequently asked questions

Is the SNBI a regulation?

The SNBI is a specification incorporated by reference in 23 CFR 650.317, and the NBIS requires inventory data to be reported in accordance with it (650.315(a)). It therefore carries regulatory force through the NBIS.

Do inspectors need to memorize item IDs?

No, but they should know the structure well enough to find items and read commentary quickly. Inspection software typically presents items by name.

Can an owner keep using its own extra items?

Owners commonly collect additional data for their own management needs. The SNBI governs what is reported to FHWA.

What happens if a special situation is not covered?

The SNBI directs users to consult the local FHWA division office for an acceptable solution.

Are QC and QA dates required for every inspection?

They are reported when a review was performed. The SNBI says not to report them when no review was performed. The NBIS separately requires documented QC and QA procedures and reviews (650.313(p)).

Where are element data reported?

In the Element Identification and Element Conditions subsections, combined with inventory data in the JSON submittal. Element data per the MBEI are required for NHS bridges.

Part P — Glossary

SNBI: Specifications for the National Bridge Inventory, March 2022, FHWA. **Coding Guide:** the 1995 Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, superseded by the SNBI. **NBI:** the National Bridge Inventory database maintained by FHWA. **NBI NextGen:** FHWA's updated NBI database system for SNBI data. **One-to-one item:** an item with one value per bridge record. **Many-to-one data set:** records such as inspection events, spans or features with several values per bridge. **Frequency code:** I, EI or C. **Transitioned data:** SNBI values derived from Coding Guide data using the crosswalk. **Verified data:** transitioned data validated by inspection or review. **Designated Lead State:** the state that submits a full record for a border bridge.

Part Q — Calculated items: what inspectors do not report

Several SNBI items carry frequency code C, meaning they are calculated by FHWA from other reported items and are not reported by the inspector or the agency. Understanding them prevents wasted effort and confusion when reviewing NBI outputs.

- **B.IE.06 Inspection Due Date.** The default calculation is the completion date (B.IE.03) plus the interval (B.IE.05). It is calculated only for inspection types that have an interval. If an owner disagrees with a calculated due date, the fix is in the reported dates or interval, not in B.IE.06.
- **B.C.12 Bridge Condition Classification.** G for a lowest rating of 7, 8 or 9; F for 5 or 6; P for 4 or lower. The lowest rating is taken from B.C.01 Deck, B.C.02 Superstructure, B.C.03 Substructure and B.C.04 Culvert. The SNBI examples include a concrete closed-spandrel arch with superstructure 7 and substructure 8 (Good), a corrugated metal pipe culvert rated 5 (Fair), and a steel box girder with deck 4, superstructure 6 and substructure 7 (Poor).
- **B.C.13 Lowest Condition Rating Code.** The lowest code from the same four items. It is the number behind the B.C.12 letter.

The SNBI notes that calculated item pages are written in passive voice, unlike the active-voice reported items, precisely because they are not intended to be reported by an inspector. Inspection software should display these values to help reviewers but should not let users edit them as if they were reported fields.

Why it matters

Because B.C.12 is derived only from the four primary component ratings, a deck downgrade from 5 to 4 moves a bridge from Fair to Poor in national performance measures even if all other components are in good condition. That is why the SNBI and the NBIS emphasize consistent rating practice, documented justification and QC review. Ratings for other items, such as railings, joints or the channel, do not drive B.C.12, though they remain important for maintenance planning.

Part R — Common misconceptions

- **"The SNBI is just the Coding Guide renumbered."** No. It restructures the data into many-to-one data sets, adds new items, removes others, changes code values and integrates element data. Many old items have no direct equivalent.
- **"Transitioned data are good enough."** Only temporarily. Transitioned data were accepted for the 2026 and 2027 submittals; the March 15, 2028 submittal must be collected or verified data with no temporary codes.
- **"The due date is something we enter."** B.IE.06 is calculated by FHWA.
- **"Every inspection needs a QC date."** B.IE.08 is reported only when a QC review was actually performed. The SNBI commentary recognizes that agencies may select inspections for QC review by representative bridge type or other methods.
- **"Element data are required for every bridge."** The SNBI states element data are required to be reported to FHWA only for bridges carrying NHS routes, though many owners collect them more widely.
- **"An underwater inspection always means divers."** The SNBI commentary allows code 3 when all portions of a substructure flagged for underwater inspection are inspected by wading and probing in unusually low flow, recording both routine and underwater records if done during a routine inspection.
- **"A service inspection is the same as a routine inspection."** Code 8 is used when a service inspection is performed for a bridge with a risk-based routine interval exceeding 48 months.
- **"Scour monitoring visits each get their own record."** For a triggering storm event, scour monitoring (code 9) is recorded once for that event, with the first site visit as the begin date and the last as the completion date.

Part S — Study guide

Before taking the quiz, make sure you can:

1. Name the regulation that incorporates the SNBI by reference and the section requiring reporting in accordance with it.
2. Describe the difference between one-to-one items and many-to-one data sets, with an example of each.
3. Explain frequency codes I, EI and C, and give an example of a calculated item.
4. List the inspection type codes 1 through 9.
5. State the risk-based interval levels for Method 1 and Method 2.
6. Recall the key transition dates: last Coding Guide submittal March 15, 2025; first SNBI hybrid submittal March 15, 2026; complete dataset March 15, 2028.
7. Explain how the 15-business-day resubmittal for critical errors works.
8. Describe how B.C.12 is calculated and why a single component rating can change national classification.
9. Explain the Designated Lead State concept for border bridges.
10. Identify the inspector's role in verifying transitioned data in the field.

Part T — Using the SNBI document efficiently

The SNBI is a long reference document, and few inspectors read it cover to cover. Using it well is a skill in its own right.

- **Use the two tables of contents.** The March 2022 document provides a condensed table of contents and an expanded one, with links on every page. The condensed version lists sections and subsections; the expanded version lists every item with its page number.
- **Read the subsection introduction first.** Many subsections, such as the inspection events and component condition rating subsections, open with general guidance that applies to every item in the group. The condition ratings

introduction, for example, explains that ratings consider the type, location and severity of defects, their extent, and their effect on strength or performance, and points to Table 20 for component ratings.

- **Read the specification and commentary together.** The specification column says what to report; the commentary column explains intent and special cases, such as when to use underwater code 3 at low water.
- **Work the examples.** The item examples, such as those for Bridge 0004794A in the inspection event items, show how several related items fit together across one bridge's records.
- **Check the errata.** FHWA has issued errata to the March 2022 SNBI. Confirm that your agency manual and software reflect them.
- **Keep a crosswalk handy.** During verification of transitioned data, the FHWA data crosswalk explains where each value came from, which helps an inspector judge whether it is plausible.

Finally, remember that the SNBI defines how data are reported, while the NBIS sets what inspections must be done, by whom and how often, and the MBE and MBEI provide the inspection and element methods. All three are needed to produce correct NBI data.

Key takeaways

- The SNBI (March 2022) supersedes the 1995 Coding Guide and is incorporated by reference in 23 CFR 650.317.
- Items are grouped in seven sections and identified as B.X.Y.
- Frequency codes I, EI and C tell who records an item and when.
- Many-to-one data sets record multiple spans, features, inspections, postings and work events.
- The transition ran from the last Coding Guide submittal on March 15, 2025 to a complete SNBI dataset due March 15, 2028.

References

1. FHWA, Specifications for the National Bridge Inventory (SNBI), FHWA-HIF-22-017, March 2022
2. 23 CFR Part 650, Subpart C — National Bridge Inspection Standards (final rule published May 6, 2022)
3. AASHTO, Manual for Bridge Element Inspection, 2nd Edition, 2019
4. AASHTO, The Manual for Bridge Evaluation, 3rd Edition, 2018 (with interim revisions)
5. FHWA, Bridge Inspector's Reference Manual (BIRM), FHWA-NHI-12-049, 2012 (as revised)

Study text only; the final quiz is taken online. Verify all references against the edition your agency has adopted.