

Inspection Types and Intervals Under the NBIS

The 2022 NBIS replaced fixed calendar intervals with risk-based intervals. This course covers every inspection type, the default, reduced and extended intervals, and the tolerances owners must track.

Learning objectives

- Distinguish the NBIS inspection types
- State default routine, underwater and NSTM intervals
- Explain criteria for reduced and extended intervals
- Apply interval logic to example bridges

The inspection types

The NBIS recognizes **initial, routine, in-depth, underwater, NSTM, damage, special and service** inspections (23 CFR 650.305, 650.313).

- **Initial** — first inspection of a new, replaced, rehabilitated or temporary bridge, within 3 months of opening; records inventory data and baseline conditions.
- **Routine** — regularly scheduled comprehensive inspection identifying changes from previous conditions.
- **In-depth** — close-up inspection of one or more members, often with NDE, to find deficiencies not detectable by routine methods.
- **Damage** — unscheduled, after environmental or human-caused damage.
- **Special** — at owner discretion to monitor a known or suspected deficiency.
- **Service** — required midway when the routine interval exceeds 48 months.

Routine intervals — Method 1

Method 1 is a simplified risk assessment with three categories (650.311(a)(1)):

- **Regular:** not to exceed 24 months.
- **Reduced:** owners document criteria for intervals below 24 months; bridges with deck, superstructure, substructure or culvert rated 3 or less, or scour condition rated 3 or less, must be inspected at intervals not to exceed 12 months.
- **Extended:** up to 48 months when *all* criteria are met — components and channel rated 6 or better, inventory rating factor ≥ 1.0 with routine permits unrestricted, no Category E or E' fatigue details, vertical clearance ≥ 14 ft, limited concrete/steel superstructure types, and stable for scour. The owner must document a policy and notify FHWA in writing before implementing.

Routine intervals — Method 2

Method 2 uses a Risk Assessment Panel (RAP) of at least four people, at least two of them PEs, including the NBIS program manager. Bridges are classified into four categories with intervals not to exceed 12, 24, 48 or 72 months. The policy requires FHWA approval and must include screening criteria (for example, poor-condition bridges cannot exceed 24 months; fair-condition bridges cannot exceed 48), deterioration modes, attributes and logic suitable for computer programming.

When the routine interval exceeds 48 months, a **service inspection** is required in the month midway between routine inspections. New, rehabilitated or modified bridges must have an initial inspection, 24 months in service and the next routine inspection before qualifying for intervals over 24 months.

Underwater and NSTM intervals

Underwater (650.311(b)): regular not to exceed 60 months; reduced to not more than 24 months when underwater condition, channel or channel protection, or scour condition is rated 3 or less; extended up to 72 months when underwater, channel and scour conditions are 6 or better and the bridge is stable for scour.

NSTM (650.311(c)): regular not to exceed 24 months; 12 months when the NSTM inspection condition is 4 or less; extended up to 48 months only when all criteria are met — built after 1978 under a fracture control plan, no finite-life fatigue details, no fatigue crack history, NSTM condition 6 or better, inventory RF ≥ 1.0 and no pin and hanger assemblies.

Tolerances and next inspection

For intervals under 24 months, the tolerance is up to 2 months after the month due; for intervals of 24 months or more, up to 3 months (650.311(e)). Exceptions for rare circumstances need FHWA approval in advance. After each inspection, the next interval for each inspection type is set from the results.

Worked example: a 1995 steel multi-girder bridge, all components rated 6–7, inventory RF 1.15, Category E' cover-plate ends present. It does *not* qualify for a 48-month Method 1 extended interval because of the E' details, so it stays at 24 months unless reduced criteria apply.

Part A — Why intervals matter

An inspection interval is a statement of risk tolerance. Every month between inspections is a month in which deterioration, damage or a change in the waterway can progress without anyone looking. Too short an interval wastes inspection resources that could be spent on the bridges that need attention; too long an interval lets a problem grow past the point where it is cheap to fix — or past the point where it is safe. The NBIS (23 CFR 650.311) sets maximum intervals and gives owners two ways to set them: a condition-based approach (Method 1) and a risk-based approach (Method 2).

For engineers, intervals show up in several practical ways:

- **Scheduling and budgets.** Consultants bidding on inspection contracts need to know how many bridges come due in each year; a change from 24 to 48 months on a large share of an inventory halves annual routine workload for those bridges.
- **Design decisions.** Details that require frequent or hands-on inspection — NSTMs, fatigue-prone details, underwater foundations — carry a lifetime inspection cost. Designers who avoid them reduce owner cost for decades.
- **Response to findings.** When an inspection finds a problem, one of the most common recommendations is to shorten the interval or add a special inspection.
- **Compliance.** FHWA's annual NBIS oversight looks at whether inspections were performed within interval plus tolerance. Late inspections are among the most commonly cited issues.

This course works through each inspection type, how its interval is set, how tolerances work, and how to apply the logic to example bridges. Always confirm the current text of 650.311 on eCFR; this course summarizes it and deliberately points you

back to the regulation for item-by-item criteria.

Part B — The inspection types revisited

The NBIS defines inspection types in 650.305 and sets intervals for some of them in 650.311. The table below separates types that have a *regulatory* interval from those whose timing is set by events or owner judgment.

Type	Regulatory interval?	What sets the timing
Initial	Event-based	Required for new, replaced, rehabilitated or newly inventoried bridges; establishes baseline
Routine	Yes	Method 1 (condition) or Method 2 (risk) intervals
Underwater	Yes	Separate interval for underwater portions that cannot be inspected by wading or probing at low water
NSTM	Yes	Separate, hands-on interval for nonredundant steel tension members
Service	Yes, conditionally	Required when a risk-based routine interval exceeds 48 months
Damage	No — event	After impact, flood, fire, earthquake or similar event, per owner procedure
In-depth	No — owner	Owner decides when close-up or NDE inspection of particular members is needed
Special	No — owner	Set to monitor a specific known or suspected deficiency

Why routine, underwater and NSTM intervals are separate

A single bridge may have three different clocks. A river bridge with a two-girder steel superstructure may need routine inspection every 24 months, NSTM hands-on inspection every 24 months (often scheduled together with the routine), and underwater inspection every 60 months. The clocks are tracked separately in the inventory because each type requires different personnel, equipment and access — divers for underwater, snooper trucks or rope access for NSTM.

How owners combine inspections

Owners commonly align clocks so a single mobilization satisfies more than one type — for example, scheduling the underwater inspection in the same season as every third routine inspection where the intervals allow. Alignment is good practice, but each type must still be performed within its own interval plus tolerance. An NSTM inspection cannot be pushed beyond its interval just to match a routine visit.

Part C — Method 1 in detail

Method 1 sets routine intervals by condition and other characteristics. It has three tiers:

Tier	Maximum routine interval	General idea
Reduced	12 months	Bridges with deficiencies that warrant closer watching — notably poor condition (a component or culvert rating of 3 or less) and other triggers in the rule
Standard	24 months	The default for bridges that do not meet reduced or extended criteria
Extended	48 months	Bridges meeting the rule's criteria for good condition and low risk (for example, condition, load capacity, scour, structure type and other criteria listed in 650.311)

The extended-interval criteria are a specific checklist in the regulation. If any criterion is not met, the bridge cannot use 48 months under Method 1. Read the checklist directly; this course does not reproduce it item by item.

Thinking about the reduced tier

A component rating of 3 (serious) means deterioration has seriously affected primary structural components — local failures may be present. At that level, a lot can change in 24 months. The 12-month cap ensures someone looks at least annually. Many owners go further and inspect poor bridges every 6 months or set up special inspections focused on the controlling defect.

Thinking about the extended tier

Extended intervals reward low-risk structures: relatively new, good condition, adequate load capacity, not scour critical, no fatigue-prone or nonredundant details. Typical candidates are short-span prestressed concrete slab or box beam bridges and concrete box culverts on low-volume roads that are in good condition. The benefit is real: if 30% of an inventory moves from 24 to 48 months, annual routine inspections for those bridges drop by half, freeing staff and money for the bridges that need attention.

Worked example 1 — Assigning Method 1 tiers

Bridge	Lowest rating	Other notes	Tier
A — 1958 steel stringer, timber deck	Superstructure 3	Posted	Reduced: 12 months
B — 1985 prestressed I-girder	5	Over river, not scour critical	Standard: 24 months (fair condition does not meet extended criteria)
C — 2015 concrete box culvert	Culvert 7	Meets every extended-interval criterion in 650.311	Extended: up to 48 months
D — 2010 prestressed slab	7	Scour critical per appraisal	Not eligible for extended (fails a criterion); 24 months

Bridge D illustrates the most common mistake: assuming good condition alone qualifies a bridge for 48 months. The extended tier requires every criterion to be met.

Part D — Method 2: risk-based intervals

Method 2 allows routine intervals up to 72 months based on a documented risk assessment. It requires FHWA approval of the owner's policy and a Risk Assessment Panel (RAP) of at least four members, including at least two registered PEs, with collective expertise in inspection, design, evaluation and materials.

The reliability-based framework

NCHRP Report 782, *Proposed Guideline for Reliability-Based Bridge Inspection Practices* (2014), is the main research basis. Its approach:

1. **Identify damage modes** for a family of similar bridges — for example, corrosion of prestressing strands in adjacent box beams, fatigue cracking at welded details, scour at piers.

2. **Identify attributes** that affect the *likelihood* of each damage mode — age, environment (deicing salt, marine exposure), current condition, detailing, traffic volume.
3. **Assess consequence** if the damage mode occurs — from minor (cosmetic, easily repaired) to high (structural failure, loss of life, major traffic disruption).
4. **Combine** likelihood and consequence on a risk matrix to assign each bridge to an interval category.

Worked example 2 — A simplified risk matrix

The following matrix is illustrative only — an actual RAP develops and documents its own scoring.

Likelihood ↓ / Consequence →	Low	Moderate	High
Remote	72 months	48 months	24 months
Low	48 months	24 months	24 months
Moderate	24 months	24 months	12 months
High	12 months	12 months	12 months

A 2018 prestressed box beam bridge on a low-volume road, with waterproofing membrane, good condition and a short detour, might score "remote" likelihood and "low" consequence → 72 months. The same superstructure type built in 1975, with known strand corrosion issues in that family and no membrane, might score "moderate" likelihood → 24 months.

Service inspections

When Method 2 assigns a routine interval over 48 months, the rule requires a service inspection in between. A service inspection is a lighter visit to verify that nothing has changed significantly — new impact damage, drainage problems, debris accumulation, scour, or rapid deterioration. If significant change is found, the owner should trigger a full inspection and revisit the risk assessment.

Documentation

Method 2 requires a written, approved process. The RAP's assumptions, scoring, data sources and decisions must be documented so FHWA and future reviewers can follow the logic. A risk-based program without documentation is effectively a non-compliant extended interval.

Part E — Underwater intervals

Underwater inspection is required for underwater portions of a bridge that cannot be inspected visually at low water by wading or probing. The Method 1 underwater intervals parallel the routine tiers:

Tier	Maximum underwater interval
Reduced	24 months (where condition or other rule triggers apply)
Standard	60 months
Extended	72 months (where all rule criteria are met)

Method 2 can also be applied to underwater inspections, subject to the rule's maximums and FHWA-approved policy.

What drives a reduced underwater interval

Typical reasons owners inspect underwater elements more frequently include poor condition of underwater substructure, active scour or channel instability, timber piles subject to marine borers, steel piles with known section loss in the splash or tidal zone, and foundations with unknown details. A bridge that is scour critical relies on its plan of action for flood monitoring — that is a separate requirement from the underwater interval, and both apply.

Worked example 3 — Wading or diving?

A two-span bridge crosses a creek with a center pier. Normal water depth at the pier is 2 ft, and the bottom is visible. The inspector can wade and probe around the pier footing during the routine inspection. No separate underwater inspection is required, though the routine report should document the probing and channel profile. If the creek normally runs 6 ft deep and turbid at the pier, the pier cannot be inspected by wading, so an underwater inspection by qualified divers is required on the underwater interval.

Seasonal planning

Underwater inspections are usually scheduled for low-flow seasons when visibility and current are favorable and dive safety is easier to manage. Because the interval tolerance is limited, owners should not plan the next underwater inspection at the very end of the window — a wet season can make diving unsafe for months. Schedule early in the window and keep a backup date.

Part F — NSTM intervals

NSTM inspections are hands-on inspections of nonredundant steel tension members. Under Method 1:

Tier	Maximum NSTM interval
Reduced	12 months (where condition or other rule triggers apply)
Standard	24 months
Extended	48 months (where all rule criteria are met)

Method 2 can also be applied to NSTMs under approved policy, up to the rule's maximum.

Why NSTMs get special attention

An NSTM's failure may cause partial or total collapse. Fatigue cracks in steel can grow from undetectable to critical over a period that depends on stress range, number of cycles and fracture toughness. The interval is intended to give inspectors multiple chances to find a crack before it reaches critical size. The 2022 rule allows extended intervals where criteria are met, reflecting improved fabrication (fracture control plans, tougher steels) and better-understood details on newer bridges.

Worked example 4 — Interplay of routine and NSTM clocks

A 1972 two-girder steel bridge is in fair condition (lowest rating 5), with Category E' cover plate details on the girders. Under Method 1:

- Routine: standard 24 months.
- NSTM: the girders are NSTMs; the age and fatigue-prone details mean the bridge would not meet extended-interval criteria, so standard 24 months — and the owner may choose 12 months given the E' details.

- Practical approach: schedule routine and NSTM inspection together every 24 months with snoopers access, and consider a 12-month NSTM visit focused on the cover plate terminations.

Part G — Tolerances and computing due dates

The rule allows a tolerance on each interval:

Interval	Tolerance
Less than 24 months (e.g., 6 or 12 months)	2 months
24 months or more (24, 48, 60, 72)	3 months

The tolerance accommodates weather, access, traffic control and workload. It is not an extension of the interval; owner procedures typically compute the next due date from the established interval so the program does not drift later and later.

Worked example 5 — A drift problem

An owner computes each next due date from the actual inspection date rather than the target date, and inspections are routinely done at the end of the tolerance.

Cycle	Target	Actual (3 months late)	Next target if computed from actual
1	Jan 2020	Apr 2020	Apr 2022
2	Apr 2022	Jul 2022	Jul 2024
3	Jul 2024	Oct 2024	Oct 2026

Each individual inspection was "within tolerance" of its target, but the effective interval became 27 months. Owner procedures should prevent this — for example by computing the next target from the original target date or by limiting how often the tolerance is used. Check how your owner's procedure handles this, and do not assume the tolerance is a standing allowance.

Worked example 6 — Calculating windows

Last inspection	Interval	Target	Latest compliant
Jun 12, 2025 (routine)	24 mo	Jun 12, 2027	Sep 12, 2027
Feb 3, 2026 (NSTM)	12 mo	Feb 3, 2027	Apr 3, 2027
Aug 20, 2022 (underwater)	60 mo	Aug 20, 2027	Nov 20, 2027
Oct 1, 2024 (routine, Method 2)	72 mo	Oct 1, 2030	Jan 1, 2031 — plus a service inspection in between

Part H — Changing an interval

Intervals are not permanent. Events that should prompt an interval review include:

- A drop in a component rating (for example, from 5 to 4, or to 3 which triggers the reduced tier).
- A critical finding.
- New fatigue cracking or active section loss.

- A flood that changes the channel, or a change in scour status.
- A rehabilitation or repair that improves condition (which may allow a longer interval if criteria are met).
- Changes in load rating or posting.
- Changes in traffic or route importance.

Worked example 7 — An interval after repair

A 1990 prestressed I-girder bridge was on a 12-month interval because the substructure was rated 3 (a severely deteriorated pier cap). In 2025 the cap was replaced. The next routine inspection rates the substructure 7 and the other components 6–7. The bridge no longer meets the reduced-tier trigger, so the owner can return it to the standard 24-month interval. If all extended-interval criteria are met, the owner may consider 48 months — but many owners require at least one standard-interval cycle after a major repair to confirm performance.

Recording the reason

When an interval changes, the bridge file should record why: the inspection or rating that drove the change, the criteria considered, and who approved it. That record is what an auditor will ask to see.

Part I — Initial, damage, in-depth and special inspections in scheduling

Initial inspections

An initial inspection establishes the baseline for a new, replaced or rehabilitated bridge, and records inventory data and element quantities. For phased construction, the portion opened to traffic needs inventory and inspection coverage. The initial inspection is also the best time to identify details that will drive future intervals — NSTMs, fatigue-prone details, underwater elements — and record access requirements.

Damage inspections

Damage inspections follow events. Owner procedures should define triggers (for example, any reported vehicle strike on a superstructure, floods above a defined stage, earthquakes above a defined intensity) and who responds. Damage inspections do not normally reset the routine clock.

In-depth inspections

In-depth inspections go beyond routine methods — close-up, often with NDE — to quantify deficiencies. Owners often schedule them for specific members on a cycle (for example, an in-depth inspection of pin-and-hanger assemblies with ultrasonic testing of the pins) or as a follow-up to a routine finding.

Special inspections

Special inspections monitor a known or suspected deficiency, such as crack growth, settlement, or a scour hole. Their frequency should match the rate at which the condition could become dangerous — weekly, monthly or quarterly as engineering judgment dictates — and they should have clear action thresholds (for example, "if the crack extends beyond the drilled hole, notify the bridge engineer immediately and restrict the lane").

Worked example 8 — A special inspection plan

Item	Plan
Deficiency	Settlement of abutment 1 wingwall with 1/2 in. crack opening
Method	Survey control points on wall and approach slab; crack gauges
Frequency	Monthly for 6 months, then quarterly if stable
Thresholds	Additional settlement > 1/4 in. or crack opening > 1 in. → engineer review within 1 week; signs of approach slab failure → lane restriction
Ends when	Wall repaired or movement stable over 4 consecutive readings and engineer closes the special inspection

Part J — Applying it: a mixed inventory

The following exercise applies the interval logic to a small inventory. Work through each bridge, then compare with the answers.

#	Description
1	2019 precast box culvert, ratings 8, low-volume road, meets all Method 1 extended criteria; no underwater portion
2	1964 steel truss over a river, eyebar bottom chords, superstructure 4, substructure 5, piers in 15 ft of water
3	1978 prestressed I-girder overpass, lowest rating 5, no water
4	1950 timber pile bent bridge over a tidal creek, substructure 3, posted
5	2005 steel multi-girder, ratings 7, scour critical, piers in 4 ft of water (wadeable at low tide)

Answers

1. **Box culvert:** routine up to 48 months (extended). No underwater or NSTM.
2. **Truss:** routine 24 months (rating 4 does not trigger the 3-or-less reduced tier, though many owners choose 12). NSTM: eyebars are NSTMs; standard 24 months, owner may reduce. Underwater: piers not wadeable, so underwater inspection at 60 months standard unless condition triggers reduce it.
3. **Overpass:** routine 24 months. Not eligible for extended (fair rating). No NSTM, no underwater.
4. **Timber bridge:** substructure 3 → reduced, 12-month routine. Underwater portions of timber piles in a tidal creek subject to marine borers: likely reduced 24-month underwater interval if not wadeable; many owners inspect annually.
5. **Steel multi-girder:** good condition, but scour critical, so not eligible for extended routine; 24 months. Not NSTM (multi-girder). Piers wadeable at low tide — inspected by wading/probing during routine; scour plan of action governs flood monitoring.

Part K — How intervals evolved

The first NBIS (1971) required inspection at regular intervals not to exceed two years. That fixed 24-month cycle stayed at the center of the program for decades. Over time, revisions added separate requirements for fracture-critical members, underwater inspection and special inspections, and the 2004 rule allowed owners to request FHWA approval for intervals up to 48 months for certain bridges. Many owners never used the 48-month option because the approval process was burdensome and the criteria varied.

MAP-21 (2012) directed FHWA to address risk-based inspection intervals. Research in parallel — notably NCHRP Report 782 (2014) — developed a reliability-based framework. The 2022 rule codified two clear paths: Method 1, with explicit criteria for 12-, 24- and 48-month routine intervals, and Method 2, a risk-based process allowing up to 72 months. The shift reflects a broader trend in asset management: spend inspection effort where risk is highest, and document why.

Lessons from the evolution

- Fixed intervals are simple to administer but treat a new culvert and a deteriorated truss the same.
- Risk-based intervals are more efficient but depend on good data and disciplined documentation.
- Both depend on consistent condition ratings — a bridge rated 7 that should be 5 may receive an interval it should not have. Course BR-I05 covers rating consistency.

Part L — Program-level planning

Interval policy translates directly into workload. Program managers and consultants use a simple calculation to estimate annual inspection demand.

Worked example 9 — Annual workload

A county owns 400 NBIS bridges with the following routine intervals:

Interval	Bridges	Inspections per year (bridges ÷ interval in years)
12 months	40	40
24 months	260	130
48 months	100	25
Total	400	195

If the 100 extended-interval bridges were instead on 24 months, they would need 50 inspections a year instead of 25, so the extended tier saves about 25 routine inspections a year (total demand would be 220 instead of 195). With an average cost per routine inspection (including traffic control and reporting) taken as an illustrative figure, the savings can then be redirected — for example to more frequent special inspections on the 40 poor bridges.

Smoothing the schedule

When many bridges were built or first inspected in the same year, their due dates cluster. Owners can smooth workload by inspecting some bridges early (an earlier inspection is always allowed) and resetting their cycle, so each year carries a similar load. This also reduces the risk that a bad weather season or staffing shortage pushes a large block of bridges past tolerance at once.

Tracking tools

Most owners track due dates in a bridge management system with automated reports of bridges coming due in the next 90 days and those within tolerance. A useful dashboard shows, per inspection type, bridges overdue, within tolerance, and due in the next quarter — a direct view of compliance risk.

Part M — Case study: an interval decision under pressure

A State DOT district has a 1968 continuous steel girder bridge on a rural principal arterial, over a stream. Four girders, superstructure rated 5, substructure 6, deck 5. The bridge is on a standard 24-month routine interval. Its last routine inspection was in May 2025.

September 2025. A maintenance crew reports a vehicle struck the south fascia girder. The district sends a team leader for a damage inspection within two days. The team finds a 1.5 in. bottom flange deformation and a 2 in. crack in the web at the end of a stiffener weld near the impact. The team leader classifies this as a critical finding and notifies the program manager.

Immediate actions. The south lane is closed over the damaged girder. The bridge is not on the NHS, and the girder is not an NSTM (four-girder system), so 24-hour FHWA notification is not triggered under the NHS/NSTM criteria; the State reports per its procedure.

Engineering follow-up. The load rating engineer evaluates the damaged girder, assuming the cracked section is ineffective. The bridge rates adequately with the lane closed. A crack-arrest hole is drilled, and a special inspection is set monthly.

Interval review. The program manager considers: Does the bridge now meet a reduced-tier trigger? The superstructure rating after the damage inspection is lowered to 4 — not 3, so Method 1 does not mandate 12 months. Nevertheless, the active crack and lane closure justify a shorter interval. The district sets a 12-month routine interval until the girder is repaired, plus the monthly special inspection.

Repair (spring 2026). The damaged girder section is heat straightened and the cracked web region is repaired with bolted splice plates. A post-repair in-depth inspection with MT finds no remaining cracks. The superstructure returns to 5. The special inspection ends; the district returns the bridge to 24 months, documenting the reasons.

The case shows that intervals respond to events and that the regulatory tiers are minimums — engineering judgment can and should tighten them when a situation calls for it.

Part N — Frequently asked questions

Can an owner inspect earlier than the interval?

Yes. Early inspection is always allowed. Owners usually reset the cycle based on their procedure.

If a bridge is closed, do inspections stop?

Closed bridges remain in the inventory; owners should follow their procedures and FHWA guidance on inspection of closed bridges, particularly where the closed bridge could affect public safety (for example, over a road or railroad) or might reopen.

Does a 48-month bridge still need underwater inspection on its own clock?

Yes, if it has underwater elements that require it. Each inspection type has its own interval.

Who decides the interval?

The inspection organization, under its written procedures. Consultants recommend; the owner decides and documents.

Can a team leader recommend a shorter interval in the report?

Yes, and they should whenever the condition justifies it. The recommendation, and the owner's decision, should be recorded in the bridge file.

Is Method 2 worth it for small owners?

Method 2 is generally adopted at the State level with FHWA approval, because it requires a RAP, data and documented models. Local agencies typically follow their State's approved policy rather than developing their own.

Part O — Self-check and summary

Question	Answer
Method 1 routine tiers?	12 / 24 / 48 months
Maximum risk-based routine interval?	72 months (Method 2)
Method 1 underwater tiers?	24 / 60 / 72 months
Method 1 NSTM tiers?	12 / 24 / 48 months
Tolerance for a 12-month interval?	2 months
Tolerance for a 60-month interval?	3 months
When is a service inspection required?	When a risk-based routine interval exceeds 48 months
RAP minimum composition?	4 members, at least 2 registered PEs
Does good condition alone qualify for 48 months?	No — every extended-interval criterion must be met

Key points

- Each bridge can have separate routine, underwater and NSTM clocks.
- Method 1 is criteria-driven; Method 2 is risk-driven, requires FHWA approval and a documented RAP process.
- Tolerances are scheduling allowances, not extensions; avoid drift.
- Intervals should be revisited after any significant change in condition, scour status, or a critical finding.
- The regulation sets maximums; engineering judgment can always shorten an interval.

Part P — Access, equipment and personnel by inspection type

Interval planning is only realistic if the access and personnel for each inspection type are planned too. The table summarizes typical needs.

Type	Typical access/equipment	Personnel	Planning notes
Routine	Ground, ladders, boats, lifts or snooper as needed for the bridge	Qualified team leader leading field work	Traffic control permits; railroad flagging for overpasses
NSTM	Hands-on access to every NSTM: snooper, lift, rope access, rigging	Team leader with NSTM training	Longest lead time — equipment availability, lane closures, night work
Underwater	Dive boat, surface-supplied or scuba gear, probing rods, sonar where useful	Qualified underwater bridge inspection diver(s), dive supervisor per safety	Low-flow season; tides; visibility; dive safety plan

Type	Typical access/equipment	Personnel	Planning notes
		standards	
In-depth	Close access plus NDE equipment (UT, MT, GPR, half-cell)	Team leader plus NDE technicians certified for the method	Coordinate NDE crews and calibration
Damage	Whatever is needed quickly	On-call team leader; engineer on standby	Pre-arranged on-call contracts speed response
Service	Typically ground-level visual	Per owner policy	Short visit; clear escalation criteria

Worked example 10 — A lead-time problem

An NSTM inspection of a long-span deck truss over a navigable river requires a barge-mounted lift and a Coast Guard notice. The bridge's 24-month NSTM interval ends in August with a 3-month tolerance. Equipment availability is limited in summer, and fall weather on the river is unreliable. A program manager who waits until July to arrange access risks missing the window. A better plan books equipment in the winter for a May–June inspection, leaving the tolerance as true contingency rather than the plan.

Part Q — Recording intervals in the inventory and the file

The SNBI requires owners to report inspection dates and intervals for the inspection types performed. Accurate recording matters because FHWA's compliance metrics are computed from inventory data: if the interval field says 24 months but the bridge was approved for 48, it will appear overdue; if it says 48 months without supporting criteria, it may be flagged in review.

Good practice for the bridge file

- Record the method (Method 1 or Method 2) and tier for each inspection type.
- For extended intervals, keep the criteria checklist with the date each criterion was verified.
- For Method 2, reference the RAP model version and the bridge's risk score.
- Record any owner decision to shorten an interval, with the reason and who approved it.
- Record the next target date and the latest compliant date.

Worked example 11 — An audit question

An auditor selects a bridge shown in the inventory with a 48-month routine interval. The file contains a criteria checklist completed four years ago, but the most recent inspection lowered the deck rating from 7 to 5. Does the extended interval still apply? The owner should have re-evaluated the criteria after that inspection; if a criterion is no longer met, the bridge should have moved back to the standard 24-month interval. The fix is procedural: require a criteria re-check with every inspection on an extended-interval bridge.

Wrap-up

Intervals connect condition, risk and resources. The rule gives clear maximums and two paths for setting them; the practitioner's job is to apply the criteria honestly, plan access early enough to stay within tolerance, record the reasoning, and shorten intervals whenever conditions demand it. The next course, BR-I03, covers critical findings — the events most likely to trigger an interval change.

Part R — Common interval mistakes

Mistake	Why it matters	How to avoid it
Assigning 48 months based on good condition alone	Other extended criteria (scour, load capacity, details) may fail	Use the full 650.311 checklist for every extended bridge
Computing next target from actual date after late inspections	Interval drifts beyond the intended maximum	Compute from target or follow owner rule on tolerance use
Forgetting the service inspection for >48-month risk-based intervals	Non-compliance; missed changes	Auto-schedule service inspection at approval
Aligning NSTM with routine by pushing NSTM past its interval	NSTM overdue	Align by inspecting early, never late
Not re-checking criteria after a rating drop	Bridge stays on an interval it no longer qualifies for	Re-verify criteria at every inspection
Treating wadeable and non-wadeable piers the same	Missed underwater requirement or unnecessary dives	Document water depth and visibility at each element
Leaving no record of why an interval was shortened	Later staff restore it without understanding the issue	Record reason, approver and end condition

Part S — Exercise 2: due dates and decisions

Work these, then check the answers.

1. A routine inspection on a 24-month bridge was due March 15, 2026. It was performed May 30, 2026. Compliant?
2. An NSTM inspection on a 12-month interval was due January 10, 2027. Latest compliant date?
3. A Method 2 bridge has a 60-month routine interval. What other inspection must be scheduled?
4. A bridge on a 48-month Method 1 interval is found scour critical in a new appraisal. What happens to the interval?
5. Underwater inspection done July 2022 at a 60-month interval. Target and latest compliant date?

Answers

1. Yes — 24-month interval has a 3-month tolerance, so the window extends to June 15, 2026.
2. March 10, 2027 (2-month tolerance for intervals under 24 months).
3. A service inspection, because the risk-based routine interval exceeds 48 months.
4. It no longer meets the extended criteria; return to the standard 24-month interval (or shorter if the owner judges it necessary), and implement the scour plan of action.
5. Target July 2027; latest compliant October 2027 (3-month tolerance).

Glossary

Term	Meaning
Method 1	Condition- and criteria-based interval method (12/24/48 routine)
Method 2	Risk-based interval method with RAP and FHWA-approved policy (up to 72 routine)
Tolerance	Scheduling allowance: 2 months (<24-month intervals) or 3 months (≥24)
Service inspection	Interim inspection required when a risk-based routine interval exceeds 48 months

Term	Meaning
RAP	Risk Assessment Panel, ≥4 members including ≥2 PEs
Damage mode	A way a bridge element can deteriorate or fail; basic unit of risk assessment

Part T — The consultant's role in interval decisions

Consultants perform a large share of NBIS inspections. Although the owner sets intervals, consultants influence them in three ways.

1. Accurate data

Interval criteria depend on ratings, element quantities, scour coding, and notes about details. Inconsistent or inflated ratings can place a bridge on an interval it does not qualify for. Consultants should rate to the owner's guidance and flag uncertainty rather than splitting the difference.

2. Explicit recommendations

Reports should include a clear interval recommendation when conditions warrant a change: "Recommend reducing the routine interval to 12 months and adding a 6-month special inspection of the pier 2 cap until repair," with the reason. Vague language ("monitor") gives the owner nothing to act on.

3. Planning support

Consultants managing inspection programs for an owner should provide look-ahead schedules that show which bridges are coming due by type, the access needed, and lead times, so equipment and traffic control can be booked early. A good consultant program never relies on the tolerance window to meet a due date.

Worked example 12 — Writing an interval recommendation

Weak: "Bridge should be watched."

Strong: "The pier 1 cap has delaminated and spalled over 35% of its bottom surface, with exposed bars showing up to 25% section loss (CS3/CS4). Substructure rated 4. Recommend: (1) load rating review of the pier cap within 3 months; (2) reduce routine interval from 24 to 12 months; (3) special inspection every 6 months until repair, with escalation to the bridge engineer if new spalling exposes additional bars or any crack exceeds 1/16 in. on the cap sides."

The strong recommendation gives the owner an actionable plan, a reason that will survive staff turnover, and clear escalation criteria.

A final reminder: when an interval recommendation is accepted, the consultant should confirm that the inventory record and the bridge file were both updated. A recommendation that lives only in a PDF report is easily missed when the next cycle is scheduled, and the next team may arrive months later than intended.

Key takeaways

- Method 1: 12 / 24 / 48 months; Method 2: up to 72 months with a RAP and FHWA approval.
- Ratings of 3 or less force 12-month routine intervals.
- Underwater: 24 / 60 / 72; NSTM: 12 / 24 / 48 months.

- Tolerance is 2 months (intervals under 24) or 3 months (24 or more).

References

1. 23 CFR Part 650, Subpart C — National Bridge Inspection Standards (final rule published May 6, 2022)
2. 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.