

Ethics for Bridge Engineers: Sealing, Ratings and Critical Findings

Bridge engineers make decisions that the traveling public never sees and cannot check: whether a rating supports keeping a bridge open, whether a crack is a critical finding, whether a set of plans is ready to seal. This one-hour ethics course works through those decisions using three primary sources: the NCEES Model Law and Model Rules (August 2026 editions), which most U.S. licensing boards use as a template for their own statutes and rules, and the NSPE Code of Ethics for Engineers (as revised July 2019). It connects those obligations to the federal National Bridge Inspection Standards (23 CFR 650 Subpart C) where the regulation creates specific moments of ethical pressure: load ratings, load postings, closures, quality control and critical findings. Scenarios are invented for teaching and are labeled as such.

Learning objectives

- Apply the paramount duty to public safety
- Handle pressure on ratings and postings
- Use seals properly
- Report and escalate concerns

Why ethics is a bridge engineering topic

Most continuing education in bridge engineering is about technical knowledge: how to rate a girder, how to code a component, how to detail a column. Ethics courses are sometimes treated as a compliance box. For bridge engineers that would be a mistake, because the decisions with the largest consequences in bridge practice are frequently not technical puzzles at all. They are moments where the technically correct answer is known, or knowable, and someone would prefer a different answer.

Consider the kinds of pressure that arise in ordinary bridge work. A load rating comes out below the legal load, and posting the bridge will force school buses and farm trucks onto a long detour. An inspection finds section loss that, if coded honestly, will trigger a critical finding and a phone call no one wants to make on a Friday afternoon. A design deadline arrives before the checker has finished, and the client wants sealed plans anyway. A consultant who did the original design is asked to evaluate the cracking that has appeared in it. A vendor offers a trip to see a product demonstration. None of these situations requires advanced mechanics to understand. All of them require the engineer to know what their obligations are and to act on them.

The NSPE Code of Ethics opens its preamble by stating that engineering has a direct and vital impact on the quality of life for all people, and that the services provided by engineers require honesty, impartiality, fairness and equity, and must be dedicated to the protection of the public health, safety and welfare. Bridges make that abstraction concrete. A bridge carries members of the public who have no way to evaluate its condition. They rely entirely on the integrity of the people who inspect, rate, design and maintain it.

This course is organized around the obligations that come up most often in bridge practice: the paramount duty to public safety; competence and responsible charge; the use of the seal; ratings, postings and closures; critical findings and escalation; truthful reports and quality control; conflicts of interest; and reviewing the work of other engineers. Each section identifies the

specific provisions that apply, then discusses how they play out in bridge work. Short scenarios, invented for teaching, illustrate the issues.

Related technical courses in this catalog include BR-L01 for load rating fundamentals, BR-I01 for inspection program basics, BR-S01 for the Specifications for the National Bridge Inventory, and BR-F02 for nonredundant steel tension members. This course does not repeat that technical content; it focuses on the professional obligations that surround it.

The sources: model law, model rules and a society code

Three different kinds of documents shape an engineer's ethical obligations, and it matters which is which.

State law and board rules. Engineering licensure in the United States is governed by each state or jurisdiction. The legally binding obligations for a licensee are those in the jurisdiction's engineering practice act and in the rules adopted by its licensing board. A licensee who violates them can be disciplined by that board. This course does not reproduce any state's law; learners must confirm the requirements of each jurisdiction where they are licensed.

The NCEES Model Law and Model Rules. The National Council of Examiners for Engineering and Surveying (NCEES) publishes the Model Law and the Model Rules. NCEES describes the Model Law as reflecting best practices as determined by its member boards and as a model for state practice legislation, and describes the Model Rules as providing licensure boards with guidelines for engineering and surveying licensing laws and ethics. Many boards have adopted language that closely follows them, which is why they are useful for a multistate audience. They are not themselves law. This course cites the August 2026 editions.

The NSPE Code of Ethics. The National Society of Professional Engineers (NSPE) Code of Ethics for Engineers is a professional society code. It binds NSPE members as a condition of membership and is widely used as a teaching and reference standard. It is organized as a preamble, six Fundamental Canons, Rules of Practice (Section II) and Professional Obligations (Section III). This course cites the version as revised July 2019.

Federal bridge regulations. The National Bridge Inspection Standards (NBIS), 23 CFR 650 Subpart C, are not an ethics code. They are federal regulations that set requirements for state transportation departments, federal agencies and tribal governments. They matter here because they create specific obligations and deadlines (load rating, load posting, closure, quality control, critical findings) where an engineer's ethical duties become very concrete.

Continuing competency and ethics hours. Model Rules 240.30 describes the NCEES CPC Standard: the equivalent of 15 PDHs per calendar year with no carryover, of which at least 1 PDH must be earned through a course or activity focusing on engineering or surveying ethics. It defines an ethics course or activity as one with content related to awareness of ethical concerns and conflicts, enhanced familiarity with codes of conduct, or understanding of standards of practice or care. It defines a PDH as one nominal contact hour, with a contact hour being a minimum of 50 minutes. Whether a particular state follows this standard, and how many ethics hours it requires, is a matter of that state's rules.

When the documents differ, the practical rule is simple: the law and rules of the jurisdiction govern; the model documents and the NSPE Code explain the profession's consensus and are often stricter or more detailed.

The paramount duty

Every major engineering ethics code puts public safety first. The first NSPE Fundamental Canon states that engineers, in the fulfillment of their professional duties, shall hold paramount the safety, health and welfare of the public. Model Rules 240.15

A.1 says licensees shall be cognizant that their first and foremost responsibility is to safeguard the health, safety and welfare of the public when performing services for clients and employers.

The phrase when performing services for clients and employers is important. The paramount duty does not mean the engineer stops serving the client. It means that when the client's interests and public safety conflict, public safety wins. NSPE Canon 4 still requires engineers to act for each employer or client as faithful agents or trustees, but that duty operates inside the boundary set by Canon 1.

Model Rules 240.15 A spells out what the paramount duty requires in practice:

- A.2: sign and seal only plans, surveys and other documents that conform to accepted engineering and surveying standards and that safeguard public health, safety and welfare.
- A.3: notify the employer or client and such other authority as may be appropriate when professional judgment is overruled when public health, safety or welfare is endangered.
- A.4: to the best of the licensee's knowledge, include all relevant and pertinent information in an objective and truthful manner within all professional documents, statements and testimony.
- A.5: express a professional opinion publicly only when it is founded on adequate knowledge of the facts and a competent evaluation of the subject matter.
- A.6: issue no statements, criticisms or arguments on engineering matters that are inspired or paid for by interested parties unless the licensee identifies those parties and reveals any interest of their own.
- A.7: not partner, practice or offer to practice with any person or firm known to be engaged in fraudulent or dishonest practices.
- A.8: report to the board known or suspected violations of rules or laws applying to engineering practice, may report to appropriate legal authorities, and cooperate with the board and those authorities.
- A.9: not knowingly provide false or incomplete information regarding an applicant for licensure.
- A.10: comply with the licensing laws and rules of each jurisdiction where the licensee practices.

The NSPE Rules of Practice II.1 contain parallel provisions. II.1.a requires engineers whose judgment is overruled under circumstances that endanger life or property to notify their employer or client and such other authority as may be appropriate. II.1.b requires engineers to approve only engineering documents that conform to applicable standards. II.1.f requires engineers with knowledge of an alleged violation of the Code to report it to appropriate professional bodies and, when relevant, public authorities.

What paramount means for bridges. In bridge work, the paramount duty is most often tested by three questions. Is this bridge safe to remain open at the current load limits? Is the condition I observed being reported accurately and in time? Are the documents I am approving consistent with the standards that apply? The rest of this course examines how each of those questions arises.

Competence and responsible charge

NSPE Canon 2 requires engineers to perform services only in areas of their competence. Rule II.2.a says engineers shall undertake assignments only when qualified by education or experience in the specific technical fields involved. Model Rules 240.15 B.1 uses nearly identical words for licensees. Model Law 150.10 A.14 lists providing engineering services outside any of the licensee's areas of competence as a ground for discipline.

Note that the license itself is generally not discipline-specific in the way competence is. A licensed professional engineer whose career has been in highway geometry may be legally licensed to practice engineering, but the codes make clear that competence in the specific technical field is a separate requirement. Bridge work has many such fields: steel fatigue and fracture, prestressed concrete, scour and hydraulics, seismic design, nondestructive evaluation, load rating of complex structures. An engineer competent to rate a simple-span prestressed girder bridge may not be competent to rate a curved steel box girder or evaluate a fracture-critical truss.

Responsible charge. Model Law 110.20 E defines responsible charge as exercising full professional knowledge of and control over work. A licensee in responsible charge must:

1. Have and exercise the authority to review and to change, reject or approve both the work in progress and the final work product, through examination, evaluation, communication and direction throughout the development of the work;
2. Be personally aware of the project's scope, needs, parameters, limitations and special requirements;
3. Be capable of answering questions relevant to the engineering decisions made, in enough detail to demonstrate reasonable knowledge of and proficiency in the work; and
4. Accept full responsibility for the work.

This definition rules out several practices that happen informally in many offices. A senior engineer who never sees calculations until they are complete and then seals them after a quick look is not exercising authority throughout the development of the work. An engineer who seals a load rating without knowing which members controlled, or why, cannot answer questions in sufficient detail. An engineer who seals a rating prepared entirely by an outside subconsultant without review is not in responsible charge of it.

Coordinating a project. Model Rules 240.15 B.3 allows a licensee to accept an assignment and take responsibility for coordinating an entire project if each technical segment is signed and sealed by the licensee responsible for preparing that segment. NSPE II.2.c says the same. On a bridge replacement, for example, the prime consultant's project manager may coordinate the job, but the hydraulic and scour analysis, the geotechnical recommendations and the structural design each need to be sealed by the engineer responsible for that segment.

Remote work. Model Rules 240.20 D adds that the licensee is responsible for meeting all of the requirements for responsible charge whether the work is performed remotely or locally. Distributed teams are normal now, but the obligations of review, control and personal knowledge do not relax because the drafter or analyst is in another office.

Competence is continuing. NSPE III.2.e requires engineers to continue their professional development throughout their careers and keep current in their specialty fields. Bridge engineering changes: the NBIS was substantially revised in 2022, the SNBI changes coding, and specifications are revised regularly. An engineer who last studied load rating under older methods should not assume their knowledge is current.

The seal: what it certifies

The professional seal is the most visible symbol of licensure and the place where ethical obligations become legal ones. Model Law 140.10 D allows each licensee to obtain a seal containing the jurisdiction of licensure, the licensee's name, the license number and the words professional engineer (with discipline, where the jurisdiction uses one).

What must be sealed. Model Rules 240.20 A says the seal and signature of the licensee and the date of signing shall be placed on all final engineering specifications, reports, drawings, plans, design information and calculations whenever presented to a client or any public agency, to certify that the work was done by the licensee or under the licensee's responsible

charge. Working drawings and preliminary documents need not be sealed if they carry a statement in large bold letters to the effect PRELIMINARY, NOT FOR CONSTRUCTION, RECORDING PURPOSES, OR IMPLEMENTATION. Under 240.20 B, the seal and signature are placed so they reproduce on copies.

Multi-sheet documents. Under 240.20 C, when a document has more than one sheet, the first or title page is sealed and signed by the licensee in responsible charge. Two or more licensees may seal, with a note under each seal designating the subject matter for which each is responsible. Each sheet is also sealed by the licensee or licensees responsible for it.

Only your own work. Model Rules 240.20 D states that the seal and signature shall be placed on work only when it was under the licensee's responsible charge, and only on work within the licensee's areas of competence, and that the board has final authority over whether work was actually prepared under the licensee's responsible charge. Model Rules 240.15 B.2 and NSPE II.2.b repeat the prohibition from the ethics side. Model Law 150.10 A.10 makes signing, affixing or permitting the licensee's seal or signature to be affixed to documents not prepared by or under the licensee's responsible charge a ground for discipline. The phrase permitting is worth noticing: an engineer who allows staff to apply their digital seal to documents they have not reviewed is exposed even if they did not click the button themselves.

Revisions. Under 240.20 E, any revision to a sealed document must be described and dated, and if the revision is not made by the original licensee, it must be signed and sealed by the licensee in responsible charge of the revision. In bridge work this arises with plan revisions during construction, with load rating updates after a condition change, and with standard details reused from earlier projects.

Successor licensees. Under 240.20 F, when the licensee in responsible charge is unavailable, or the work is a site adaptation of a standard design or a design sealed by an out-of-jurisdiction licensee, a successor licensee may take responsible charge by performing all professional services, including developing a complete design file with criteria, calculations, code research and any necessary changes. Drafting need not be redone, but must accurately reflect the successor's work. The burden is on the successor to show compliance, and the successor controls the work product and the sealed originals. Simply placing a new seal on someone else's calculations does not qualify.

Signature methods. Under 240.20 G, one of three methods must be used: physical seal with handwritten signature in permanent ink; digital seal with handwritten signature in permanent ink; or digital seal with a digital signature, each containing the licensee's name. Under 240.20 H, a digital signature must be unique to the individual, capable of verification, under the individual's sole control, and linked to the document so that any change invalidates the signature. Sole control means the private credential is not shared with a CADD manager or administrative assistant.

Illustrative scenario. (Invented.) A firm's principal is travelling and the deadline for a bridge rehabilitation submittal is the next morning. The principal emails, apply my seal, I trust the team. The documents have not been reviewed by the principal. Applying the seal would violate 240.20 D in substance and is a listed ground for discipline under Model Law 150.10 A.10. The correct answers are to submit the package marked preliminary, to have another licensee who has actually been in responsible charge seal it, or to ask the client for a short extension. Explaining this to the client is uncomfortable; defending it to a board is worse.

Ratings, postings and closures under pressure

Load ratings are where bridge engineering and ethics intersect most often, because a rating result has immediate and visible consequences for the public and for the owner.

What the NBIS requires. Under 23 CFR 650.313(k), each bridge must be rated for its safe load capacity in accordance with the AASHTO Manual for Bridge Evaluation as incorporated by reference, and owners must develop procedures for new and updated ratings. 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 re-rating, such as changes in condition, reconstruction, new construction, or changes in dead or live loads. Under 650.313(l), bridges must be posted when the maximum unrestricted legal loads or state routine permit loads exceed what the rating allows, and posting must be made as soon as possible but not later than 30 days after a load rating determines a need. Missing or illegible posting signs must be corrected as soon as possible but not later than 30 days after inspection or other notification determines a need. Under 650.313(m), owners must have criteria for closing bridges, bridges meeting the criteria must be closed immediately, and bridges must be closed when the gross live load capacity is less than 3 tons.

These deadlines mean the engineer's rating result is not just a number in a report. It starts a regulatory clock.

Where the pressure comes from. A posting can cut off a business, reroute emergency vehicles or force a long detour. A closure can be politically explosive. It is natural for owners, local officials and even supervisors to ask whether the rating could be a bit higher. Some of those questions are legitimate. A first-pass rating may use conservative assumptions that a refined analysis, a field measurement of section loss, a load test or better material data could improve. The Manual for Bridge Evaluation provides for refined methods, and BR-L01 through BR-L06 cover them.

The ethical line. The difference between legitimate refinement and an ethical violation is whether the change is justified by better information or better analysis, documented, and consistent with the applicable standard, or whether it is driven by the desired answer. Changing an assumed section loss without new field data, selecting a less conservative method that the owner's procedures do not permit, ignoring a deteriorated member because it is inconvenient, or adjusting factors without basis to make a bridge pass are all examples of the second kind.

Model Rules 240.15 A.2 limits sealing to documents that conform to accepted engineering standards and safeguard public safety. A.4 requires all relevant and pertinent information to be included in an objective and truthful manner. NSPE III.1.a says engineers shall not distort or alter the facts. NSPE III.3.a requires engineers to avoid statements containing a material misrepresentation of fact or omitting a material fact. Model Law 150.10 A.7 lists knowingly making or signing false statements or certifications in connection with practice as a ground for discipline.

When judgment is overruled. Sometimes the engineer produces a sound rating and someone with authority decides not to act on it. Model Rules 240.15 A.3 and NSPE II.1.a require the engineer to notify the employer or client and such other authority as may be appropriate when professional judgment is overruled in circumstances that endanger the public. NSPE III.2.b goes further for documents: if the client or employer insists on completing, signing or sealing nonconforming plans or specifications, the engineer shall notify the proper authorities and withdraw from further service on the project.

Illustrative scenario. (Invented.) A consultant rates a county's steel stringer bridge after an inspection documents new section loss at bearings. The rating shows the bridge must be posted for the state's legal single-unit vehicles. The county engineer asks the consultant to hold the report until after a funding vote in six weeks. Holding the report would push the posting beyond the 30-day posting requirement and leave legal loads crossing a bridge that the engineer has determined cannot carry them. The engineer should deliver the report on schedule, explain the posting need clearly, and, if the county still declines to act, notify the appropriate authority in the state's bridge program. The engineer can also legitimately offer refinements, such as a field-verified section loss survey, that might change the result; but the report should not be held while that happens.

Critical findings and escalation

The 2022 NBIS revision gave critical findings a precise regulatory framework. Under 23 CFR 650.305, a critical finding is a structural or safety-related deficiency that requires immediate action to ensure public safety.

What the NBIS requires. Under 650.313(q), owners must document procedures to address critical findings in a timely manner. Those procedures must define critical findings considering the location and redundancy of the affected member and the extent and consequence of the deficiency. The regulation lists deficiencies including, 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. At a minimum, critical findings include findings that warrant: (A) full or partial closure of any bridge; (B) an NSTM rated in serious or worse condition (NSTM inspection item coded 3 or less); (C) a deck, superstructure, substructure or culvert rated critical or worse (coded 2 or less); (D) channel or scour condition rated critical or worse (coded 2 or less); or (E) immediate load restriction or posting, or immediate repair work, including shoring, in order to remain open. Procedures must also set timeframes for addressing them.

State DOTs, federal agencies and tribal governments must notify FHWA within 24 hours of discovery of each critical finding on the National Highway System in categories (A) and (B), and provide monthly, or as requested, a written status report on each critical finding until resolved. The report contains the owner, NBI structure number, date of finding, description and photos, corrective actions completed, temporary or planned, their status, and the estimated or actual completion date.

Why this is an ethics issue. The inspector or engineer in the field is usually the first person to know about a critical condition. The regulation tells the owner what to do once it knows; the ethics codes tell the individual what to do to make sure it knows. Model Rules 240.15 A.1 and NSPE Canon 1 make public safety paramount. A.4 and NSPE II.3.a require truthful and complete reporting. A.3 and NSPE II.1.a require notification when judgment is overruled.

Common failure modes. The ethical failures around critical findings are rarely dramatic falsification. More often they are:

- Under-coding a component by one step so that it does not reach the critical threshold, because the inspector does not want to trigger the process.
- Writing a finding in vague language, such as some section loss noted, when the inspector measured and photographed severe loss.
- Recording the finding properly but not telephoning anyone, so the report sits in a queue for weeks.
- Assuming someone else on the team will report it.
- Downgrading a finding during office review without returning to the field or consulting the inspector.

Each of these leaves the public exposed while the paperwork looks acceptable.

Practical guidance. Know your owner's critical finding procedure before you go into the field, including who to call and how fast. Code what you see according to the coding guide, not according to what you think the consequences should be. Document with measurements and photographs. Make the call, then follow up in writing. If a supervisor changes your coding, ask for the reason and make sure the file reflects both the field observation and the basis for the change. BR-I01 and BR-S01 cover inspection and coding procedures in detail, and BR-F02 covers NSTM inspection.

Illustrative scenario. (Invented.) During a routine inspection, a team leader finds a through-thickness crack in a two-girder bridge's bottom flange at a cover plate end. The team leader recognizes this as an NSTM in serious or worse condition, which falls within the minimum critical finding categories. The team leader's obligations are clear: stop, document, notify the

program as the owner's procedures require, and remain available to answer questions. Waiting to finish the rest of the route first, or emailing the photos at the end of the week, would not meet the spirit of the procedures or the paramount duty.

Truthful reports and quality control

Bridge inspection and rating programs run on documents: inspection reports, condition codes, element quantities, photographs, rating calculations and bridge files. Those documents drive funding, maintenance and safety decisions for decades. Their accuracy is an ethical obligation, not just a quality goal.

The ethics provisions. Model Rules 240.15 A.4 requires licensees to include all relevant and pertinent information in an objective and truthful manner within all professional documents, statements and testimony. NSPE II.3.a requires engineers to be objective and truthful in professional reports, statements or testimony, to include all relevant and pertinent information, and notes that reports should bear the date indicating when they were current. NSPE III.1.a requires engineers to acknowledge their errors and not distort or alter the facts.

The NBIS quality framework. Under 650.313(p), owners must assure systematic quality control and quality assurance procedures are used to maintain a high degree of accuracy and consistency, document the extent, interval and responsible party for reviewing inspection teams in the field, inspection reports, NBI data and computations including scour appraisals and load ratings, and perform and document QC and QA reviews, including tracking and completing identified actions. The regulation requires that QC and QA reviews be performed by personnel other than the individual who completed the original report or calculations. Section 650.305 defines quality control as procedures intended to maintain the quality of a bridge inspection and load rating at or above a specified level.

Copy-forward. One of the most persistent problems in inspection programs is copying the previous report forward with minimal change. It saves time and produces reports that look consistent. It also can conceal deterioration and record observations that were not actually made. An inspector who signs a report containing comments copied from two cycles ago, describing conditions they did not verify, is making a statement that is not truthful. If a portion of the bridge could not be accessed, the report should say so rather than repeating the previous description.

Acknowledging errors. Engineers make mistakes. NSPE III.1.a requires them to acknowledge their errors. When an engineer discovers that a sealed rating used the wrong section properties, or that an earlier inspection missed a deficiency, the ethical response is to report it to the client or owner, correct it and document the correction. Under Model Rules 240.20 E, revisions to sealed documents must be described and dated. Concealing an error to avoid embarrassment or liability compounds it.

Quality reviewers. Engineers who perform QC and QA reviews have their own obligations. A review that is signed but not actually performed is a false statement. A reviewer who finds a significant problem and is pressured to let it pass faces the same overruled-judgment situation discussed earlier.

Illustrative scenario. (Invented.) An inspection firm is behind schedule. The project manager suggests that for low-risk culverts, the team should drive by, take a photograph from the road and update the date on the previous report. The resulting reports would record inspections that were not performed to the standard represented. Signing them would violate the truthfulness obligations in Model Rules 240.15 A.4 and NSPE II.3.a, and could constitute knowingly signing false statements under Model Law 150.10 A.7. The right response is to raise the schedule problem with the owner, who may be able to adjust priorities within the regulatory intervals, rather than to falsify the work.

Conflicts of interest, gifts and procurement

Bridge work involves public money, long-term relationships between owners and consultants, and vendors with proprietary products. Conflicts of interest are common; the ethical obligation is to disclose and manage them.

Disclosure. Model Rules 240.15 B.6 requires licensees to disclose to their employers or clients all known or potential conflicts of interest or other circumstances that could influence or appear to influence their judgment or the quality of their service. NSPE II.4.a contains the same requirement. The test includes appearance: an engineer may be confident their judgment is unaffected, but if a reasonable client would want to know, it should be disclosed.

Compensation from more than one party. Model Rules 240.15 B.7 prohibits accepting compensation from more than one party for services on the same project unless the circumstances are fully disclosed and agreed to in writing by all interested parties. NSPE II.4.b is similar.

Gratuities and supplier benefits. Model Rules 240.15 B.5 prohibits soliciting or accepting gratuities, directly or indirectly, from contractors, their agents or other parties in connection with work for employers or clients. NSPE II.4.c prohibits soliciting or accepting financial or other valuable consideration from outside agents in connection with the engineer's work, III.5.a prohibits accepting financial or other considerations, including free engineering designs, from material or equipment suppliers for specifying their product, and III.5.b prohibits accepting commissions or allowances from contractors or others dealing with the engineer's clients. In bridge work, this covers bearing, joint, coating and deck system suppliers, and contractors whose work the engineer inspects or approves.

Public service. Model Rules 240.15 B.8 prohibits licensees from soliciting or accepting a professional contract from a governmental body on which a principal or officer of their organization serves as a member, and prohibits licensees serving a government body, who are also principals or employees of a private concern, from participating in decisions about services that concern provides to that body. NSPE II.4.d and II.4.e are similar.

Securing work. Model Rules 240.15 C.2 prohibits offering, giving, soliciting or receiving any commission, gift or other valuable consideration to secure work, and making any political contribution intended to influence the award of a contract by public authority. NSPE II.5.b similarly prohibits contributions to influence the award of a contract by public authority. Many state and federal procurement laws add their own requirements, which are outside the scope of this course.

Reviewing your own design. A common bridge-specific conflict arises when a firm is asked to evaluate a problem in a structure it designed. The firm may know the structure best and may be the most efficient choice. It also has an interest in the conclusion. The codes do not forbid this, but they require disclosure, and the engineer must be particularly careful to report findings objectively, including any that reflect on the original design. NSPE III.1.a's requirement to acknowledge errors applies with full force.

Confidential information. Model Rules 240.15 B.4 and NSPE II.1.c prohibit revealing facts, data or information obtained in a professional capacity without the prior consent of the client or employer, except as authorized or required by law or rules. B.9 prohibits using confidential information for personal profit. NSPE III.4 adds that engineers shall not disclose confidential information about the business affairs or technical processes of clients, employers or public bodies they serve. Note that the confidentiality obligations contain an exception for disclosure authorized or required by law, and they sit alongside the paramount duty. Confidentiality does not justify hiding an imminent public safety hazard from the authority responsible for it.

Illustrative scenario. (Invented.) A bearing manufacturer invites an owner's bridge design engineer to a two-day plant tour at a resort, all expenses paid, shortly before the owner selects bearing types for a major project. Accepting would likely fall

within the prohibitions on accepting valuable consideration from suppliers, and at minimum creates an appearance of influence. Many public agencies have specific gift rules. The appropriate path is to decline or to have the employer pay for any legitimate technical visit under its own policies.

Reviewing others' work and reporting violations

Bridge engineers routinely review other engineers' work: checking designs, performing QA on inspections, peer-reviewing ratings and evaluating older structures designed by someone else. The codes set out how to do this fairly.

Fair criticism. Model Rules 240.15 C.3 prohibits injuring or attempting to injure, maliciously or falsely, the professional reputation, prospects, practice or employment of other licensees, and prohibits indiscriminately criticizing other licensees' work. NSPE III.7 contains the same prohibition and adds that engineers who believe others are guilty of unethical or illegal practice shall present the information to the proper authority. NSPE III.6 prohibits seeking work by untruthfully criticizing other engineers.

Reviewing another engineer's work. NSPE III.7.a says engineers in private practice shall not review the work of another engineer for the same client except with that engineer's knowledge, or unless the other engineer's connection with the work has ended. III.7.b says engineers in governmental, industrial or educational employment are entitled to review and evaluate others' work when required by their duties. A DOT reviewer checking consultant plans is in the second category.

Informing the other engineer. Model Rules 240.15 C.4 requires licensees to make a reasonable effort to inform another licensee whose work is believed to contain a material discrepancy, error or omission that may impact public health, safety or welfare, unless such reporting is legally prohibited. This is a meaningful obligation in bridge practice. An engineer who notices, while doing unrelated work, that a neighboring structure's rating appears to have omitted a deteriorated member, or that a standard detail in circulation has an error, should tell the responsible engineer.

Reporting violations. Model Rules 240.15 A.8 requires licensees who know or have reason to believe that any person or firm has violated rules or laws applying to engineering practice to report it to the board, permits them to report to legal authorities, and requires cooperation. NSPE II.1.f has a similar requirement for violations of the NSPE Code. NSPE II.1.e prohibits aiding or abetting the unlawful practice of engineering, and Model Law 150.10 A.8 lists aiding or assisting another person in violating the Act or rules as a ground for discipline.

Credit. NSPE III.9 requires engineers to give credit for engineering work to those to whom credit is due, and III.3.c prohibits articles that imply credit to the author for work performed by others. NSPE II.5.a and Model Rules 240.15 C.1 prohibit misrepresenting qualifications or exaggerating responsibility for prior assignments, including in proposals. For bridge firms, this means statements of qualifications should accurately describe who did the work on cited projects.

Illustrative scenario. (Invented.) A DOT engineer reviewing a consultant's rehabilitation plans finds that the consultant's rating appears to use the original design section for a girder that the latest inspection shows with substantial web section loss. The reviewer should return the comment to the consultant and make sure it is resolved before the plans proceed, not quietly correct it or publicly criticize the firm. If the consultant refuses to address a material public safety error, the reviewer's obligation shifts to escalation within the agency.

Consequences: discipline and personal responsibility

Ethics obligations are backed by enforcement. Model Law 150.10 A gives the licensing board power to suspend, revoke, place on probation, fine, recover costs and/or reprimand, or to refuse to issue, restore or renew a license or intern certification, for

licensees or interns found guilty of the listed grounds. Among the fourteen grounds listed in the August 2026 Model Law are:

- Fraud or deceit in obtaining or renewing a license (A.1).
- Negligence, incompetence or misconduct in practice (A.2).
- Failure to comply with the Act or the board's rules (A.4).
- Discipline by another jurisdiction on substantially equivalent grounds (A.5).
- Failure to provide information requested by the board in response to a complaint (A.6).
- Knowingly making or signing false statements, certifications or affidavits in connection with practice (A.7).
- Aiding or assisting another person in violating the Act or rules (A.8).
- Using a seal or practicing while the license is inactive or restricted (A.9).
- Signing, affixing or permitting one's seal or signature to be affixed to documents not prepared by or under one's responsible charge (A.10).
- Dishonorable, unethical or unprofessional conduct likely to deceive, defraud or harm the public (A.11).
- Providing false testimony or information to the board (A.12).
- Practice outside one's areas of competence (A.14).

Model Law 150.10 B allows fines for each offense, with each day of continued violation potentially a separate offense, and lists factors the board may consider in setting the amount, including the severity of the violation and the risk of harm to the public.

Personal responsibility. NSPE III.8 requires engineers to accept personal responsibility for their professional activities, III.8.a requires conformance with state registration laws, and III.8.b prohibits using association with a nonengineer, corporation or partnership as a cloak for unethical acts. The NSPE Code's closing note adds that the Code deals with professional services, which must be performed by real persons, and that business form should not negate or influence individuals' conformance with it. In bridge practice this means that following a firm's or agency's direction is not a defense for sealing an unreviewed document or suppressing a finding.

Multiple jurisdictions. Bridge engineers often hold licenses in several states. Model Rules 240.15 A.10 requires compliance with the laws and rules of each jurisdiction where the licensee practices, and Model Law 150.10 A.5 means discipline in one state can lead to discipline in others.

Beyond the board. Board discipline is not the only consequence. Civil liability, contract disputes, loss of prequalification with an owner and reputational harm can all follow ethical failures. These are outside the scope of this course and vary by jurisdiction.

A decision process for hard cases

The codes do not provide a flowchart, but their provisions suggest a practical sequence for the situations bridge engineers face. The following is a teaching framework, not a quotation from any code.

1. **Identify the safety question.** Is anyone at risk if the matter is not addressed? If so, the paramount duty (NSPE Canon 1; Model Rules 240.15 A.1) frames everything else.
2. **Get the facts right.** Measure, photograph, recheck calculations, consult the inspection record. Many apparent ethical dilemmas dissolve when the facts are clearer; others become sharper.
3. **Identify the applicable standards and procedures.** The owner's critical finding procedure, the posting procedure, the rating manual, the board's seal rules. These often tell you exactly what must happen and by when.

4. **Check your own competence and role.** Are you the right person to make this judgment? If not, who is, and have they been told?
5. **Communicate within the chain.** Explain the issue clearly and in writing to your supervisor or client, including the basis for your conclusion and what is required.
6. **If overruled on a safety matter, escalate.** Model Rules 240.15 A.3 and NSPE II.1.a require notifying the employer or client and such other authority as may be appropriate.
7. **Do not sign what you cannot stand behind.** NSPE III.2.b requires withdrawal from service on a project if the client insists on nonconforming documents.
8. **Document.** Keep a factual record of what you found, who you told and when.

Illustrative composite case. (Invented.) An engineer at a small consulting firm inspects a two-lane county bridge with a timber substructure. Several piles have severe decay and one cap is crushed under a girder line. The engineer believes the bridge needs immediate load restriction. The firm's principal, who has a long relationship with the county, suggests describing the condition as advanced deterioration recommend monitoring because the county has no money and closing the road would be a disaster for the community.

Applying the framework: the safety question is whether legal loads can cross a crushed cap. The facts should be documented with measurements and photographs, and perhaps a quick rating check of the affected cap and piles. The owner's procedures and 650.313(q) indicate that a condition warranting immediate load restriction or shoring to remain open is a critical finding. The engineer should explain this to the principal in writing. If the principal still insists on the softened wording, the engineer cannot sign a report that omits a material fact (Model Rules 240.15 A.4; NSPE III.3.a) and must notify the appropriate authority (240.15 A.3). There are also constructive paths the engineer can offer: temporary shoring, a reduced posting, a lane restriction to keep trucks off the damaged girder line. Ethical action does not mean ignoring the community's needs; it means meeting them without hiding the hazard. BR-T01 covers timber bridge condition issues and BR-R01 covers repair options.

Key takeaways

- Public safety is paramount (NSPE Canon 1; Model Rules 240.15 A.1); the duty to the client operates inside that boundary.
- Responsible charge (Model Law 110.20 E) means authority, personal awareness, the ability to answer detailed questions and full responsibility; a seal certifies all four.
- Seal only work prepared under your responsible charge and within your competence; permitting your seal on unreviewed work is a ground for discipline (Model Law 150.10 A.10).
- The NBIS sets hard deadlines: ratings within 3 months of the initial inspection or a change that warrants re-rating, postings within 30 days of a rating showing need, and immediate closure when closure criteria are met.
- Critical findings must be defined, timed and tracked under 650.313(q); FHWA must be notified within 24 hours for NHS closure and serious NSTM findings.
- Reports must be complete and truthful; copy-forward and softened wording can be false statements.
- Disclose conflicts, decline supplier gifts, and inform other engineers of material errors that affect safety (Model Rules 240.15 C.4).
- When overruled on a safety matter, notify the employer or client and the appropriate authority; withdraw rather than seal nonconforming documents.

References

1. NCEES, Model Law and Model Rules
2. NSPE, Code of Ethics for Engineers
3. 23 CFR Part 650, Subpart C — National Bridge Inspection Standards (final rule published May 6, 2022)
4. NCEES, Model Law (August 2026) and Model Rules (August 2026 revision), [ncees.org](https://www.ncees.org)
5. NSPE, Code of Ethics for Engineers, Publication #1102, as revised July 2019

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