

## PART 650—BRIDGES, STRUCTURES, AND HYDRAULICS

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### Subpart A—Location and Hydraulic Design of Encroachments on Flood Plains

SOURCE: 44 FR 67580, Nov. 26, 1979, unless otherwise noted.

#### § 650.101 Purpose.

To prescribe Federal Highway Administration (FHWA) policies and procedures for the location and hydraulic design of highway encroachments on flood plains, including direct Federal highway projects administered by the FHWA.

#### § 650.103 Policy.

It is the policy of the FHWA:

- (a) To encourage a broad and unified effort to prevent uneconomic, hazardous or incompatible use and development of the Nation's flood plains,
- (b) To avoid longitudinal encroachments, where practicable,
- (c) To avoid significant encroachments, where practicable,
- (d) To minimize impacts of highway agency actions which adversely affect base flood plains,
- (e) To restore and preserve the natural and beneficial flood-plain values that are adversely impacted by highway agency actions,
- (f) To avoid support of incompatible flood-plain development,
- (g) To be consistent with the intent of the Standards and Criteria of the National Flood Insurance Program, where appropriate, and

(h) To incorporate “A Unified National Program for Floodplain Management” of the Water Resources Council into FHWA procedures.

**§ 650.105 Definitions.**

(a) *Action* shall mean any highway construction, reconstruction, rehabilitation, repair, or improvement undertaken with Federal or Federal-aid highway funds or FHWA approval.

(b) *Base flood* shall mean the flood or tide having a 1-percent chance of being exceeded in any given year.

(c) *Base flood plain* shall mean the area subject to flooding by the base flood.

(d) *Design Flood* shall mean the peak discharge, volume if appropriate, stage or wave crest elevation of the flood associated with the probability of exceedance selected for the design of a highway encroachment. By definition, the highway will not be inundated from the stage of the design flood.

(e) *Encroachment* shall mean an action within the limits of the base flood plain.

(f) *Floodproof* shall mean to design and construct individual buildings, facilities, and their sites to protect against structural failure, to keep water out or to reduce the effects of water entry.

(g) *Freeboard* shall mean the vertical clearance of the lowest structural member of the bridge superstructure above the water surface elevation of the overtopping flood.

(h) *Minimize* shall mean to reduce to the smallest practicable amount or degree.

(i) *Natural and beneficial flood-plain values* shall include but are not limited to fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge.

(j) *Overtopping flood* shall mean the flood described by the probability of exceedance and water surface elevation at which flow occurs over the highway, over the watershed divide, or through structure(s) provided for emergency relief.

(k) *Practicable* shall mean capable of being done within reasonable natural, social, or economic constraints.

(l) *Preserve* shall mean to avoid modification to the functions of the natural flood-plain environment or to maintain it as closely as practicable in its natural state.

(m) *Regulatory floodway* shall mean the flood-plain area that is reserved in an open manner by Federal, State or local requirements, *i.e.*, unconfined or unobstructed either horizontally or vertically, to provide for the discharge of the base flood so that the cumulative increase in water surface elevation is no more than a designated amount (not to exceed 1 foot as established by the Federal Emergency Management Agency (FEMA) for administering the National Flood Insurance Program).

(n) *Restore* shall mean to reestablish a setting or environment in which the functions of the natural and beneficial flood-plain values adversely impacted by the highway agency action can again operate.

(o) *Risk* shall mean the consequences associated with the probability of flooding attributable to an encroachment. It shall include the potential for property loss and hazard to life during the service life of the highway.

(p) *Risk analysis* shall mean an economic comparison of design alternatives using expected total costs (construction costs plus risk costs) to determine the alternative with the least total expected cost to the public. It shall include probable flood-related costs during the service life of the facility for highway operation, maintenance, and repair, for highway-aggravated flood damage to other property, and for additional or interrupted highway travel.

(q) *Significant encroachment* shall mean a highway encroachment and any direct support of likely base flood-plain development that would involve one or more of the following construction-or flood-related impacts:

(1) A significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route.

(2) A significant risk, or

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(3) A significant adverse impact on natural and beneficial flood-plain values.

(r) *Support base flood-plain development* shall mean to encourage, allow, serve, or otherwise facilitate additional base flood-plain development. Direct support results from an encroachment, while indirect support results from an action out of the base flood plain.

### § 650.107 Applicability.

(a) The provisions of this regulation shall apply to all encroachments and to all actions which affect base flood plains, except for repairs made with emergency funds (23 CFR part 668) during or immediately following a disaster.

(b) The provisions of this regulation shall not apply to or alter approvals or authorizations which were given by FHWA pursuant to regulations or directives in effect before the effective date of this regulation.

### § 650.109 Public involvement.

Procedures which have been established to meet the public involvement requirements of 23 CFR part 771 shall be used to provide opportunity for early public review and comment on alternatives which contain encroachments.

[53 FR 11065, Apr. 5, 1988]

### § 650.111 Location hydraulic studies.

(a) National Flood Insurance Program (NFIP) maps or information developed by the highway agency, if NFIP maps are not available, shall be used to determine whether a highway location alternative will include an encroachment.

(b) Location studies shall include evaluation and discussion of the practicability of alternatives to any longitudinal encroachments.

(c) Location studies shall include discussion of the following items, commensurate with the significance of the risk or environmental impact, for all alternatives containing encroachments and for those actions which would support base flood-plain development:

(1) The risks associated with implementation of the action,

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(2) The impacts on natural and beneficial flood-plain values,

(3) The support of probable incompatible flood-plain development,

(4) The measures to minimize flood-plain impacts associated with the action, and

(5) The measures to restore and preserve the natural and beneficial flood-plain values impacted by the action.

(d) Location studies shall include evaluation and discussion of the practicability of alternatives to any significant encroachments or any support of incompatible flood-plain development.

(e) The studies required by § 650.111 (c) and (d) shall be summarized in environmental review documents prepared pursuant to 23 CFR part 771.

(f) Local, State, and Federal water resources and flood-plain management agencies should be consulted to determine if the proposed highway action is consistent with existing watershed and flood-plain management programs and to obtain current information on development and proposed actions in the affected watersheds.

### § 650.113 Only practicable alternative finding.

(a) A proposed action which includes a significant encroachment shall not be approved unless the FHWA finds that the proposed significant encroachment is the only practicable alternative. This finding shall be included in the final environmental document (final environmental impact statement or finding of no significant impact) and shall be supported by the following information:

(1) The reasons why the proposed action must be located in the flood plain,

(2) The alternatives considered and why they were not practicable, and

(3) A statement indicating whether the action conforms to applicable State or local flood-plain protection standards.

(b) [Reserved]

[44 FR 67580, Nov. 26, 1979, as amended at 48 FR 29274, June 24, 1983]

### § 650.115 Design standards.

(a) The design selected for an encroachment shall be supported by analyses of design alternatives with consideration given to capital costs and

risks, and to other economic, engineering, social and environmental concerns.

(1) Consideration of capital costs and risks shall include, as appropriate, a risk analysis or assessment which includes:

(i) The overtopping flood or the base flood, whichever is greater, or

(ii) The greatest flood which must flow through the highway drainage structure(s), where overtopping is not practicable. The greatest flood used in the analysis is subject to state-of-the-art capability to estimate the exceedance probability.

(2) The design flood for encroachments by through lanes of Interstate highways shall not be less than the flood with a 2-percent chance of being exceeded in any given year. No minimum design flood is specified for Interstate highway ramps and frontage roads or for other highways.

(3) Freeboard shall be provided, where practicable, to protect bridge structures from debris- and scour-related failure.

(4) The effect of existing flood control channels, levees, and reservoirs shall be considered in estimating the peak discharge and stage for all floods considered in the design.

(5) The design of encroachments shall be consistent with standards established by the FEMA, State, and local governmental agencies for the administration of the National Flood Insurance Program for:

(i) All direct Federal highway actions, unless the standards are demonstrably inappropriate, and

(ii) Federal-aid highway actions where a regulatory floodway has been designated or where studies are underway to establish a regulatory floodway.

(b) Rest area buildings and related water supply and waste treatment facilities shall be located outside the base flood plain, where practicable. Rest area buildings which are located on the base flood plain shall be floodproofed against damage from the base flood.

(c) Where highway fills are to be used as dams to permanently impound water more than 50 acre-feet ( $6.17 \times 10^4$  cubic metres) in volume or 25 feet (7.6 metres) deep, the hydrologic, hydroau-

lic, and structural design of the fill and appurtenant spillways shall have the approval of the State or Federal agency responsible for the safety of dams or like structures within the State, prior to authorization by the Division Administrator to advertise for bids for construction.

#### § 650.117 Content of design studies.

(a) The detail of studies shall be commensurate with the risk associated with the encroachment and with other economic, engineering, social or environmental concerns.

(b) Studies by highway agencies shall contain:

(1) The hydrologic and hydraulic data and design computations,

(2) The analysis required by § 650.115(a), and

(3) For proposed direct Federal highway actions, the reasons, when applicable, why FEMA criteria (44 CFR 60.3, formerly 24 CFR 1910.3) are demonstrably inappropriate.

(c) For encroachment locations, project plans shall show:

(1) The magnitude, approximate probability of exceedance and, at appropriate locations, the water surface elevations associated with the overtopping flood or the flood of § 650.115(a)(1)(ii), and

(2) The magnitude and water surface elevation of the base flood, if larger than the overtopping flood.

### Subpart B—Erosion and Sediment Control on Highway Construction Projects

SOURCE: 59 FR 37939, July 26, 1994, unless otherwise noted.

#### § 650.201 Purpose.

The purpose of this subpart is to prescribe policies and procedures for the control of erosion, abatement of water pollution, and prevention of damage by sediment deposition from all construction projects funded under title 23, United States Code.

#### § 650.203 Policy.

It is the policy of the Federal Highway Administration (FHWA) that all highways funded in whole or in part

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under title 23, United States Code, shall be located, designed, constructed and operated according to standards that will minimize erosion and sediment damage to the highway and adjacent properties and abate pollution of surface and ground water resources. Guidance for the development of standards used to minimize erosion and sediment damage is referenced in § 650.211 of this part.

### § 650.205 Definitions.

*Erosion control measures and practices* are actions that are taken to inhibit the dislodging and transporting of soil particles by water or wind, including actions that limit the area of exposed soil and minimize the time the soil is exposed.

*Permanent erosion and sediment control measures and practices* are installations and design features of a construction project which remain in place and in service after completion of the project.

*Pollutants* are substances, including sediment, which cause deterioration of water quality when added to surface or ground waters in sufficient quantity.

*Sediment control measures and practices* are actions taken to control the deposition of sediments resulting from surface runoff.

*Temporary erosion and sediment control measures and practices* are actions taken on an interim basis during construction to minimize the disturbance, transportation, and unwanted deposition of sediment.

### § 650.207 Plans, specifications and estimates.

(a) Emphasis shall be placed on erosion control in the preparation of plans, specifications and estimates.

(b) All reasonable steps shall be taken to insure that highway project designs for the control of erosion and sedimentation and the protection of water quality comply with applicable standards and regulations of other agencies.

[39 FR 36332, Oct. 9, 1974]

### § 650.209 Construction.

(a) Permanent erosion and sediment control measures and practices shall be established and implemented at the earliest practicable time consistent

with good construction and management practices.

(b) Implementation of temporary erosion and sediment control measures and practices shall be coordinated with permanent measures to assure economical, effective, and continuous control throughout construction.

(c) Erosion and sediment control measures and practices shall be monitored and maintained or revised to insure that they are fulfilling their intended function during the construction of the project.

(d) Federal-aid funds shall not be used in erosion and sediment control actions made necessary because of contractor oversight, carelessness, or failure to implement sufficient control measures.

(e) Pollutants used during highway construction or operation and material from sediment traps shall not be stockpiled or disposed of in a manner which makes them susceptible to being washed into any watercourse by runoff or high water. No pollutants shall be deposited or disposed of in watercourses.

### § 650.211 Guidelines.

(a) The FHWA adopts the AASHTO Highway Drainage Guidelines, Volume III, "Erosion and Sediment Control in Highway Construction," 1992,<sup>1</sup> as guidelines to be followed on all construction projects funded under title 23, United States Code. These guidelines are not intended to preempt any requirements made by or under State law if such requirements are more stringent.

(b) Each State highway agency should apply the guidelines referenced in paragraph (a) of this section or apply its own guidelines, if these guidelines are more stringent, to develop standards and practices for the control of erosion and sediment on Federal-aid construction projects. These specific standards and practices may reference

<sup>1</sup>This document is available for inspection from the FHWA headquarters and field offices as prescribed by 49 CFR part 7, appendix D. It may be purchased from the American Association of State Highway and Transportation Officials offices at Suite 225, 444 North Capitol Street, NW., Washington, DC 20001.

available resources, such as the procedures presented in the AASHTO "Model Drainage Manual," 1991.<sup>2</sup>

(c) Consistent with the requirements of section 6217(g) of the Coastal Zone Act Reauthorization Amendments of 1990 (Pub. L. 101-508, 104 Stat. 1388-299), highway construction projects funded under title 23, United States Code, and located in the coastal zone management areas of States with coastal zone management programs approved by the United States Department of Commerce, National Oceanic and Atmospheric Administration, should utilize "Guidance Specifying Management Measures for Sources of Nonpoint Source Pollution in Coastal Waters," 84-B-92-002, U.S. EPA, January 1993.<sup>3</sup> State highway agencies should refer to this Environmental Protection Agency guidance document for the design of projects within coastal zone management areas.

### Subpart C—National Bridge Inspection Standards

SOURCE: 69 FR 74436, Dec. 14, 2004, unless otherwise noted.

#### § 650.301 Purpose.

This subpart sets the national standards for the proper safety inspection and evaluation of all highway bridges in accordance with 23 U.S.C. 151.

#### § 650.303 Applicability.

The National Bridge Inspection Standards (NBIS) in this subpart apply to all structures defined as highway bridges located on all public roads.

#### § 650.305 Definitions.

Terms used in this subpart are defined as follows:

*American Association of State Highway and Transportation Officials (AASHTO)*

<sup>2</sup>This document is available for inspection from the FHWA headquarters and field offices as prescribed by 49 CFR part 7, appendix D. It may be purchased from the American Association of State Highway and Transportation Officials offices at Suite 225, 444 North Capitol Street, NW., Washington, DC 20001.

<sup>3</sup>This document is available for inspection and copying as prescribed by 49 CFR part 7, appendix D.

*Manual.* "Manual for Condition Evaluation of Bridges," second edition, published by the American Association of State Highway and Transportation Officials (incorporated by reference, see § 650.317).

*Bridge.* A structure including supports erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passage-way for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes; it may also include multiple pipes, where the clear distance between openings is less than half of the smaller contiguous opening.

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

*Bridge inspection refresher training.* The National Highway Institute "Bridge Inspection Refresher Training Course"<sup>1</sup> or other State, local, or federally developed instruction aimed to improve quality of inspections, introduce new techniques, and maintain the consistency of the inspection program.

*Bridge Inspector's Reference Manual (BIRM).* A comprehensive FHWA manual on programs, procedures and techniques for inspecting and evaluating a variety of in-service highway bridges. This manual may be purchased from the U.S. Government Printing Office, Washington, DC 20402 and from National Technical Information Service, Springfield, Virginia 22161, and is available at the following URL: <http://www.fhwa.dot.gov/bridge/bripub.htm>.

*Complex bridge.* Movable, suspension, cable stayed, and other bridges with unusual characteristics.

<sup>1</sup>The National Highway Institute training may be found at the following URL: <http://www.nhi.fhwa.dot.gov/>

*Comprehensive bridge inspection training.* Training that covers all aspects of bridge inspection and enables inspectors to relate conditions observed on a bridge to established criteria (see the Bridge Inspector's Reference Manual for the recommended material to be covered in a comprehensive training course).

*Critical finding.* A structural or safety related deficiency that requires immediate follow-up inspection or action.

*Damage inspection.* This is an unscheduled inspection to assess structural damage resulting from environmental factors or human actions.

*Fracture critical member (FCM).* A steel member in tension, or with a tension element, whose failure would probably cause a portion of or the entire bridge to collapse.

*Fracture critical member inspection.* A hands-on inspection of a fracture critical member or member components that may include visual and other non-destructive evaluation.

*Hands-on.* Inspection within arms length of the component. Inspection uses visual techniques that may be supplemented by nondestructive testing.

*Highway.* The term "highway" is defined in 23 U.S.C. 101(a)(11).

*In-depth inspection.* A close-up, inspection of one or more members above or below the water level to identify any deficiencies not readily detectable using routine inspection procedures; hands-on inspection may be necessary at some locations.

*Initial inspection.* The first inspection of a bridge as it becomes a part of the bridge file to provide all Structure Inventory and Appraisal (SI&A) data and other relevant data and to determine baseline structural conditions.

*Legal load.* The maximum legal load for each vehicle configuration permitted by law for the State in which the bridge is located.

*Load rating.* The determination of the live load carrying capacity of a bridge using bridge plans and supplemented by information gathered from a field inspection.

*National Institute for Certification in Engineering Technologies (NICET).* The NICET provides nationally applicable voluntary certification programs cov-

ering several broad engineering technology fields and a number of specialized subfields. For information on the NICET program certification contact: National Institute for Certification in Engineering Technologies, 1420 King Street, Alexandria, VA 22314-2794.

*Operating rating.* The maximum permissible live load to which the structure may be subjected for the load configuration used in the rating.

*Professional engineer (PE).* An individual, who has fulfilled education and experience requirements and passed rigorous exams that, under State licensure laws, permits them to offer engineering services directly to the public. Engineering licensure laws vary from State to State, but, in general, to become a PE an individual must be a graduate of an engineering program accredited by the Accreditation Board for Engineering and Technology, pass the Fundamentals of Engineering exam, gain four years of experience working under a PE, and pass the Principles of Practice of Engineering exam.

*Program manager.* The individual in charge of the program, that has been assigned or delegated the duties and responsibilities for bridge inspection, reporting, and inventory. The program manager provides overall leadership and is available to inspection team leaders to provide guidance.

*Public road.* The term "public road" is defined in 23 U.S.C. 101(a)(27).

*Quality assurance (QA).* The use of sampling and other measures to assure the adequacy of quality control procedures in order to verify or measure the quality level of the entire bridge inspection and load rating program.

*Quality control (QC).* Procedures that are intended to maintain the quality of a bridge inspection and load rating at or above a specified level.

*Routine inspection.* Regularly scheduled inspection consisting of observations and/or measurements needed to determine the physical and functional condition of the bridge, to identify any changes from initial or previously recorded conditions, and to ensure that the structure continues to satisfy present service requirements.

*Routine permit load.* A live load, which has a gross weight, axle weight or distance between axles not conforming

with State statutes for legally configured vehicles, authorized for unlimited trips over an extended period of time to move alongside other heavy vehicles on a regular basis.

*Scour.* Erosion of streambed or bank material due to flowing water; often considered as being localized around piers and abutments of bridges.

*Scour critical bridge.* A bridge with a foundation element that has been determined to be unstable for the observed or evaluated scour condition.

*Special inspection.* An inspection scheduled at the discretion of the bridge owner, used to monitor a particular known or suspected deficiency.

*State transportation department.* The term "State transportation department" is defined in 23 U.S.C. 101(a)(34).

*Team leader.* Individual in charge of an inspection team responsible for planning, preparing, and performing field inspection of the bridge.

*Underwater diver bridge inspection training.* Training that covers all aspects of underwater bridge inspection and enables inspectors to relate the conditions of underwater bridge elements to established criteria (see the Bridge Inspector's Reference Manual section on underwater inspection for the recommended material to be covered in an underwater diver bridge inspection training course).

*Underwater inspection.* Inspection of the underwater portion of a bridge substructure and the surrounding channel, which cannot be inspected visually at low water by wading or probing, generally requiring diving or other appropriate techniques.

**§ 650.307 Bridge inspection organization.**

(a) Each State transportation department must inspect, or cause to be inspected, all highway bridges located on public roads that are fully or partially located within the State's boundaries, except for bridges that are owned by Federal agencies.

(b) Federal agencies must inspect, or cause to be inspected, all highway bridges located on public roads that are fully or partially located within the respective agency responsibility or jurisdiction.

(c) Each State transportation department or Federal agency must include a bridge inspection organization that is responsible for the following:

(1) Statewide or Federal agencywide bridge inspection policies and procedures, quality assurance and quality control, and preparation and maintenance of a bridge inventory.

(2) Bridge inspections, reports, load ratings and other requirements of these standards.

(d) Functions identified in paragraphs (c)(1) and (2) of this section may be delegated, but such delegation does not relieve the State transportation department or Federal agency of any of its responsibilities under this subpart.

(e) The State transportation department or Federal agency bridge inspection organization must have a program manager with the qualifications defined in § 650.309(a), who has been delegated responsibility for paragraphs (c)(1) and (2) of this section.

**§ 650.309 Qualifications of personnel.**

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

(1) Be a registered professional engineer, or have ten years bridge inspection experience; and

(2) Successfully complete a Federal Highway Administration (FHWA) approved comprehensive bridge inspection training course.

(b) There are five ways to qualify as a team leader. A team leader must, at a minimum:

(1) Have the qualifications specified in paragraph (a) of this section; or

(2) Have five years bridge inspection experience and have successfully completed an FHWA approved comprehensive bridge inspection training course; or

(3) Be certified as a Level III or IV Bridge Safety Inspector under the National Society of Professional Engineer's program for National Certification in Engineering Technologies (NICET) and have successfully completed an FHWA approved comprehensive bridge inspection training course, or

(4) Have all of the following:

(i) A bachelor's degree in engineering from a college or university accredited by or determined as substantially

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equivalent by the Accreditation Board for Engineering and Technology;

(ii) Successfully passed the National Council of Examiners for Engineering and Surveying Fundamentals of Engineering examination;

(iii) Two years of bridge inspection experience; and

(iv) Successfully completed an FHWA approved comprehensive bridge inspection training course, or

(5) Have all of the following:

(i) An associate's degree in engineering or engineering technology from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology;

(ii) Four years of bridge inspection experience; and

(iii) Successfully completed an FHWA approved comprehensive bridge inspection training course.

(c) The individual charged with the overall responsibility for load rating bridges must be a registered professional engineer.

(d) An underwater bridge inspection diver must complete an FHWA approved comprehensive bridge inspection training course or other FHWA approved underwater diver bridge inspection training course.

### § 650.311 Inspection frequency.

(a) *Routine inspections.* (1) Inspect each bridge at regular intervals not to exceed twenty-four months.

(2) Certain bridges require inspection at less than twenty-four-month intervals. Establish criteria to determine the level and frequency to which these bridges are inspected considering such factors as age, traffic characteristics, and known deficiencies.

(3) Certain bridges may be inspected at greater than twenty-four month intervals, not to exceed forty-eight-months, with written FHWA approval. This may be appropriate when past inspection findings and analysis justifies the increased inspection interval.

(b) *Underwater inspections.* (1) Inspect underwater structural elements at regular intervals not to exceed sixty months.

(2) Certain underwater structural elements require inspection at less than sixty-month intervals. Establish cri-

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teria to determine the level and frequency to which these members are inspected considering such factors as construction material, environment, age, scour characteristics, condition rating from past inspections and known deficiencies.

(3) Certain underwater structural elements may be inspected at greater than sixty-month intervals, not to exceed seventy-two months, with written FHWA approval. This may be appropriate when past inspection findings and analysis justifies the increased inspection interval.

(c) *Fracture critical member (FCM) inspections.* (1) Inspect FCMs at intervals not to exceed twenty-four months.

(2) Certain FCMs require inspection at less than twenty-four-month intervals. Establish criteria to determine the level and frequency to which these members are inspected considering such factors as age, traffic characteristics, and known deficiencies.

(d) Damage, in-depth, and special inspections. Establish criteria to determine the level and frequency of these inspections.

### § 650.313 Inspection procedures.

(a) Inspect each bridge in accordance with the inspection procedures in the AASHTO Manual (incorporated by reference, *see* § 650.317).

(b) Provide at least one team leader, who meets the minimum qualifications stated in § 650.309, at the bridge at all times during each initial, routine, in-depth, fracture critical member and underwater inspection.

(c) Rate each bridge as to its safe load-carrying capacity in accordance with the AASHTO Manual (incorporated by reference, *see* § 650.317). Post or restrict the bridge in accordance with the AASHTO Manual or in accordance with State law, when the maximum unrestricted legal loads or State routine permit loads exceed that allowed under the operating rating or equivalent rating factor.

(d) Prepare bridge files as described in the AASHTO Manual (incorporated by reference, *see* § 650.317). Maintain reports on the results of bridge inspections together with notations of any action taken to address the findings of such inspections. Maintain relevant

maintenance and inspection data to allow assessment of current bridge condition. Record the findings and results of bridge inspections on standard State or Federal agency forms.

(e) Identify bridges with FCMs, bridges requiring underwater inspection, and bridges that are scour critical.

(1) Bridges with fracture critical members. In the inspection records, identify the location of FCMs and describe the FCM inspection frequency and procedures. Inspect FCMs according to these procedures.

(2) Bridges requiring underwater inspections. Identify the location of underwater elements and include a description of the underwater elements, the inspection frequency and the procedures in the inspection records for each bridge requiring underwater inspection. Inspect those elements requiring underwater inspections according to these procedures.

(3) Bridges that are scour critical. Prepare a plan of action to monitor known and potential deficiencies and to address critical findings. Monitor bridges that are scour critical in accordance with the plan.

(f) *Complex bridges.* Identify specialized inspection procedures, and additional inspector training and experience required to inspect complex bridges. Inspect complex bridges according to those procedures.

(g) *Quality control and quality assurance.* Assure systematic quality control (QC) and quality assurance (QA) procedures are used to maintain a high degree of accuracy and consistency in the inspection program. Include periodic field review of inspection teams, periodic bridge inspection refresher training for program managers and team leaders, and independent review of inspection reports and computations.

(h) *Follow-up on critical findings.* Establish a statewide or Federal agency wide procedure to assure that critical findings are addressed in a timely manner. Periodically notify the FHWA of the actions taken to resolve or monitor critical findings.

#### § 650.315 Inventory.

(a) Each State or Federal agency must prepare and maintain an inventory of all bridges subject to the NBIS. Certain Structure Inventory and Appraisal (SI&A) data must be collected and retained by the State or Federal agency for collection by the FHWA as requested. A tabulation of this data is contained in the SI&A sheet distributed by the FHWA as part of the "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," (December 1995) together with subsequent interim changes or the most recent version. Report the data using FHWA established procedures as outlined in the "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges."

(b) For routine, in-depth, fracture critical member, underwater, damage and special inspections enter the SI&A data into the State or Federal agency inventory within 90 days of the date of inspection for State or Federal agency bridges and within 180 days of the date of inspection for all other bridges.

(c) For existing bridge modifications that alter previously recorded data and for new bridges, enter the SI&A data into the State or Federal agency inventory within 90 days after the completion of the work for State or Federal agency bridges and within 180 days after the completion of the work for all other bridges.

(d) For changes in load restriction or closure status, enter the SI&A data into the State or Federal agency inventory within 90 days after the change in status of the structure for State or Federal agency bridges and within 180 days after the change in status of the structure for all other bridges.

#### § 650.317 Reference manuals.

(a) The materials listed in this subpart are incorporated by reference in the corresponding sections noted. These incorporations by reference were approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. These materials are incorporated as they exist on the date of the approval, and notice of any change in these documents will be published in the FEDERAL REGISTER.

## § 650.401

The materials are available for purchase at the address listed below, and are available for inspection at the National Archives and Records Administration (NARA). These materials may also be reviewed at the Department of Transportation Library, 400 Seventh Street, SW., Washington, DC, in Room 2200. For information on the availability of these materials at NARA call (202) 741-6030, or go to the following URL: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). In the event there is a conflict between the standards in this subpart and any of these materials, the standards in this subpart will apply.

(b) The following materials are available for purchase from the American Association of State Highway and Transportation Officials, Suite 249, 444 N. Capitol Street, NW., Washington, DC 20001. The materials may also be ordered via the AASHTO bookstore located at the following URL: <http://www.aashto.org/aashto/home.nsf/FrontPage>.

(1) The Manual for Condition Evaluation of Bridges, 1994, second edition, as amended by the 1995, 1996, 1998, and 2000 interim revisions, AASHTO, incorporation by reference approved for §§ 650.305 and 650.313.

(2) 2001 Interim Revision to the Manual for Condition Evaluation of Bridges, AASHTO, incorporation by reference approved for §§ 650.305 and 650.313.

(3) 2003 Interim Revision to the Manual for Condition Evaluation of Bridges, AASHTO, incorporation by reference approved for §§ 650.305 and 650.313.

### Subpart D—Highway Bridge Replacement and Rehabilitation Program

SOURCE: 44 FR 15665, Mar. 15, 1979, unless otherwise noted.

#### § 650.401 Purpose.

The purpose of this regulation is to prescribe policies and outline procedures for administering the Highway Bridge Replacement and Rehabilitation Program in accordance with 23 U.S.C. 144.

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#### § 650.403 Definition of terms.

As used in this regulation:

(a) *Bridge*. A structure, including supports, erected over a depression or an obstruction, such as water, a highway, or a railway, having a track or passageway for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or spring lines of arches, or extreme ends of the openings for multiple boxes; it may include multiple pipes where the clear distance between openings is less than half of the smaller contiguous opening.

(b) *Sufficiency rating*. The numerical rating of a bridge based on its structural adequacy and safety, essentiality for public use, and its serviceability and functional obsolescence.

(c) *Rehabilitation*. The major work required to restore the structural integrity of a bridge as well as work necessary to correct major safety defects.

#### § 650.405 Eligible projects.

(a) *General*. Deficient highway bridges on all public roads may be eligible for replacement or rehabilitation.

(b) *Types of projects which are eligible*. The following types of work are eligible for participation in the Highway Bridge Replacement and Rehabilitation Program (HBRRP), hereinafter known as the bridge program.

(1) *Replacement*. Total replacement of a structurally deficient or functionally obsolete bridge with a new facility constructed in the same general traffic corridor. A nominal amount of approach work, sufficient to connect the new facility to the existing roadway or to return the gradeline to an attainable touchdown point in accordance with good design practice is also eligible. The replacement structure must meet the current geometric, construction and structural standards required for the types and volume of projected traffic on the facility over its design life.

(2) *Rehabilitation*. The project requirements necessary to perform the major work required to restore the structural integrity of a bridge as well as work necessary to correct major safety defects are eligible except as noted under

ineligible work. Bridges to be rehabilitated both on or off the F-A System shall, as a minimum, conform with the provisions of 23 CFR part 625, Design Standards for Federal-aid Highways, for the class of highway on which the bridge is a part.

(c) *Ineligible work.* Except as otherwise prescribed by the Administrator, the costs of long approach fills, causeways, connecting roadways, interchanges, ramps, and other extensive earth structures, when constructed beyond the attainable touchdown point, are not eligible under the bridge program.

**§ 650.407 Application for bridge replacement or rehabilitation.**

(a) Agencies participate in the bridge program by conducting bridge inspections and submitting Structure Inventory and Appraisal (SI&A) sheet inspection data. Federal and local governments supply SI&A sheet data to the State agency for review and processing. The State is responsible for submitting the six computer card format or tapes containing all public road SI&A sheet bridge information through the Division Administrator of the Federal Highway Administration (FHWA) for processing. These requirements are prescribed in 23 CFR 650.309 and 650.311, the National Bridge Inspection Standards.

(b) Inventory data may be submitted as available and shall be submitted at such additional times as the FHWA may request.

(c) Inventory data on bridges that have been strengthened or repaired to eliminate deficiencies, or those that have been replaced or rehabilitated using bridge replacement and/or other funds, must be revised in the inventory through data submission.

(d) The Secretary may, at the request of a State, inventory bridges, on and off the Federal-aid system, for historic significance.

[44 FR 15665, Mar. 15, 1979, as amended at 44 FR 72112, Dec. 13, 1979]

**§ 650.409 Evaluation of bridge inventory.**

(a) *Sufficiency rating of bridges.* Upon receipt and evaluation of the bridge inventory, a sufficiency rating will be as-

signed to each bridge by the Secretary in accordance with the approved AASHTO<sup>1</sup> sufficiency rating formula. The sufficiency rating will be used as a basis for establishing eligibility and priority for replacement or rehabilitation of bridges; in general the lower the rating, the higher the priority.

(b) *Selection of bridges for inclusion in State program.* After evaluation of the inventory and assignment of sufficiency ratings, the Secretary will provide the State with a selection list of bridges within the State that are eligible for the bridge program. From that list or from previously furnished selection lists, the State may select bridge projects.

**§ 650.411 Procedures for bridge replacement and rehabilitation projects.**

(a) Consideration shall be given to projects which will remove from service highway bridges most in danger of failure.

(b) *Submission and approval of projects.*

(1) Bridge replacement or rehabilitation projects shall be submitted by the State to the Secretary in accordance with 23 CFR part 630, subpart A Federal-Aid Programs, Approval and Authorization.

(2) Funds apportioned to a State shall be made available throughout each State on a fair and equitable basis.

(c)(1) Each approved project will be designed, constructed, and inspected for acceptance in the same manner as other projects on the system on which the project is located. It shall be the responsibility of the State agency to properly maintain, or cause to be properly maintained, any project constructed under this bridge program. The State highway agency shall enter into a formal agreement for maintenance with appropriate local government officials in cases where an eligible project is located within and is under the legal authority of such a local government.

(2) Whenever a deficient bridge is replaced or its deficiency alleviated by a

<sup>1</sup>American Association of State Highway and Transportation Officials, Suite 225, 444 North Capitol Street, NW, Washington, DC 20001.

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new bridge under the bridge program, the deficient bridge shall either be dismantled or demolished or its use limited to the type and volume of traffic the structure can safely service over its remaining life. For example, if the only deficiency of the existing structure is inadequate roadway width and the combination of the new and existing structure can be made to meet current standards for the volume of traffic the facility will carry over its design life, the existing bridge may remain in place and be incorporated into the system.

[44 FR 15665, Mar. 15, 1979, as amended at 44 FR 72112, Dec. 13, 1979]

### § 650.413 Funding.

(a) Funds authorized for carrying out the Highway Bridge Replacement and Rehabilitation Program are available for obligation at the beginning of the fiscal year for which authorized and remain available for expenditure for the same period as funds apportioned for projects on the Federal-aid primary system.

(b) The Federal share payable on account of any project carried out under 23 U.S.C. 144 shall be 80 percent of the eligible cost.

(c) Not less than 15 percent nor more than 35 percent of the apportioned funds shall be expended for projects located on public roads, other than those on a Federal-aid system. The Secretary after consultation with State and local officials may, with respect to a State, reduce the requirement for expenditure for bridges not on a Federal-aid system when he determines that such State has inadequate needs to justify such expenditure.

### § 650.415 Reports.

The Secretary must report annually to the Congress on projects approved and current inventories together with recommendations for further improvements.

## Subparts E–F [Reserved]

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### Subpart G—Discretionary Bridge Candidate Rating Factor

SOURCE: 48 FR 52296, Nov. 17, 1983, unless otherwise noted.

#### § 650.701 Purpose.

The purpose of this regulation is to describe a rating factor used as part of a selection process of allocation of discretionary bridge funds made available to the Secretary of Transportation under 23 U.S.C. 144.

#### § 650.703 Eligible projects.

(a) Deficient highway bridges on Federal-aid highway system roads may be eligible for allocation of discretionary bridge funds to the same extent as they are for bridge funds apportioned under 23 U.S.C. 144, provided that the total project cost for a discretionary bridge candidate is at least \$10 million or twice the amount of 23 U.S.C. 144 funds apportioned to the State during the fiscal year for which funding for the candidate bridge is requested.

(b) After November 14, 2002 only candidate bridges not previously selected with a computed rating factor of 100 or less and ready to begin construction in the fiscal year in which funds are available for obligation will be eligible for consideration.

(c) Projects from States that have transferred Highway Bridge Replacement and Rehabilitation funds to other funding categories will not be eligible for funding the following fiscal year.

[48 FR 52296, Nov. 17, 1983, as amended at 67 FR 63542, Oct. 15, 2002]

#### § 650.705 Application for discretionary bridge funds.

Each year through its field offices, the FHWA will issue an annual call for discretionary bridge candidate submissions including updates of previously submitted but not selected projects. Each State is responsible for submitting such data as required for candidate bridges. Data requested will include structure number, funds needed by fiscal year, total project cost, current average daily truck traffic and a narrative describing the existing bridge, the proposed new or rehabilitated bridge and other relevant factors

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which the State believes may warrant special consideration.

**§ 650.707 Rating factor.**

(a) The following formula is to be used in the selection process for ranking discretionary bridge candidates.

$$\text{Rating Factor (RF)} = \frac{\text{SR}}{\text{N}} \times \frac{\text{TPC}}{\text{ADT}} \times \left[ 1 + \frac{\text{Unobligated HBRRP Balance}}{\text{Total HBRRP Funds Received}} \right]$$

The lower the rating factor, the higher the priority for selection and funding.

(b) The terms in the rating factor are defined as follows:

(1) SR is Sufficiency Rating computed as illustrated in appendix A of the Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, USDOT/FHWA (latest edition); (If SR is less than 1.0, use SR=1.0);

(2) ADT is Average Daily Traffic in thousands taking the most current value from the national bridge inventory data;

(3) ADTT is Average Daily Truck Traffic in thousands (Pick up trucks and light delivery trucks not included). For load posted bridges, the ADTT furnished should be that which would use the bridge if traffic were not restricted. The ADTT should be the annual average volume, not peak or seasonal;

(4) N is National Highway System Status. N=1 if not on the National Highway System. N=1.5 if bridge carries a National Highway System road;

(5) The last term of the rating factor expression includes the State's unobligated balance of funds received under 23 U.S.C. 144 as of June 30 preceding the date of calculation, and the total funds received under 23 U.S.C. 144 for the last four fiscal years ending with the most recent fiscal year of the FHWA's annual call for discretionary bridge candidate submittals; (if unobligated HBRRP balance is less than \$10 million, use zero balance);

(6) TPC is Total Project Cost in millions of dollars;

(7) HBRRP is Highway Bridge Replacement and Rehabilitation Program;

(8) ADT' is ADT plus ADTT.

(c) In order to balance the relative importance of candidate bridges with

very low (less than one) sufficiency ratings and very low ADT's against candidate bridges with high ADT's, the minimum sufficiency rating used will be 1.0. If the computed sufficiency rating for a candidate bridge is less than 1.0, use 1.0 in the rating factor formula.

(d) If the unobligated balance of HBRRP funds for the State is less than \$10 million, the HBRRP modifier is 1.0. This will limit the effect of the modifier on those States with small apportionments or those who may be accumulating funds to finance a major bridge.

[48 FR 52296, Nov. 17, 1983; 48 FR 53407, Nov. 28, 1983, as amended at 67 FR 63542, Oct. 15, 2002]

**§ 650.709 Special considerations.**

(a) The selection process for new discretionary bridge projects will be based upon the rating factor priority ranking. However, although not specifically included in the rating factor formula, special consideration will be given to bridges that are closed to all traffic or that have a load restriction of less than 10 tons. Consideration will also be given to bridges with other unique situations, and to bridge candidates in States that have not previously been allocated discretionary bridge funds. In addition, consideration will be given to candidates that receive additional funds or contributions from local, State, county, or private sources, but not from Federal sources which reduce the total Federal cost or Federal share of the project. These funds or contributions may be used to reduce the total project cost for use in the rating factor formula.

(b) The need to administer the program from a balanced national perspective requires that the special cases set forth in paragraph (a) of this section

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and other unique situations be considered in the discretionary bridge candidate evaluation process.

(c) Priority consideration will be given to the continuation and completion of projects previously begun with discretionary bridge funds which will be ready to begin construction in the fiscal year in which funds are available for obligation.

[48 FR 52296, Nov. 17, 1983, as amended at 67 FR 63543, Oct. 15, 2002]

### Subpart H—Navigational Clearances for Bridges

SOURCE: 52 FR 28139, July 28, 1987, unless otherwise noted.

#### § 650.801 Purpose.

The purpose of this regulation is to establish policy and to set forth coordination procedures for Federal-aid highway bridges which require navigational clearances.

#### § 650.803 Policy.

It is the policy of FHWA:

(a) To provide clearances which meet the reasonable needs of navigation and provide for cost-effective highway operations,

(b) To provide fixed bridges wherever practicable, and

(c) To consider appropriate pier protection and vehicular protective and warning systems on bridges subject to ship collisions.

#### § 650.805 Bridges not requiring a USCG permit.

(a) The FHWA has the responsibility under 23 U.S.C. 144(h) to determine that a USCG permit is not required for bridge construction. This determination shall be made at an early stage of project development so that any necessary coordination can be accomplished during environmental processing.

(b) A USCG permit shall not be required if the FHWA determines that the proposed construction, reconstruction, rehabilitation, or replacement of the federally aided or assisted bridge is over waters (1) which are not used or are not susceptible to use in their natural condition or by reasonable im-

provement as a means to transport interstate or foreign commerce and (2) which are (i) not tidal, or (ii) if tidal, used only by recreational boating, fishing, and other small vessels less than 21 feet in length.

(c) The highway agency (HA) shall assess the need for a USCG permit or navigation lights or signals for proposed bridges. The HA shall consult the appropriate District Offices of the U.S. Army Corps of Engineers if the susceptibility to improvement for navigation of the water of concern is unknown and shall consult the USCG if the types of vessels using the waterway are unknown.

(d) For bridge crossings of waterways with navigational traffic where the HA believes that a USCG permit may not be required, the HA shall provide supporting information early in the environmental analysis stage of project development to enable the FHWA to make a determination that a USCG permit is not required and that proposed navigational clearances are reasonable.

(e) Since construction in waters exempt from a USCG permit may be subject to other USCG authorizations, such as approval of navigation lights and signals and timely notice to local mariners of waterway changes, the USCG should be notified whenever the proposed action may substantially affect local navigation.

#### § 650.807 Bridges requiring a USCG permit.

(a) The USCG has the responsibility (1) to determine whether a USCG permit is required for the improvement or construction of a bridge over navigable waters except for the exemption exercised by FHWA in § 650.805 and (2) to approve the bridge location, alignment and appropriate navigational clearances in all bridge permit applications.

(b) A USCG permit shall be required when a bridge crosses waters which are: (1) tidal and used by recreational boating, fishing, and other small vessels 21 feet or greater in length or (2) used or susceptible to use in their natural condition or by reasonable improvement as a means to transport interstate or foreign commerce. If it is

determined that a USCG permit is required, the project shall be processed in accordance with the following procedures.

(c) The HA shall initiate coordination with the USCG at an early stage of project development and provide opportunity for the USCG to be involved throughout the environmental review process in accordance with 23 CFR part 771. The FHWA and Coast Guard have developed internal guidelines which set forth coordination procedures that both agencies have found useful in streamlining and expediting the permit approval process. These guidelines include (1) USCG/FHWA Procedures for Handling Projects which Require a USCG Permit<sup>1</sup> and (2) the USCG/FHWA Memorandum of Understanding on Coordinating The Preparation and Processing of Environmental Projects.<sup>2</sup>

(d) The HA shall accomplish sufficient preliminary design and consultation during the environmental phase of project development to investigate bridge concepts, including the feasibility of any proposed movable bridges, the horizontal and vertical clearances that may be required, and other location considerations which may affect navigation. At least one fixed bridge alternative shall be included with any proposal for a movable bridge to provide a comparative analysis of engineering, social, economic and environmental benefit and impacts.

(e) The HA shall consider hydraulic, safety, environmental and navigational needs along with highway costs when designing a proposed navigable waterway crossing.

(f) For bridges where the risk of ship collision is significant, HA's shall consider, in addition to USCG requirements, the need for pier protection and warning systems as outlined in FHWA Technical Advisory 5140.19, Pier Pro-

tection and Warning Systems for Bridges Subject to Ship Collisions, dated February 11, 1983.

(g) Special navigational clearances shall normally not be provided for accommodation of floating construction equipment of any type that is not required for navigation channel maintenance. If the navigational clearances are influenced by the needs of such equipment, the USCG should be consulted to determine the appropriate clearances to be provided.

(h) For projects which require FHWA approval of plans, specifications and estimates, preliminary bridge plans shall be approved at the appropriate level by FHWA for structural concepts, hydraulics, and navigational clearances prior to submission of the permit application.

(i) If the HA bid plans contain alternative designs for the same configuration (fixed or movable), the permit application shall be prepared in sufficient detail so that all alternatives can be evaluated by the USCG. If appropriate, the USCG will issue a permit for all alternatives. Within 30 days after award of the construction contract, the USCG shall be notified by the HA of the alternate which was selected. The USCG procedure for evaluating permit applications which contain alternates is presented in its Bridge Administration Manual (COMDT INST M16590.5).<sup>3</sup> The FHWA policy on alternates, Alternate Design for Bridges; Policy Statement, was published at 48 FR 21409 on May 12, 1983.

#### § 650.809 Movable span bridges.

A fixed bridge shall be selected whenever practicable. If there are social, economic, environmental or engineering reasons which favor the selection of a movable bridge, a cost benefit analysis to support the need for the movable bridge shall be prepared as a part of the preliminary plans.

<sup>1</sup>This document is an internal directive in the USCG Bridge Administration Manual, Enclosure 1a, COMDT INST M16590.5, change 2 dated Dec. 1, 1983. It is available for inspection and copying from the U.S. Coast Guard or the Federal Highway Administration as prescribed in 49 CFR part 7, appendices B and D.

<sup>2</sup>FHWA Notice 6640.22 dated July 17, 1981, is available for inspection and copying as prescribed in 49 CFR part 7, appendix D.

<sup>3</sup>United States Coast Guard internal directives are available for inspection and copying as prescribed in 49 CFR part 7, appendix B.