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documents pertinent to the PTC system being assessed.

(e) The reviewer shall analyze the Hazard Log and/or any other hazard analysis documents for comprehensiveness and compliance with railroad, vendor, supplier, industry, national, or international standards.

(f) The reviewer shall analyze all Fault Tree Analyses (FTA), Failure Mode and Effects Criticality Analysis (FMECA), and other hazard analyses for completeness, correctness, and compliance with railroad, vendor, supplier, industry, national, or international standards.

(g) The reviewer shall randomly select various safety-critical software modules, as well as safety-critical hardware components if required by FRA for audit to verify whether the railroad, vendor, supplier, industry, national, or international standards were followed. The number of modules audited must be determined as a representative number sufficient to provide confidence that all unaudited modules were developed in compliance with railroad, vendor, supplier, industry, national, or international standards

(h) The reviewer shall evaluate and comment on the plan for installation and test procedures of the PTC system for revenue service.

(i) The reviewer shall prepare a final report of the assessment. The report shall be submitted to the railroad prior to the commencement of installation testing and contain at least the following information:

(1) Reviewer's evaluation of the adequacy of the PSP or PTCSP including the supplier's MTTHE and risk estimates for the PTC system, and the supplier's confidence interval in these estimates;

(2) PTC system vulnerabilities, potentially hazardous failure modes, or potentially hazardous operating circumstances which the reviewer felt were not adequately identified, tracked or mitigated;

(3) A clear statement of position for all parties involved for each PTC system vulnerability cited by the reviewer;

(4) Identification of any documentation or information sought by the reviewer that was denied, incomplete, or inadequate;

(5) A listing of each applicable vendor, supplier, industry, national or international standard, process, or procedure which was not properly followed;

(6) Identification of the hardware and software verification and validation procedures for the PTC system's safety-critical applications, and the reviewer's evaluation of the adequacy of these procedures;

(7) Methods employed by PTC system manufacturer to develop safety-critical software; and

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(8) If directed by FRA, methods employed by PTC system manufacturer to develop safety-critical hardware.

[75 FR 2721, Jan. 15, 2010]

PART 237—BRIDGE SAFETY STANDARDS

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APPENDIX A—SUPPLEMENTAL STATEMENT OF AGENCY POLICY ON THE SAFETY OF RAILROAD BRIDGES

APPENDIX B—SCHEDULE OF CIVIL PENALTIES

AUTHORITY: 49 U.S.C. 20102-20114; P.L. 110-432, division A, section 417; 28 U.S.C. 2461, note; and 49 CFR 1.49.

SOURCE: 75 FR 41302, July 15, 2010, unless otherwise noted.

Subpart A—General

§ 237.1 Application.

(a) Except as provided in paragraphs (b) or (c) of this section, this part applies to all owners of railroad track with a gage of two feet or more and which is supported by a bridge.

(b) This part does not apply to bridges on track used exclusively for rapid transit operations in an urban area that are not connected with the general railroad system of transportation.

(c) This part does not apply to bridges located within an installation which is not part of the general railroad system of transportation and over which trains are not operated by a railroad.

§ 237.3 Responsibility for compliance.

(a) Except as provided in paragraph (b) of this section, an owner of track to which this part applies is responsible for compliance.

(b) If an owner of track to which this part applies assigns responsibility for the bridges that carry the track to another person (by lease or otherwise), written notification of the assignment shall be provided to the appropriate FRA Regional Office at least 30 days in advance of the assignment. The notification may be made by any party to that assignment, but shall be in writing and include the following—

(1) The name and address of the track owner;

(2) The name and address of the person to whom responsibility is assigned (assignee);

(3) A statement of the exact relationship between the track owner and the assignee;

(4) A precise identification of the track segment and the individual bridges in the assignment;

(5) A statement as to the competence and ability of the assignee to carry out the bridge safety duties of the track owner under this part; and

(6) A statement signed by the assignee acknowledging the assignment to him of responsibility for purposes of compliance with this part.

(c) The Administrator may hold the track owner or the assignee, or both, responsible for compliance with this part and subject to penalties under § 237.7.

(d) A common carrier by railroad which is directed by the Surface Transportation Board to provide service over the track of another railroad under 49 U.S.C. 11123 is considered the owner of that track for the purposes of the application of this part during the period the directed service order remains in effect.

(e) When any person, including a contractor for a railroad or track owner, performs any function required by this part, that person is required to perform that function in accordance with this part.

(f) Where an owner of track to which this part applies has previously assigned responsibility for a segment of track to another person as prescribed in 49 CFR 213.5(c), additional notification to FRA is not required.

(g) FRA reserves the right to reject an assignment of responsibility under § 237.3(b) for cause shown.

§ 237.5 Definitions.

For the purposes of this part—

Bridge modification means a change to the configuration of a railroad bridge that affects the load capacity of the bridge.

Bridge repair means remediation of damage or deterioration which has affected the structural integrity of a railroad bridge.

Railroad bridge means any structure with a deck, regardless of length, which supports one or more railroad tracks, or any other undergrade structure with an individual span length of 10 feet or more located at such a depth that it is affected by live loads.

Track owner means a person responsible for compliance in accordance with § 237.3.

§ 237.7 Penalties.

(a) Any person who violates any requirement of this part or causes the violation of any such requirement is

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subject to a civil penalty of at least \$650 and not more than \$25,000 per violation, except that: Penalties may be assessed against individuals only for willful violations, and, where a grossly negligent violation or a pattern of repeated violations has created an imminent hazard of death or injury to persons, or has caused death or injury, a penalty not to exceed \$105,000 per violation may be assessed. “Person” means an entity of any type covered under 1 U.S.C. 1, including but not limited to the following: A railroad; a manager, supervisor, official, or other employee or agent of a railroad; any owner, manufacturer, lessor, or lessee of railroad equipment, track, or facilities; any independent contractor providing goods or services to a railroad; any employee of such owner, manufacturer, lessor, lessee, or independent contractor; and anyone held by the Administrator of the Federal Railroad Administration to be responsible under § 237.3(d). Each day a violation continues shall constitute a separate offense. See Appendix B to this part for a statement of agency civil penalty policy.

(b) Any person who knowingly and willfully falsifies a record or report required by this part may be subject to criminal penalties under 49 U.S.C. 21311.

[75 FR 41302, July 15, 2010, as amended at 77 FR 24422, Apr. 24, 2012]

§ 237.9 Waivers.

(a) Any person subject to a requirement of this part may petition the Administrator for a waiver of compliance with such requirement. The filing of such a petition does not affect that person’s responsibility for compliance with that requirement while the petition is being considered.

(b) Each petition for waiver must be filed in the manner and contain the information required by part 211 of this chapter.

(c) If the Administrator finds that a waiver of compliance is in the public interest and is consistent with railroad safety, the Administrator may grant the waiver subject to any conditions the Administrator deems necessary. If a waiver is granted, the Administrator publishes a notice in the Federal Reg-

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ister containing the reasons for granting the waiver.

Subpart B—Railroad Bridge Safety Assurance

§ 237.31 Adoption of bridge management programs.

Each track owner shall adopt a bridge safety management program to prevent the deterioration of railroad bridges by preserving their capability to safely carry the traffic to be operated over them, and reduce the risk of human casualties, environmental damage, and disruption to the Nation’s railroad transportation system that would result from a catastrophic bridge failure, not later than the dates in the following schedule:

(a) March 14, 2011: Class I carriers;

(b) March 14, 2011: Owners of track segments which are part of the general railroad system of transportation and which carry more than ten scheduled passenger trains per week;

(c) September 13, 2011: Class II carriers to which paragraph (b) of this section does not apply; and

(d) September 13, 2012: All other track owners subject to this part and not described paragraphs (a) through (c) of this section.

§ 237.33 Content of bridge management programs.

Each bridge management program adopted in compliance with this part shall include, as a minimum, the following:

(a) An accurate inventory of railroad bridges, which shall include a unique identifier for each bridge, its location, configuration, type of construction, number of spans, span lengths, and all other information necessary to provide for the management of bridge safety;

(b) A record of the safe load capacity of each bridge;

(c) A provision to obtain and maintain the design documents of each bridge if available, and to document all repairs, modifications, and inspections of each bridge; and

(d) A bridge inspection program covering as a minimum:

(1) Inspection personnel safety considerations;

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(2) Types of inspection including required detail;

(3) Definitions of defect levels along with associated condition codes if condition codes are used;

(4) The method of documenting inspections including standard forms or formats;

(5) Structure type and component nomenclature; and

(6) Numbering or identification protocol for substructure units, spans, and individual components.

Subpart C—Qualifications and Designations of Responsible Persons

§ 237.51 Railroad bridge engineers.

(a) A railroad bridge engineer shall be a person who is determined by the track owner to be competent to perform the following functions as they apply to the particular engineering work to be performed:

(1) Determine the forces and stresses in railroad bridges and bridge components;

(2) Prescribe safe loading conditions for railroad bridges;

(3) Prescribe inspection and maintenance procedures for railroad bridges; and

(4) Design repairs and modifications to railroad bridges.

(b) The educational qualifications of a railroad bridge engineer shall include either:

(1) A degree in engineering granted by a school of engineering with at least one program accredited by ABET, Inc. or its successor organization as a professional engineering curriculum, or a degree from a program accredited as a professional engineering curriculum by a foreign organization recognized by ABET, Inc. or its successor; or

(2) Current registration as a professional engineer.

(c) Nothing in this part affects the States' authority to regulate the professional practice of engineering.

§ 237.53 Railroad bridge inspectors.

A railroad bridge inspector shall be a person who is determined by the track owner to be technically competent to view, measure, report and record the condition of a railroad bridge and its

individual components which that person is designated to inspect. An inspector shall be designated to authorize or restrict the operation of railroad traffic over a bridge according to its immediate condition or state of repair.

§ 237.55 Railroad bridge supervisors.

A railroad bridge supervisor shall be a person, regardless of position title, who is determined by the track owner to be technically competent to supervise the construction, modification or repair of a railroad bridge in conformance with common or particular specifications, plans and instructions applicable to the work to be performed, and to authorize or restrict the operation of railroad traffic over a bridge according to its immediate condition or state of repair.

§ 237.57 Designations of individuals.

Each track owner shall designate those individuals qualified as railroad bridge engineers, railroad bridge inspectors and railroad bridge supervisors. Each individual designation shall include the basis for the designation in effect and shall be recorded.

Subpart D—Capacity of Bridges

§ 237.71 Determination of bridge load capacities.

(a) Each track owner shall determine the load capacity of each of its railroad bridges. The load capacity need not be the ultimate or maximum load capacity, but must be a safe load capacity.

(b) The load capacity of each bridge shall be documented in the track owner's bridge management program, together with the method by which the capacity was determined.

(c) The determination of load capacity shall be made by a railroad bridge engineer using appropriate engineering methods and standards that are particularly applicable to railroad bridges.

(d) Bridge load capacity may be determined from existing design and modification records of a bridge, provided that the bridge substantially conforms to its recorded configuration. Otherwise, the load capacity of a bridge shall be determined by measurement and calculation of the properties of its individual components, or other

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methods as determined by a railroad bridge engineer.

(e) If a track owner has a group of bridges for which the load capacity has not already been determined, the owner shall schedule the evaluation of those bridges according to their relative priority, as established by a railroad bridge engineer. The initial determination of load capacity shall be completed not later than five years following the required date for adoption of the track owner's bridge management program in conformance with § 237.31.

(f) Where a bridge inspection reveals that, in the determination of the railroad bridge engineer, the condition of a bridge or a bridge component might adversely affect the ability of the bridge to carry the traffic being operated, a new capacity shall be determined.

(g) Bridge load capacity may be expressed in terms of numerical values related to a standard system of bridge loads, but shall in any case be stated in terms of weight and length of individual or combined cars and locomotives, for the use of transportation personnel.

(h) Bridge load capacity may be expressed in terms of both normal and maximum load conditions. Operation of equipment that produces forces greater than the normal capacity shall be subject to any restrictions or conditions that may be prescribed by a railroad bridge engineer.

§ 237.73 Protection of bridges from over-weight and over-dimension loads.

(a) Each track owner shall issue instructions to the personnel who are responsible for the configuration and operation of trains over its bridges to prevent the operation of cars, locomotives and other equipment that would exceed the capacity or dimensions of its bridges.

(b) The instructions regarding weight shall be expressed in terms of maximum equipment weights, and either minimum equipment lengths or axle spacing.

(c) The instructions regarding dimensions shall be expressed in terms of feet and inches of cross section and equipment length, in conformance with com-

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mon railroad industry practice for reporting dimensions of exceptional equipment in interchange in which height above top-of-rail is shown for each cross section measurement, followed by the width of the car of the shipment at that height.

(d) The instructions may apply to individual structures, or to a defined line segment or group(s) of line segments where the published capacities and dimensions are within the limits of all structures on the subject line segments.

Subpart E—Bridge Inspection

§ 237.101 Scheduling of bridge inspections.

(a) Each bridge management program shall include a provision for scheduling an inspection for each bridge in railroad service at least once in each calendar year, with not more than 540 days between any successive inspections.

(b) A bridge shall be inspected more frequently than provided for in the bridge management program when a railroad bridge engineer determines that such inspection frequency is necessary considering conditions noted on prior inspections, the type and configuration of the bridge, and the weight and frequency of traffic carried on the bridge.

(c) Each bridge management program shall define requirements for the special inspection of a bridge to be performed whenever the bridge is involved in an event which might have compromised the integrity of the bridge, including but not limited to a flood, fire, earthquake, derailment or vehicular or vessel impact.

(d) Any railroad bridge that has not been in railroad service and has not been inspected in accordance with this section within the previous 540 days shall be inspected and the inspection report reviewed by a railroad bridge engineer prior to the resumption of railroad service.

§ 237.103 Bridge inspection procedures.

(a) Each bridge management program shall specify the procedure to be used

for inspection of individual bridges or classes and types of bridges.

(b) The bridge inspection procedures shall be as specified by a railroad bridge engineer who is designated as responsible for the conduct and review of the inspections. The inspection procedures shall incorporate the methods, means of access, and level of detail to be recorded for the various components of that bridge or class of bridges.

(c) The bridge inspection procedures shall ensure that the level of detail and the inspection procedures are appropriate to: the configuration of the bridge; conditions found during previous inspections; the nature of the railroad traffic moved over the bridge (including equipment weights, train frequency and length, levels of passenger and hazardous materials traffic); and vulnerability of the bridge to damage.

(d) The bridge inspection procedures shall be designed to detect, report and protect deterioration and deficiencies before they present a hazard to safe train operation.

§ 237.105 Special inspections.

(a) Each bridge management program shall prescribe a procedure for protection of train operations and for inspection of any bridge that might have been damaged by a natural or accidental event, including but not limited to a flood, fire, earthquake, derailment or vehicular or vessel impact.

(b) Each bridge management program shall provide for the detection of scour or deterioration of bridge components that are submerged, or that are subject to water flow.

§ 237.107 Conduct of bridge inspections.

Bridge inspections shall be conducted under the direct supervision of a designated railroad bridge inspector, who shall be responsible for the accuracy of the results and the conformity of the inspection to the bridge management program.

§ 237.109 Bridge inspection records.

(a) Each track owner to which this part applies shall keep a record of each inspection required to be performed on those bridges under this part.

(b) Each record of an inspection under the bridge management program prescribed in this part shall be prepared from notes taken on the day(s) the inspection is made, supplemented with sketches and photographs as needed. Such record will be dated with the date(s) the physical inspection takes place and the date the record is created, and it will be signed or otherwise certified by the person making the inspection.

(c) Each bridge management program shall specify that every bridge inspection report shall include, as a minimum, the following information:

(1) A precise identification of the bridge inspected;

(2) The date on which the physical inspection was completed;

(3) The identification and written or electronic signature of the inspector;

(4) The type of inspection performed, in conformance with the definitions of inspection types in the bridge management program;

(5) An indication on the report as to whether any item noted thereon requires expedited or critical review by a railroad bridge engineer, and any restrictions placed at the time of the inspection;

(6) The condition of components inspected, which may be in a condition reporting format prescribed in the bridge management program, together with any narrative descriptions necessary for the correct interpretation of the report; and

(7) When an inspection does not encompass the entire bridge, the portions of the bridge which were inspected shall be identified in the report.

(d) An initial report of each bridge inspection shall be placed in the location designated in the bridge management program within 30 calendar days of the completion of the inspection unless the complete inspection report is filed first. The initial report shall include the information required by paragraphs (c)(1) through (c)(5) of this section.

(e) A complete report of each bridge inspection, including as a minimum the information required in paragraphs (c)(1) through (c)(6) of this section,

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shall be placed in the location designated in the bridge management program within 120 calendar days of the completion of the inspection.

(f) Each bridge inspection program shall specify the retention period and location for bridge inspection records. The retention period shall be no less than two years following the completion of the inspection. Records of underwater inspections shall be retained until the completion and review of the next underwater inspection of the bridge.

(g) If a bridge inspector, supervisor, or engineer discovers a deficient condition on a bridge that affects the immediate safety of train operations, that person shall report the condition as promptly as possible to the person who controls the operation of trains on the bridge in order to protect the safety of train operations.

§ 237.111 Review of bridge inspection reports.

Bridge inspection reports shall be reviewed by railroad bridge supervisors and railroad bridge engineers to:

- (a) Determine whether inspections have been performed in accordance with the prescribed schedule and specified procedures;
- (b) Evaluate whether any items on the report represent a present or potential hazard to safety;
- (c) Prescribe any modifications to the inspection procedures or frequency for that particular bridge;
- (d) Schedule any repairs or modifications to the bridge required to maintain its structural integrity; and
- (e) Determine the need for further higher-level review.

Subpart F—Repair and Modification of Bridges

§ 237.131 Design.

Each repair or modification which materially modifies the capacity of a bridge or the stresses in any primary load-carrying component of a bridge shall be designed by a railroad bridge engineer. The design shall specify the manner in which railroad traffic or other live loads may be permitted on the bridge while it is being modified or repaired. Designs and procedures for re-

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pair or modification of bridges of a common configuration, such as timber trestles, or instructions for in-kind replacement of bridge components, may be issued as a common standard. Where the common standard addresses procedures and methods that could materially modify the capacity of a bridge or the stresses in any primary load-carrying component of a bridge, the standard shall be designed and issued by a qualified railroad bridge engineer.

§ 237.133 Supervision of repairs and modifications.

Each repair or modification pursuant to this part shall be performed under the immediate supervision of a railroad bridge supervisor as defined in § 237.55 of this part who is designated and authorized by the track owner to supervise the particular work to be performed. The railroad bridge supervisor shall ensure that railroad traffic or other live loads permitted on the bridge under repair or modification are in conformity with the specifications in the design.

Subpart G—Documentation, Records, and Audits of Bridge Management Programs

§ 237.151 Audits; general.

Each program adopted to comply with this part shall include provisions for auditing the effectiveness of the several provisions of that program, including the validity of bridge inspection reports and bridge inventory data, and the correct application of movement restrictions to railroad equipment of exceptional weight or configuration.

§ 237.153 Audits of inspections.

- (a) Each bridge management program shall incorporate provisions for an internal audit to determine whether the inspection provisions of the program are being followed, and whether the program itself is effectively providing for the continued safety of the subject bridges.
- (b) The inspection audit shall include an evaluation of a representative sampling of bridge inspection reports at

the bridges noted on the reports to determine whether the reports accurately describe the condition of the bridge.

§ 237.155 Documents and records.

Each track owner required to implement a bridge management program and keep records under this part shall make those program documents and records available for inspection and reproduction by the Federal Railroad Administration.

(a) *Electronic recordkeeping; general.* For purposes of compliance with the recordkeeping requirements of this part, a track owner may create and maintain any of the records required by this part through electronic transmission, storage, and retrieval provided that all of the following conditions are met:

(1) The system used to generate the electronic record meets all requirements of this subpart;

(2) The electronically generated record contains the information required by this part;

(3) The track owner monitors its electronic records database through sufficient number of monitoring indicators to ensure a high degree of accuracy of these records;

(4) The track owner shall train its employees who use the system on the proper use of the electronic recordkeeping system; and

(5) The track owner maintains an information technology security program adequate to ensure the integrity of the system, including the prevention of unauthorized access to the program logic or individual records.

(b) *System security.* The integrity of the bridge inspection records must be protected by a security system that incorporates a user identity and password, or a comparable method, to establish appropriate levels of program and record data access meeting all of the following standards:

(1) No two individuals have the same electronic identity;

(2) A record cannot be deleted or altered by any individual after the record is certified by the employee who created the record;

(3) Any amendment to a record is either—

(i) Electronically stored apart from the record that it amends; or

(ii) Electronically attached to the record as information without changing the original record;

(4) Each amendment to a record uniquely identifies the person making the amendment; and

(5) The electronic system provides for the maintenance of inspection records as originally submitted without corruption or loss of data.

APPENDIX A TO PART 237—SUPPLEMENTAL STATEMENT OF AGENCY POLICY ON THE SAFETY OF RAILROAD BRIDGES

A Statement of Agency Policy on the Safety of Railroad Bridges was originally published by FRA in 2000 as Appendix C of the Federal Track Safety Standards, 49 CFR Part 213. With the promulgation of 49 CFR Part 237, Bridge Safety Standards, many of the non-regulatory provisions in that Policy Statement have been incorporated into the bridge safety standards in this part.

However, FRA has determined that other non-regulatory items are still useful as information and guidance for track owners. Those provisions of the Policy Statement are therefore retained and placed in this Appendix in lieu of their former location in the Track Safety Standards.

GENERAL

1. The structural integrity of bridges that carry railroad tracks is important to the safety of railroad employees and to the public. The responsibility for the safety of railroad bridges is specified in §237.3, "Responsibility for compliance."

2. The capacity of a bridge to safely support its traffic can be determined only by intelligent application of engineering principles and the law of physics. Track owners should use those principles to assess the integrity of railroad bridges.

3. The long term ability of a structure to perform its function is an economic issue beyond the intent of this policy. In assessing a bridge's structural condition, FRA focuses on the present safety of the structure, rather than its appearance or long term usefulness.

4. FRA inspectors conduct regular evaluations of railroad bridge inspection and management practices. The objective of these evaluations is to document the practices of the evaluated railroad, to disclose any program weaknesses that could affect the safety of the public or railroad employees, and to assure compliance with the terms of this regulation. If the evaluation discloses problems, FRA seeks a cooperative resolution. If safety is jeopardized by a track owner's failure to

resolve a bridge problem, FRA will use appropriate measures, including assessing civil penalties and issuance of emergency orders, to protect the safety of railroad employees and the public.

5. This policy statement addresses the integrity of bridges that carry railroad tracks. It does not address the integrity of other types of structures on railroad property (i.e., tunnels, highway bridges over railroads, or other structures on or over the right-of-way).

6. The guidelines published in this statement are advisory. They do not have the force of regulations or orders, which FRA may enforce using civil penalties or other means. The guidelines supplement the requirements of part 237 and are retained for information and guidance.

GUIDELINES

1. *Responsibility for safety of railroad bridges.*

(a) The responsibility for the safety of railroad bridges is specified in §237.3.

(b) The track owner should maintain current information regarding loads that may be operated over the bridge, either from its own engineering evaluations or as provided by a competent engineer representing the track owner. Information on permissible loads may be communicated by the track owner either in terms of specific car and locomotive configurations and weights, or as values representing a standard railroad bridge rating reference system. The most common standard bridge rating reference system incorporated in the Manual for Railway Engineering of the American Railway Engineering and Maintenance-of-Way Association is the dimensional and proportional load configuration devised by Theodore Cooper. Other reference systems may be used where convenient, provided their effects can be defined in terms of shear, bending and pier reactions as necessary for a comprehensive evaluation and statement of the capacity of a bridge.

(c) The owner of the track on a bridge should advise other railroads operating on that track of the maximum loads permitted on the bridge stated in terms of car and locomotive configurations and weights. No railroad should operate a load which exceeds those limits without specific authority from, and in accordance with restrictions placed by, the track owner.

2. *Capacity of railroad bridges.*

(a) The safe capacity of bridges should be determined pursuant to §237.71.

(b) Proper analysis of a bridge requires knowledge of the actual dimensions, materials and properties of the structural members of the bridge, their condition, and the stresses imposed in those members by the service loads.

(c) The factors which were used for the design of a bridge can generally be used to de-

termine and rate the load capacity of a bridge provided:

(i) The condition of the bridge has not changed significantly; and

(ii) The stresses resulting from the service loads can be correlated to the stresses for which the bridge was designed or rated.

3. *Railroad bridge loads.*

(a) Control of loads is governed by §237.73.

(b) Authority for exceptions. Equipment exceeding the nominal weight restriction on a bridge should be operated only under conditions determined by a competent railroad bridge engineer who has properly analyzed the stresses resulting from the proposed loads and has determined that the proposed operation can be conducted safely without damaging the bridge.

(c) Operating conditions. Operating conditions for exceptional loads may include speed restrictions, restriction of traffic from adjacent multiple tracks, and weight limitations on adjacent cars in the same train.

4. *Railroad bridge records.*

(a) The organization responsible for the safety of a bridge should keep design, construction, maintenance and repair records readily accessible to permit the determination of safe loads. Having design or rating drawings and calculations that conform to the actual structure greatly simplifies the process of making accurate determinations of safe bridge loads. This provision is governed by §237.33.

(b) Organizations acquiring railroad property should obtain original or usable copies of all bridge records and drawings, and protect or maintain knowledge of the location of the original records.

5. *Specifications for design and rating of railroad bridges.*

(a) The recommended specifications for the design and rating of bridges are those found in the Manual for Railway Engineering published by the American Railway Engineering and Maintenance-of-Way Association. These specifications incorporate recognized principles of structural design and analysis to provide for the safe and economic utilization of railroad bridges during their expected useful lives. These specifications are continually reviewed and revised by committees of competent engineers. Other specifications for design and rating, however, have been successfully used by some railroads and may continue to be suitable.

(b) A bridge can be rated for capacity according to current specifications regardless of the specification to which it was originally designed.

6. *Periodic inspections of railroad bridges.*

(a) Periodic bridge inspections by competent inspectors are necessary to determine whether a structure conforms to its design or rating condition and, if not, the degree of nonconformity. See §237.101. Section 237.101(a) calls for every railroad bridge to be

inspected at least once in each calendar year. Deterioration or damage may occur during the course of a year regardless of the level of traffic that passes over a bridge. Inspections at more frequent intervals may be required by the nature or condition of a structure or intensive traffic levels.

7. *Underwater inspections of railroad bridges.*

(a) Inspections of bridges should include measuring and recording the condition of substructure support at locations subject to erosion from moving water.

(b) Stream beds often are not visible to the inspector. Indirect measurements by sounding, probing, or any other appropriate means are necessary in these cases. A series of records of these readings will provide the best information in the event unexpected changes suddenly occur. Where such indirect measurements do not provide the necessary assurance of foundation integrity, diving inspections should be performed as prescribed by a competent engineer.

8. *Seismic considerations.*

(a) Owners of bridges should be aware of the risks posed by earthquakes in the areas in which their bridges are located. Precautions should be taken to protect the safety of trains and the public following an earthquake.

(b) Contingency plans for seismic events should be prepared in advance, taking into account the potential for seismic activity in an area.

(c) The predicted attenuation of ground motion varies considerably within the United States. Local ground motion attenuation values and the magnitude of an earthquake both influence the extent of the area affected by an earthquake. Regions with low frequency of seismic events produce less data from which to predict attenuation factors. That uncertainty should be considered when designating the area in which precautions should be taken following the first notice of an earthquake. In fact, earthquakes in such regions might propagate their effects over much wider areas than earthquakes of the same magnitude occurring in regions with frequent seismic activity.

9. *Special inspections of railroad bridges.*

Requirements for special inspections of railroad bridges are found in § 237.105.

10. *Railroad bridge inspection records.*

(a) The requirements for recording and reporting bridge inspections are found in § 237.109.

(b) Information from bridge inspection reports should be incorporated into a bridge management program to ensure that exceptions on the reports are corrected or accounted for. A series of inspection reports prepared over time should be maintained so as to provide a valuable record of trends and rates of degradation of bridge components. The reports should be structured to promote comprehensive inspections and effective

communication between an inspector and an engineer who performs an analysis of a bridge.

(c) An inspection report should be comprehensible to a competent person without interpretation by the reporting inspector.

11. *Railroad bridge inspectors and engineers.*

(a) Bridge inspections should be performed by technicians whose training and experience enable them to detect and record indications of distress on a bridge. Inspectors should provide accurate measurements and other information about the condition of the bridge in enough detail so that an engineer can make a proper evaluation of the safety of the bridge. Qualifications of personnel are addressed in subpart C to part 237.

(b) Accurate information about the condition of a bridge should be evaluated by an engineer who is competent to determine the capacity of the bridge. The inspector and the evaluator often are not the same individual; therefore, the quality of the bridge evaluation depends on the quality of the communication between them. Review of inspection reports is addressed in § 237.111.

12. *Scheduling inspections.*

(a) A bridge management program should include a means to ensure that each bridge under the program is inspected at the frequency prescribed for that bridge by a competent engineer. Scheduling of bridge inspections is addressed in § 237.101.

(b) Bridge inspections should be scheduled from an accurate bridge inventory list that includes the due date of the next inspection.

13. *Special considerations for railroad bridges.*

Railroad bridges differ from other types of bridges in the types of loads they carry, in their modes of failure and indications of distress, and in their construction details and components. Proper inspection and analysis of railroad bridges require familiarity with the loads, details and indications of distress that are unique to this class of structure. Particular care should be taken that modifications to railroad bridges, including retrofits for protection against the effects of earthquakes, are suitable for the structure to which they are to be applied. Modifications should not adversely affect the serviceability of neither the bridge nor its accessibility for periodic or special inspection.

14. *Railroad implementation of bridge safety programs.*

FRA recommends that each track owner or other entity which is responsible for the integrity of bridges which support its track should comply with the intent of this regulation by adopting and implementing an effective and comprehensive program to ensure the safety of its bridges. The bridge safety program should incorporate the following essential elements, applied according to the configuration of the railroad and its bridges. The basis of the program should be in one comprehensive and coherent document

which is available to all railroad personnel and other persons who are responsible for the application of any portion of the program. The program should include:

(a) Clearly defined roles and responsibilities of all persons who are designated or authorized to make determinations regarding the integrity of the track owner's bridges. The designations may be made by position or by individual;

(b) Provisions for a complete inventory of bridges that carry the owner's track, to include the following information on each bridge:

- (1) A unique identifier, such as milepost location and a subdivision code;
- (2) The location of the bridge by nearest town or station, and geographic coordinates;
- (3) The name of the geographic features crossed by the bridge;
- (4) The number of tracks on the bridge;
- (5) The number of spans in the bridge;
- (6) The lengths of the spans;
- (7) Types of construction of:
 - (i) Substructure;
 - (ii) Superstructure; and
 - (iii) Deck;
- (8) Overall length of the bridge;
- (9) Dates of:
 - (i) Construction;
 - (ii) Major renovation; and
 - (iii) Strengthening; and
- (10) Identification of entities responsible for maintenance of the bridge or its different components.

(c) Known capacity of its bridges as determined by rating by competent railroad bridge engineer or by design documents;

(d) Procedures for the control of movement of high, wide or heavy loads exceeding the nominal capacity of bridges;

(e) Instructions for the maintenance of permanent records of design, construction, modification, and repair;

(f) Railroad-specific procedures and standards for design and rating of bridges;

(g) Detailed bridge inspection policy, including:

- (1) Inspector qualifications; including:
 - (i) Bridge experience or appropriate educational training;
 - (ii) Training on bridge inspection procedures; and
 - (iii) Training on Railroad Workplace Safety; and
- (2) Type and frequency of inspection; including:
 - (i) Periodic (at least annually);
 - (ii) Underwater;
 - (iii) Special;
 - (iv) Seismic; and
- (v) Cursory inspections of overhead bridges that are not the responsibility of the railroad;

(3) Inspection schedule for each bridge;

(4) Documentation of inspections; including:

- (i) Date;
- (ii) Name of inspector;
- (iii) Reporting Format; and
- (iv) Coherence of information;
- (5) Inspection Report Review Process;
- (6) Record retention; and
- (7) Tracking of critical deficiencies to resolution; and

(h) Provide for the protection of train operations following an inspection, noting a critical deficiency, repair, modification or adverse event and should include:

- (1) A listing of qualifications of personnel permitted to authorize train operations following an adverse event; and
- (2) Detailed internal program audit procedures to ensure compliance with the provisions of the program.

APPENDIX B TO PART 237—SCHEDULE OF CIVIL PENALTIES¹

Section ²	Violation	Willful violation
Subpart B—Railroad Bridge Safety Assurance		
237.31 Adoption of bridge management program	\$9,500	\$17,000
237.33 Content of bridge management program:		
(a) Inventory of railroad bridges	2,500	5,000
(b) Record of safe load capacity	5,500	10,000
(c) Provision to obtain and maintain:		
(i) Design documents	5,500	10,000
(ii) Documentation of repairs and modifications	2,500	5,000
(iii) Inspection reports	2,500	5,000
(d) Bridge inspection program content	2,500	5,000
Subpart C—Qualification and Designation of Responsible Persons		
237.51 Railroad bridge engineers:		
(a) Competency	5,500	10,000
(b) Educational qualification	2,500	5,000
237.53 Railroad bridge inspectors	5,500	10,000
237.55 Railroad bridge supervisors	5,500	10,000
237.57 Designation of individuals	2,500	5,000

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Section ²		Violation	Willful violation
Subpart D—Capacity of Bridges			
237.71	Determination of bridge load capacities:		
	(a) Safe load capacity	5,500	10,000
	(b) Load capacity documented	5,500	10,000
	(c) Load capacity determined by a railroad bridge engineer	5,500	10,000
	(d) Method of load capacity determination	2,500	5,000
	(e) Prioritization of load capacity determination	2,500	5,000
	(f) New load capacity determined due to change in condition	2,500	5,000
	(g) Load capacity stated in terms of weight and length of equipment	2,500	5,000
	(h) Restriction on operations by railroad bridge engineer	5,500	10,000
237.73	Protection of bridges from over-weight and over-dimension equipment:		
	(a) Instructions issued	5,500	10,000
	(b) Weight instructions	2,500	5,000
	(c) Dimensional instructions	2,500	5,000
	(d) Incorrect instructions issued	2,500	5,000
Subpart E—Bridge Inspection			
237.101	Scheduling of bridge inspections:		
	(a) Scheduling:		
	(i) Failure to inspect	9,500	17,000
	(ii) Inspection within calendar year	2,500	5,000
	(iii) Inspection frequency exceeding 540 days	2,500	5,000
	(b) Increased inspection frequency	5,500	10,000
	(c) Special inspections	2,500	5,000
	(d) Resumption of railroad operations prior to inspection & review	9,500	17,000
237.103	Bridge inspection procedures	2,500	5,000
237.105	Special inspections:		
	(a) Procedures to protect train operations and requiring special inspections	2,500	5,000
	(b) Provision for the detection of scour or underwater deterioration	2,500	5,000
237.107	Conduct of bridge inspections	5,500	10,000
237.109	Bridge inspection records:		
	(a) Record of inspection	2,500	5,000
	(b) Inspection record:		
	(i) Certification and date	2,500	5,000
	(ii) Falsification		17,000
	(c) Inspection record information	2,500	5,000
	(d) Initial report within 30 days	2,500	5,000
	(e) Final inspection report within 120 calendar days	2,500	5,000
	(f) Retention	2,500	5,000
	(g) Prompt reporting of dangerous conditions	5,500	10,000
237.111	Review of bridge inspection reports.		
	(a) Review by railroad bridge engineers and supervisors	2,500	5,000
	(b) Appropriate action concerning present or potential safety hazards	5,500	10,000
	(c) Modification of inspection frequency or procedures	2,500	5,000
	(d) Scheduling remedial action	2,500	5,000
	(e) Higher-level review	2,500	5,000
Subpart F—Repair and Modification of Bridges			
237.131	Design	5,500	10,000
237.133	Supervision of repairs and modifications	5,500	10,000
Subpart G—Documentation, Records and Audits of Bridge Management Programs			
237.151	Audits; general	2,500	5,000
237.153	Audits of inspections	2,500	5,000
237.155	Documents and records:		
	(a) Electronic recordkeeping, general	2,500	5,000
	(b) System security	2,500	5,000

¹ A penalty may be assessed against an individual only for a willful violation. The Administrator reserves the right to assess a penalty of up to \$105,000 for any violation where circumstances warrant. See 49 CFR part 209, appendix A.

² The penalty schedule uses section numbers from 49 CFR part 237. If more than one item is listed as a type of violation of a given section, each item is also designated by a "penalty code," which is used to facilitate assessment of civil penalties, and which may or may not correspond to any subsection designation(s). For convenience, penalty citations will cite the CFR section and the penalty code, if any. FRA reserves the right, should litigation become necessary, to substitute in its complaint the CFR citation in place of the combined CFR and penalty code citation, should they differ.

[75 FR 41302, July 15, 2010, as amended at 77 FR 24422, Apr. 24, 2012]

PART 238—PASSENGER EQUIPMENT SAFETY STANDARDS

Subpart A—General

Sec.

- 238.1 Purpose and scope.
- 238.3 Applicability.
- 238.5 Definitions.
- 238.7 Waivers.
- 238.9 Responsibility for compliance.
- 238.11 Penalties.
- 238.13 Preemptive effect.
- 238.15 Movement of passenger equipment with power brake defects.
- 238.17 Movement of passenger equipment with other than power brake defects.
- 238.19 Reporting and tracking of repairs to defective passenger equipment.
- 238.21 Special approval procedure.
- 238.23 Information collection.

Subpart B—Safety Planning and General Requirements

- 238.101 Scope.
- 238.103 Fire safety.
- 238.105 Train electronic hardware and software safety.
- 238.107 Inspection, testing, and maintenance plan.
- 238.109 Training, qualification, and designation program.
- 238.111 Pre-revenue service acceptance testing plan.
- 238.113 Emergency window exits.
- 238.114 Rescue access windows.
- 238.115 Emergency lighting.
- 238.117 Protection against personal injury.
- 238.119 Rim-stamped straight-plate wheels.
- 238.121 Emergency communication.
- 238.123 Emergency roof access.

FIGURE 1 TO SUBPART B OF PART 238—EXAMPLE OF LOCATION AND STAGGERING OF EMERGENCY WINDOW EXITS—§ 238.113

FIGURE 1A TO SUBPART B OF PART 238—EXAMPLE OF LOCATION OF RESCUE ACCESS WINDOWS—§ 238.114

FIGURE 1B TO SUBPART B OF PART 238—EXAMPLE OF LOCATION AND STAGGERING OF EMERGENCY WINDOW EXITS AND LOCATION OF RESCUE ACCESS WINDOWS—§§ 238.113 AND 238.114

FIGURE 1C TO SUBPART B OF PART 238—EXAMPLE OF A PASSENGER COMPARTMENT INCLUDING A VESTIBULE CONNECTED BY AN OPEN PASSAGEWAY AND EXCLUDING A VESTIBULE SEPARATED BY AN INTERIOR DOOR—§§ 238.113 AND 238.114

FIGURE 2 TO SUBPART B OF PART 238—EXAMPLE OF A MULTI-LEVEL CAR COMPLYING WITH WINDOW LOCATION AND STAGGERING REQUIREMENTS—§§ 238.113 AND 238.114

FIGURE 2A TO SUBPART B OF PART 238—EXAMPLE OF AN INTERMEDIATE LEVEL SEATING AREA OF A MULTI-LEVEL CAR COMPLYING WITH WINDOW LOCATION REQUIREMENTS—§§ 238.113 AND 238.114

FIGURE 2B TO SUBPART B OF PART 238—EXAMPLE OF AN INTERMEDIATE LEVEL SEATING AREA OF A MULTI-LEVEL CAR COMPLYING WITH WINDOW LOCATION REQUIREMENTS—§§ 238.113 AND 238.114

FIGURE 3 TO SUBPART B OF PART 238—EXAMPLE OF LOCATION AND MARKING OF STRUCTURAL WEAK POINTS ON ROOF OF PASSENGER CAR—§ 238.123

Subpart C—Specific Requirements for Tier I Passenger Equipment

- 238.201 Scope/alternative compliance.
- 238.203 Static end strength.
- 238.205 Anti-climbing mechanism.
- 238.207 Link between coupling mechanism and car body.
- 238.209 Forward-facing end structure of locomotives.
- 238.211 Collision posts.
- 238.213 Corner posts.
- 238.215 Rollover strength.
- 238.217 Side structure.
- 238.219 Truck-to-car-body attachment.
- 238.221 Glazing.
- 238.223 Locomotive fuel tanks.
- 238.225 Electrical system.
- 238.227 Suspension system.
- 238.229 Safety appliances—general.
- 238.230 Safety appliances—new equipment.
- 238.231 Brake system.
- 238.233 Interior fittings and surfaces.
- 238.235 Doors.
- 238.237 Automated monitoring.

FIGURE 1 TO SUBPART C OF PART 238

Subpart D—Inspection, Testing, and Maintenance Requirements for Tier I Passenger Equipment

- 238.301 Scope.
- 238.303 Exterior calendar day mechanical inspection of passenger equipment.
- 238.305 Interior calendar day mechanical inspection of passenger cars.
- 238.307 Periodic mechanical inspection of passenger cars and unpowered vehicles used in passenger trains.
- 238.309 Periodic brake equipment maintenance.
- 238.311 Single car test.
- 238.313 Class I brake test.
- 238.315 Class IA brake test.
- 238.317 Class II brake test.
- 238.319 Running brake test.
- 238.321 Out-of-service credit.

Subpart E—Specific Requirements for Tier II Passenger Equipment

- 238.401 Scope.