



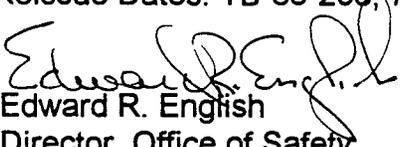
Memorandum

U.S. Department
of Transportation

Federal Railroad
Administration

Date: MAY 6 1996 Reply to Attn of: T-96-02

Subject: Amendment of the FRA Track Safety Standards
Original Issue Number and Date: TB-83-02, 1/20/83
Reissue Dates: TB-85-205, 7/1/85

From: 
Edward R. English
Director, Office of Safety
Assurance and Compliance

To: All Regional Administrators, Deputy Regional Administrators,
Supervisory Railroad Safety Specialists (Track), and
Federal and State Track Inspectors

49 CFR Part 213
Docket No. RST-3, Notice No. 4
FINAL RULE dated August 31, 1982

213.4 Excepted Track

- Defect Codes:
- 4.01 Excepted track segment not identified in appropriate record.
 - 4.02 Excepted track segment located within 30 feet of an adjacent track subject to simultaneous operation at speeds in excess of 10 mph.
 - 4.03 Excepted track not inspected in accordance with 213.233(c) as specified for Class 1 track.
 - 4.04 Train speed exceeds 10 mph on excepted track.
 - 4.05 Revenue passenger train operated on excepted track.

- 4.06 Freight train operated on excepted track with more than five cars required to be placarded in accordance with 49 CFR Part 172.
- 4.07 Train with a car required to be placarded by 49 CFR Part 172 operated over excepted track within 100 feet of a bridge or in a public street or highway.

The intent of the rule is to permit portions of certain low density main tracks and associated yard tracks and sidings to be excepted from Subparts B, C, D, and E of the Standards. In fact, a track owner may apply the rule anywhere. However, by designating a track as "excepted" the owner must restrict all freight and work train movements to a maximum of 10 mph, restrict the number of hazardous material cars in a train, and prohibit the movement of revenue passenger trains.

Section 213.4(b) prohibits the designation as "excepted track" of any track located within 30 feet of an adjacent track which can be subjected to simultaneous use at speeds in excess of 10 mph. The 30 feet will be measured between track centerlines. Simultaneous use means simultaneous movement of cars or locomotives on both tracks.

Operation on tracks located within 30 feet of excepted track may be restricted to 10 mph by the physical layout of the tracks, or by definite restrictions placed by the track owner by rule, timetable, special instruction, or other positive instruction or order. The criterion is the positive protection of trains on higher speed track against a collision with fouling equipment from a potential derailment on the excepted track.

The term "train" is defined in 49 CFR Part 236.832 as "a locomotive or more than one locomotive coupled, with or without cars." That definition applies to this rule.

A designation of "excepted track" need only be recorded by the track owner and implemented by issuance of appropriate instructions to all affected employees. It will not be filed with FRA. The rule does not specify which employees must be notified of excepted track designations, but the track owner must necessarily notify all employees who could be involved in supervision or conduct of operations, maintenance, or inspection of excepted track of the procedures necessary for compliance with the requirements of this rule.

Subpart F-Inspection does not specify an inspection frequency for excepted track. Since excepted track is only excepted from Subparts B, C, D, and E, Subpart F applies. Subsection 213.4(c) equates excepted track with Class 1 track for inspection purposes. The requirements of Subpart F for Class 1 track apply to excepted track.

In the application of paragraph (d), a railroad bridge is defined as follows:

Railroad Bridge

A railroad bridge is any structure supporting one or more railroad tracks with a span length of twelve feet or more measured along the track centerline.

The term "bridge" shall apply to the entire structure between the faces of the backwalls of abutments or equivalent components, regardless of the number of spans. The term shall include all structures, whether of timber, stone, concrete, metal, or any combination thereof.

FRA and State inspectors will continue to inspect excepted track and report these inspections on the Inspection Report Form. If serious deficiencies are discovered, they will be shown on the inspection report, entering "X" for class of track and entering "EXCEPTED TRACK" in the column for remedial action. The track owner would not be legally obligated by the Track Safety Standards to correct the deficiencies noted, but if the condition of the track continues to constitute a hazard to life and limb and the track owner fails to alleviate the hazard, the inspector should notify his or her supervisors immediately.¹

213.5 Responsibility of Track Owners

No defect codes.

Prior to this amendment, the Standards permitted a track owner two options upon detecting a track defect:

1. Bring the track into compliance by repair, or imposition of speed restrictions.
2. Halt operations over the track.

The Standards now permit a third option:

3. Operate under the authority of a person designated under Section 213.7(a), who has at least one year of supervisory experience in railroad track maintenance, subject to conditions set forth in this part.

¹ The Standards do not limit FRA's emergency order authority (49 U.S.C. 20104) over all areas of railroad safety. Thus, if a segment of excepted track is in an unsafe condition that creates an emergency situation involving a hazard of death or injury, FRA may issue an emergency order halting or restricting operations over that segment. See CFR Part 209, Appendix A, for a more detailed explanation of FRA's emergency order authority.

The application of the third option is specified in Section 213.9.

213.9 Classes of Track: Operating Speed Limits

- Defect Codes:
- 9.01 Failure to restore other than excepted track to compliance with Class 1 Standards within 30 days after a person designated under Section 213.7(a) has determined that operation may safely continue over defects not meeting Class 1 Standards.
 - 9.02 Failure of track owner to enforce over Class 1 defects the limiting conditions imposed by person designated under 213.7(a).

The Standards classify track solely on the basis of authorized speeds for freight and passenger trains, irrespective of traffic density, curvature, grades, or rail weight. Tolerances are specified in the Standards for each class of track. Any deviation beyond the limiting tolerances for any but excepted track (Section 213.4) requires repair, or reduction of speeds to the appropriate class.

If the deviation exceeds Class 1 Standards, operation may continue over the deviation at Class 1 speeds for not more than 30 days after a person designated in Section 213.7(a)(1) with at least one year of supervisory experience in railroad track maintenance determines that operations may safely continue, and specifies limiting conditions, if any. The designated person must have personally seen the deviation.

Paragraph 213.241(b) requires that an inspection report shows the location and nature of any deviation from the Standards and the remedial action taken by the person making the inspection. Since the determination that operations may safely continue and the imposition of compensating conditions constitute remedial action, although temporary, such action must be recorded on the track owner's inspection report.

A defect over which trains are operated under Section 213.9(b) continues to exist as a defect. The track owner's inspector should continue to report the existence of the defect until it is corrected.

The 30-day period commences when:

1. An FRA or State inspector issues notice with FRA's inspection form, or
2. A person designated under Section 213.7 records the defect on a track owner's record of inspection.

213.11 Restoration or Renewal of Track Under Traffic Conditions

Defect Code: 11.01 Proper qualified supervision not provided at work site during work hours when track is being restored or renewed under traffic conditions.

This Section specifies that a person designated under Section 213.7(a) must provide continuous supervision during work periods when track is under traffic conditions. The section is specific in that each phase of the restoration or renewal need not be under the visual supervision of that person, but the person must be present at the job site in direct control of the work and have direct knowledge of the condition of the track over which he or she permits trains to pass.

At the end of the work period when the designated person leaves the job site, the track must be in compliance with the provisions of the Track Safety Standards, but nothing prohibits the use of Section 213.9(b) for up to 30 days by a designated person who determines that the track is safe for operation at 10 mph.

213.53 Gage

Defect Codes: 53.01 Gage dimension exceeds allowable for tangent track.

53.02 Gage dimension is less than allowable for tangent track.

53.03 Gage dimension exceeds allowable for curved track.

53.04 Gage dimension is less than allowable for curved track.

An accurate standard track gage or a rule graduated in inches is an acceptable measuring device. Gage not within the specified limits of the Standards is a defect.

213.109 Crossties

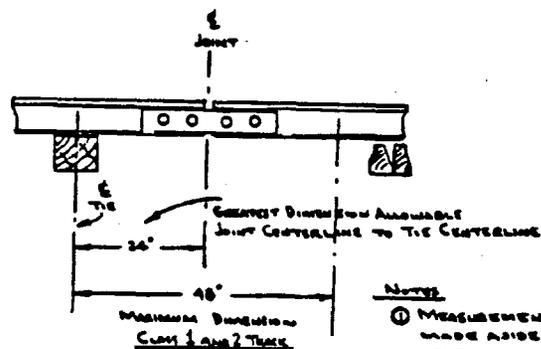
Defect Codes:	109.01	Fewer than minimum allowable number of non-defective ties per 39 feet.
	109.02	No effective support ties within the prescribed distance from a joint.
	109.03	Crossties not effectively distributed to support a 39-foot segment of track.

1. Defect code 109.01 addresses paragraph 213.109(c) which specifies the minimum number of non-defective ties within a 39-foot segment of track. This 39-foot segment may be taken anywhere along the track. It need not be measured from joint to joint or weld to weld. The minimum number of non-defective ties required within 39 feet are:

<u>Track Class</u>	<u>Effective Ties Required</u>
1	5
2	8
3	8
4	12
5	12
6	14

This rule applies independently of any other provisions of the Standards; it does not require associated evidence of actual or incipient geometry defects or other defective conditions.

2. Defect code 109.02 addresses Paragraph 213.109(b)(3) which requires at least one non-defective tie at a joint, located within the distance specified in Paragraph (d). The distance will be measured from the center of the joint to the centerline of the tie as shown in Figures 1 and 2, not along the center of the track.



- NOTE
- ① MEASUREMENTS TO BE MADE ASIDE OR ATOP OF RAIL.
 - ② ONLY ONE EFFECTIVE TIE NEEDS FALL AT OR WITHIN THE MAXIMUM 48 INCH DIMENSION SHOWN.

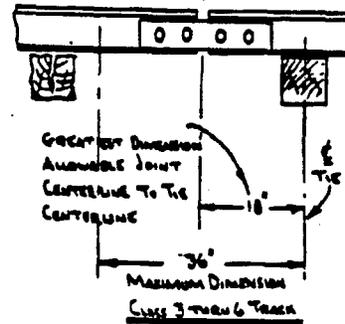
Figures 1 and 2 detail the maximum distance a centerline of an effective support tie may be from the joint before support is deemed inadequate. Only

Figure 1

one tie is necessary at or within the maximum dimension shown. Measurement will be made aside or atop the rail.

For clarity of measurement and description:

1. Where a "Dutchman" exists within the joint bars measure from the bar centerline.
2. Where non-symmetrical bars exist, (example: 5 hole heel block bars, 5 hole compromise bars) measure from the design point where rail ends normally abut.
3. A short rail will comprise two rail joints.



NOTES

- ① MEASUREMENTS TO BE MADE ASIDE OR ATOP OF RAIL.
- ② ONLY ONE EFFECTIVE TIE NEED FALL AT OR WITHIN THE MAXIMUM 36 INCH DIMENSION SHOWN.

Figure 2

3. Defect code 109.03 addresses Paragraph 213.209(b) (2) which requires that the crossties must be effectively distributed to support the entire 39 foot segment of track. Evidence that crossties are not effectively distributed includes, primarily, indications of actual or incipient deviations from the geometry standards.

When citing defect code 109.03, several additional factors should be considered. These factors should be documented if the defect is being cited as a violation. These factors include, but are not limited to:

- a. Geometry conditions.
 - b. Class of Track.
 - c. Curvature.
 - d. Traffic density (annual tonnage).
 - e. Rail weight and condition.
 - f. Condition of other components of the track.
4. Lack of the required number of fasteners on a tie does not necessarily make that a defective tie. An inadequate fastening condition itself should be addressed directly under Section 213.127. If the inadequate fastening condition is associated with or caused by insufficient effectively distributed crossties then the crosstie condition should be cited primarily, with the fastener defect included as evidence.
 5. As with all provision of the Standards, the inspector must use judgment and discretion in the application of the crosstie standards. They should be used to

describe conditions which constitute a risk to the safe operation of trains, and should not be applied in doubtful cases. No criterion now exists for the maximum distance between non-defective ties, and this measurement should not be used to describe a tie defect. If such a description is appropriate, it should be in terms of adjacent, non-defective ties in a group.

213.113 Defective Rails

Defect Codes 113.01-113.14 (delete Codes 113.15-113.22)

Failure of the track owner to comply with the speed restrictions and prescribed inspection intervals specified in Sections 213.113 and 213.237 (inspection of rail), constitutes a violation of the Standards. The inspector should have as reference the Rail Defect Manual compiled by Sperry Rail Service.

The inspector should be aware that transverse and compound fissures are characteristic of rail which has not been control cooled (normally rolled prior to 1936), and detail fractures are characteristic of control cooled rail (usually indicated by the letters CC or CH on the brand (i.e., 1360 RE CC CG&I 1982 1111).

Transverse and compound fissures with less than 100% growth in the rail head cross-sectional area may continue to be operated over at a speed established by a person designated under 213.7(a). Rail inspection vehicles may identify one fissure and discontinue identifying additional fissures in the rail. If the rail contains more than one fissure, the one marked and identified may not be the most serious. The inspector, when able, should examine the sides of the ball of a fissure rail in service to see if bleeding or crackouts exist. Such evidence may indicate a weakening of 100% of the rail head cross-sectional area and may justify remedial action A.

Head and web separations are predominant in joint areas and will originate at the ends of rails horizontally at a fillet section and progress inward. When the length of separation has progressed 3 inches or more, the ball of the rail may break out completely and fall out under traffic. This condition is often called a "pop out."

Another form of head-web separation, often referred to as a "fillet cracked rail," is the longitudinal growth of a crack in the fillet area, usually on the gage side of the outer rail of a curve. The crack may not extend the full width between the ball and the web, but it is potentially dangerous. Evidence of fillet cracking is a hairline crack running beneath the ball of rail with "bleeding," or rust discoloration. Fillet cracks often result from improper super-elevation or from stress reversal as a result of transposing rail. The use of a Sands mirror is an effective aid in examining rail for determination of head-web cracks or separation in the body of the rail extending beyond the joint bars.

The standards deal with split web, piped rail and head-web separation as a group. When any of the three defects are less than ½ inch, speed must be limited to 60 mph and the rail re-inspected 90 days after resuming service.

When any of the three defects exceed a length of 3 inches, a person designated under 213.7(a) must limit the operating speed. Since the defect is 3 inches in length and, in fact, greater, it would be imprudent of the track owner to authorize a speed exceeding 30 mph.

A bolt hole defect is a progressive fracture originating at a bolt hole and extending away from the hole, usually at an angle. A bolt hole crack can result from high stress along the edge of the bolt hole from the bolt itself. A major cause of this high stress is improper field drilling of the hole. Excessive longitudinal rail movement also causes high stress along the edge of the hole.

The remedial action for a bolt hole crack $\frac{1}{2}$ inch or less, if the rail is not replaced, is to limit speed to 60 mph and re-inspect the rail 90 days after resuming service.

For a bolt hole crack greater than $\frac{1}{2}$ inches but not exceeding $1\frac{1}{2}$ inches, the re-inspection time is reduced to 30 days. No speed limit is specified in lieu of the more frequent period of re-inspection.

For a bolt hole crack exceeding $1\frac{1}{2}$ inches, a person designated under 213.7(a) may designate a speed restriction.

A broken base can result from improper bearing of the base on a track spike or tie plate, over-crimped anchors, or may originate in a seam. For any broken base less than or equal to 6 inches, the same application of joint bars is required and speed is not to exceed 30 mph. For a broken base in excess of 6 inches, a person designated under Section 213.7 must visually supervise each operation over the defective rail or the same application of joint bars is required and the speed is not to exceed 30 mph. The inspector is to be aware that dimensions between the outer most hole of a 24-inch joint bar vary between approximately 15 and 18 inches and for a 36-inch joint bar nearly 30 inches. The inspector should point out to the owner that broken bases approaching these dimensions, found in track, may obviate the purpose for which the joint bars are applied.

A broken base rail may be caused by damage from external sources, such as rail anchors being driven through the base by a derailed wheel. Such conditions are not considered "damaged rail," but are addressed by the more stringent provisions applicable to broken base rail.

The remedial actions required for defective rails specify definite time limits and speeds, and allow certain discretion to the track owner for the continued operation of trains over some rail defects. The time limits, speeds, and permitted discretion under this rule are specific. The most stringent requirement calls for visual supervision of each train operation over a defect. There is no situation in which Section 213.9(b) would apply to a defect listed under this rule.

213.127 Rail Fastenings

Defect Code: 127.01 Insufficient fasteners in a 39-foot track segment.

A Federal Track Safety Inspector, or a State Track Safety Inspector qualified under 49 CFR 212.203, may determine that insufficient fasteners exist to maintain gage within the limits of Section 213.53.

This section explicitly requires the inspector to exercise judgment in evaluating the condition of fasteners. The following factors should be considered in the evaluation:

- a. Gage exceeding the limits of Section 213.53.**
- b. Gage close to the limits of Section 213.53 with evidence of recent widening.**
- c. Evidence of recent rapid deterioration of gage with probable continued deterioration.**
- d. Evidence of recent significant damage to rail fasteners to the extent that gage widening is probable.**
- e. Evidence of recent maintenance work improperly performed resulting in lack of sufficient fasteners to prevent gage widening under expected traffic.**
- f. Traffic conditions, including speed, tonnage, and type of equipment.**
- g. Conditions of curvature and grades.**

Rail anchors or anti-creepers are not considered to be rail fastenings. Rail fastenings that perform a dual function to restrain rail laterally and longitudinally should only be evaluated on their ability to provide lateral restraint to prevent gage widening.

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**cc. D. Hollingsworth, Louisville
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