(b) Obstruct visibility of railroad signs and signals:

(1) Along the right-of-way, and

(2) At highway-rail crossings; (This paragraph (b)(2) is applicable September 21, 1999.)

(c) Interfere with railroad employees performing normal trackside duties;

(d) Prevent proper functioning of signal and communication lines; or

(e) Prevent railroad employees from visually inspecting moving equipment from their normal duty stations.

Subpart C—Track Geometry

§ 213.51 Scope.

This subpart prescribes requirements for the gage, alinement, and surface of track, and the elevation of outer rails and speed limitations for curved track.

§ 213.53 Gage.

(a) Gage is measured between the heads of the rails at right-angles to the rails in a plane five-eighths of an inch below the top of the rail head.

(b) Gage shall be within the limits prescribed in the following table—

Class of track	The gage must be at least—	But not more than—
Excepted track	N/A	4′10¼″.
Class 1 track	4′8″	4′10″.
Class 2 and 3 track	4′8″	4′9¾″.
Class 4 and 5 track	4′8″	4′9½″.

§ 213.55 Track alinement.

(a) Except as provided in paragraph (b) of this section, alinement may not deviate from uniformity more than the amount prescribed in the following table:

Class of track	Tangent track	Curved track	
	The deviation of the mid-offset from a 62-foot line [1] may not be more than— (inches)	The deviation of the mid-ordinate from a 31-foot chord [2] may not be more than— (inches)	The deviation of the mid-ordinate from a 62-foot chord [2] may not be more than— (inches)
Class 1 track	5	[3] N/A	5
Class 2 track	3	[3] N/A	3
Class 3 track	1¾	1¼	1¾
Class 4 track	1½	1	1½
Class 5 track	¾	½	⅝

[1] The ends of the line shall be at points on the gage side of the line rail, five-eighths of an inch below the top of the railhead. Either rail may be used as the line rail; however, the same rail shall be used for the full length of that tangential segment of the track.

[2] The ends of the chord shall be at points on the gage side of the outer rail, five-eighths of an inch below the top of the railhead.

[3] N/A—Not Applicable

(b) For operations at a qualified cant deficiency, E_u, of more than 5 inches, the alinement of the outside rail of the curve may not deviate from uniformity more than the amount prescribed in the following table:

Class of track	Curved track	
	The deviation of the mid-ordinate from a 31-foot chord [1] may not be more than— (inches)	The deviation of the mid-ordinate from a 62-foot chord [1] may not be more than— (inches)
Class 1 track [2]	[3] N/A	1¼
Class 2 track [2]	[3] N/A	1¼
Class 3 track	¾	1¼
Class 4 track	¾	⅞
Class 5 track	½	⅝

[1] The ends of the chord shall be at points on the gage side of the outer rail, five-eighths of an inch below the top of the railhead.

[2] Restraining rails or other systems may be required for derailment prevention.

[3] N/A—Not Applicable

[78 FR 16100, Mar. 13, 2013]

§ 213.57 Curves; elevation and speed limitations.

(a) The maximum elevation of the outside rail of a curve may not be more than 8 inches on track Classes 1 and 2, and 7 inches on track Classes 3 through 5. The outside rail of a curve may not be lower than the inside rail by design, except when engineered to address specific track or operating conditions; the limits in § 213.63 apply in all cases.

(b) The maximum allowable posted timetable operating speed for each curve is determined by the following formula—

$$V_{max} = \sqrt{\frac{E_a + E_u}{0.0007D}}$$

Where—

V_{max} = Maximum allowable posted timetable operating speed (m.p.h.).

E_a = Actual elevation of the outside rail (inches).[1]

E_u = Qualified cant deficiency[2] (inches) of the vehicle type.

D = Degree of curvature (degrees).[3]

(c) All vehicles are considered qualified for operating on track with a cant deficiency, E_u, not exceeding 3 inches. Table 1 of appendix A to this part is a table of speeds computed in accordance with the formula in paragraph (b) of this section, when E_u equals 3 inches, for various elevations and degrees of curvature.

(d) Each vehicle type must be approved by FRA to operate on track with a qualified cant deficiency, E_u, greater than 3 inches. Each vehicle type must demonstrate, in a ready-for-service load condition, compliance with the requirements of either paragraph (d)(1) or (2) of this section.

(1) When positioned on a track with a uniform superelevation equal to the proposed cant deficiency:

(i) No wheel of the vehicle type unloads to a value less than 60 percent of its static value on perfectly level track; and

(ii) For passenger cars, the roll angle between the floor of the equipment and the horizontal does not exceed 8.6 degrees; or

(2) When operating through a constant radius curve at a constant speed corresponding to the proposed cant deficiency, and a test plan is submitted to and approved by FRA in accordance with § 213.345(e) and (f):

(i) The steady-state (average) load on any wheel, throughout the body of the curve, is not less than 60 percent of its static value on perfectly level track; and

(ii) For passenger cars, the steady-state (average) lateral acceleration measured on the floor of the carbody does not exceed 0.15g.

(e) The track owner or railroad shall transmit the results of the testing specified in paragraph (d) of this section to FRA's Associate Administrator for Railroad Safety/Chief Safety Officer (FRA) requesting approval for the vehicle type to operate at the desired curving speeds allowed under the formula

[1] Actual elevation, E_a, for each 155-foot track segment in the body of the curve is determined by averaging the elevation for 11 points through the segment at 15.5-foot spacing. If the curve length is less than 155 feet, the points are averaged through the full length of the body of the curve.

[2] If the actual elevation, E_a, and degree of curvature, D, change as a result of track degradation, then the actual cant deficiency for the maximum allowable posted timetable operating speed, V_{max}, may be greater than the qualified cant deficiency, E_u. This actual cant deficiency for each curve may not exceed the qualified cant deficiency, E_u, plus 1 inch.

[3] Degree of curvature, D, is determined by averaging the degree of curvature over the same track segment as the elevation.