§ 213.51

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

<table>
<thead>
<tr>
<th>Class of track</th>
<th>The gage must be at least—</th>
<th>But not more than—</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excepted track</td>
<td>N/A</td>
<td>4′10½&quot;.</td>
</tr>
<tr>
<td>Class 1 track</td>
<td>4′8″</td>
<td>4′10″.</td>
</tr>
<tr>
<td>Class 2 and 3 track</td>
<td>4′8″</td>
<td>4′9½&quot;.</td>
</tr>
<tr>
<td>Class 4 and 5 track</td>
<td>4′8″</td>
<td>4′9½&quot;.</td>
</tr>
</tbody>
</table>

§ 213.55 Alinement.

Alinement may not deviate from uniformity more than the amount prescribed in the following table:

<table>
<thead>
<tr>
<th>Class of track</th>
<th>Tangent track</th>
<th>Curved track</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The deviation of the mid-offset from a 62-foot line may not be more than— (inches)</td>
<td>The deviation of the mid-ordinate from a 31-foot chord may not be more than— (inches)</td>
</tr>
<tr>
<td>Class 1 track</td>
<td>5</td>
<td>3 N/A</td>
</tr>
<tr>
<td>Class 2 track</td>
<td>3</td>
<td>3 N/A</td>
</tr>
<tr>
<td>Class 3 track</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>Class 4 track</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>Class 5 track</td>
<td>5⁄8</td>
<td>1½</td>
</tr>
</tbody>
</table>

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 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.

§ 213.57 Curves; elevation and speed limitations.

(a) The maximum crosslevel on the outside rail of a curve may not be more than 8 inches on track Classes 1 and 2 and 7 inches on Classes 3 through 5. Except as provided in §213.63, the outside rail of a curve may not be lower than the inside rail. (The first sentence of paragraph (a) is applicable September 21, 1999.)
(b)(1) The maximum allowable operating speed for each curve is determined by the following formula—

\[ V_{\text{max}} = \sqrt{\frac{E_a + 3}{0.0007D}} \]

Where—

\[ V_{\text{max}} = \text{Maximum allowable operating speed (miles per hour).} \]
Federal Railroad Administration, DOT § 213.57

(a)(1) For rolling stock meeting the requirements specified in paragraph (d) of this section, the maximum operating speed for each curve may be determined by the following formula—

\[ V_{\text{max}} = \frac{E_a + 4}{0.0007D} \]

Where—

\[ V_{\text{max}} = \text{Maximum allowable operating speed (miles per hour).} \]
\[ E_a = \text{Actual elevation of the outside rail (inches).}^1 \]
\[ D = \text{Degree of curvature (degrees).}^2 \]

(2) Table 1 of appendix A is a table of maximum allowable operating speed computed in accordance with this formula for various elevations and degrees of curvature.

(2) Table 2 of appendix A is a table of maximum allowable operating speed computed in accordance with this formula for various elevations and degrees of curvature.

(d) Qualified equipment may be operated at curving speeds determined by the formula in paragraph (c) of this section, provided each specific class of equipment is approved for operation by the Federal Railroad Administration and the railroad demonstrates that:

(1) When positioned on a track with a uniform 4-inch superelevation, the roll angle between the floor of the equipment and the horizontal does not exceed 5.7 degrees; and

(2) When positioned on a track with a uniform 6 inch superelevation, no wheel of the equipment unloads to a value of 60 percent of its static value on perfectly level track, and the roll angle between the floor of the equipment and the horizontal does not exceed 8.6 degrees.

1Actual elevation for each 155 foot track segment in the body of the curve is determined by averaging the elevation for 10 points through the segment at 15.5 foot spacing. If the curve length is less than 155 feet, average the points through the full length of the body of the curve.

2Degree of curvature is determined by averaging the degree of curvature over the same track segment as the elevation.

(3) The track owner shall notify the Federal Railroad Administrator no less than 30 calendar days prior to the proposed implementation of the higher curving speeds allowed under the formula in paragraph (c) of this section. The notification shall be in writing and shall contain, at a minimum, the following information—

(i) A complete description of the class of equipment involved, including schematic diagrams of the suspension systems and the location of the center of gravity above top of rail;

(ii) A complete description of the test procedure and instrumentation used to qualify the equipment and the maximum values for wheel unloading and roll angles which were observed during testing;

(iii) Procedures or standards in effect which relate to the maintenance of the suspension system for the particular class of equipment; and

(iv) Identification of line segment on which the higher curving speeds are proposed to be implemented.

(e) A track owner, or an operator of a passenger or commuter service, who provides passenger or commuter service over trackage of more than one track owner with the same class of equipment may provide written notification to the Federal Railroad Administrator with the written consent of the other affected track owners.

(f) Equipment presently operating at curving speeds allowed under the formula in paragraph (c) of this section, by reason of conditional waivers granted by the Federal Railroad Administration, shall be considered to have successfully complied with the requirements of paragraph (d) of this section.

(g) A track owner or a railroad operating above Class 5 speeds, may request approval from the Federal Railroad Administrator to operate specified equipment at a level of cant deficiency greater than four inches in accordance with §213.329(c) and (d) on curves in

3The test procedure may be conducted in a test facility whereby all the wheels on one side (right or left) of the equipment are alternately raised and lowered by 4 and 6 inches and the vertical wheel loads under each wheel are measured and a level is used to record the angle through which the floor of the equipment has been rotated.
§ 213.59 Elevation of curved track; runoff.

(a) If a curve is elevated, the full elevation shall be provided throughout the curve, unless physical conditions do not permit. If elevation runoff occurs in a curve, the actual minimum elevation shall be used in computing the maximum allowable operating speed for that curve under § 213.57(b).

(b) Elevation runoff shall be at a uniform rate, within the limits of track surface deviation prescribed in §213.63, and it shall extend at least the full length of the spirals. If physical conditions do not permit a spiral long enough to accommodate the minimum length of runoff, part of the runoff may be on tangent track.

§ 213.63 Track surface.

Each owner of the track to which this part applies shall maintain the surface of its track within the limits prescribed in the following table:

<table>
<thead>
<tr>
<th>Track surface</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>The runoff in any 31 feet of rail at the end of a raise may not be more than.</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>The deviation from uniform profile on either rail at the mid-ordinate of a 62-foot chord may not be more than.</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>The deviation from zero crosslevel at any point on tangent or reverse crosslevel elevation on curves may not be more than.</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>The difference in crosslevel between any two points less than 62 feet apart may not be more than.</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

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