

III. TRACK DESIGN

3.01 GENERAL

The following sections govern the criteria to be used in the designing of industry tracks. Any deviation from these requirements must be approved by Railway's Chief Engineer or designated representative.

3.02 HORIZONTAL CURVATURE

Tracks should be designed utilizing the minimum degree of curvature practicable, but must be limited to a maximum of 12 degrees (radius = 478.34 feet) on spur tracks and 10 degrees (radius = 573.69 feet) on lead tracks. Calculations for horizontal curves must be based on the chord definition.

Where reverse curves are to be used, it will be necessary to provide preferably 100 feet, but a minimum of 70 feet, of tangent between the point of tangency of the preceding curve and the point of curvature of the next curve.

Spiral curves and/or superelevation shall only be required where the speed of operation so dictates. Designs for lead tracks one mile or longer will be evaluated by the Company on an individual basis to determine if spirals and superelevation are required.

Horizontal curves must not begin on the long ties of a turnout.

3.03 VERTICAL CURVES

Vertical curves must be provided at break points in the profile of the track and should be as long as practicable.

Vertical curves must not begin on the long ties of a turnout. The grade from the switch point through the long ties of the proposed turnout must be the same as the existing track from which it springs. Minimum length of vertical curves in feet shall be as follows:

a) for lead tracks:

100 times the algebraic difference of grades in percent for summits and sags, i.e., maximum rate of change for summits and sags = 1.0

b) for spur tracks up to 1500 feet in length:

33.3 times the algebraic difference of grades in percent for summits and 40 times the algebraic difference for sags, i.e., maximum rate of change for summits = 3.0 and maximum rate of change for sags = 2.5.

c) for spur tracks over 1500 feet in length:

40 times the algebraic difference of grades in percent for summits and 50 times the difference for sags, i.e., maximum rate of change for summits = 2.5 and maximum rate of change for sags = 2.0.

3.04 GRADES

Track grades should be kept to a minimum and shall be restricted to a maximum of 2 percent (compensated) on lead tracks, and 3 percent (compensated) on individual spur tracks. Grade compensation for curvature will be 0.04 percent per degree of curvature. The section of a track where rail cars are placed for loading or unloading should have a 0.0% grade.

3.05 CLEARANCES

Standard vertical and horizontal clearances are shown on Plan 7-1, attached to these guidelines. All substandard clearances must have the approval of the responsible operating officer of the Company provided that the Company Clearance Engineer determines that there are no equipment restrictions for the proposed plans.

3.06 TURNOUTS

All main track turnouts will be No. 10 or larger. Turnouts in side tracks will also be No. 10 unless space will not permit, in which case a No. 8 turnout will be considered. Reference Standard Plan 2-17 and the Turnout Design Schematic for turnout geometry. Standard No. 8 and No. 10 turnouts are shown on Plan No. 2-4, No. 2-6, and No. 2-7.

For two turnouts in the same track diverging in opposite directions, thereby creating a reverse curve situation, it will be necessary to provide preferably 100 feet but a minimum of 70 feet between the points of switches of the two turnouts.

For a main track turnout diverging in the same direction as a preceding curve, as much tangent as possible should be allowed, but the turnout cannot be placed before the end of the spiral.

For a main track turnout diverging in the opposite direction from the preceding curve, the turnout cannot be placed before 100 feet beyond the end of the spiral.

All work on the main tracks, including main track turnouts, shall be accomplished by the Railway Company.

3.07 ROADBED SECTION

Requirements for roadbed shoulder width, ditches, and slopes are shown on Plans 1-21 (heavy tonnage tracks other than main tracks), and 1-22 (industrial tracks), attached to these guidelines. Industry should note the importance of constructing these typical roadbed sections, which will provide an adequate walkway for both Company and Industry personnel. This is especially true in the area between switch stands and derails, and any other areas as dictated by local, State or Federal regulations.