

Ref:	NR/L2/TRK/001/mod12
Issue:	7
Date:	05 September 2015
Compliance date:	05 September 2015

Track Geometry - Maintenance design requirements

This document is the property of Network Rail. It shall not be reproduced in whole or part nor disclosed to a third party without the written permission of Network Rail.

© Copyright 2015 Network Rail.

Uncontrolled copy once printed from its electronic source.

Published and Issued by Network Rail, 2nd Floor, One Eversholt Street, London NW1 2DN.



Ref:	NR/L2/TRK/001/mod12
Issue:	7
Date:	05 September 2015
Compliance date:	05 September 2015

Contents

1 Scope	3
2 Definitions	3
3 Principles	3
4 Geometry design tolerances	3
4.1 Cant	3
Table 1 - Cross level; variation from design	4
4.2 Horizontal and vertical alignment	4
Table 2 - Track position; variation from design	4
Table 3 - Track position at platforms	5
Table 4 - Track position at over bridges, tunnels and other overhead structures	5
Table 5 - Track position on routes with overhead line electrification	5
5 Absolute Track Geometry (ATG)	6
5.1 General	6
5.2 Alignment monitoring	6
6 Local designs	6
6.1 Use of local designs	6
6.2 Design requirements	7
6.3 Design approval	7
7 Maintenance by on track machines (OTM)	7
7.1 Method	7
7.2 Following OTM work	7
7.3 Maintenance of S&C	8
8 Measurement and compensation method	8
9 Design Over-lift	9
Table 6 – Track geometry quality band SD values (in mm) for 35m top	9
10 Loading on structures	10
Table 7 – Action required when lifting or sluing over underline structures	10
11 Track position; on-site marking	10
11.1 Transition curves	10
11.2 Circular curves	10
11.3 High cant deficiency	11
12 Track Geometry records	11
Table 8 – Track geometry records	11

Ref:	NR/L2/TRK/001/mod12
Issue:	7
Date:	05 September 2015
Compliance date:	05 September 2015

1 Scope

This module of NR/L2/TRK/001 covers:

- a) geometry design tolerances;
- b) track position maintenance tolerances and intervention limits;
- c) Absolute Track Geometry (ATG);
- d) use of Local designs;
- e) maintenance by on-track machines (OTM), including:
 - measurement and compensation;
 - design over-lift systems;
 - maintenance of S&C;
- f) loading on structures;
- g) on-site geometry marking;
- h) details of geometry records to be kept.

2 Definitions

See Glossary (NR/L2/TRK/001/mod01).

3 Principles

The relationship between

- a) the track and line-side structures and
- b) one track and the adjacent track

shall be maintained so that any authorised rail vehicle using the route will not come into contact with any line-side structure or passing vehicle.

Maintain clearances in accordance with NR/L2/TRK/3201.

Maintain track to meet the geometric requirements for safety, ride quality, performance and whole life cost.

4 Geometry design tolerances

4.1 Cant

Restore the track as close to its design cant values and transition positions as possible wherever maintenance work is undertaken.

Installation tolerance, maintenance tolerance and intervention limits for cross level variation from design are shown in Table 1.

Ref:	NR/L2/TRK/001/mod12
Issue:	7
Date:	05 September 2015
Compliance date:	05 September 2015

Table 1 - Cross level; variation from design			
Parameter	Installation tolerance	Maintenance tolerance	Intervention limit
Cross level error where the speed is:	variation from design, mm See also NR/L2/TRK/2102.	Variation from design, mm	variation from design, mm
up to 20mph	±10	±20	±50
25 – 40mph	±8	±20	±40
45 – 60mph	±8	±20	±30
65 – 95mph	±5	±15	±25
100 – 125mph	±3	±15	±25
All speeds in High Cant Deficiency curves.	±3	±10	±15
3m twist fault where the speed is:			
Up to 60mph	8mm 1 in 375	See Alert Limit values in NR/L2/TRK/001/mod11	See Intervention Limit values in NR/L2/TRK/001/mod11
65 to 95mph	7mm 1 in 428		
≥100mph	6mm 1 in 500		

4.2 Horizontal and vertical alignment

Install and maintain track to a designed alignment and longitudinal level.

Installation tolerance, maintenance tolerance and intervention limits for track position variation from design are shown in Tables 2 to 5.

Table 2 - Track position; variation from design			
Parameter	Installation tolerance	Maintenance tolerance	Intervention limit
Track position tolerances and limits are given as a variation from the current design position, measured at datum plates or other reference markers (in mm).			
Vertical position of track where the speed is:	See also NR/L2/TRK/2102		
up to 40mph	+0 / -30	+0 / -30	
45 – 60mph	+0 / -30	+0 / -30	
65 – 95mph	+0 / -30	+0 / -30	
100 – 125mph	+0 / -30	+0 / -30	
Horizontal position of track where the speed is:	See also NR/L2/TRK/2102		
up to 40mph	±15	±25	±30
45 – 60mph	±15	±25	±30
65 – 95mph	±15	±25	±30
100 – 125mph	±10	±25	±30
		On high cant deficiency (HCD) curves, assess the requirement to impose a speed restriction in accordance with NR/L3/TRK/3260.	
		Where no datum plates or other reference markers exist, preserve passing and walkway clearances.	
		These tolerances do not apply at sites of mining subsidence. Assess each site locally and apply site specific tolerances. Impose speed restrictions as required.	