

Information for users

To access individual modules referenced within this standard, blue active links are provided from the relevant index pages where these are listed. Clicking on a specific reference will lead to the corresponding document. Please ensure to open **bookmarks** for easier navigation within the document and to access **index of modules**.

Alternatively, you may use the search facility to search for a specific document by using the complete document reference number – such as NR/L3/SIG/30082/002 – in the search field.

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Issue	13
Date	05 March 2016
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Level 3 Work Instruction

Track Design Handbook

Endorsement & Authorisation

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Documents

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User information

This Network Rail standard contains colour-coding according to the following Red–Amber–Green classification.

Red requirements – no variations permitted

- Red requirements are to be complied with and achieved at all times.
- Red requirements are presented in a red box.
- Red requirements are monitored for compliance.
- Non-compliances will be investigated and corrective actions enforced.

Amber requirements – variations permitted subject to approved risk analysis and mitigation

- Amber requirements are to be complied with unless an approved variation is in place.
- Amber requirements are presented with an amber sidebar.
- Amber requirements are monitored for compliance.
- Variations can only be approved through the national non-compliance process.
- Non-approved variations will be investigated and corrective actions enforced.

Green guidance – to be used unless alternative solutions are followed

- Guidance should be followed unless an alternative solution produces a better result.
- Guidance is presented with a dotted green sidebar.
- Guidance is not monitored for compliance.
- Alternative solutions should be documented to demonstrate effective control.

Amendment marks

- First document amendments are presented with a single black line to the right of the affected text.
- Second document amendments are presented with a double black line to the right of the affected text.

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Issue record

Issue	Date	Comments
1	Mar 1996	Supersedes GC/EH0049 and CE HB3
1A	Dec 1997	For details of changes see Issue 10, February 2007 (NR/SP/TRK/0049)
2	Dec 1999	For details of changes see Issue 10, February 2007 (NR/SP/TRK/0049)
3	April 2000	For details of changes see Issue 10, February 2007 (NR/SP/TRK/0049)
4	Aug 2000	For details of changes see Issue 10, February 2007 (NR/SP/TRK/0049)
5	June 2001	For details of changes see Issue 10, February 2007 (NR/SP/TRK/0049)
6	Feb 2002	For details of changes see Issue 10, February 2007 (NR/SP/TRK/0049)
7	Feb 2003	For details of changes see Issue 10, February 2007 (NR/SP/TRK/0049)
8	Aug 2004	For details of changes see Issue 10, February 2007 (NR/SP/TRK/0049)
9	June 2006	For details of changes see Issue 10, February 2007 (NR/SP/TRK/0049)
10	Feb 2007	For details of changes see Issue 10, February 2007 (NR/SP/TRK/0049)
11	June 2008	Preferred Geometries and Configurations of S&C according to usage are provided for the first time (sheet J.1.1). Values in tables in Section A verified/corrected. Structure Gauging Sheets re-formatted and now include Temporary Works and TENs Routes. New sheet (A.8.9b) on Construction of On-Track Plant Calibration Sidings. New sheet (A.9.2) on Gauge Transition between CEN60 plain line and 1432mm gauge track. Majority of formulae/equations in Section C rationalised. New sheets (D.8.1 & 2) on Level Crossing Surface Systems. Minor corrections and updates to a number of data sheets. Several sheets withdrawn (use RE/PW drawings instead). The Briefing Note gives further detail of changes to each data sheet.
12	Mar 2010	Sheets A.1.2, A.6.3, A.6.7, B.2.1, B.2.2, B.2.3. (S&C Geometry) have new and/or more fully explained geometry requirements: Sheet A.8.1d (Additional Clearances for Cant & Curvature) is new . Sheets B.2.4 (Guidance on Circular Curves) and B.3.3, B.3.10 (Speeds through Follow-on Turnouts & Crossovers) completely revised. Rail section sheets withdrawn, instead they are cross referenced to RE/PW drawings on sheet D.1.1. Sheet D.2.6 updated in line with current rail purchasing contracts. Sheets D.4.1a through to D.4.3 (Rail Pads, Clips and Insulators) have been substantially updated to include new and corrected information. Sheet D.6.2 now cross references the company standard on Train Detection. Sheets D.8.3 & D.8.4 (Level Crossing Road Profiles) are completely new. Sheet E.1.1 shows revised switch and/or stock rail lengths for all full depth vertical switches. Sheet J.1.1 CVS 10 (Str) Turnout & Crossover and NR60 C11 Scissors (both Non-preferred) added. Sheet J.1.2 In Bearer Clamplock with Mechanical Supplementary Drive POE introduced. Hy-Drive POE on Vertical S&C withdrawn. Sheet J.2.2 Clauses iv & v (re Bearer Ties) added to para 4 Sheet J.3.1 References different Group Standard; and approach control speed differential reduced from 15 to 10 mph. Sheet J.4.1 Where switch diamonds are required they are to be of full depth vertical design. Sheet J.4.2 <i>Occasional</i> use of NR60 stress transfer blocks explained. Sheet J.5.2 Measurement of lead length detailed more fully. The Briefing Note gives further detail of changes to each data sheet.
13	March 2016	The document has been re-structured into seven modules. All sheets have been re-numbered according to the new section within

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		which they reside. Scope of document limited to 140mph. Requirements for geometry design moved to NR/L2/TRK/2102. The Briefing Note gives further detail of changes to each data sheet.
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Compliance

This Network Rail Company standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 04 June 2016.

When this standard is implemented, it is permissible for all projects, which have formally completed GRIP Stage 3, to continue to comply with the Issue of any relevant Network Rail Standards current when GRIP Stage 3 was reached and not to comply with requirements contained herein unless the designated Standard Owner has stipulated otherwise in the accompanying Briefing Note.

Reference Documentation

See section 3.

Disclaimer

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1 Purpose

This standard gives the requirements for the design of track alignments and layouts. Information provided on track geometry, the mathematics of track layouts, switch & crossing (S&C) assemblies, sleepers and rail fastenings is intended to result in designs that take proper account of the speed of traffic.

2 Scope

This standard applies to all design work carried out on existing and new track assets for use in Network Rail Infrastructure

3 Reference documentation

NR/L2/TRK/2500, *Engineering Assurance Arrangements for Track Engineering Projects*

NR/L2/TRK/2102, *Design and Construction of Track*

NR/L2/TRK/4040, *Level Crossing Surface Systems*

NR/L2/TRK/4239, *Track Bed Investigation, Design & Renewal*

NR/L3/TRK/4004, *Switch & Crossing Assemblies*

4 Alternative Designs

The specification for both maximum and recommended normal values for track geometry parameters to be used in track alignment and layout designs is stated in NR/L2/TRK/2102, *Design and Construction of Track*. The designs of Network Rail's standard range of S&C are based on these values.

Preferred Geometries and Configurations of S&C are tabulated on sheet A.5.1.

Alternative designs of S&C, or of other components or methods having a bearing on track geometry, may be approved for use subject to demonstration of acceptable values; and there being an accepted business benefit from so doing. The approval process is set out in Network Rail Company Procedure NR/L2/TRK/2500 *Engineering Assurance Arrangements for Track Engineering Projects*.

5 Issue of data sheets

The data sheets, which follow, are numbered, as *sheets* rather than *pages*, in a separate series. Revised or additional sheets will not be issued individually; the complete Track Design Handbook will be re-issued, and each re-issue will incorporate a revised index as well as the sheets themselves.

6 Summary of handbook modules

Module 1	Guidance and Principles
Module 2	Mathematics
Module 3	Assembly
Module 4	Components
Module 5	System Interfaces
Module 6	Miscellaneous
Module 7	Gauging

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