

20-030 – Track System Requirements

[This page should be deleted at the publication stage of the project]

Version:	1.01		
Purpose:	Approval to proceed to consultation		
Authors:	Dominic Trueman, Principal Track Systems Engineer Toby Johnson, Principal Track Engineer		
Sponsor:	Tom Lee, Director of Standards		
Lead industry committee:	Infrastructure Standards Committee (INS SC)	Date:	09 May 2023
Supporting industry committee:	Rolling Stock Standards Committee (RST SC)	Date:	08 June 2023

Decision

Infrastructure Standards Committee (INS SC) is asked to:

APPROVE that the proposed revision of GCRT5021 is consulted on.

In approving the standard for consultation the SC has:

DECIDE if the proposed revision of GCRT5021 delivers the intentions of the proposal for change.

DECIDE if the proposed revision of GCRT5021 is in a suitable state for consultation.

APPROVE that the proposed new issue RIS-7707-INS is consulted on.

In approving the standard for consultation the SC has:

DECIDE if the proposed new issue RIS-7707-INS delivers the intentions of the proposal for change.

DECIDE if the proposed new issue RIS-7707-INS is in a suitable state for consultation.

IDENTIFY any specific organisations or individuals to be included in the consultation.

Rolling stock Standards Committee (RST SC) is asked to:

SUPPORT that the proposed revision of GCRT5021 is consulted on.

In supporting the standard for consultation the SC has:

DECIDE if the proposed revision of GCRT5021 delivers the intentions of the proposal for change.

DECIDE if the proposed revision of GCRT5021 is in a suitable state for consultation.

SUPPORT that the proposed new issue RIS-7707-INS is consulted on.

In supporting the standard for consultation the SC has:

DECIDE if the proposed new issue RIS-7707-INS delivers the intentions of the proposal for change.

DECIDE if the proposed new issue RIS-7707-INS is in a suitable state for consultation.

IDENTIFY any specific organisations or individuals to be included in the consultation.

20-030 – Track System Requirements

This business case for change has been developed to support standards committees in taking decisions related to changes to standards, it includes an assessment of the predicted impacts arising from the change.

Proposed revised document

Number	Title	Issue
GCRT5021	Track System Requirements	6

Proposed new document

Number	Title	Issue
RIS-7707-INS	Switches and Crossings	1

Proposed superseded documents

Number	Title	Issue
GCRT5021	Track System Requirements	5

Summary

Background and change

GCRT5021 set outs requirements for track geometry, track system, track components, and switches and crossings (S&C) to provide for the safe guidance and support of rail vehicles.

GCRT5021 issue five was published in December 2011, and the 60-month review recommended that GCRT5021 should be revised in accordance with the current Railway Group Standard code. This revision incorporates amendments, deviations, and clarifications submitted since publication. In total, there have been six deviations, two amendments, and three enquiries against GCRT5021 issue five. Additionally, S&C requirements not classified as national technical rules (NTRs) have been withdrawn and retained in a new rail industry standard, RIS-7707-INS.

The findings from research on loading requirement for tracks systems (RSSB research report T1073 (2020) on vertical track loading and the associated University of Huddersfield research project COF-UOH-59 (2023) on lateral track loading) have been incorporated into GCRT5021, facilitating the optimisation of the track loading parameters specified for track design. The requirements for curving have been reviewed and optimised, delivering further benefit from this revision.

Industry impact due to changes

Impact areas	Scale of impact	Estimated value (£)		
A. Legal compliance and assurance	Low	Not proportionate to quantify		
B. Health, safety and security	N/A	-		
C. Reliability and operational performance	Medium	£233,000 over a five-year period		
D. Design and maintenance	High	£1,600,000 over a five-year period		
E. People, process and systems	Medium	Not proportionate to quantify		
F. Environment and sustainability	Low	Not proportionate to quantify		
G. Customer experience and industry reputation	N/A	-		
Total value of industry opportunity =		£1,833,000 over a five-year period		
The standards change contribution to the total value of industry opportunity				
<input type="checkbox"/> None or low	<input type="checkbox"/> Minor but useful	<input type="checkbox"/> Moderate	<input checked="" type="checkbox"/> Important / essential	<input type="checkbox"/> Urgent / critical

Detail

1. What are the objectives associated with this change?

Objective 1 – Incorporate amendments, deviations, and clarifications into standard

- 1.1 There have been two amendments, six deviations, and three requests for help relating to GCRT5021 issue five since its publication. Five of the six deviations concern the maximum limit for track gradients, relating to the maximum limit of 1 in 500. As a result, the requirement is to be clarified and good practice guidance added. The remaining deviation relates to Objective 5 and the amendments relate to Objective 3.

Objective 2 – Align GCRT5021 with standards framework

- 1.2 There are requirements in GCRT5021, particularly those that are associated with switches and crossings, which are not in scope of Railway Group Standards (RGS) as they are not valid national technical rules (NTRs). These requirements are to be withdrawn from the RGS or converted to industry guidance. Where there are non-NTR requirements relating to S&C which are valid and useful to industry, they are to be retained in a new rail industry standard, RIS-7707-INS.

Objective 3 – Address issues associated with INF NTSN/TSI

- 1.3 In 2015, Network Rail and RSSB undertook a comparison of track standards to review the technical requirements and understand the implications for the GB rail industry. This exercise identified the following issues for consideration during the review of GCRT5021 issue five: rate of change of cant deficiency, maximum unguided length through obtuse crossings, and minimum length of straight track between reverse curves of 300 m to 160 m radius.
- 1.4 The GB method for assessing maximum unguided length in obtuse crossings is set out in GMRT2466, and is called up by GCRT5021 Appendix H. It differs from the European method detailed in the INF NTSN and it therefore identified as a specific case. The reference to the GB method in GCRT5021, which is currently in Appendix H, will be converted to a requirement to make the specific case an NTR.

Objective 4 – Optimisation of Track Loading Requirements

- 1.5 The track system loading requirements have set values, rather than being optimised for the loads the track system experiences. RSSB research reports T1073 (2020) and COF-UOH-59 (2023), establish the loading regimes for track systems. The requirements in Part 3 of GCRT5021 have been revised in line with the findings of this research to ensure that the parameters defined for track loading are appropriate, and that efficiencies can be made during track design and construction.

Objective 5 – Refinement of Curving Rules and Management of Track Geometry Faults

- 1.6 To facilitate higher speeds, without detrimental impacts to the track, aspects of track geometry requirements relating to transitions are to be revised. Specifically, this relates permitting longer distances for which virtual transitions can be calculated over.
- 1.7 Regarding the management of poor track quality, to prevent the unnecessary imposition of speed restrictions due small section of inherently poor track geometry, requirements have been revised to facilitate pragmatic management of poor track quality. It will be permitted to manage these sites through a risk assessment rather than the automatic imposition of a speed restriction.
- 1.8 Track geometry fault values for loaded track will be clarified.

2. How does the content in the standard need to change to achieve the objective?

Objective 1 – Incorporate amendments, deviations, and clarifications into standard

- 2.1 Section 2.8 Track Geometry Requirements for Sidings of GCRT5021 issue five will be withdrawn.
- 2.2 Five deviations relate to GCRT5021 associated with the requirement for track gradients in sidings 12-184-DGN, 15-034-DEV, and 15-136-DEV. GCRT5021 issue five sets a maximum limit of 1 in 500 for track gradient, which is a historic value and overly onerous. Owing to the historic number of deviations for turnback sidings highlight the requirement for track gradient in sidings has been revised so that the limit applies to new track only, and additional good practice guidance has been provided.

Objective 2 – Align GCRT5021 with standards framework

- 2.3 GCRT5021 required restructuring, with some requirements withdrawn and rewritten as guidance and other requirements withdrawn, as they are out of scope of RGS. This will lead to the withdrawal of over 100 NTRs. The requirements being withdrawn from the RGS, but which are valid and useful, and are associated with S&C, will be included in RIS-7707-INS. The disposition of requirements is detailed in Appendix A.

Objective 3 – Address issues associated with INF NTSN/TSI

- 2.4 GCRT5021 has been updated to address the findings from the joint Network Rail and RSSB standards review.
- 2.5 To address these issues, requirements have been revised for rate of change cant deficiency (see 2.8) and the guidance regarding the maximum unguided length through obtuse crossings has been updated.

Objective 4 – Optimisation of Track Loading Requirements

- 2.6 The current performance requirements set out in Part 3 have been updated, taking account of the outcomes from both the RSSB research report T1073 (2020) and the University of Huddersfield research report COF-UOH-59 (2023). The revised requirements facilitate the optimisation of track systems design, based on the planned loading conditions.

Objective 5 – Refinement of Curving Rules and Management of Track Geometry Faults

- 2.7 Requirements relating to curving rules, and the measurement and management of track geometry faults have been modified in the latest revision. These changes prevent overly onerous speed restrictions being applied. There are also clarifications and reformatting changes to this section. They are further detailed below.

Virtual transitions

- 2.8 Permissible speed around a curve, where there is no geometric transition, is calculated using a virtual transition. The distance used to calculate the virtual transition is 12.2m, which is a historic value based on the shortest distance between bogie centres of rail vehicle. Currently, the majority of vehicles use longer wheelbases and to reflect this the requirement has been converted to guidance to use 12.2m or longer where appropriate.

Clarify and review Rate of Change of Cant Deficiency at Switch Toes

- 2.9 The existing standard allows the rate of change of cant deficiency at switch toes to be disregarded; this has been withdrawn to align with industry. The requirements for maximum

theoretical cant deficiency at switch toes have been withdrawn as they are covered by the requirements for abrupt change of cant deficiency set out in the Infrastructure NTSN. New requirements, rationale, and guidance have been introduced to GCRT5021 to support the application of abrupt change of cant deficiency at switch toes.

Clarify measurement of Track Twist and Track Gauge

- 2.10 The wording of the requirements for the measurement of track twist has been revised to clarify that track twist and track gauge are measured for loaded track. Unloaded track geometry measurements do not include the vehicle forces, which can highlight areas of poor support, loose fastenings, and voiding, which are potential derailment risks.

Clarify Management of 'Super-Red' Eighths

- 2.11 The intent of the requirement is to ensure that sections of track exceeding the maximum standard deviations (SD) for track quality are appropriately managed by maintenance intervention and by speed restrictions.
- 2.12 The requirements for the management of a site with maximum SDs are to be revised to permit the use of a risk assessment, rather than imposing a, sometimes unnecessary, speed restriction. The most onerous SD value is used to calculate the track quality band for a section of track and can result in the imposition of speed restrictions on track where there are no tangible safety issues, unnecessarily impacting on the performance of the railway system.

3. How urgently does the change need to happen to achieve the objectives?

- 3.1 Whilst there is no specific technical driver for these changes, the RGS requires updating to remove NTRs that are no longer valid. Early publication will enable the benefits associated with the changes to be realised.

4. What are the positive and negative impacts of implementing the change?

Justification of impact, scale and quantification for the seven impact areas

A. Legal compliance and assurance

- 4.1 By aligning GCRT5021 with the current standards framework, and creating a separate S&C specific RIS, the number of NTRs have been significantly reduced. Therefore, the need for approved body assessment has been reduced which will facilitate efficiencies and provide a cost benefit in the design and project phases. In the absence of data, it is not considered proportionate to estimate the benefit.

B. Health, safety and security

- 4.2 The changes to the standard are not directly relevant to health, safety, and security, and no benefit is claimed.

C. Reliability and operation performance

- 4.3 By refining the requirements relating to vehicle curving, it may be possible to facilitate higher curving speeds improving operational performance. Using a conservative example of one route being improved by five minutes per day for one train, then a journey time reduction of 1,500 minutes per annum would be possible (based on operation of 300 days per year). Using a delay cost of £31 per minute, this equates to a benefit of around £233,000 over five years.

D. Design and maintenance

- 4.4 By defining the track loading parameters, a reduction in both track design and maintenance costs is possible. This can be achieved through the utilisation of improved track system design to deliver increased resilience requiring less maintenance. The business case for RSSB research project T1073 (2020) estimated that a benefit of £1.6M over five years.
- 4.5 Additionally, providing further clarity on track geometry faults will reduce the unnecessary imposition of speed restrictions.

E. People, process and systems

- 4.6 As discussed in 4.1, the reduction in NTRs will facilitate efficiencies and provide a cost benefit in the design and project phases. In the absence of data, it is not considered proportionate to estimate the benefit.

F. Environment and sustainability

- 4.7 Optimisation of the track support parameters will facilitate improved design and resilience of the track system. Guidance on optimising track support design will present opportunities to reduce concrete usage in track support and the potential to reduce the carbon footprint, particularly for ballastless track. In the absence of data on carbon reduction in track forms it is not considered proportionate to estimate the benefit.

G. Customer experience and industry reputation

- 4.8 The changes to the standard are not directly relevant to customer experience and industry reputation, and no benefit is claimed.

5. What is the contribution of this standards change in realising the value to industry opportunity?

- 5.1 It is considered that GCRT5021 issue six and RIS-7707-INS issue one will provide a total value to industry opportunity of approximately £1,833,000 over five years and has been categorised as important/essential.

6. What is the effort required by RSSB to make the change?

- 6.1 The project requires two infrastructure technical specialists to work on the RGS and RIS documents in parallel, supported by a project manager and administrative support as necessary.

7. Can RSSB deliver against industry's expected timescales?

- 7.1 RSSB project is currently on schedule to meet the estimated publication date of December 2023 [proposed].

8. How will the industry implement the change?

- 8.1 The industry will implement the changes by updating local/company track design standards and documentation to reflect the changes in GCRT5021 and RIS-7707-INS. The revision will provide additional clarity and improved requirements. The changes in the standard will not impose any additional requirements for track maintainers or designers.

9. How will RSSB assess whether the change is achieving the objectives?

- 9.1 RSSB is represented on various track systems groups, including V/T SIC and V/T TAG, and feedback will be sought from these groups to establish if the changes are achieving the objectives.

- 9.2 The 12-month review process for standards changes also provides the opportunity to seek feedback on the application of the GCRT5021 and RIS-7707-INS.

Appendix A Disposition Table

A.1.1 The table below presents the initial analysis of the changes required from GCRT5021 issue five to GCRT5021 issue six and RIS-7707-INS issue one.

A.1.2 Description of text used in the ‘Way forward’ column of the disposition table:

- No change
- Redrafted – No material change, content reworded to improve clarity (editorial change)
- Revised – Material change to content.
- Withdrawn
- Converted to guidance
- Converted to requirement
- New

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
Part 1 Purpose and introduction	Part 1	-	No change	Title only	2
1.1 Purpose	1.1	-	No change	Title only	2
1.1.1	1.1.1	-	Revised	Does not meet the criteria for technical compatibility	2
1.2 Introduction	1.2	-	No change	Title only	2
-	1.2.1	-	New	Background information	2
-	1.2.1.1	-	New	Explains the context of the track system.	2
-	1.2.1.2	-	New	Explains the purpose of the track system.	2
1.2.1 Principles	1.2.2	-	No change	Template text	2
1.2.1.1	1.2.2.1	-	Redrafted	For clarification	2
-	1.2.2.2	-	New	Explains that this document contains NTRs	2
-	1.2.2.3	-	New	Explains the criteria for NTRs.	2
-	1.2.3	-	New	Title only	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
-	1.2.3.1	-	New	Explains that some NTRs are relevant to NTSN parameters.	2
-	1.2.3.2	-	New	Explains the structure of the document.	2
-	1.2.3.3	-	New	Explains the structure of guidance	2
1.2.2 Related requirements in other documents	1.2.4	-	No change	Title only	2
1.2.2.1	1.2.4.1	-	Redrafted	Updated	2
1.2.3 Supporting documents	1.2.5	-	No change	Title only	2
1.2.3.1	1.2.5.1	-	Redrafted	Updated	2
1.3 Approval and authorisation of this document	1.3	-	No change	Title only	2
1.3.1	1.3.1	-	Redrafted	Updated	2
1.3.2	1.3.2	-	Redrafted	Updated	2
-	-	Part 1	New	Title only	2
-	-	1.1	New	Title only. Purpose	2
-	-	1.1.1	New	Explains the scope of the document.	2
-	-	1.1.2	New	Explains that the requirements are in addition to requirements in NTSN and RGS.	2
-	-	1.1.3	New	Explains who can adopt standard and how.	2
-	-	1.2	New	Title only. Related requirements in other documents	2
-	-	1.2.1	New	Defines the RGS with related requirements.	2
-	-	1.3	New	Title only. Supporting documents	2
-	-	1.3.1	New	Defines the supporting guidance notes and RIS.	2
-	-	1.4	New	Title only. Application of this document	2
-	-	1.4.1	New	Template text. Explains why compliance dates not provided.	2
-	-	1.4.2	New	Template text. Explains the deviation process.	2
-	-	1.5	New	Title only. Health and safety responsibilities	2
-	-	1.5.1	New	Template text. Explains health and safety responsibilities.	2
-	-	1.6	New	Title only. Structure of this document	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
-	-	1.6.1	New	Template text. Explains the structure of document.	2
-	-	1.6.2	New	Template text. Explains the how guidance is presented.	2
-	-	1.7	New	Title only. Approval and authorisation of this document	2
-	-	1.7.1	New	Defines proposed dates for approval by lead SC.	2
-	-	1.7.2	New	Defines proposed dates for authorisation by RSSB.	2
Part 2 Requirements for Track Geometry	Part 2	-	No change	Title only	2
2.1 Normal limiting design values and exceptional limiting design values	2.1	-	No change	Title only	2
2.1.1 Normal limiting design values and exceptional limiting design values	G 2.1.1	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.1.2 Normal limiting design values and exceptional limiting design values	G 2.1.2	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	G 2.1.3	-	New	Guidance	2
2.1.3 Normal limiting design values and exceptional limiting design values	G 2.1.4	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.1.4 Normal limiting design values and exceptional limiting design values	-	-	Withdrawn	Not needed	2
2.1.5 Normal limiting design values and exceptional limiting design values	-	-	Withdrawn	Not needed	2
2.2 General horizontal alignment requirements	2.2	-	No change	Title only	2
2.2.1 General horizontal alignment requirements	G 2.2.1	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	G 2.2.2	-	New	Guidance	2
2.2.2 General horizontal alignment requirements	G 2.2.3	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.2.3 General horizontal alignment requirements	G 2.2.3	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.3 Permissible speed	2.3	-	No change	Title only	2
-	G 2.3.1	-	New	Guidance	2
2.3.1 Permissible speed	G 2.3.2	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.3.2 Permissible speed	G 2.3.3	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	G 2.3.4	-	New	Guidance	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
2.4 Enhanced permissible speed	2.4	-	No change	Title only	2
2.4.1 Calculation of enhanced permissible speed	-	-	Withdrawn	Title only	2
2.4.1.1 Calculation of enhanced permissible speed	G 2.4.3	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.4.1.2 Calculation of enhanced permissible speed	G 2.4.1, G 2.4.2	-	Converted to guidance	Does not meet the criteria for technical compatibility	5
2.4.1.3 Calculation of enhanced permissible speed	-	-	Withdrawn	Not required	2
2.4.1.4 Calculation of enhanced permissible speed	G 2.4.4	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.4.1.5 Calculation of enhanced permissible speed	G 2.4.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.4.2 Enhanced permissible speed for S&C	-	-	Withdrawn	Title only	-
2.4.2.1 Enhanced permissible speed for S&C	G 2.4.5	-	No change	-	5
2.5 Circular curves	2.5	-	No change	Title only	-
2.5.1 Minimum radii	2.5.1	-	No change	Title only	-
2.5.1.1 Minimum radii	G 2.5.1.5	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.5.1.2 Minimum radii	2.5.1.1	-	Redrafted	Tabulated	5
2.5.1.3 Minimum radii	2.5.1.1	-	Redrafted	Tabulated	5
2.5.1.4 Minimum radii	2.5.1.1	-	Redrafted	Tabulated	5
2.5.1.5 Minimum radii	2.5.1.1	-	Redrafted	Tabulated	5
-	G 2.5.1.2	-	New	Rationale	2
-	G 2.5.1.3	-	New	Rationale	2
-	G 2.5.1.4	-	New	Rationale	2
-	G 2.5.1.6	-	New	Guidance	2
-	G 2.5.1.7	-	New	Guidance	2
2.5.2 Reverse curves	2.5.2	-	No change	Title only	-
2.5.2.1 Reverse curves	2.5.2.1	-	No change	-	3
-	G 2.5.2.2	-	New	Rationale	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
-	G 2.5.2.3	-	New	Rationale	2
-	G 2.5.2.4	-	New	Rationale	2
2.5.3 Normal limiting design values for cant	2.5.3	-	Redrafted	Title only	-
2.5.3.1 Normal limiting design values for cant	2.5.3.1	-	Redrafted	Tabulated	5
-	G 2.5.3.3	-	New	Rationale	2
-	G 2.5.3.4	-	New	Rationale	2
-	G 2.5.3.5	-	New	Rationale	2
-	G 2.5.3.6	-	New	Guidance	2
-	G 2.5.3.7	-	New	Guidance	2
-	G 2.5.3.8	-	New	Guidance	2
2.5.4 Exceptional limiting design values for cant	2.5.3	-	Redrafted	Title only	-
2.5.4.1 Exceptional limiting design values for cant	2.5.3.1	-	Redrafted	Tabulated	5
2.5.5 Cant on curves with radii less than 320 m	-	-	Withdrawn	Title only	-
2.5.5.1 Cant on curves with radii less than 320 m	2.5.3.2	-	Redrafted	Revision of curving rules	3
2.5.6 Negative cant	4.1.2	-	No change	Title only	2
2.5.6.1 Negative cant	4.1.2.1	-	Redrafted	Tabulated	2
-	G 4.1.2.2	-	New	Rationale	2
-	G 4.1.2.3	-	New	Rationale	2
-	G 4.1.2.4	-	New	Guidance	2
-	G 4.1.2.5	-	New	Guidance	2
-	G 4.1.2.6	-	New	Guidance	2
2.5.7 Normal limiting design values for cant deficiency at permissible speed	2.5.4	-	Redrafted	Title only	-
2.5.7.1 Normal limiting design values for cant deficiency at permissible speed	2.5.4.1, 2.5.5.1	-	Redrafted	Tabulated	5
-	2.5.4.2	-	New	Output from revision of curving rules research	5

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
2.5.8 Exceptional limiting design values for cant deficiency at permissible speed	-	-	Withdrawn	Title only	-
2.5.8.1 Exceptional limiting design values for cant deficiency at permissible speed	2.5.4.3	-	Redrafted	Revision of curving rules	-
2.5.8.2 Exceptional limiting design values for cant deficiency at permissible speed	2.5.4.1	-	Redrafted	Tabulated	2
-	G 2.5.4.4	-	New	Rationale	2
-	G 2.5.4.5	-	New	Rationale	2
-	G 2.5.4.6	-	New	Rationale	2
-	G 2.5.4.7	-	New	Rationale	2
-	G 2.5.4.8	-	New	Guidance	2
-	G 2.5.4.9	-	New	Guidance	2
-	G 2.5.4.10	-	New	Guidance	2
2.5.9 Normal limiting design values for cant deficiency at switch toes	4.1.1	-	No change	Title only	5
2.5.9.1 Normal limiting design values for cant deficiency at switch toes	4.1.1.6	-	Redrafted	Limits to align with NTSN	5
2.5.10 Exceptional limiting design values for cant deficiency at switch toes	4.1.1	-	No change	Title only	5
2.5.10.1 Exceptional limiting design values for cant deficiency at switch toes	-	-	Withdrawn	Replicated in NTSN	5
2.5.10.2 Exceptional limiting design values for cant deficiency at switch toes	4.1.1.1	-	Redrafted	Permissible exceptional limiting design value incorporated into Table 20, alignment with industry good practice.	5
-	G 4.1.1.2	-	New	Rationale	5
-	G 4.1.1.3	-	New	Rationale	5
-	G 4.1.1.4	-	New	Rationale	5
-	G 4.1.1.5	-	New	Rationale	5
-	G 4.1.1.6	-	New	Guidance	5
-	G 4.1.1.7	-	New	Guidance	5
-	G 4.1.1.8	-	New	Guidance	5
-	G 4.1.1.9	-	New	Guidance	5

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
-	G 4.1.1.10	-	New	Guidance	5
-	G 4.1.1.11	-	New	Guidance	5
2.5.11 General requirements for cant deficiency on plain line at enhanced permissible speed	-	-	Withdrawn	Title only	-
2.5.11.1 General requirements for cant deficiency on plain line at enhanced permissible speed	-	-	Withdrawn	Covered by G 2.5.4.5	2
2.5.11.2 General requirements for cant deficiency on plain line at enhanced permissible speed	-	-	Withdrawn	Not needed	2
2.5.12 Normal limiting design values for cant deficiency on plain line at enhanced permissible speed	-	-	No change	Title only	-
2.5.12.1 Normal limiting design values for cant deficiency on plain line at enhanced permissible speed	2.5.4.1	-	Redrafted	Tabulated	5
2.5.13 Exceptional limiting design values for cant deficiency on plain line at enhanced permissible speed	-	-	No change	Title only	-
2.5.13.1 Exceptional limiting design values for cant deficiency on plain line at enhanced permissible speed	2.5.4.1	-	Redrafted	Tabulated	5
2.5.14 Normal limiting design values for cant deficiency on the through route of S&C at enhanced permissible speed	-	-	No change	Title only	-
2.5.14.1 Normal limiting design values for cant deficiency on the through route of S&C at enhanced permissible speed	4.1.1.1	-	Redrafted	Tabulated	5
2.5.14.2 Normal limiting design values for cant deficiency on the through route of S&C at enhanced permissible speed	4.1.1.1	-	Redrafted	Tabulated	5
2.5.14.3 Normal limiting design values for cant deficiency on the through route of S&C at enhanced permissible speed	4.1.1.1	-	Redrafted	Tabulated	5
2.5.15 Exceptional limiting design values for cant deficiency on the through route of S&C at enhanced permissible speed	-	-	No change	Title only	-
2.5.15.1 Exceptional limiting design values for cant deficiency on the through route of S&C at enhanced permissible speed	4.1.1.1	-	Redrafted	Tabulated	5
2.5.15.2 Exceptional limiting design values for cant deficiency on the through route of S&C at enhanced permissible speed	4.1.1.1	-	Redrafted	Tabulated	5
2.5.15.3 Exceptional limiting design values for cant deficiency on the through route of S&C at enhanced permissible speed	4.1.1.1	-	Redrafted	Tabulated	5
2.6 Transition curves	2.6	-	No change	Title only	2
2.6.1 General requirements for transition curves	2.6.1	-	Redrafted	Title only	2
2.6.1.1 General requirements for transition curves	G 2.6.1.1	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.6.1.2 General requirements for transition curves	G 2.6.1.2, G 2.6.1.3	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.6.1.3 General requirements for transition curves	G 2.6.1.5	-	Converted to guidance	Does not meet the criteria for technical compatibility	2

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2.6.1.4 General requirements for transition curves	G 2.6.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.6.1.5 General requirements for transition curves	G 2.6.1.7	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.6.1.6 General requirements for transition curves	G 2.6.1.8	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	G 2.6.1.4	-	New	Guidance	5
2.6.2 Particular requirements for clothoid spiral transition curves	-	-	Withdrawn	Title only	-
2.6.2.1 Particular requirements for clothoid spiral transition curves	G 2.6.1.9	-	Redrafted	Guidance	2
2.6.3 Particular requirements for forms of transition curves other than clothoid spiral	-	-	Withdrawn	Title only	-
2.6.3.1 Particular requirements for forms of transition curves other than clothoid spiral	-	-	Withdrawn	Not needed - covered in G 2.6.1.5	2
2.6.3.2 Particular requirements for forms of transition curves other than clothoid spiral	-	-	Withdrawn	Not needed	2
2.6.4 Cant gradient	2.6.2	-	No change	Title only	-
2.6.4.1 Cant gradient	2.6.2.1	-	No change	-	-
-	G 2.6.2.2	-	New	Rationale	2
-	G 2.6.2.3	-	New	Rationale	2
-	G 2.6.2.4	-	New	Rationale	2
2.6.4.2 Cant gradient	G 2.6.2.5	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	G 2.6.2.6	-	New	Guidance	2
2.6.5 Rate of change of cant at permissible speed	2.6.3	-	Redrafted	Title only	-
2.6.5.1 Rate of change of cant at permissible speed	2.6.3.1	-	Redrafted	Tabulated	-
2.6.5.2 Rate of change of cant at permissible speed	2.6.3.1	-	Redrafted	Tabulated	-
2.6.6 Rate of change of cant at enhanced permissible speed	-	-	Withdrawn	Title only	-
2.6.6.1 Rate of change of cant at enhanced permissible speed	2.6.3.1	-	Redrafted	Tabulated	-
2.6.6.2 Rate of change of cant at enhanced permissible speed	2.6.3.1	-	Redrafted	Tabulated	-
-	G 2.6.3.2	-	New	Rationale	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
-	G 2.6.3.3	-	New	Rationale	2
-	G 2.6.3.4	-	New	Rationale	2
-	G 2.6.3.5	-	New	Guidance	2
2.6.7 Normal limiting design values for rate of change of cant deficiency at permissible speed	2.6.4	-	Redrafted	Title only	-
2.6.7.1 Normal limiting design values for rate of change of cant deficiency at permissible speed	2.6.4.1	-	Redrafted	Tabulated	-
-	G 2.6.4.2	-	New	Rationale	2
-	G 2.6.4.3	-	New	Rationale	2
-	G 2.6.4.4	-	New	Rationale	2
-	G 2.6.4.5	-	New	Guidance	2
-	G 2.6.4.6	-	New	Guidance	2
2.6.7.2 Normal limiting design values for rate of change of cant deficiency at permissible speed	G 4.1.1.6	-	Revised	Aligned with industry good practice.	5
2.6.8 Exceptional limiting design values for rate of change of cant deficiency at permissible speed	-	-	Withdrawn	Title only	-
2.6.8.1 Exceptional limiting design values for rate of change of cant deficiency at permissible speed	2.6.4.1	-	Redrafted	Tabulated	-
2.6.8.2 Exceptional limiting design values for rate of change of cant deficiency at permissible speed	G 4.1.1.6	-	Revised	Align with NTSN	5
2.6.9 Transition curves - rate of change of cant deficiency at enhanced permissible speed	-	-	Withdrawn	Title only	-
2.6.9.1 Transition curves - rate of change of cant deficiency at enhanced permissible speed	2.6.4.1	-	Redrafted	Tabulated	-
2.6.9.2 Transition curves - rate of change of cant deficiency at enhanced permissible speed	2.6.4.1	-	Redrafted	Tabulated	-
2.6.9.3 Transition curves - rate of change of cant deficiency at enhanced permissible speed	2.6.4.1	-	Redrafted	Tabulated	5
2.7 Vertical alignment	2.7	-	No change	Title only	-
2.7.1 General requirements for vertical alignment	2.7.1	-	Redrafted	Title only	-
2.7.1.1 General requirements for vertical alignment	G 2.7.1.1	-	Converted to guidance	Second sentence deleted.	2
2.7.2 Track gradients	2.7.2	-	Redrafted	Title only	-
2.7.2.1 Track gradients	G 2.7.2.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	1

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
2.7.2.2 Track gradients	-	-	Withdrawn	Covered by 2.7.2	1
2.7.3 Normal limiting design value for track gradient	-	-	Withdrawn	Title only	-
2.7.3.1 Normal limiting design value for track gradient	2.7.2.1	-	Redrafted	Tabulated	1
2.7.4 Exceptional limiting design values for track gradient	-	-	Withdrawn	Title only	-
2.7.4.1 Exceptional limiting design values for track gradient	2.7.2.1	-	Redrafted	Tabulated	1
-	G 2.7.2.3	-	New	Rationale	1
-	G 2.7.2.4	-	New	Rationale	1
-	G 2.7.2.5	-	New	Rationale	1
-	G 2.7.2.6	-	New	Guidance	1
-	G 2.7.2.7	-	New	Guidance	1
-	G 2.7.2.8	-	New	Guidance	1
-	G 2.7.2.9	-	New	Guidance	2
2.7.5 Vertical curves	2.7.3	-	No change	Title only	-
2.7.5.1 Vertical curves	-	-	Withdrawn	Align with NTSN	-
-	G 2.7.3.1	-	New	Guidance	2
-	G 2.7.3.2	-	New	Guidance	2
2.7.5.2 Vertical curves	G 2.7.3.3	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	G 2.7.3.4	-	New	Guidance	2
2.7.6 Normal limiting design value for vertical curves	-	-	Withdrawn	Title only	-
2.7.6.1 Normal limiting design value for vertical curves	-	-	Withdrawn	Covered by G 2.7.3.1	-
2.7.7 Exceptional limiting design value for vertical curves	-	-	Withdrawn	Title only	-
2.7.7.1 Exceptional limiting design value for vertical curves	-	-	Withdrawn	Covered by G 2.7.3.1	-
2.8 Track geometry requirements for sidings	-	-	Withdrawn	Title only	-
2.8.1 Horizontal alignment	-	-	Withdrawn	Title only	-

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
2.8.1.1 Horizontal alignment	G 2.5.1.5	-	Converted to guidance	Incorporated into 2.5	2
2.8.1.2 Horizontal alignment	2.5.1.1	-	Redrafted	Incorporated into 2.5	2
2.8.1.3 Horizontal alignment	2.5.1.1	-	Redrafted	Incorporated into 2.5	2
2.8.1.4 Horizontal alignment	G 2.5.2.5	-	Converted to guidance	Incorporated into 2.5	2
2.8.1.5 Horizontal alignment	2.5.2.1	-	Redrafted	Incorporated into 2.5	2
2.8.1.6 Horizontal alignment	G 2.2.3	-	Converted to guidance	Incorporated into 2.2	2
2.8.2 Vertical alignment	-	-	Withdrawn	Incorporated into other sections	-
2.8.2.1 Vertical alignment	2.7.2.2	-	Revised	Now applies to new track only	1
2.8.2.2 Vertical alignment	-	-	Withdrawn	Incorporated into other sections	1
2.9 Track gauge	2.8	-	No change	Title only	-
2.9.1 Nominal track gauge	-	-	Withdrawn	Title only	-
2.9.1.1 Nominal track gauge	-	-	Withdrawn	Covered by NTSN	2
2.9.1.2 Nominal track gauge	-	-	Withdrawn	Covered by NTSN	2
-	G 2.8.1	-	New	Guidance	2
2.9.2 Gauge widening	-	-	Withdrawn	Title only	-
2.9.2.1 Gauge widening	G 2.8.2	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.9.2.2 Gauge widening	G 2.8.4	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.9.2.3 Gauge widening	G 2.8.4	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.9.2.4 Gauge widening	G 2.8.4	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.9.2.5 Gauge widening	G 2.8.5	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	G 2.8.3	-	New	Guidance	5
2.10 Rail inclination	3.2.2	-	No change	Title only	-
2.10.1 Rail inclination	3.2.2.1	-	No change	-	-

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
2.10.2 Rail inclination	3.2.2.2	-	Redrafted	Second sentence deleted.	-
-	G 3.2.2.3	-	New	Rationale	2
-	G 3.2.2.4	-	New	Rationale	2
-	G 3.2.2.5	-	New	Rationale	2
-	G 3.2.2.6	-	New	Guidance	2
2.11 Track geometry faults	2.9	-	No change	Title only	-
2.11.1 Corrective action	2.9.1	-	Redrafted	Title only	-
2.11.1.1 Corrective action	G 2.9.1.1	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	G 2.9.1.2	-	New	Guidance	2
-	G 2.9.1.3	-	New	Guidance	2
-	G 2.9.1.4	-	New	Guidance	2
-	G 2.9.1.5	-	New	Guidance	2
2.11.1.2 Corrective action	G 2.9.1.7	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	G 2.9.1.8	-	New	Guidance	2
-	G 2.9.1.9	-	New	Guidance	2
2.11.2 Twist faults	2.9.2	-	Revised	Title only	-
2.11.2.1 Twist faults	2.9.2.1	-	Revised	Reformatted	-
2.11.2.1 Twist faults	2.9.2.2	-	Revised	Reformatted	2
-	G 2.9.2.3	-	New	Rationale	2
-	G 2.9.2.4	-	New	Rationale	2
-	G 2.9.2.5	-	New	Rationale	2
-	G 2.9.2.6	-	New	Guidance	2
-	G 2.9.2.7	-	New	Guidance	2
2.11.3 Track gauge in plain line	2.9.3	-	Revised	Tabulated	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
2.11.3.1 Track gauge in plain line	2.9.3.1	-	Revised	Tabulated - values changed to align with industry. IAL, IL and AL values stated for consistency.	2
-	2.9.3.4	-	Revised	Tabulated - values changed to align with industry. IL and AL values stated for consistency.	2
-	G 2.9.3.6	-	New	Rationale	2
-	G 2.9.3.7	-	New	Rationale	2
-	G 2.9.3.8	-	New	Rationale	2
-	G 2.9.3.9	-	New	Rationale	2
-	G 2.9.3.10	-	New	Rationale	2
-	G 2.9.3.11	-	New	Guidance	2
-	G 2.9.3.12	-	New	Guidance	2
-	G 2.9.3.13	-	New	Guidance	2
-	G 2.9.3.14	-	New	Guidance	2
2.11.3.2 Track gauge in plain line	G 2.9.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
2.11.3.3 Track gauge in plain line	2.9.3.2, 2.9.3.3	-	Revised	Align with industry	2
2.11.4 Additional requirements for track gauge in S&C	-	-	Withdrawn	Title only	-
2.11.4.1 Additional requirements for track gauge in S&C	2.9.3.5	-	Redrafted	Tabulated	2
2.11.4.2 Additional requirements for track gauge in S&C	2.9.3.5	-	Redrafted	Tabulated	2
2.11.4.3 Additional requirements for track gauge in S&C	2.9.3.5	-	Redrafted	Tabulated	2
2.11.4.4 Additional requirements for track gauge in S&C	2.9.3.5	-	Redrafted	Tabulated	2
2.11.5 Cyclic top faults	-	-	Withdrawn	Title only	-
2.11.5.1 Cyclic top faults	G 2.9.1.7	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	G 2.9.1.8	-	New	Rationale	2
2.11.6 Vertical profile (top) faults	2.9.4	-	Redrafted	Title only	-
2.11.6.1 Vertical profile (top) faults	2.9.4.1	-	Revised	IAL, IL and AL values stated for consistency with other fault parameters. IAL added to align with industry good practice, issue 5 provided IL values only.	2
2.11.6.2 Vertical profile (top) faults	G 2.9.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
-	G 2.9.4.2	-	New	Rationale	2
-	G 2.9.4.3	-	New	Rationale	2
-	G 2.9.4.4	-	New	Rationale	2
-	G 2.9.4.5	-	New	Guidance	2
2.11.7 Lateral alignment faults	2.9.5	-	No change	Title only	-
2.11.7.1 Lateral alignment faults	2.9.5.1	-	Revised	IAL, IL and AL values stated for consistency with other fault parameters. IAL added to align with industry good practice, issue 5 provided IL values only.	2
2.11.7.2 Lateral alignment faults	G 2.9.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	G 2.9.5.2	-	New	Rationale	2
-	G 2.9.5.3	-	New	Rationale	2
-	G 2.9.5.4	-	New	Rationale	2
-	G 2.9.5.5	-	New	Guidance	2
-	G 2.9.5.6	-	New	Guidance	2
2.11.8 Maximum and very poor standard deviations	2.9.6	-	Redrafted	Title only	-
2.11.8.1 Maximum and very poor standard deviations	2.9.6.1	-	Redrafted	Requirement includes a speed criteria of less than 80 mph for consistency and clarification	-
2.11.8.2 Maximum and very poor standard deviations	2.9.6.2	-	Redrafted	Requirement includes a speed criteria of greater than 80 mph (changed from 75 mph) for consistency and clarification	-
2.11.8.3 Maximum and very poor standard deviations	2.9.6.3	-	Redrafted	Changed to refer to 'Very Poor' and 'Poor' track quality, the terms align with industry good practice. In the tables referenced, speed bands greater than 125 mph have been removed.	5
2.11.8.4 Maximum and very poor standard deviations	G 2.9.6.8	-	Converted to guidance	Does not meet the criteria for technical compatibility	5
2.11.8.5 Maximum and very poor standard deviations	-	-	Withdrawn	Covered by 2.9.7.5	5
2.11.8.6 Maximum and very poor standard deviations	-	-	Withdrawn	Covered by 2.9.7.5	-
2.11.8.7 Maximum and very poor standard deviations	G 2.9.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	-
-	G 2.9.6.4	-	New	Rationale	5
-	G 2.9.6.5	-	New	Rationale	5
-	G 2.9.6.6	-	New	Rationale	5
-	G 2.9.6.7	-	New	Guidance	5

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
-	G 2.9.6.8	-	New	Guidance	5
-	G 2.9.6.9	-	New	Guidance	5
-	G 2.9.6.10	-	New	Guidance	5
Part 3 Requirements for the Track System and Components	Part 3	-	No change	Title only	-
3.1 Performance specification for the track system	3.1	-	No change	Title only	-
3.1.1 Performance specification for the track system	3.1.1, 3.1.2, 3.1.3	-	Revised	Incorporates track loading research	4
-	G 3.1.4	-	New	Rationale	4
-	G 3.1.5	-	New	Rationale	4
-	G 3.1.6	-	New	Rationale	4
-	G 3.1.7	-	New	Guidance	4
-	G 3.1.8	-	New	Guidance	4
-	G 3.1.9	-	New	Guidance	4
-	G 3.1.10	-	New	Guidance	4
-	G 3.1.11	-	New	Guidance	4
-	G 3.1.12	-	New	Guidance	4
-	G 3.1.13	-	New	Guidance	4
3.2 Requirements for rails, rail gaps and rail fastenings	3.2	-	No change	Title only	-
3.2.1 Profile of new rails	3.2.1	-	No change	Title only	-
3.2.1.1 Profile of new rails	3.2.1.1, 3.2.1.2	-	Revised	For clarification	2
-	G 3.2.1.3	-	New	Rationale	2
-	G 3.2.1.4	-	New	Rationale	2
-	G 3.2.1.5	-	New	Rationale	2
3.2.2 Profile of reprofiled rails	-	-	Withdrawn	Title only	-
3.2.2.1 Profile of reprofiled rails	G 3.2.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
3.2.3 Hardness of new rails	3.2.3	-	No change	Title only	-
3.2.3.1 Hardness of new rails	G 3.2.3.1	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	G 3.2.3.2	-	New	Guidance	2
3.2.4 Rails to fit with existing fastenings	-	-	Withdrawn	Title only	-
3.2.4.1 Rails to fit with existing fastenings	-	-	Withdrawn	No longer recommended	-
3.2.4.2 Rails to fit with existing fastenings	-	-	Withdrawn	No longer recommended	-
3.2.5 In-service rail head profile	-	-	Withdrawn	Title only	-
3.2.5.1 In-service rail head profile	G 3.2.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
3.2.6 Rail fastenings - electrical insulation for track circuits	3.2.6	-	No change	Title only	-
3.2.6.1 Rail fastenings - electrical insulation for track circuits	3.2.6.1, 3.6.2.2	-	Revised	For clarity	2
-	G 3.2.6.3	-	New	Rationale	2
-	G 3.2.6.4	-	New	Rationale	2
3.2.6.2 Rail fastenings - electrical insulation for track circuits	G 3.2.6.5	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
3.2.7 Rail head width and sidewear	3.2.7	-	No change	Title only	-
3.2.7.1 Rail head width and sidewear	3.2.7.1	-	Redrafted	Requirements for speeds above 125 mph removed	2
-	G 3.2.7.2	-	New	Rationale	2
-	G 3.2.7.3	-	New	Rationale	2
3.2.7.2 Rail head width and sidewear	G 3.2.7.4	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
3.2.7.3 Rail head width and sidewear	G 3.2.7.5	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
3.2.7.4 Rail head width and sidewear	G 3.2.7.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
3.2.8 Rail depth and loss of section - prevention of wheel / fishplate strikes	3.2.8	-	No change	Title only	-
3.2.8.1 Rail depth and loss of section - prevention of wheel / fishplate strikes	3.2.8.1	-	Redrafted	Reformatted	-
3.2.8.2 Rail depth and loss of section - prevention of wheel / fishplate strikes	3.2.8.1	-	No change	Incorporated into table	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
-	G 3.2.8.2	-	New	Rationale	2
-	G 3.2.8.3	-	New	Rationale	2
3.2.8.3 Rail depth and loss of section - prevention of wheel / fishplate strikes	G 3.2.8.4	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
3.2.9 Interface between rails to be permanently joined	3.2.9	-	No change	Title only	-
3.2.9.1 Interface between rails to be permanently joined	G 3.2.9.3	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
3.2.9.2 Interface between rails to be permanently joined	3.2.9.1	-	Redrafted	For clarification	2
-	G 3.2.9.2	-	New	Rationale	2
-	G 3.2.9.4	-	New	Guidance	2
3.2.10 Gaps between rail ends	3.2.4	-	No change	Title only	-
3.2.10.1 Gaps between rail ends	3.2.4.1	-	Redrafted	Editorial change	-
-	G 3.2.4.2	-	New	Rationale	2
-	G 3.2.4.3	-	New	Rationale	2
3.2.10.2 Gaps between rail ends	G 3.2.4.4	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
3.2.11 Check rails on curves	3.2.5	-	No change	Title only	-
3.2.11.1 Check rails on curves	3.2.5.1, 3.2.5.2	-	Redrafted	Does not meet the criteria for technical compatibility	-
3.2.11.2 Check rails on curves	3.2.5.3	-	No change	-	-
-	G 3.2.5.4	-	New	Rationale	2
-	G 3.2.5.5	-	New	Rationale	2
-	G 3.2.5.6	-	New	Rationale	2
-	G 3.2.5.7	-	New	Guidance	2
-	G 3.2.5.8	-	New	Guidance	2
3.3 Performance requirements for trackbed	3.3	-	No change	Title only	-
3.3.1 General performance requirements	3.3.1	-	No change	Title only	-
3.3.1.1 General performance requirements	-	-	Withdrawn	Not required - not used by industry	4

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3.3.1.2 General performance requirements	-	-	Withdrawn	Not required - not used by industry	4
3.3.1.3 General performance requirements	-	-	Withdrawn	Not required - not used by industry	4
-	G 3.3.1.1	-	New	Guidance	2
-	G 3.3.1.2	-	New	Guidance	2
Part 4 Particular Requirements for S&C	Part 4	-	No change	Title only	-
4.1 Identification of points	-	Part 2	No change	Title only	2
4.1.1 Point identity	-	2.1	No change	Title only	2
4.1.1.1 Point identity	-	2.1.1	Redrafted	Does not meet the criteria for technical compatibility. Requirement combines unworked points in running lines.	2
4.1.1.2 Point identity	-	2.1.2	No change	Does not meet the criteria for technical compatibility	2
4.1.1.3 Point identity	-	2.1.1	Redrafted	Does not meet the criteria for technical compatibility. Requirement combined with other point types.	2
4.1.1.4 Point identity	-	2.1.3	Redrafted	Does not meet the criteria for technical compatibility. Reference to particular requirements in other sections of previous issue integrated into requirement.	2
-	-	G 2.1.4	New	Rationale	2
-	-	G 2.1.5	New	Rationale	2
-	-	G 2.1.6	New	Rationale	2
-	-	G 2.1.7	New	Guidance	2
-	-	G 2.1.8	New	Guidance	2
4.1.2 Point end identification plates	-	2.2	No change	Title only	2
4.1.2.1 Point end identification plates	-	2.2.1	Revised	Does not meet the criteria for technical compatibility. Revised to include reference to AC10 to make requirement specific and reduce confusion over the use of 'similar markings'.	2
4.1.2.2 Point end identification plates	-	2.2.2	Redrafted	Does not meet the criteria for technical compatibility. Redrafted in RSSB style and to aid clarity and refer to AC10.	2
4.1.2.3 Point end identification plates	-	2.2.3	Redrafted	Does not meet the criteria for technical compatibility. Redrafted in RSSB style and for conciseness.	2
4.1.2.4 Point end identification plates	-	2.2.4	Redrafted	Does not meet the criteria for technical compatibility	2
4.1.2.5 Point end identification plates	-	2.2.4	Redrafted	Does not meet the criteria for technical compatibility	2
4.1.2.6 Point end identification plates	-	2.2.5	Redrafted	Does not meet the criteria for technical compatibility	2
4.1.2.7 Point end identification plates	-	2.2.6	Redrafted	Does not meet the criteria for technical compatibility	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
-	-	G 2.2.7	New	Rationale	2
-	-	G 2.2.8	New	Rationale	2
-	-	G 2.2.9	New	Rationale	2
-	-	G 2.2.10	New	Rationale	2
-	-	G 2.2.11	New	Guidance	2
-	-	G 2.2.12	New	Guidance	2
-	-	G 2.2.13	New	Guidance	2
-	-	G 2.2.14	New	Guidance	2
4.1.2.8 Point end identification plates	-	G 2.2.15	Converted to guidance	Does not meet the criteria for technical compatibility	2
-	-	Part 3	New	Title only. Point operating equipment.	2
4.2 Facing point locking	-	3.1	No change	Title only	2
4.2.1 Worked points	-	-	Withdrawn	Title only	2
4.2.1.1 Worked points	-	3.1.1	No change	Does not meet the criteria for technical compatibility	2
4.2.1.2 Worked points	-	3.1.2	Redrafted	Does not meet the criteria for technical compatibility	2
4.2.1.3 Worked points	-	-	Withdrawn	Document superseded	-
4.2.2 Train operated points	-	-	Withdrawn	Title only	2
4.2.2.1 Train operated points	-	3.1.3	No change	Does not meet the criteria for technical compatibility	2
4.2.3 Settings at switches	-	-	Withdrawn	Title only	2
4.2.3.1 Settings at switches	-	3.1.4	Redrafted	Does not meet the criteria for technical compatibility	2
4.2.4 Settings at switch diamonds	-	-	Withdrawn	Title only	2
4.2.4.1 Settings at switch diamonds	-	3.1.4	Redrafted	Does not meet the criteria for technical compatibility	2
4.2.5 Settings at swing nose crossings	-	-	Withdrawn	Title only	2
4.2.5.1 Settings at swing nose crossings	-	3.1.4	Redrafted	Does not meet the criteria for technical compatibility	2
-	-	G 3.1.5	New	Rationale	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
-	-	G 3.1.6	New	Rationale	2
-	-	G 3.1.7	New	Guidance	2
-	-	G 3.1.8	New	Guidance	2
4.3 Detection of points	-	3.2	No change	Title only	2
4.3.1 Worked points	-	-	Withdrawn	Title only	2
4.3.1.1 Worked points	-	3.2.1	No change	Does not meet the criteria for technical compatibility	2
4.3.1.2 Worked points	-	3.2.2	Redrafted	Does not meet the criteria for technical compatibility	2
4.3.1.3 Worked points	-	-	Withdrawn	Document superseded	2
4.3.2 Unworked points	-	-	Withdrawn	Title only	2
4.3.2.1 Unworked points	-	3.2.3	Redrafted	Does not meet the criteria for technical compatibility	2
4.3.3 Train operated points	-	-	Withdrawn	Title only	2
4.3.3.1 Train operated points	-	3.2.4	No change	Does not meet the criteria for technical compatibility	2
4.3.4 Out of use points	-	-	Withdrawn	Title only	2
4.3.4.1 Out of use points	-	3.2.5	No change	Does not meet the criteria for technical compatibility	2
4.3.5 Detection of derailleurs and scotch blocks	-	-	Withdrawn	Title only	2
4.3.5.1 Detection of derailleurs and scotch blocks	-	3.2.6	Redrafted	Does not meet the criteria for technical compatibility	2
-	-	G 3.2.7	New	Rationale	2
-	-	G 3.2.8	New	Rationale	2
-	-	G 3.2.9	New	Guidance	2
-	-	G 3.2.10	New	Guidance	2
-	-	G 3.2.11	New	Guidance	2
-	-	G 3.2.12	New	Guidance	2
-	-	G 3.2.13	New	Guidance	2
4.4 Flangeway and track gauge in points	4.4	-	Redrafted	Title only	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
4.4.1 General requirements for flangeway and track gauge in points	4.4.1	-	No change	Title only	2
4.4.1.1 General requirements for flangeway and track gauge in points	-	-	Withdrawn	Covered by 2.9.3	2
4.4.1.2 General requirements for flangeway and track gauge in points	-	-	Withdrawn	Covered by 4.4.2	2
4.4.1.3 General requirements for flangeway and track gauge in points	-	-	Withdrawn	Covered by 2.9.3	2
-	G 4.4.1.1	-	New	Guidance	2
-	G 4.4.1.2	-	New	Guidance	2
4.4.2 Stretcher bars on switches and switch diamonds	-	-	Withdrawn	Title only	2
4.4.2.1 Stretcher bars on switches and switch diamonds	G 4.4.1.3, G 4.4.1.4	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
4.4.3 Flangeway in switches	4.4.2	-	No change	Title only	2
4.4.3.1 Flangeway in switches	4.4.2.1, 4.4.2.2	-	Redrafted	Tabulated	2
4.4.3.2 Flangeway in switches	4.4.2.2	-	Redrafted	For clarification	2
-	G 4.4.2.3	-	New	Rationale	2
-	G 4.4.2.4	-	New	Rationale	2
-	G 4.4.2.5	-	New	Rationale	2
-	G 4.4.2.6	-	New	Rationale	2
-	G 4.4.2.7	-	New	Guidance	2
-	G 4.4.2.8	-	New	Guidance	2
-	G 4.4.2.9	-	New	Guidance	2
-	G 4.4.2.10	-	New	Guidance	2
4.4.4 Flangeway in switch diamonds	4.4.3	-	No change	Title only	2
4.4.4.1 Flangeway in switch diamonds	4.4.3.1	-	Redrafted	Tabulated	2
4.4.4.2 Flangeway in switch diamonds	4.4.3.1	-	Redrafted	Tabulated	2
-	G 4.4.3.2	-	New	Rationale	2
-	G 4.4.3.3	-	New	Rationale	2

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-	G 4.4.3.4	-	New	Rationale	2
-	G 4.4.3.5	-	New	Rationale	2
-	G 4.4.3.6	-	New	Guidance	2
4.4.5 Flangeway in swing nose crossings	4.4.4	-	No change	Title only	2
4.4.5.1 Flangeway in swing nose crossings	4.4.4.1	-	Redrafted	Tabulated	2
4.4.5.2 Flangeway in swing nose crossings	4.4.4.2	-	Redrafted	For clarification	2
-	G 4.4.4.3	-	New	Rationale	2
-	G 4.4.4.4	-	New	Rationale	2
-	G 4.4.4.5	-	New	Rationale	2
-	G 4.4.4.6	-	New	Guidance	2
4.5 Particular requirements for train operated points	-	3.3	Redrafted	Title only	2
4.5.1 Particular requirements for train operated points	-	3.3.1	No change	Does not meet the criteria for technical compatibility	2
4.5.2 Particular requirements for train operated points	-	3.3.2	Redrafted	Does not meet the criteria for technical compatibility. Redrafted in RSSB style and to aid clarity.	2
4.5.3 Particular requirements for train operated points	-	3.3.3	Redrafted	Does not meet the criteria for technical compatibility. Redrafted in RSSB style and to aid clarity.	2
-	-	G 3.3.4	New	Rationale	2
-	-	G 3.3.5	New	Guidance	2
-	-	G 3.3.6	New	Guidance	2
-	-	G 3.3.7	New	Guidance	2
4.6 Limits on wear and damage to switches, switch diamonds and swing nose crossings	-	3.4	Redrafted	Edited for brevity. Reference to switches, switch diamonds and swing nose crossings not required	2
4.6.1 Limits on wear and damage to switches, switch diamonds and swing nose crossings	-	3.4.1, G 3.4.6	Redrafted	Does not meet the criteria for technical compatibility. Requirement edited to be more concise and align with RSSB style guide. List of particular features moved to guidance.	2
-	-	G 3.4.2	New	Rationale	2
-	-	G 3.4.3	New	Rationale	2
-	-	G 3.4.4	New	Guidance	2
-	-	G 3.4.5	New	Guidance	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
4.7 Requirements for crossings	Part 4	-	Redrafted	Title only	-
4.7.1 Selection of crossings	4.2	-	No change	-	3
4.7.1.1 Selection of crossings	4.2.1	-	Redrafted	Improved clarity	3
4.7.1.2 Selection of crossings	4.2.2	-	Redrafted	Improved clarity	-
-	G 4.2.3	-	New	Rationale	3
-	G 4.2.4	-	New	Rationale	3
-	G 4.2.5	-	New	Rationale	3
-	G 4.2.6	-	New	Guidance	3
-	G 4.2.7	-	New	Guidance	3
-	G 4.2.8	-	New	Guidance	3
-	G 4.2.9	-	New	Guidance	3
4.7.1.3 Selection of crossings	4.3.1	-	No change	-	-
4.7.1.4 Selection of crossings	4.3.2	-	No change	-	-
-	G 4.3.3	-	New	Rationale	2
-	G 4.3.4	-	New	Rationale	2
-	G 4.3.5	-	New	Rationale	2
4.7.1.5 Selection of crossings	G 4.3.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
4.7.1.6 Selection of crossings	-	-	Withdrawn	Not required	2
4.7.2 Flangeway and check gauge for fixed crossings	4.4.5	-	No change	Title only	3
4.7.2.1 Flangeway and check gauge for fixed crossings	4.4.5.1, G 4.4.5.3	-	Redrafted	For clarification, some parts of requirement moved to guidance	3
-	G 4.4.5.2	-	New	Rationale	3
-	G 4.4.5.4	-	New	Guidance	3
4.7.2.2 Flangeway and check gauge for fixed crossings	G 4.4.5.5	-	Converted to guidance	Does not meet the criteria for technical compatibility	3
Part 5 Application of this Document	Part 5	-	No change	-	-

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
5.1 Application - infrastructure managers	-	-	Withdrawn	Title only	-
5.1.1 Scope	5.1	-	No change	-	-
5.1.1.1 Scope	-	-	Withdrawn	Superseded	2
5.1.1.2 Scope	-	-	Withdrawn	Superseded	2
5.1.1.3 Scope	-	-	Withdrawn	Superseded	2
-	5.1.1	-	New	Defines scope of application.	2
-	5.1.2	-	New	Defines scope of application.	2
-	5.1.3	-	New	Defines scope of application.	2
-	5.1.4	-	New	Defines scope of application.	2
5.1.2 Exclusions from scope	5.2	-	No change	Title only	-
5.1.2.1 Exclusions from scope	-	G 3.2.10	Converted to guidance	Does not meet the criteria for technical compatibility	2
5.1.2.2 Exclusions from scope	-	2.1.4, 3.2.6	Redrafted	Does not meet the criteria for technical compatibility	2
-	5.2.1	-	New	Explains there are no exclusions from scope	2
5.1.3 Compliance with Part 2 of this document	-	-	Withdrawn	Title only	2
5.1.3.1 Compliance with Part 2 of this document	-	-	Withdrawn	Superseded	2
5.1.3.2 Compliance with Part 2 of this document	-	-	Withdrawn	Superseded	2
5.1.3.3 Compliance with Part 2 of this document	-	-	Withdrawn	Superseded	2
5.1.3.4 Compliance with Part 2 of this document	-	-	Withdrawn	Superseded	2
5.1.3.5 Compliance with Part 2 of this document	-	-	Withdrawn	Superseded	2
5.1.4 Compliance with Part 3 of this document	-	-	Withdrawn	Title only	2
5.1.4.1 Compliance with Part 3 of this document	-	-	Withdrawn	Superseded	2
5.1.4.2 Compliance with Part 3 of this document	-	-	Withdrawn	Superseded	2
5.1.4.3 Compliance with Part 3 of this document	-	-	Withdrawn	Superseded	2
5.1.5 Compliance with Part 4 of this document	-	-	Withdrawn	Withdrawn. Title only	2

From GCRT5021 issue five	To GCRT5021 issue six	To RIS-7707-INS issue one	Way forward	Comments	Objective
5.1.5.1 Compliance with Part 4 of this document	-	-	Withdrawn	Withdrawn. No longer relevant	2
5.1.5.2 Compliance with Part 4 of this document	4.4.2.2	-	Redrafted	For clarification	2
5.1.6 General compliance date for infrastructure managers	5.3	-	Redrafted	Title only	-
5.1.6.1 General compliance date for infrastructure managers	5.3.1	-	Revised	New in to force date	-
5.1.6.2 General compliance date for infrastructure managers	-	-	Withdrawn	No longer required	-
5.1.7 Exceptions to general compliance date	5.4	-	Redrafted	Title only	-
5.1.7.1 Exceptions to general compliance date	5.4.1	-	Revised	Template text	-
5.2 Application - railway undertakings	-	-	Withdrawn	Superseded	2
5.2.1 Application - railway undertakings	-	-	Withdrawn	Superseded	2
-	5.5	-	New	Title only	-
-	5.5.1	-	New	Template text. Explains applicability of requirements for projects already underway.	-
-	5.6	-	New	Title only	-
-	5.6.1	-	New	Template text. Explains deviation process.	-
-	5.6.2	-	New	Template text. Explains exemption to NTSN process.	-
5.3 Health and safety responsibilities	5.7	-	No change	-	-
5.3.1 Health and safety responsibilities	5.7.1	-	No change	-	-
A.1.1 List of open points	-	-	Withdrawn	Background information	2
B.1.1 Track gradient design - factors to be considered	G 2.7.2.7	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
B.1.2 Track gradient design - factors to be considered	G 2.7.2.7	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
B.1.3 Track gradient design - factors to be considered	G 2.7.2.8	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
C.1.1 Twist faults and vehicle	-	-	Withdrawn	Background information	2
C.1.2 Twist faults and vehicle	-	-	Withdrawn	Background information	2
C.1.3 Twist faults and vehicle	-	-	Withdrawn	Background information	2
C.1.4 Twist faults and vehicle	-	-	Withdrawn	Background information	2

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C.1.5 Twist faults and vehicle	-	-	Withdrawn	Background information	2
D.1.1 Reprofilng of rails	G 3.2.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
D.1.2 Reprofilng of rails	G 3.2.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
D.1.3 Reprofilng of rails	G 3.2.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
D.1.4 Reprofilng of rails	G 3.2.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
D.2.1 In-service rail head profile	G 3.2.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
D.2.2 In-service rail head profile	G 3.2.1.6	-	Converted to guidance	Does not meet the criteria for technical compatibility	2
D.2.3 In-service rail head profile	-	-	Withdrawn	Not required	2
D.2.4 In-service rail head profile	-	-	Withdrawn	Not required	2
E.1.1 Point identity	-	G 2.1.8 to G 2.1.10	Converted to guidance	Previously guidance in appendix. Now incorporated into relevant section.	2
F.1.1 Free wheel passage and flangeway in switches	-	-	Withdrawn	Background information	2
G.1.1 Flangeway in switches	-	-	Withdrawn	Background information	2
G.1.2 Flangeway in switches	-	-	Withdrawn	Background information	2
G.1.3 Flangeway in switches	-	G 3.1.10	Converted to guidance	Previously explanatory note in appendix. Now incorporated into relevant section.	2
G.1.4 Flangeway in switches	-	-	Withdrawn	Background information	2
G.1.5 Flangeway in switches	-	G 3.2.5	Converted to guidance	Previously explanatory note in appendix. Now incorporated into relevant section.	2
G.1.6 Flangeway in switches	-	-	Withdrawn	Background information	2
H.1.1 Use of fixed obtuse crossings	-	-	Withdrawn	Covered by 4.4.5.1	2
H.1.2 Use of fixed obtuse crossings	-	-	Withdrawn	Not applicable	2
H.1.3 Use of fixed obtuse crossings	-	-	Withdrawn	Not applicable	2
H.1.4 Use of fixed obtuse crossings	-	-	Withdrawn	Not applicable	2
H.1.5 Use of fixed obtuse crossings	-	-	Withdrawn	Not applicable	2
H.1.6 Use of fixed obtuse crossings	-	-	Withdrawn	Not applicable	2

