

Cambridge Science Park Station Interchange

Form F002: Statement of Design Intent

New Modular Equipment Buildings & Enclosed Compounds




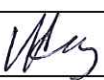
August 2013

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Document History

JOB NUMBER: 5110967		DOCUMENT REF: 5110967-ATK-REP-CV-000204				
						
01	For Approval	RR	CM	RT	VFS	01.08.13
Revision	Purpose Description	Originated	Checked	Reviewed	Authorised	Date

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

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Form F002

Appendices

- A1 List of Design Standards
- A2 Eurocode Compliance Summary

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Part 1: Details

1.1 Scope of Design Works

As set out in the relevant Form F001 (5110967-ATK-REP-CV-000004), this submission relates to the design of the new asset(s) listed below;

Description of Asset	Permanent or Temporary Works
New Modular Equipment Building & Enclosed Compound <p>The new modular equipment building shall comprise of a Network Rail approved modular construction, fixed directly onto a reinforced concrete ground slab foundation. The ground slab shall be cast in-situ and will have a surface area of 15.5m long x 3m wide. Additionally, it is proposed to construct a 1.2m wide footpath with a bituminous surfacing around the entire perimeter of the equipment building to provide a safe pedestrian access to all four sides. The new building will be contained within an enclosed compound complete with vehicle access gates at both ends. The enclosed compounds will comprise of a 2.4m high galvanised steel security fence, measuring 17.9m long x 5.4m wide.</p>	Permanent Works
New Modular Sub-Station Building & Enclosed Compound <p>The new modular equipment building shall comprise of a Network Rail approved modular construction, fixed directly onto a reinforced concrete ground slab foundation. The ground slab shall be cast in-situ and will have a surface area of 5.5m long x 5.5m wide. Additionally, it is proposed to construct a 1.2m wide footpath with a bituminous surfacing around the entire perimeter of the equipment building to provide a safe pedestrian access to all four sides. The new building will be contained within an enclosed compound complete with a pedestrian access gate at one side. The enclosed compounds will comprise of a 2.4m high galvanised steel security fence on three sides and making use of the existing 2.2m high steel security fence located along the rear of the new sub-station building. The enclosed compound will provide an area of 6.7m long x 6.7m wide.</p>	Permanent Works

This document covers the construction of a proposed new modular equipment building and a proposed new modular sub-station building only. Both modular buildings will be constructed within fenced compound comprising of a new 2.4m high galvanised steel security fence with lockable gate

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access points. All other infrastructure proposals in relation to the new station will be covered within separate submissions.

1.2 Proposals for the Staging of the Design and Design Check submissions

The design calculations and assumptions will be checked by a member of the design team who has not been involved in the preparation of the design calculations or assumptions.

The design is subject to Atkins Quality Assurance procedures including regular design reviews to ensure compliance. The design will be checked and reviewed within the same design team and will be approved by the CRE.

The signed Form 2 will be used by the designer and checker to progress the detailed design. Any significant changes from the signed Form 2 will be made known to all the relevant signatories in Parts 3 to 7. Any departures from the Form 1 will also be recorded on the Form 3 (Design and Checking Certificate).

1.3 Design Statement

1.3.1 General

The new equipment building is proposed to comprise of a Network Rail approved modular construction which satisfies the technical requirements stated within BR1615D "Specification for Relocatable Equipment Buildings for S&T use" as an absolute minimum.

Additionally, the following Eurocodes and its associated National Annex should be used to calculate the forces applied from general actions, which the building will have to frequently withstand over its design life;

- BS EN 1991-1-1:2002 Eurocode 1: General Actions – Densities, self-weight, imposed loads for buildings
- BS EN 1991-1-2:2002 Eurocode 1 – General Actions – Actions on structures Exposed to Fire
- BS EN 1991-1-3:2003 Eurocode 1 – General Actions – Snow loads
- BS EN 1991-1-4:2005 Eurocode 1 – General Actions – Wind actions
- BS EN 1991-1-6:2005 Eurocode 1 – General Actions – Actions during execution
- BS EN 1991-1-7:2006 Eurocode 1 – General Actions – Accidental actions

The modular building shall be fixed directly onto a reinforced concrete ground slab foundation as per the manufacturer's specification. The structural design of the proposed reinforced concrete ground slab foundation shall be carried in accordance with BS EN 1992-1-1:2004 "Eurocode 2: Design of Concrete Structures. General Rules and Rules for Buildings" whilst satisfying the technical requirements stated within NR/CIV/SD/FORMA/620 "Typical Foundations for Modular Buildings Foundations". Reference to BR1615D "Specification for Relocatable Equipment Buildings for S&T use" is recommended at detailed design to ensure that all equipment requirements are provided within the proposed reinforced concrete ground slab foundation.

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It is proposed to install a 2.4m high galvanised steel security fence compound around both modular buildings, complete with lockable gates. The proposed steel security fence shall be designed in accordance with BS 1722-12:2006 "Fences. Specification for Steel Palisade Fences".

The proposed modular buildings and security fencing may require traction bonding provisions due to the overhead line apparatus being in close proximity. These provisions, if required, shall comply with NR/SP/ELP/21085 "Specification for the Design of Earthing and Bonding Systems for 25kV A.C. Electrified Lines" and should be confirmed through detailed design.

The principal contractor is required to carry out a detailed services search including identification of statutory and railway services and to ensure that the excavation is planned and managed in accordance with NR/L2/AMG/1030 Issue 1 December 2008 "Working Safely in the Vicinity of Buried Services". If any doubt exists about the presence of underground services, the appropriate utility company shall be contacted directly for further advice. Additionally, the appointed principal contractor shall also ensure that all power and water supplies, if any, within the existing buildings are made redundant prior to commencing the demolition works.

All proposed works shall be executed and managed under a Network Rail approved safe system of work.

Design and Category 1b Checks, where applicable, will be carried out in accordance with Atkins Technical Instructions and NR/L2/CIV/003.

The AIP and this Statement of Design Intent, along with associated comments by those approving, will be reviewed by the Designer before commencement of detailed design.

The Check process will maintain an appropriate degree of independence from the Design. Where necessary the Checker will communicate directly with the Designer to clarify areas of uncertainty and to report the results of the Check.

The Checker will countersign the Certificate of Design and Checking when satisfied that all aspects of the design have been adequately addressed. All necessary certification and design check statements will be forwarded to Network Rail.

The Contractor's Responsible Engineer (Design) (CRE) will oversee and review the Design and Check processes to ensure that they are in accordance with appropriate standards and that any differences are resolved. The CRE will take responsibility for ensuring that the design complies with the AIP and Statement of Design Intent and all applicable standards in accordance with NR/L2/INI/02009.

Design decisions made in accordance with NR/L2/CIV/003/F1990-1997 are included within the text where appropriate and summarised in Appendix A2. The following revisions of the forms have been used:

- F1990 version 2.0 dated June 2012
- F1991 version 2.0 dated June 2012
- F1992 version 2.0 dated June 2012

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- F1993 version 2.0 dated June 2012
- F1994 version 2.0 dated June 2012
- F1997 version 2.0 dated June 2012

It is anticipated that the level of inspection during execution will be IL2 "Inspection in accordance with the procedures of the organisation" (BS EN 1990: Basis of Structural Design – Table B5). Any off-site fabrication will be IL3 "Third party inspection".

1.3.2 Method of Analysis

The proposed modular buildings shall be a Network Rail approved modular building system which satisfy the structural requirements in accordance with the Eurocodes and its associated National Annex provided in section 1.3.1. Furthermore the new modular buildings shall satisfy the technical requirements stated within BR1615D "Specification for Relocatable Equipment Buildings for S&T use" as an absolute minimum.

The permanent load from the modular buildings and the equipment to be housed within, along with the anticipated variable loads shall be confirmed by the manufacturer at detailed design stage. The calculated permanent and variable actions shall be uniformly distributed over the area of the proposed ground slab. Additionally, all fixings between the concrete ground slab and the modular buildings shall be confirmed by manufacturer at detailed design.

The structural design of the ground slab shall be carried out in accordance with the Eurocodes and its associated National Annex provided in section 1.3.1. and should apply a bearing pressure which does not exceed 50kN/m², as per the requirements stated within NR/CIV/SD/FORMA/620 "Typical Foundations for Modular Buildings Foundations".

The proposed 2.4m high galvanised steel security fencing shall be designed in accordance with BS 1722-12:2006 "Fences. Specification for Steel Palisade Fences".

All drainage components, if any, shall be designed to satisfy the technical requirements as stated within NR/L3/CIV/005 Part 2A "Railway Drainage Systems Manual Part 2A; General design requirements". The proposed piped drainage system shall also comply with NR/L3/CIV/140/MC185C "Model Clause 185; Track Drainage".

1.3.3 Description of Idealised Structure

The structural design of the proposed modular buildings shall be carried out by a Network Rail approved supplier and manufacturer. The manufacturer shall also confirm the fixings between the structural components and the proposed fixings between the modular buildings and the reinforced concrete ground slab.

The fixings between the modular buildings and the reinforced concrete ground slab shall be capable of resisting the calculated moments and shear forces. Furthermore, the embedment depth for the fixings should be adequate to resist the calculated pull-out forces.

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The proposed in-situ reinforced concrete foundations shall be designed as a ground supported using high tensile reinforcement mesh. The global stability of the concrete slab shall be checked to resist the calculated overturning and sliding forces applied from the modular buildings. These forces should be confirmed by the Network Rail approved supplier and manufacturer.

The geotechnical (GEO), equilibrium (EQU) and structural (STR) ultimate limit states will be verified through the detailed design process in relation to the proposed modular buildings and reinforced concrete ground slab foundations in accordance with BS EN 1990. Partial factors and combination factors will be applied, where applicable, as specified within BS EN 1990.

1.3.4 Geotechnical

1.3.4.1 Foundations and Ground Conditions

An assessment of the foundation options and any ground improvement underlying the proposed building and compounds will take into account the imposed loadings and the presence / depth of unacceptable Made Ground or unacceptable natural deposits. The results of the assessment will identify:

- Review of proposed foundation solution and arrangement;
- acceptability of ground conditions at and underlying proposed formation level;
- bearing, sliding and overturning failure of proposed foundations;
- review of total and differential settlements across platform;
- any requirement of ground improvement and the most appropriate form (e.g. excavate and replace, vibro stone columns etc.).

Historical and recent ground investigation information will be used to fully establish ground and groundwater conditions across the platform. Where required to support design development additional investigations shall be undertaken.

Exploratory holes typically indicate that the ground conditions are expected to comprise granular Made Ground overlying loose to medium dense granular River Terrace deposits which in turn overlie firm becoming very stiff with depth Gault Clay.

1.3.4.2 Designed Soil Parameters and Groundwater

In accordance with BS EN 1997-1:2004, characteristic values for geotechnical parameters shall be chosen from field and laboratory tests, complemented as appropriate by theory, correlation or empiricism from test results. The values chosen shall be cautious estimates of the value affecting the occurrence of the limit state. Soil properties to be used are as set out in the appropriate F001 (Document Reference: 5110967-ATK-REP-CV-000004) and amended during design development and / or on receipt of any additional ground investigations.

Ongoing groundwater monitoring across the site and is anticipated to continue during the design period. Characteristic water levels for the foundations have been based on an appraisal of the groundwater levels measured or groundwater strikes encountered during drilling. The design water levels are derived by adding up to 1m to the characteristic values. Where little or no information is available, water levels have been assessed based on either monitoring data from nearby boreholes or on the basis of cautious assumptions.

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1.3.4.3 Design Philosophy

Granular Made Ground is likely to be present at the proposed foundation levels. Due to its inherent variability, Made Ground is not normally considered to be a suitable bearing stratum. As such, ground improvement or other remedial measures are recommended.

Ground improvement of the Made Ground using vibro replacement stone columns is considered to represent the optimal solution. Material conformance, plate load and / or zone testing tests shall be carried out as required in accordance with the ICE Specification for Ground Treatment to validate performance of the treatment.

During assessment, review of any additional investigations and information not available at outline design shall be undertaken to determine if excavation and replacement of Made Ground represents a more economical solution.

1.3.4.4 Actions

For foundation design, the following geotechnical actions are considered:

- the weight of soil;
- groundwater pressures;
- dead and imposed load from structures;
- horizontal or lateral actions;
- removal of load due to excavation of ground;
- variable loading e.g. pedestrian / rail;
- vertical displacements due to underlying ground movements.

The actions specific to each design case and whether they are favourable or unfavourable will be assessed.

1.3.4.5 Bearing and Sliding Resistance

For foundations the design bearing resistance of the founding stratum is calculated according to Eurocode 7 (BS EN 1997-1:2004) for undrained and drained conditions.

The bearing resistance for conventional pad foundations equation is:

$$R/A' = c' N_c b_c s_c i_c + q' N_q b_q s_q i_q + 0.5 \gamma' B' N_\gamma b_\gamma s_\gamma i_\gamma$$

where:

$$N_q = e^{\pi \tan \phi'} \tan^2(45 + \phi'/2)$$

$$N_c = (N_q - 1) \cot \phi'$$

$$N_\gamma = 2 (N_q - 1) \tan \phi'$$

For foundations in sloping ground modifications to the influence factors above will be required. For foundations bearing on SHW Class 1, characteristic values of $c' = 0$ kPa, $\phi' = 35^\circ$ are used in design.

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Sliding resistance equation is:

$$V \tan \delta'$$

where:

V = resultant vertical force

δ = interface friction angle

The design of vibro replacement shall generally be undertaken in accordance with guidance set out by Heinz J. Priebe in Technical paper GT 037-13, The Design of Vibro Replacement.

1.3.4.6 Settlement

Settlement of the buildings is to be estimated using the Oasys software Pdisp, which calculates stresses and displacements within linear elastic or non-linear soil masses. Pressures are applied vertically as uniformly distributed loads on rectangular areas.

Values of drained vertical Young's Modulus are derived using the relationship proposed by Stroud (1989) with penetration resistance 'N'. Values of N for all existing ground conditions underlying formation and any engineered fill placed as part of any ground improvement works will be assigned appropriate 'N' values. As a sensitivity analysis, lower and upper bound values will be selected.

Settlements caused by consolidation of underlying cohesive soils are also estimated using traditional hand calculations. Bedrock level is to be taken as the horizontal rigid boundary.

A review of settlement following vibro replacement ground improvement shall also be undertaken taking cognisance of the guidance provided by Technical paper GT 037-13, The Design of Vibro Replacement.

1.3.4.7 Differential settlement to be allowed for in design

Differential settlement design criteria are as set out in the appropriate F001 (see 1.1 above for document reference).

1.3.4.9 Protection against Chemical Attack

To allow an assessment of the measures necessary for the protection of buried concrete in accordance with the procedures within BRE Special Digest 1 document, all sulphate content and pH values of soil and groundwater laboratory testing from available ground investigation will be reviewed.

The following methodology has been applied to determine the characteristic values used in the assessment and will be based on a brownfield site:

- water-soluble sulphate concentrations;
- characteristic soil pH value;
- total potential sulphate derived from the Total Sulphur test, using the equation "TPS % SO₄ = 3 x TS % S";
- potential sulphate values.

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The assessment will be tailored to suit the number of tests for an individual structure (i.e. mean of the highest 20%).

Design sulphate classes and associated ACEC (Aggressive Chemical Environment for Concrete) classes will be for each of the geological formations and an overall classification for the structure.

1.3.4.10 Geotechnical Instrumentation

As a minimum settlement markers located on the should be in place post-construction to monitor any ongoing long term settlement and assist with validation of ground improvement below the platform.

1.3.4.11 Assumptions and Risks

While not exhaustive, the foundation design for the structure is based on the following assumptions and potential risks:

- the ground conditions and testing (in situ and laboratory) results from all available ground investigations are representative at the platform location;
- Made Ground is considered to represent an unsuitable bearing stratum and will require to be treated by means of vibro-replacement ground improvement or excavated and replaced with SWH Class 1 granular fill beneath formation of foundations;
- groundwater and seepages may be encountered within excavations;
- completed ground improvement shall be subject to validation and conformance testing;
- any potentially expansive materials (slag, clinker) shall be removed from below the foundations;
- an appropriate construction methodology shall be adopted to prevent deterioration of formation materials or damage to foundations.

1.4 Standards to be used in the Design

1.4.1 Date of Standards Freeze

The standard freeze date has been confirmed as June 2012 (inclusive of NR Company Standards issue 84 – June 2012 and RGS – June 2012).

1.4.2 List of Design Standards

Refer to **Appendix A1**.

1.5 Derogations and Temporary Non Conformances to Standards

None.

1.6 Any other relevant information

1.6.1 Hidden/partially hidden parts/elements for the purposes of examination/inspection

None.

1.6.2 Other Information

None.

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Matters to be considered

The matters that do not apply to the Works to meet the particular CR-T are to be struck out by the Contractor's Responsible Engineer.

1. The Asset affected will be safe in use, so far as is reasonably practicable, when used in accordance with its intended purpose.
2. Hazards are managed in accordance with requirements of the CDM Regulations. Residual risks are documented in a Risk Register. Risks to both (a) health and safety during construction, maintenance, use, railway operations, and (b) occupational health and safety, are as low as reasonably practicable or better.
3. The provisions for examination, maintenance, and eventual renewal/removal are satisfactory.
4. The overall Design concept and appearance of the infrastructure are appropriate for their purpose, location, and site conditions.
5. Where the proposal includes the strengthening, partial renewal, or removal of structures, the stability of the whole structure and all its parts at all stages of the Works are addressed, including the long-term adequacy of the remaining elements of the structure and supporting soil.
6. The effects of the proposals on existing railway infrastructure are adequately considered.
7. Arrangements for liaison and consultation with external bodies (such as Local Authorities, statutory undertakers, the Environment Agency, and landowners) are satisfactory, and the likely effects of the proposals on external organisations are addressed. Required Permissions/Approvals have been obtained to support the proposals.
8. The impact of the proposals on services and service routes is adequately investigated and appropriate mitigation measures have been agreed with the appropriate Authority and incorporated into the Design.
9. The effects on other disciplines including track, signalling (including signal sighting), telecommunications, electrification, lighting, and other operational electrical and mechanical equipment have been satisfactorily considered.
10. The requirements/recommendations of Railway Group Standards and Network Rail standards have been addressed, and proposed departures from these standards are identified and justified.
11. The requirements of the Building Regulations are met.
12. The proposed Design loadings are appropriate, and any non-standard accidental loadings are correctly identified.
13. The requirements of **NR/L2/CIV/003/F1990** to **F1997** have been considered, and the selected options/choice recorded.
14. The proposed Design standards and methods of Design are suitable.
- ~~15. For a Design that requires a Category 3 Design Check:
A Geotechnical Design Report (which meets the requirements of **BS EN 1997**) is available. That Report justifies the selection of the Geotechnical Design parameters, and outlines any further work required for implementation.~~
- ~~16. The Design complies with the clearance and platform stepping distance requirements.~~
17. Important Design matters not covered by standards are identified.
18. The proposals are appropriately economic and sustainable.

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Part 2: Designer's Submission

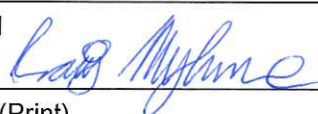
I confirm that the criteria specified in **NR/L2/CIV/003** have been considered, and

- (a) This Statement of Design Intent is submitted on behalf of :

Atkins
Rail Solutions
200 Broomielaw
Glasgow
G1 4RU

and, (b) Unless identified in **1.2** and **1.5**,

- (i) the Design will comply with all relevant standards and will be delivered in accordance with CR-T, and
- (ii) the deliverables identified within the CR-T will be completed and submitted in support of this submission.

Signed 	Title CRE CIVILS DESIGN
Name (Print) CRAIG MACFARLANE	Date 01/08/13
To be signed by the Contractor's Responsible Engineer appointed for the relevant Design phase.	

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Part 3: Construction Organisation's Acknowledgement of Submission by a Sub-Contract Designer

The organisation named in Part 2 is engaged as a sub-contractor to the organisation stated below. I acknowledge the submission of this certificate to Network Rail in support of our contract obligation for the provision of this Statement of Design Intent on behalf of:

NOT APPLICABLE

I confirm that, unless stated in Part 2, the submission complies with the CR-T.

Signed	Title
Name (Print)	Date
To be signed by the Contractor's Responsible Engineer appointed for the Construction phase.	

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Part 4: Project Engineer's Comments

I have considered the submission and confirm that the information specified in **NR/L2/CIV/003** and the CR-T is included in the submission. My comments on the submission are as follows:

I have reviewed the submission and confirm that, unless stated in Part 2, it complies with the Approval in Principle, and the Asset Manager's requirements for this project as set out in the Project Requirements Specification.

I confirm that the Design is to be checked in accordance with the following Categories :

Description of Asset	Permanent or Temporary Works	Design Check Category
Modular Equipment Buildings & Enclosed Compounds	Permanent Works	1b

Signed	Title
Name (Print)	Date
To be signed by the Project Engineer (Building and Civil Engineering)	

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Part 5: Asset Managers' Approval

This Part is only to be used where the outline Design deviates from the PRS and so endorsement is required from the relevant Asset Engineer(s) for which the Statement of Design Intent has been submitted.

I have considered the submission and confirm that the proposed deviations to the PRS are acceptable subject to any comments listed below being addressed within the detailed Design.

Signed	Title
Name (Print)	Date
To be signed by the Asset Manager (Structures)	

Signed	Title
Name (Print)	Date
To be signed by the Asset Manager (Geotechnical)	

Signed	Title
Name (Print)	Date
To be signed by the Asset Manager (Buildings)	

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Appendix A1

List of Design Standards

RAILWAY GROUP STANDARDS AND CODES OF PRACTICE (REVISION DATE DEC 2012)

INFRASTRUCTURE

TRACK, STRUCTURES, STATIONS & FIXED INFRASTRUCTURE (RT-RAILWAY GROUP STANDARDS)

GC/RT5021	Iss 5 Dec 11	Track System Requirements
GC/RT5033	Iss 2 Dec 07	Terminal Tracks — Requirements for Buffer Stops, Arresting Devices and End Impact Walls
GC/RT5112	Iss 2 Dec 08	Rail Traffic Loading Requirements for the Design of Railway Structures
GC/RT5212	Iss 1 Feb 03	Requirements for Defining and Maintaining Clearances
GE/RT8073	Iss 2 Oct 09	Requirements for the Application of Standard Vehicle Gauges
GI/RT7016	Iss 4 Sep 10	Interface Between Station Platforms, Track and Trains

TRACK, STRUCTURES, STATIONS & FIXED INFRASTRUCTURE (RC-RAILWAY APPROVED CODES OF PRACTICE)

GC/RC5633	Iss 2 Dec 07	Recommendations for the Risk Assessment of Buffer Stops, Arresting Devices and End Impact Walls
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TRACK, STRUCTURES, STATIONS & FIXED INFRASTRUCTURE (GN-RAILWAY GUIDANCE NOTES)

GE/GN8573	Iss 3 Oct 09	Guidance on Gauging
GI/GN7616	Iss 1 Dec 10	Guidance on Station Platform Geometry

TRACK, STRUCTURES, STATIONS & FIXED INFRASTRUCTURE (OTHER)

RIS-7700-INS	Iss 1 Dec 07	Rail Industry Standard for Station Infrastructure
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CONTROL COMMAND & SIGNALLING

GI/RT7033	Iss 2 Oct 09	Lineside Operational Safety Signs
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ENERGY

GE/RT8025	Iss 1 Oct 01	Electrical Protective Provisions for Electrified Lines
GL/RT1253	Iss 1 Apr 00	Mitigation of DC Stray Current Effects

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NETWORK RAIL COMPANY STANDARDS (NR/CAT/STP/001 ISS 86 DEC 2012 – MAR 2013)
4.2.1 CIVIL ENGINEERING
CIVIL ENGINEERING – COMPANY STANDARDS

New Designation	Former Designation		
<i>NR/CS/CIV/044</i>	RT/CE/P/044	Iss 1 Apr 04	Managing Structures Works
<i>including</i>			
NR/BS/LI/045	N/A	Iss 3 Aug 08	Monitoring track over or adjacent to Civil Engineering works: procedure and intervention levels
NR/BS/LI/187	N/A	Iss 1 Jun 10	Application of Structural Eurocodes
NR/BS/LI/188	N/A	Iss 1 Jun 10	Design of Structures: Additional requirements relating to hidden parts

CIVIL ENGINEERING – SPECIFICATIONS (INCLUDING PROCEDURES)

<i>NR/SP/CIV/003</i>	RT/CE/S/003	Iss 2 Apr 04	Technical Approval of Design, Construction and Maintenance of Civil Engineering Infrastructure
<i>including</i>			
NR/BS/LI/189	N/A	Iss 1 Jun 10	Technical Approval: Additional requirements relating to hidden parts
NR/SP/CIV/035	RT/CE/S/035	Iss 2 Feb 04	Assessment of Structures
NR/SP/CIV/044	RT/CE/S/044	Iss 2 Aug 04	Design & Construction of Undertrack Crossings

CIVIL ENGINEERING – LEVEL 1

NR/L1/CIV/032	RT/CE/P/032	Iss 2 Sep 09	The Management of Structures
<i>including</i>			
NR/BS/LI/176	N/A	Iss 1 May 10	Structures and Earthworks: Urgent Defect Reports
NR/BS/LI/192	N/A	Iss 1 Sep 10	Management of existing structures and earthworks: records of evaluations

CIVIL ENGINEERING – LEVEL 2

NR/L2/CIV/003	-	Iss 4 Jun 12	Engineering Assurance of Building and Civil Engineering Works
NR/L2/CIV/086	-	Iss 3 Jun 11	Management of Earthworks

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

CIVIL ENGINEERING – LEVEL 3

NR/L3/CIV/004	-	Iss 1 Jun 12	Index of Building and Civil Engineering Forms
NR/L3/CIV/005	-	Iss 2 Jun 11	Railway Drainage Systems Manual – Contents
NR/L3/CIV/005-1	-	Iss 1 Dec 10	Purpose, Scope and General Management Requirements
NR/L3/CIV/005-2A	-	Iss 1 Dec 10	General Design Requirements
NR/L3/CIV/005-2B	-	Iss 1 Dec 10	Hydraulic Design of New Drainage Systems
NR/L3/CIV/005-2C	-	Iss 1 Dec 10	Design of Drainage System Components
NR/L3/CIV/005-2D	-	Iss 1 Dec 10	Remediation
NR/L3/CIV/005-2E	-	Iss 1 Dec 10	Installation
NR/L3/CIV/006	-	Iss 4 Dec 10	Handbook for the Examination of Structures
NR/L3/CIV/020	-	Iss 1 Mar 11	Design of Bridges
NR/L3/CIV/030	RT/E/PS/00030	Iss 3 Sep 11	Platform Components and Prefabricated Construction Systems
NR/L3/CIV/037	RT/CE/P/037	Iss 3 Dec 08	Managing the Risk Arising from Mineral Extraction and Landfill Operations
NR/L3/CIV/038	-	Iss 1 Dec 08	Managing the Potential Effects of Coal Mining Subsidence
NR/L3/CIV/039	RT/CE/S/039	Iss 5 Mar 09	Specification for the Assessment and Certification of Protective Coatings and Sealants
NR/L3/CIV/040	-	Iss 1 Mar 09	Specification for the use of Protective Coating Systems
NR/L3/CIV/041	RT/CE/S/041	Iss 3 Aug 08	Waterproofing Systems for Underline Bridge Decks
NR/L3/CIV/065		Iss 3 Jun 12	Examination of Earthworks
NR/L3/CIV/071	RT/CE/S/071	Iss 4 Jun 11	Geotechnical Design (NB Statements paraphrasing superseded text of EC0 shall be replaced by current versions of that text)
NR/L3/CIV/076	-	Iss 4 Sep 10	Management of the risk of Bridge Strikes from road vehicles and waterborne vessels
NR/L3/CIV/140	-	Iss 10 Sep 10	Model Clauses for Civil Engineering Works
NR/L3/CIV/151	NR/WI/CIV/151	Iss 6 Mar 12	Technical Approval of Standard Designs and Details for Civil Engineering Works
including			
NR/L3/CIV/151/F010		Iss 6 Mar 12	Index of Standard Designs and Details for Building and Civil Engineering Works

Note 1: F010 listed in NR/L3/CIV/004 as issue 7 but only issue 6 is currently available.

Note 2: Additions/amendments to list of standard drawings in F010 are set out in 'Other Network Rail Documents'

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

NR/L3/CIV/160	-	Iss 1 Jun 09	The Design of Car Parks for Railway Stations and Depots
NR/L3/CIV/162	-	Iss 2 Sep 11	Platform Extensions

CIVIL ENGINEERING – GUIDANCE NOTES (INCLUDING CODES OF PRACTICE)

New Designation	Former Designation		
NR/GN/CIV/001	RT/CE/C/001	Iss 3 Aug 08	Waterproofing of Underline Bridge Decks
NR/GN/CIV/002	RT/CE/C/002	Iss 5 Mar 09	The use of Protective Coatings and Sealants
NR/GN/CIV/015	RT/CE/C/015	Iss 1 Nov 95	The Assessment of Underbridge Capacity
NR/GN/CIV/025	RT/CE/C/025	Iss 3 Jun 06	The Structural Assessment of Underbridges
NR/GN/CIV/026	RT/CE/C/026	Iss 1 Jan 96	Examination of Tunnels
NR/GN/CIV/133	RT/CE/G/133	Iss 1 Apr 05	Information required for an Approval in Principle Submission
NR/GN/CIV/202	N/A	Iss 3 Sep 10	Management of the Risk of Bridge Strikes
NR/GN/CIV/203	N/A	Iss 1 Oct 07	Evaluation and Assessment of Earthworks
NR/GN/CIV/801	-	Iss 3 Mar 09	The Application of the Observational Approach to the Design of Remedial Works to Earthworks

4.6 ELECTRICAL POWER - SPECIFICATIONS (AS APPLICABLE TO STRUCTURES)

NR/SP/ELP/21085	N/A	Iss E3 Apr 07	Specification for the Design of Earthing and Bonding Systems for 25kV a.c. electrified lines
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4.14 INVESTMENT PROJECTS– STANDARD FUNCTIONAL PROCEDURES

NR/PRC/MPI/CI0058	N/A	Iss 1 Feb 07	Controlling the Risk of Earthwork Instability during MP&I “Civils” Excavation Works
NR/BS/LI/045	N/A	Iss 3 Aug 08	Monitoring track over or adjacent to Civil Engineering works: procedure and intervention levels
NR/L2/INI/EDT/CP0091	N/A	Iss 1 Mar 11	Specification for Computer Aided Design
NR/L3/INI/CP0063	N/A	Iss 1 Mar 10	Piling Adjacent to the Running Line
NR/L3/INI/CP0074	N/A	Iss 1 Sep 10	Project Advice Note (PAN) Process

4.18 SAFETY AND COMPLIANCE - OCCUPATIONAL HEALTH AND SAFETY POLICY – SPECS

NR/SP/OHS/069	RT/CE/S/069	Iss 2 Feb 05	Lineside Facilities for Personal Safety
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4.19 SIGNAL ENGINEERING (AS APPLICABLE TO STRUCTURES)

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

NR/L2/SIG/11204	-	Iss 8 Jun 12	Signalling Design Handbook (Modules X as applicable to Level Crossings)
NR/L3/SIG/11303	-	Iss 5 Sep 11	Signalling Installation

4.22 TRACK ENGINEERING

TRACK ENGINEERING– SPECIFICATIONS (AS APPLICABLE TO STRUCTURES)

NR/SP/TRK/036	RT/CE/S/036	Iss E1 Apr 00	Management of Gauging and Clearances
NR/SP/TRK/9003	(RT/CE/C/003)	Iss 1 Dec 05	Installation and Maintenance of Longitudinal Timbers
NR/SP/TRK/9006	(RT/CE/C/006)	Iss 1 Dec 05	Design, Installation and Maintenance of Lineside Drainage

TRACK ENGINEERING – PRODUCT SPECIFICATIONS (AS APPLICABLE TO STRUCTURES)

NR/SP/TRK/010	RT/CE/S/010	Iss 2 Oct 96	Geotextiles
NR/PS/TRK/029	RT/CE/S/029	Iss 4 Dec 05	Wood Sleepers, Bearers and Longitudinal Timbers

TRACK ENGINEERING– LEVEL 2 (AS APPLICABLE TO STRUCTURES)

NR/L2/TRK/2102	RT/CE/S/102	Iss 6 Mar 10	Design and Construction of Track
NR/L2/TRK/3038	RT/CE/S/038	Iss 5 Mar 11	Longitudinal Timbers – Design, Installation and Maintenance
NR/L2/TRK/3100	N/A	Iss 1 Sep 10	Topographic, Engineering, Land and Measured Building Surveying - Strategy and General
NR/L2/TRK/4040	RT/CE/S/040	Iss 2 Dec 10	Level Crossing Surface Systems
NR/L2/TRK/5100	N/A	Iss 2 Aug 08	Management of Fencing and other Boundary Measures
Including:			
NR/BS/LI/146	-	Iss 1 Aug 09	-
NR/BS/LI/185	-	Iss 1 Jul 10	-

TRACK ENGINEERING– LEVEL 3 AND GUIDANCE NOTES (AS APPLICABLE TO STRUCTURES)

NR/L3/TRK/3101	N/A	Iss 1 Sep 10	Topographic, Engineering, Land and Measured Building Surveying - Track
NR/GN/TRK/3103	N/A	Iss 1 Sep 10	Topographic, Engineering, Land and Measured Building Surveying - Survey and Mapping techniques
NR/L3/TRK/3104	N/A	Iss 1 Mar 12	Asset data extraction and topographic surveying

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

Signalling

NR/GN/TRK/3105

N/A

Iss 1 Mar 12

 Topographic, Engineering, Land and Measured
Building Surveying -
Overhead Line Electrification

OTHER NETWORK RAIL DOCUMENTS
STANDARD DRAWINGS NOT LISTED IN NR/L3/CIV/151

Standard Drawings – Standard Design ‘ProjectWise’ Catalogue Accessed : Dec 2012

Signalling
Concrete Foundation Design – supporting signalling equipment

Number IPS&E/EEPF99/ CIVILS-...	Revision	Title
5003	B02	Concrete foundation details for non-accessible signal posts and base forces
5006	B01	Concrete foundation design supporting signalling equipment
5007	B01	Concrete foundation details for hinged signal post

Level crossing relevant drawings

Number IPS&E/EEPF99/ CIVILS-...	Revision	Title
0100	A	Typical Under Road Crossing (URX) and typical turning chamber
0101	A	General Arrangement of cattle-cum-trespass guards
0102	A	Support and hanger details for road and rail signs
0103	A	Pedestrian/bridleway timber crossing
0104	A	Details of Bell Gauge in accordance with T.S.R. and General Directions 2002 T.S.R. Diagram 781
0105	A	Cattle grid for use across un-gated roads

Location Case Platforms in Cutting and on Embankment

5010	B01	Location case platforms in Cutting—General Arrangement
5011	B01	Location case platforms in Cutting—Steelwork Arrangement
5012	B01	Location case platforms on Embankment—General Arrangement
5013	B01	Location case platforms on Embankment—Steelwork Arrangement
5014	B01	Location case platforms—Steelwork Details

Project Title : Cambridge Science Park Station Interchange			
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ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

Non-accessible Signal Structures (Straight Post)

5001	B01	Non-accessible Signal Straight post (Side mounted)
5002	B01	Non-accessible Signal Straight post (Top mounted)
5003	B02	Concrete foundation details for non-accessible signal posts and base forces
		(NB also listed above)

Soil retaining structures

020	B01	Soil retaining structures Concrete/GRC/GRP Boards
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Spread Concrete Foundations for Level Crossing Elements

Number EPPF99/CIVIL/...	Revision	Title
0001A	B04	Concrete Foundation Details for Base Plate mounted Lighting Column for 8m Masts
0001B	B05	Concrete Foundation Details for Base Plate mounted Lighting Column for 10m Masts
0001C	B04	Concrete Foundation Details for Base Plate mounted Lighting Column for 12m Masts
0002	B03	Concrete Foundation Details for Base Plate mounted CCTV Camera Column (Max Height 9.0m)
0003	B05	Concrete Foundation Details for Base Plate mounted Road Traffic Signal
0004A	B04	Concrete Foundation Details for Base Plate mounted Lifting Barrier (Max Boom 7.1m)
0004B	B04	Concrete Foundation Details for Base Plate mounted Lifting Barrier (Max Boom 9.1m)

PROJECT ADVICE NOTES (PAN), STRUCTURES ENGINEERING TECHNICAL ADVICE NOTES (SETAN), DRAFT STANDARDS AND OTHER UNCONTROLLED INTERNAL NETWORK RAIL DESIGN DOCUMENTS ADVISED FOR THE PROJECT

The following documents have been instructed specifically for this project :

Number	Issue and Date	Title	Source
PAN/E/CE/SS/0017	Iss 2 Jul 08	Signal structures — 'Form A' Guidance for loading and performance	Name of issuing department or person
PAN/E/SE/SI/0029	Iss 1 Mar 09	Mesh size of Protective Screens for signals on overhead electrified lines	Name of issuing department or person
PAN/E/CE/SI/0039	Iss 1 Oct 09	Signal structures Design Provision for Future Electrification	Name of issuing department or person

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

PAN/B&C-E/GEN/INS/0059	Iss 1 Mar 11	Structural Eurocodes – Network Rail Technical Requirements	Name of issuing department or person
PAN/AM(T)/GM/0062	Iss 2 Aug 11	Gauging Guidance for Civils and Track Project Engineers and Designers (version 4, July 2011)	Name of issuing department or person
PAN/PMSE-E-CD-INS-0064	Iss 1.0 Aug 11	Document Review Process	Name of issuing department or person
PAN/B&C-E/GEN/INS/0065	Iss 1 Sep 11	Acceptance Reviews of engineering deliverables by the Project Engineer (Building and Civil Engineering)	Name of issuing department or person
PAN/B&C-E/GEN/ADV/0073	Iss 1 Jan 12	Guidance on Design Risk Assessments and CDM 2007	Name of issuing department or person

STRUCTURAL EUROCODES

EC0 (EN 1990)

Eurocode 0 – Basis of Structural Design

BS EN 1990: 2002
+A1: 2005 +AC1: 2008

UK NA Dec 2004
+A1: 2009

Basis of Structural Design

EC1 (EN 1991)

Eurocode 1 – Actions on Structures

BS EN 1991-1-1:2002
+AC1: 2009

UK NA Dec 2005

General actions. Densities, self-weight, imposed loads for buildings

BS EN 1991-1-2:2002
+AC1: 2009

UK NA Apr 2007

General actions. Actions on Structures exposed to fire

BS EN 1991-1-3:2003
+A1: 2004 +AC1: 2009

UK NA Dec 2005
+C1: 2007

General actions. Snow loads

BS EN 1991-1-4:2005
+AC1: 2009

UK NA Sep 2008
+A1: 2010

General actions. Wind actions

BS EN 1991-1-5:2004
+AC1: 2009

UK NA Apr 2007

General actions. Thermal actions

BS EN 1991-1-6:2005
+AC1: 2008

UK NA May 2008

General actions. Actions during execution

BS EN 1991-1-7:2006
+AC1: 2010

UK NA Dec 2008

General actions. Accidental actions

~~BS EN 1991-2:2003~~
~~+AC1: 2010~~

~~UK NA May 2008~~

~~Actions on structures. Traffic loads on bridges~~

BS EN 1991-3:2006

UK NA Aug 2009

Actions on structures. Actions induced by cranes and machinery

~~BS EN 1991-4:2006~~

~~UK NA Nov 2009~~

~~Actions on structures. Silos and tanks~~

EC2 (EN 1992)

Eurocode 2 – Design of Concrete Structures

BS EN 1992-1-1:2004

UK NA Dec 2005

General rules and rules for buildings

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

+AC1: 2008

+A1: 2009

BS EN 1992-1-2:2004

+AC1: 2008

UK NA Dec 2005

General rules. Structural fire design

~~BS EN 1992-2:2005~~
~~+AC1: 2008~~
~~UK NA Dec 2007~~
~~Concrete bridges. Design and detailing rules~~

BS EN 1992-3:2006

UK NA Oct 2007

~~Liquid retaining and containment structures~~

EC3 (EN 1993)

Eurocode 3 – Design of Steel Structures

BS EN 1993-1-1:2005

+AC1:2006+AC2:2009

UK NA Dec 2008

General rules and rules for buildings

BS EN 1993-1-2:2005

+AC3: 2009

UK NA Nov 2008

General structural fire design

BS EN 1993-1-3:2006

+AC1: 2009

UK NA Feb 2009

General rules. Supplementary rules for cold-formed thin gauge members and sheeting

~~BS EN 1993-1-4:2006~~
~~UK NA Feb 2009~~
~~General rules. Supplementary rules for stainless steel~~

BS EN 1993-1-5:2006

+AC1: 2009

UK NA May 2008

Plated structural elements

~~BS EN 1993-1-6:2007~~
~~+AC1: 2009~~

-

~~Strength and stability of shell structures~~

BS EN 1993-1-7:2007

+AC1: 2009

-

Plated structures subjected to out of plane loading

BS EN 1993-1-8:2005

+AC2: 2009

UK NA Nov 2008

Design of joints

BS EN 1993-1-9:2005

+AC1: 2009

UK NA May 2008

Fatigue

BS EN 1993-1-10:2005

+AC2: 2009

UK NA Jan 2009

Material toughness and through-thickness properties

~~BS EN 1993-1-11:2006~~
~~+AC1: 2009~~
~~UK NA Dec 2008~~
~~Design of structures with tension components~~
~~BS EN 1993-1-12:2007~~
~~+AC1: 2009~~
~~UK NA May 2008~~
~~Additional rules for the extension of EN 1993 up to steel grades S 700~~

BS EN 1993-2:2006

+AC1: 2009

UK NA May 2008

Steel bridges

+A1: 2012

~~BS EN 1993-3-1: 2008~~
~~+AC1: 2009~~
~~UK NA Mar 2010~~
~~Towers, masts and chimneys. Towers and masts~~

BS EN 1993-3-2: 2008

-

~~Towers, masts and chimneys. Chimneys~~

BS EN 1993-4-1:2007

+AC1: 2009

-

Silos

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

BS-EN 1993-4-2:2007
+AC1: 2009

-

Tanks

BS-EN 1993-4-3:2007
+AC1: 2009

-

Pipelines

BS-EN 1993-5:2007
+AC1: 2009

UK NA Jul 2009
+A1: 2012

Piling

BS-EN 1993-6:2007
+AC1: 2009

UK NA Nov 2009

Crane supporting structures

EC4 (EN 1994)

Eurocode 4 – Design of Composite Steel and Concrete Structures

BS-EN 1994-1-1:2005
+AC1: 2009

UK NA Aug 2008

General rules and rules for buildings

BS-EN 1994-1-2:2005
+AC1: 2008

UK NA Aug 2008

General rules. Structural fire design

BS-EN 1994-2:2005
+AC1: 2008

UK NA Dec 2007

General rules and rules for bridges

EC5 (EN 1995)

Eurocode 5 – Design of Timber Structures

BS-EN 1995-1-1:2004
+A1: 2008

UK NA Oct 2006
+A1: 2009 +A2: 2012

General. Common rules and rules for buildings

BS-EN 1995-1-2:2004
+AC2: 2009

UK NA Oct 2006

General. Structural fire design

BS-EN 1995-2:2004

UK NA Oct 2006

Bridges

EC6 (EN 1996)

Eurocode 6 – Design of Masonry Structures

BS-EN 1996-1-1:2005
+AC1: 2009

UK NA May 2007

General rules for reinforced and unreinforced masonry structures

BS-EN 1996-1-2:2005

UK NA May 2007

General rules. Structural fire design

BS-EN 1996-2:2006
+AC1: 2009

UK NA May 2007
+Corr 1: 2007

Design considerations, selection of materials and execution of masonry

BS-EN 1996-3:2006
+AC1: 2009

UK NA May 2007

Simplified calculation methods for unreinforced masonry structures

EC7 (EN 1997)

Eurocode 7 – Geotechnical Design

BS-EN 1997-1:2004
+AC1: 2009

UK NA Nov 2007
+Corr 1: 2007

General rules

BS-EN 1997-2:2007

UK NA Dec 2009

Ground investigation and testing

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

EC8 (EN 1998)
Eurocode 8 – Design of Structures for Earthquake Resistance

BS EN 1998-1:2005
+AC1: 2010

UK NA Aug 2008 General rules, seismic actions and rules for buildings

BS EN 1998-2:2005
+A2: 2011

UK NA Jun 2009 Bridges

BS EN 1998-3:2006
+AC1: 2010

- Assessment and retrofitting of buildings

BS EN 1998-4:2006

UK NA Aug 2008 Silos, tanks and pipelines

BS EN 1998-5:2004

UK NA Aug 2008 Foundations, retaining structures and geotechnical aspects

BS EN 1998-6:2005

UK NA Aug 2008 Towers, masts and chimneys

EC9 (EN 1999)
Eurocode 9 – Design of Aluminium Structures

BS EN 1999-1-1:2007
+A1: 2009

UK NA Nov 2008
+A1:2010 +C1:2010 General structural rules

BS EN 1999-1-2:2007
+AC1: 2009

UK NA Jan 2009 Structural fire design

BS EN 1999-1-3:2007
+A1: 2011

UK NA Nov 2008
+A1: 2012 Structures susceptible to fatigue

BS EN 1999-1-4:2007
+A1: 2011

UK NA Jan 2009 Cold-formed structural sheeting

BS EN 1999-1-5:2007
+A1: 2009

UK NA Jan 2009 Shell structures

BSI PUBLISHED DOCUMENTS

Advisory only – departures and non-compliances will not be specifically identified or justified

PD 6688-1-1: 2011

Recommendations for the design of structures to BS EN 1991-1-1

PD 6688-1-2: 2007

Background paper to the UK National Annex to BS EN 1991-1-2 (Fire)

PD 6688-1-4: 2009

Background paper to the UK National Annex to BS EN 1991-1-4 and additional guidance (Wind actions)

PD 6688-1-5 (Date)

Background paper to the UK National Annex to BS EN 1991-1-5 (under preparation)

PD 6688-1-7: 2009

Recommendations for the design of structures to BS EN 1991-1-7 (Accidental actions)

PD 6688-2: 2011

Background to the National Annex to BS EN 1991-2 Traffic Loads on Bridges

PD 6687-1: 2010

Background paper to the UK National Annexes to BS EN 1992-1 and BS EN 1992-3

PD 6687-2: 2008

Recommendations for the design of structures to BS EN 1992-2

PD 6695-1-9: 2008

Recommendations for the design of structures to BS EN 1993-1-9 (Fatigue)

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

PD 6695-1-10: 2009	Recommendations for the design of structures to BS EN 1993-1-10 (Material toughness etc)
PD 6695-2: 2008 +AC1: 2010 +A1: 2012	Recommendations for the design of bridges to BS EN 1993
PD 6696-2: 2007 +A1: 2012	Background paper to BS EN 1994-2 and the UK National Annex to BS EN 1994-2
PD 6697:2010	Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2
PD 6694-1: 2011	Recommendations for the design of structures subject to traffic loading to BS EN 1997-1:2004
PD 6698: 2009	Recommendations for the design of structures for earthquake resistance to BS EN 1998
PD 6703: 2009	Structural bearings—Guidance on the use of structural bearings
PD 6705-2: 2010	Recommendations on the execution of steel bridges to BS EN 1090-2
PD 6705-3: 2010	Recommendations on the execution of aluminium structures to BS EN 1090-3

EXECUTION STANDARDS

BS EN 1090-1: 2009 +A1: 2012	Execution of steel structures and aluminium structures. Requirements for conformity assessment of structural components
BS EN 1090-2: 2009 +A1: 2011	Execution of steel structures and aluminium structures. Technical requirements for the execution of steel structures
BS EN 1090-3: 2009	Execution of steel structures and aluminium structures. Technical requirements for the execution of aluminium structures
BS EN 13670: 2009	Execution of concrete structures
BS EN 1536 : 2010	Execution of special Geotechnical Work—Bored Piles
BS EN 1537 : 2000	Execution of special Geotechnical Work—Ground anchors
BS EN 1538 : 2010	Execution of special Geotechnical Work—Diaphragm Walls
BS EN 12063 : 1999	Execution of special Geotechnical Work—Sheet Pile Walls
BS EN 12699 : 2001	Execution of special Geotechnical Work—Displacement Piles
BS EN 14199 : 2005	Execution of special Geotechnical Work—Micropiles
BS EN 14475: 2006	Execution of special Geotechnical Work—Reinforced Fill
BS EN 14490: 2010	Execution of special Geotechnical Work—Soil nailing

BRITISH STANDARDS – NON-CONFLICTING WITH EUROCODES

BS 1377:1990	Methods of Tests for Soils for Civil Engineering Purposes
BS 4211: 2005	Specification for permanently fixed ladders (Corr No 2 2010)
BS 4592-0: 2006 +A1: 2012	Industrial type flooring and stair treads. Common design requirements and recommendations for installation
BS 5395	Stairs, ladders and walkways

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
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Part 1: 2010	CP for Design of Stairs with straight flights and winders
Part 2: 1984	CP for Design of helical and spiral Stairs
Part 3: 1985	CP for Design of Industrial Type Stairs, permanent Ladders and Walkways (NB 'Not for New Design')
BS 5930: 1999 +A2: 2010	Site Investigations
BS 5975: 2008 +A1: 2011	CP for Temporary Works Procedures and the Permissible Stress Design of Falsework
BS 6031: 2009	CP for Earthworks (CORR 2010)
BS 6440: 1999	Powered Lifting Platforms for Use by Disabled People (Amd No 1 May 2000) (GP AMD 10960)
BS 6779	Highway Parapets for Bridges and Other Structures (See also BS EN 1317)
Part 1: 1998	Specification for Vehicle Containment Parapets of Metal Construction (Amd No 1 Mar 2003) (Partially superseded by BS EN 1317)
Part 2: 1994	Specification for Vehicle Containment Parapets of Concrete Construction (Amd No 1 Apr 1992) — NB to be used in conjunction with BS 5400-4.
Part 3: 1994	Specification for Vehicle Containment Parapets of Combined Metal and Concrete Construction
Part 4: 1999	Specification for Parapets of Reinforced and Unreinforced Masonry Construction (Amd No 1 Sept 2002)
BS 8006-1: 2010 +C1: 2012	CP for Strengthened/Reinforced Soils and Other Fills
BS 8006-2: 2011	CP for Strengthened/Reinforced Soils part 2: Soil nail design
BS 8081: 1989	CP for Ground Anchorages
BS 8300: 2009 +A1: 2010	Design of Buildings and their approaches to meet the needs of disabled people
BS 8500	Concrete – Complementary British Standard to BS EN 206-1
Part 1: 2006 +A1: 2012 +C1: 2012	Method of Specifying and Guidance for the Specifier
Part 2: 2006 +A1: 2012 +C1: 2012	Specification for Constituent Materials and Concrete
BS 8666: 2005	Scheduling etc of Steel Reinforcement for Concrete

EUROPEAN STANDARDS (Published by BSI)

BS EN 752: 2008	Drain and sewer systems outside buildings
BS EN 1295	Structural Design of Buried Pipelines under Various Conditions of Loading
Part 1 : 1997	General Requirements (CORR July 2010)

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

BS-EN 1317	Road Restraint Systems
—— Part 1: 2010	Terminology and General Criteria for Test Methods
—— Part 2: 2010	Performance Classes, Impact Test Acceptance Criteria etc for Safety Barriers
—— Part 3: 2010	Performance Classes, Impact Test Acceptance Criteria etc for Crash Cushions
—— Part 4: (DD ENV: 2002)	Performance Classes, Impact Test Acceptance Criteria and Test Methods for Terminals and Transitions of Safety Barriers
—— Part 5: 2007	Product Requirements and evaluation of conformity for Vehicle Restraint Systems
—— +A1: 2008	
BS-EN 1337	Structural Bearings
Part 1 : 2000	General Design Rules
Part 2 : 2004	Sliding Elements
Part 3 : 2005	Elastomeric Bearings
Part 4 : 2004	Roller Bearings
Part 5 : 2005	Pot Bearings
Part 6 : 2004	Rocker Bearings
Part 7 : 2004	Spherical and Cylindrical PTFE Bearings
Part 8 : 2007	Guide Bearings and Restraint Bearings
Part 9 : 1998	Protection
Part 10 : 2003	Inspection and Maintenance
Part 11 : 1998	Transport, Storage and Installation
BS-EN 12812: 2004	Falsework. Performance requirements and general design
BS EN 50122	Railway applications — Fixed installations — Electrical safety, earthing and the return circuit
Part 1 : 2011	Protective provisions against electric shock
+A1: 2011	
Part 2 : 2010	Provisions against the effects of stray currents caused by d.c. traction systems (CORR 2011)
Part 3 : 2010	Mutual Interaction of a.c. and d.c. traction systems
BS EN 60529 : 1992	Specification for Degrees of Protection Provided by Enclosures (IP Code)

~~BRITISH STANDARDS — CONFLICTING WITH EUROCODES~~

These standards have been withdrawn by BSI. This section shall be normally be deleted if not applicable – it is retained here for use in special circumstances. Note that design of concrete parapets to BS 6779 still requires use of BS 5400-4.

~~BS 5268 *~~ ~~Structural Use of Timber~~

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

Part 2 : 2002	CP for Permissible Stress Design, Materials and Workmanship
Part 5 : 1989	Code of Practice for the Preservative Treatment of Structural Timber
BS 5400 *	Steel, Concrete and Composite Bridges
Part 1 : 1988	General Statement (Amd No 1 Mar 2003)(See BD 15)
Part 2 : 2006	Specification for Loads (See BD 37)
Part 3 : 2000	CP for Design of Steel Bridges (Corr No 2 Jun 2006) (see BD 13)
Part 4 : 1990	CP for Design of Concrete Bridges (see BD 24)
Part 5 : 2005	CP for Design of Composite Bridges (see BD 16)
Part 6 : 1999	Specification for Materials and Workmanship, Steel (Corr No 1 Oct 2002)
Part 7 : 1978	Specification for Materials and Workmanship, Concrete, Reinforcement and Prestressing Tendons
Part 8 : 1978	Recommendations for Materials and Workmanship, Concrete, Reinforcement and Prestressing Tendons
Part 9 : 1983	Bridge Bearings (Corr No 1 Oct 2006) (see BD 20) Superseded by BS EN 1337
Part 10 : 1980	CP for Fatigue (Amd No 1 Mar 1999) (see BD 9)
Part 10C : 1999	Charts for Classification of Details for Fatigue
BS 5628 *	CP for Use of Masonry
Part 1 : 2005	Structural Use of Unreinforced Masonry
Part 2 : 2005	Structural Use of Reinforced and Prestressed Masonry
Part 3 : 2005	Materials and Components, Design and Workmanship
BS 5950 *	Structural Use of Steelwork in Building
Part 1 : 2000	CP for Design: Rolled and Welded Sections (Corr No 2 Mar 2008, + Amd No 1 Aug 07)
Part 2 : 2001	Specification for Materials, Fabrication and Erection: Rolled and Welded Sections
Part 3 : 1990	Design in Composite Construction: CP for Design of Simple and Continuous Composite Beams (Corr No 1 Oct 2006)
Part 4 : 1994	CP for Composite Slabs with Profiled Steel Sheet
Part 5 : 1998	CP for Design of Cold Formed Thin Gauge Sections (Amd No 1 Sep 2006)
Part 6 : 1995	CP for Design of Light Gauge Profile Steel Sheet (Corr No 1 May 1999)
Part 7 : 1992	Specification for Materials and Workmanship: Cold Formed Sections
Part 8 : 2003	CP for Fire Resistant Design
Part 9 : 1994	CP for Stressed Skin Design (Amd No 2 Mar 1997)
BS 6399 *	Loading for buildings
Part 1 : 1996	Code of practice for dead and imposed loads (Inc Corr Oct 2002)

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

Part 2 : 1997 Code of practice for wind loads (Inc Corr No-1 July 2002)

Part 3 : 1998 Code of practice for imposed roof loads (Amd No 3 May 1997)

BS8002: 1994 Code of Practice for Earth Retaining Structures (Corr No 1 Sept 2001)*

BS8004: 1986 CP for Foundations*

BS 8110 Structural Use of Concrete*

Part 1 : 1997 CP for Design and Construction (Amd No 4 Aug 2007)

Part 2 : 1985 CP for Special Circumstances (Amd No 3 Nov 2005)

Part 3 : 1985 Design Charts for Singly Reinforced Beams, Doubly Reinforced Beams and Rectangular Columns (Amd No 1 May 1989)

BS 8118 Structural Use of Aluminium*

Part 1 : 1991 Code of Practice for Design (Amd No 1 July 1999)

Part 2 : 1991 Specification for Materials, Workmanship and Protection (Amd No 1 July 1999)

HIGHWAY STANDARDS – DESIGN MANUAL FOR ROADS AND BRIDGES (DEC 2012)

NON-CONFLICTING WITH EUROCODES

STANDARDS – BRIDGES AND STRUCTURES (BD SERIES)

This list is based on IAN 124/11.

~~BD 2/12 Technical Approval of Highway Structures (DMRB 1.1.1)~~

~~BD 7/01 Weathering Steel for Highway Structures (DMRB 2.3.8)~~

~~BD 10/97 Design of Highway Structures in Areas of Mining Subsidence (DMRB 1.3.14)~~

~~BD 12/01 Design of Corrugated Steel Buried Structures with spans greater than 0.9metres and up to 8 metres (DMRB 2.2.6)~~

~~BD 21/01 The Assessment of Highway Bridges and Structures (DMRB 3.4.3)~~

~~BD 27/86 Materials for the Repair of Concrete Highway Structures (DMRB 3.3.2)~~

~~BD 28/87 Early Thermal Cracking of Concrete (Inc Amd No 1 Aug 1989) (DMRB 1.3.14)~~

~~BD 29/04 Design Criteria for Footbridges (DMRB 2.2.8)~~

~~BD 33/94 Expansion Joints for Use in Highway Bridge Decks (DMRB 2.3.6)~~

~~BD 35/06 Quality Assurance Scheme for Paints and Similar Protective Coatings (DMRB 2.4.1)~~

~~BD 36/92 The Evaluation of Maintenance Costs in Comparing Alternative Designs for Highway Structures (DMRB 1.2.1)~~

~~BD 43/03 The Impregnation of Reinforced and Prestressed Concrete Highway Structures using Hydrophobic Pore-lining Impregnants (DMRB 2.4.2)~~

~~BD 44/95 The Assessment of Concrete Highway Bridges and Structures (DMRB 3.4.14)~~

~~BD 47/99 Waterproofing and Surfacing of Concrete Bridge Decks (DMRB 2.3.4)~~

~~BD 48/93 Assessment and Strengthening of Highway Bridge Supports (DMRB 3.4.7)~~

~~BD 56/10 The Assessment of Steel Highway Bridges and Structures (DMRB 3.4.11)~~

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

BD-61/10	The Assessment of Composite Highway Bridges and Structures (DMRB 3.4.16)
BD-63/07	Inspection of Highway Structures (DMRB 3.1.4)
BD-65/97	Design Criteria for Collision Protection Beams (DMRB 2.2.5)
BD-81/02	Use of Compressive Membrane Action in Bridge Decks (DMRB 3.4.20)
BD-82/00	Design of Buried Rigid Pipes (DMRB 2.2.10)
BD-84/02	Strengthening of Concrete Bridge Supports for vehicle impact using Fibre reinforced Polymers (DMRB 1.3.16)
BD-85/08	Strengthening Highway Structures using Externally Bonded Fibre Reinforced Polymer (DMRB 1.3.18)
BD-86/11	The Assessment of Highway Bridges and Structures for the Effects of Special Types General Order (STGO) and Special order (SO) Vehicles
BD-89/03	The Conservation of Highway Structures (DMRB 3.2.4)
BD-90/05	Design of FRP Bridges and Highway Structures (DMRB 1.3.17)
BD-91/04	Unreinforced masonry arch bridges (DMRB 2.2.14)
BD-94/07	Design of Minor Structures (DMRB 2.2.1)
BD-97/12	The Assessment of Scour and Other Hydraulic Actions at Highway Structures (DMRB 3.4.21)
BD-101/11	Structural Review and Assessment of Highway Structures (DMRB 3.4.22)

ADVICE NOTES – BRIDGES AND STRUCTURES (BA SERIES)

BA-16/97	The Assessment of Highway Bridges and Structures (Amd Nos 1 & 2 to Nov 2001) (DMRB 3.4.4)
BA-26/94	Expansion Joints for Use in Highway Bridge Decks (DMRB 2.3.7)
BA-30/94	Strengthening of Concrete Highway Structures using Externally Bonded Plates (DMRB 3.3.1)
BA-35/90	Strengthening and Repair of Concrete Highway Structures (DMRB 3.3)
BA-36/90	The Use of Permanent Formwork (DMRB 2.3.7)
BA-37/92	Priority ranking of Existing Parapets (DMRB 2.3.2)
BA-38/93	Ass'mt of the fatigue Life of Corroded or Damaged Reinforcing Bars (DMRB 3.4.5)
BA-39/93	Assessment of Reinforced Concrete Half Joints (DMRB 3.4.6)
BA-40/93	Tack Welding of Reinforcing bars (DMRB 1.3.4)
BA-41/98	The Design and Appearance of Bridges (DMRB 1.3.11)
BA-43/94	Strengthening, Repair and Monitoring of Post Tensioned Concrete Bridge Decks (DMRB 3.3.2)
BA-44/96	Assessment of Concrete Highway Bridges and Structures (DMRB 3.4.15)
BA-47/99	Waterproofing and Surfacing of Concrete Bridge Decks (DMRB 2.3.5)
BA-51/95	The Assessment of Concrete Structures Affected by Steel Corrosion (DMRB 3.4.13)

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

BA 52/94	The Ass'mt of Concrete Structures Affected by Alkali-Silica Reaction (DMRB 3.4.10)
BA 53/94	Bracing Systems and the Use of U-Frames in Steel Highway Bridges (DMRB 1.3.13)
BA 55/06	The Assessment of Bridge Substructures and Foundations, Retaining Walls and Buried Structures (DMRB 3.4.9)
BA 82/00	Formation of Continuity Joints in Bridge Decks (DMRB 2.3.7)
BA 85/04	Coatings for Concrete Highway Structures & Ancillary Structures (DMRB 2.4.3)
BA 92/07	The use of Recycled Concrete Aggregates in Structural Concrete (DMRB 2.3.9)
BA 93/09	Structural Assessment of Bridges with Deck Hinges (DMRB 3.1.5)

TECHNICAL MEMORANDA – BRIDGES (BE SERIES)

BE 5/75	Rules for the Design and Use of Freyssinet Concrete Hinges in Highway Structures
BE 23	Shear Key Decks (Incorporating Amendment No. 1 to Annex, dated June 1971)

STANDARDS – HIGHWAYS (HD SERIES)

HD 22/08	Managing Geotechnical Risk
HD 26/06	Pavement Design (DMRB 7.2.3)
HD36/06	Surfacing Materials for New and Maintenance Construction (DMRB 7.5.1)
HD 37/99	Bituminous Surfacing Materials and techniques (Amd 1) (DMRB 7.5.2)
HD 39/01	Footway Design (DMRB 7.2.5)

STANDARDS – TRAFFIC ENGINEERING AND CONTROL (TD SERIES)

TD 19/06	Requirement for Road Restraint Systems (Corr No 1 Feb 2008) (DMRB 2.2.8)
TD 27/05	Cross Sections and Headroom (DMRB 6.1.2)
TD 36/93	Subways for Pedestrians and Pedal Cyclists – Layout and Dimensions (DMRB 6.3.1)

INTERIM ADVICE NOTES

(SEP 2011)

IAN 70/06	Implementation of new Reinforcement Standards
IAN 95/07	Revised Guidance regarding the use of BS 8500 (2006) etc
IAN 97/07	Assessment and upgrading of existing parapets
IAN 104/07	The anchorage of reinforcement and fixings in hardened concrete
IAN 124/11	Use of Eurocodes for the Design of Highway Structures
IAN 131/11	Deflection of Permanent Formwork
IAN 168/12	Strategy for the Repair/replacement of Bridge Expansion Joints

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

IAN 169/12 Temporary Cover Plates over Bridge Expansion Joints

MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS

(NOV 2009)

Vol.1: Nov 2009	Specification for Highway Works
Vol.2: Nov 2009	Notes for Guidance on the Specification for Highway Works
Vol.3: Nov 2009	Highway Construction Details

HIGHWAY STANDARDS – DESIGN MANUAL FOR ROADS AND BRIDGES

(SEP 2011)

CONFLICTING WITH EUROCODES
STANDARDS – BRIDGES AND STRUCTURES (BD SERIES)

Italic struck-through text indicates likely conflict with Eurocodes pending withdrawal from DMRB. This section shall normally be deleted if not applicable.

BD 9/81*	Implementation of BS 5400 : Part 10 : 1980 – CP for Fatigue (DMRB 1.3.14)
BD 13/06	Design of Steel Bridges – Use of BS 5400: Part 3:2000 (DMRB 1.3.14)
BD 15/92	General Principles for the Design and Construction of Bridges. Use of BS 5400: Part 1: 1988 (DMRB 1.3.2)
BD 16/82	Design of Composite Bridges – Use of BS 5400: Part 5:1979 (Incorporating Amendment No. 1 dated December 1987) (DMRB 1.3.14)
BD 20/92	Bridge Bearings. Use of BS 5400: Part 9: 1983 (DMRB 2.3.1)
BD 24/92	The Design of Concrete Highway bridges and Structures. Use of BS 5400: Part 4:1990 (DMRB 1.3.1)
BD 30/87	Backfilled Retaining Walls and Bridge Abutments (DMRB 2.1.5)
BD 31/01	Design of Buried Concrete Box and Portal Frame Structures (DMRB 2.2.12)
BD 37/01	Loads for Highway Bridges (DMRB 1.3.14)
BD 41/97	Reinforced Clay Brickwork Retaining Walls of Pocket type and Grouted Cavity type Construction (DMRB 2.1.1)
BD 42/00	Design of Embedded Retaining Walls and Bridge Abutments (DMRB 2.1.2)
BD 49/01	Design Rules for Aerodynamic Effects on Bridges (DMRB 1.3.3)
BD 57/01	Design for Durability (DMRB 1.3.7)
BD 58/94	Design of Bridges and Concrete Structures with External and Unbonded Prestressing (DMRB 1.3.9)
BD 60/04	Design of Highway Bridges for Vehicle Collision Loads (DMRB 1.3.5)
BD 70/03	Strengthened/ Reinforced Soils and Other Fills for Retaining Walls and Bridge Abutments (DMRB 2.1.5)
BD 74/00	Foundations (DMRB 2.1.8)

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

ADVICE NOTES – BRIDGES AND STRUCTURES (BA SERIES)

BA 19/85	The Use of BS5400: Part 3: 1982 (DMRB 1.3.14)
BA 24/87	Early Thermal Cracking of Concrete (Inc Amd No 1 Aug 1989) (DMRB 1.3.14)
BA 42/96	The Design of Integral Bridges (DMRB 1.3.12)
BA 57/01	Design for Durability (DMRB 1.3.8)
BA 59/94	Design of Highway Bridges for Hydraulic Action (DMRB 1.3.6)
BA 84/02	Use of Stainless Steel Reinforcement in Highway Structures (DMRB 1.3.15)

RAILWAY LEAFLETS – UNION INTERNATIONAL DES CHEMINS DE FER (UIC)

(JAN 2011)

7 – WAY AND WORKS
SUB-SECTION 71 LAYING AND MAINTENANCE OF TRACK

UIC 719 R	Iss 3 2008	Earthworks and track bed construction
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SUB-SECTION 77 STRUCTURAL WORKS

UIC 774-3R	Iss 2 2001	Track-bridge interaction. Recommendations for calculations
UIC 776-1R	Iss 5 2006	Loads to be considered in Railway Bridge Design
UIC 776-2R	Iss 2 2009	Design requirements for rail bridges based on interaction phenomena between train, track and bridge
UIC 776-3R	1989	Deformation of Railway Bridges
UIC 777-2R	Iss 2 2002	Structures built over railway lines – Construction requirements in the track zone

(R denotes recommendation)

OFFICE OF THE RAIL REGULATOR - RAILWAY SAFETY PUBLICATIONS

RSP7	Iss 1 Dec 11	Level Crossings: A Guide for Managers, Designers and Operators
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HMRI RAILWAY SAFETY PRINCIPLES AND GUIDANCE

Note that these documents no longer have any relevance under current legislation for approval of railway works.

HS(G) 153/1	1996	Part 1
HS(G) 153/2	1996	Part 2 Section A Guidance on Infrastructure
HS(G) 153/3	1996	Part 2 Section B Guidance on Stations

DDA BEST PRACTICE

(DEC 2012)

DEPARTMENT FOR TRANSPORT

~~Accessible Train Station Design for Disabled People: A Code of Practice Version 03: Nov 2011~~

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

~~'Inclusive Mobility' 2002~~

MISCELLANEOUS - 1

CIRIA Guide C660 Early-age thermal crack control in concrete – 2011 reprint
BRE Special Digest 1 Concrete in Aggressive Ground, BRE Special Digest 1
BRE Digest 365 Soakaway Design

MISCELLANEOUS - 2

~~The Assessment and Design of Unreinforced Masonry Vehicle Parapets, County Surveyors Guidance Note (Volume 1 of the Research Project) — produced by the County Surveyor's Society. — partially superseded by BS 6779-4.~~

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

Appendix A2

Eurocode Compliance Summary

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

EUROCODE TECHNICAL DESIGN REQUIREMENTS CHECKLIST

Introduction

This Checklist has been compiled to record the Eurocode Technical Design Requirements in accordance with Network Rail document PAN/B&C-E/INS/0059 issue 2 dated June 2012 and NR/L3/CIV/004 issue 1 dated June 2012.

It responds to Network Rail Forms F1990 to F1997 which relate to their respective Eurocodes. It forms a record of design decisions permitted by these forms.

For brevity, the following have been omitted :

1. Standards which are not relevant to the structure (refer to list of design standards for F002).
2. Standards where there are no open choices.
3. Type 1/1E directions (since there is no design choice to be agreed).
4. Non-relevant classes of structure.

Record Key

1	Form 001	GI	Ground Investigation Report
2	Form 002	GD	Geotechnical Design Report
D	Drawing	P	Project Requirements Specification
OM	Operating manual	O	Other (specified in Output Column)
N/A	The default value / method given in the Eurocode has been chosen		

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

NR/L2/CIV/003/F1990: Eurocode-Basis of Structural Design					2nd June 2012 (v2.0)	
BS EN	Clause	Type	Class	Description	Record	Output
1990	3.4 (1)P NOTE 2	2	All	Serviceability requirements	2	No additional requirements
1990	6.5.2	2	All	Serviceability criteria	2	N/A
1990	A2.2.1(13) NOTE	2	Br	Settlement limits - complex structure	2	N/A
1990	A2.2.1(15) NOTE 1	2	Br	Settlement combinations	2	Defined in F002 1.3.4
1990	A2.2.6(1) NOTE 3	2	Br	Water forces calculation	2	N/A
1990	A2.2.6(1) NOTE 3	2	Br	Water forces - Transient Design situations	2	N/A
1990	A2.3.1(1) NOTE, TABLES A2.4 (A, B, C)	2	Br	Actions dependent on water level	2	N/A
1990	A2.3.1(1) NOTE, TABLES A2.4 (A, B, C)	2	Br	Application of Single source principle to sensitive verifications	2	N/A
1990	A2.4.1(2) NOTE	2E	Br	Project specific serviceability	2	N/A

Project Title : Cambridge Science Park Station Interchange			
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Location : Chesterton Sidings, Chesterton, Cambridgeshire			
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NR/L2/CIV/003/F1991: Eurocode 1: Actions on Structures					2nd June 2012 (v2.0)	
BS EN	Clause	Type	Class	Description	Record	Output
1991-1	5.2.3 (3)	3	Br	Coatings self-weights	2	Insignificant for UB or OB
1991-1-3	1.5 NOTE	2E	All	Site testing to aid design	2	N/A
1991-1-4	All	2E	All	Loads outside scope of code - OHLE loads	1 2	N/A
1991-1-6	1.1(1) NOTE 2	2E	All	Construction safety - conflicts between code and other standards	2	N/A
1991-1-6	3.1(5) NOTE 2	2	All	Wind speed during execution	2 D	N/A
1991-1-6	3.1(8) NOTE 2	2E	All	Geometric imperfections	2 D	N/A
1991-1-6	3.1(12) NOTE	2	All	Design approach	2	N/A as construction phases not considered to be long
1991-1-6	3.3(2) NOTE	2	All	Project-specific Serviceability requirements	2 D	N/A
1991-1-6	4.1(5) NOTE	3	All	Friction factors in temp. works	2 D	N/A
1991-1-6	4.9(2) NOTE	2	All	Water actions classification	2	N/A
1991-1-6	4.9(4) NOTE 1	2	All	Flowing water forces	2	N/A
1991-1-6	4.9(5) NOTE 1	2	All	Water forces on debris	2	N/A
1991-1-6	4.11.1(1) NOTE 2	3	All	Construction load grouping	2	N/A
1991-1-7	2(2) NOTE	2E	All	Accidental action classification	2	All Accidental actions considered as free
1991-2	6.4.6.3.3(3) NOTE 1 & NOTE 3	2E	UB	Conc E values – dynamic	2	Dynamic Analysis Not Required
1991-2	6.4.6.4(4)	2E	UB	Vehicle structure interaction	2	Dynamic Analysis Not Required
1991-2	6.4.6.6(2)P NOTE	2E	UB	Fatigue from resonance	2	Dynamic Analysis Not Required
1991-2	6.5.4.4(2) NOTE 1	2	UB	Shear between track & deck	2	N/A
1991-2	6.5.4.6 NOTE	2E	UB	Calc of combined response	2	N/A
1991-2	6.5.4.6.1(1)	2E	UB	Simplified calc method	2	N/A

Project Title : Cambridge Science Park Station Interchange			
Project Number : 5110967		CR-T Reference Number : TBC	
Location : Chesterton Sidings, Chesterton, Cambridgeshire			
ELR : BGK	Mileage : 57m 1188yds to 58m 0880yds	OS Grid Ref : TL 474 605	Structure No. : N/A

1991-2	6.5.4.6.1(4)	2E	UB	Plastic shear bet. track & deck	2	N/A
1991-2	Annex C	2E	UB	Dynamic factors – Real Trains	2	N/A

NR/L2/CIV/003/F1992: Eurocode 2-Design of Concrete Structures					2nd June 2012 (v2.0)	
BS EN	Clause	Type	Class	Description	Record	Output
1992-1-1	4.4.1.2 (7)	2E	All	Cover to stainless rebar	2	N/A
1992-1-1	4.4.1.3(3)	2E	All	Controlled cover situations.	2	N/A
1992-1-1	5.8.5(1)	3	All	Second order analysis	2	N/A
1992-1-1	5.10.6 & Annex D	3	All	Time dependent prestress loss.	2	N/A
1992-1-1	6.8.4(5)	2E	All	Stress component k_2 value	2	N/A
1992-1-1	9.8.3(2)	2E	All	Compaction machinery issues	2	N/A
1992-2	4.3(103)	2E	Br	External prestress. tendons	1 2	N/A
1992-2	5.6.1 (101)P	2E	Br	Plastic analysis	2	N/A
1992-2	5.7 (105)	2E	Br	Non-linear structural analysis	2	N/A
1992-2	6 & Annex LL	3	Br	ULS element verifications	2	N/A
1992-2	6.1(109)	2E	Br	Prestressed robustness reqts	1 2	N/A