

NETWORK RAIL (Civil Engineering Standard Designs & Details)
FORM B: CERTIFICATE OF DESIGN AND CHECKING

(Page 1 of 4)

Title of Scheme:		Standard Design Details – Z Types	
Location		Site Specific – details to be provided	
ELR	Mileage	OS grid ref.	Structure No.

(Note: where different Designers and/or Checkers are responsible for different parts of a single Structure, suitable wording shall be added to identify the Lead Designer and/or Lead Checker in accordance with Clause 7.6.)

Part 1: Design Design organisation: .Mott MacDonald Ltd

I certify that reasonable professional skill and care have been used in the Design of the Scheme (or part of Scheme) identified above, with the objective of ensuring that the Design:

(a) complies with the Approval in Principle recorded on Form A Addendum revision B signed by Alan Dray on 22nd October 2009, including associated comments by the Professional Head of Civil Engineering in giving endorsement;

(b) complies with the Design standards, codes and methods stated on the above Form A (including any stated departures or dispensations), with the following amendments and/or additions:

The calculation of restraint forces to the compression flange provided by discrete U frames used the rules derived from first principles by Dr. Flint, and included in the design standards current in 1982.

The design requires an Execution Class EXC3 in accordance with BS EN 1090-2.

The alpha factor, $\alpha=1,21$ is used in checking deformations in accordance with BS EN 1990.

(c) is accurately described by the following drawings, schedules, performance, materials and workmanship specifications and other documents:

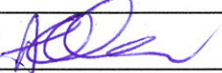
NR/CIV/SD/1200-B	Index of Drawings
NR/CIV/SD/1201-B	Key to Types
NR/CIV/SD/1202-B	General Notes and H&S Risk Register
NR/CIV/SD/1210-B	Steelwork General Assembly - Notes
NR/CIV/SD/1211-B	Steelwork General Assembly Details for Square Filler Beam Floor
NR/CIV/SD/1212-B	Steelwork General Assembly Details for 0° to 25° Skew Filler Beam Floor
NR/CIV/SD/1213-B	Steelwork General Assembly Details for 25° to 50° Skew Filler Beam Floor
NR/CIV/SD/1215-B	Steelwork General Assembly Details for Square Steel Floor
NR/CIV/SD/1216-B	Steelwork General Assembly Details for 0° to 25° Skew Steel Floor Sheet 1 of 2
NR/CIV/SD/1217-B	Steelwork General Assembly Details for 0° to 25° Skew Steel Floor Sheet 2 of 2
NR/CIV/SD/1218-B	Steelwork General Assembly Details for 25° to 50° Skew Steel Floor
NR/CIV/SD/1220-B	Main Girder Details - Notes
NR/CIV/SD/1221-B	Main Girder Sizes Filler Beam Floor - Deep Girders
NR/CIV/SD/1222-B	Main Girder Sizes Filler Beam Floor - Shallow Girders 300mm Ballast
NR/CIV/SD/1223-B	Main Girder Sizes Filler Beam Floor - Shallow Girders 200mm Ballast
NR/CIV/SD/1224-B	Main Girder Steelwork Details Filler Beam Floor
NR/CIV/SD/1225-B	Main Girder Sizes Steel Floor - Deep Girders
NR/CIV/SD/1226-B	Main Girder Sizes Steel Floor - Shallow Girders 300mm Ballast
NR/CIV/SD/1227-B	Main Girder Sizes Steel Floor - Shallow Girders 200mm Ballast
NR/CIV/SD/1228-B	Main Girder Steelwork Details Steel Floor
NR/CIV/SD/1230-B	Deck Steelwork and Trimmer Details - Notes
NR/CIV/SD/1231-B	Details of Cross Girder and Trimmer Girder 0° to 25° Skew Filler Beam Floor

NR/CIV/SD/1232-B	Details of Cross Girder and Trimmer Girder 25° to 50° Skew Filler Beam Floor
NR/CIV/SD/1235-B	Details of Transverse Ribs and Trimmer Girder Square Steel Floor
NR/CIV/SD/1236-B	Details of Transverse Ribs and Trimmer Girder 0° to 25° Skew Steel Floor
NR/CIV/SD/1237-B	Details of Transverse Ribs and Trimmer Girder 25° to 50° Bridge Skew Sheet 1 of 2
NR/CIV/SD/1238-B	Details of Transverse Ribs and Trimmer Girder 25° to 50° Bridge Skew Sheet 2 of 2
NR/CIV/SD/1239-B	Details of Transverse Ribs to Trimmer Girder Connections. All Skews
NR/CIV/SD/1240-B	Bearings – Notes
NR/CIV/SD/1241-B	Details of Standard Bearings
NR/CIV/SD/1250-B	Steelwork Protective Treatment - Notes
NR/CIV/SD/1251-B	Filler Beam Floor Main Girder and Floor Protective Treatment Details
NR/CIV/SD/1252-B	Bearing Protective Treatment Details
NR/CIV/SD/1255-B	Steel Floor Main Girder and Floor Protective Treatment Details
NR/CIV/SD/1260-B	Concrete and Reinforcement Details - Notes
NR/CIV/SD/1261-B	Concrete Details for Square Filler Beam Floor
NR/CIV/SD/1262-B	Concrete Details for 0° to 25° Skew Filler Beam Floor
NR/CIV/SD/1263-B	Concrete Details for 25° to 50° Skew Filler Beam Floor
NR/CIV/SD/1264-B	Reinforcement Details for Square Filler Beam Floor
NR/CIV/SD/1265-B	Reinforcement Details for 0° to 25° Skew Filler Beam Floor
NR/CIV/SD/1266-B	Reinforcement Details for 25° to 50° Skew Filler Beam Floor
NR/CIV/SD/1267-B	Concrete Details for Steel Floor
NR/CIV/SD/1268-B	Reinforcement Details for Steel Floor
NR/CIV/SD/1270-B	Waterproofing Details - Notes
NR/CIV/SD/1271-B	Waterproofing Details for Filler Beam Floor
NR/CIV/SD/1272-B	Waterproofing Details for Steel Floor
NR/CIV/SD/1281-B	Ballast Plate and Filler Rail Details

NR/CIV/SD/TUM/1200-D Technical User Manual For Standard Half Through Underbridges Z-Type. Standard Detail and Design Drawings

Signed 	Title Senior Engineer
Name (Print) Ian Palmer	Date 14 th May 2010
To be signed by the Designer or other person authorised to sign on behalf of the organisation responsible for the Design.	

I certify that the staff who have prepared the above Design are competent to carry out their duties and that they have used reasonable professional skill and care.

Signed 	Title Divisional Director
Name (Print) Tony Wilkins	Date 14 th May 2010
To be signed by the Director or other person authorised to sign on behalf of the organisation responsible for the Design to whom the Designer is responsible.	