

NETWORK RAIL (Civil Engineering Standard Designs & Details)**FORM B: CERTIFICATE OF DESIGN AND CHECKING****(Page 1 of 4)**

Title of Scheme:		Standard Design Details – U 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 A signed by Alan Dray on 29th January 2010, 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/1300-B	Index of Drawings
NR/CIV/SD/1301-B	Key to Types
NR/CIV/SD/1302-B	General Notes and H&S Risk Register
NR/CIV/SD/1310-B	Steelwork General Assembly - Notes
NR/CIV/SD/1311-B	Steelwork General Assembly Details Square Floor
NR/CIV/SD/1312-B	Steelwork General Assembly Details 0° to 25° Skew Floor Sheet 1 of 2
NR/CIV/SD/1313-B	Steelwork General Assembly Details 0° to 25° Skew Floor Sheet 2 of 2
NR/CIV/SD/1314-B	Steelwork General Assembly Details 25° to 50° Skew Floor
NR/CIV/SD/1320-B	Main Girder Details - Notes
NR/CIV/SD/1321-B	Main Girder Sizes - Deep Girders
NR/CIV/SD/1322-B	Main Girder Sizes - Shallow Girders, 300mm Ballast
NR/CIV/SD/1323-B	Main Girder Sizes - Shallow Girders, 200mm Ballast
NR/CIV/SD/1324-B	Main Girder Details Sheet 1 of 2
NR/CIV/SD/1325-B	Main Girder Details Sheet 2 of 2
NR/CIV/SD/1330-B	Cross Girder and Trimmer Girder Details - Notes
NR/CIV/SD/1331-B	Cross Girder and Trimmer Girder Details Square Floor
NR/CIV/SD/1332-B	Cross Girder and Trimmer Girder Details 0° to 25° Skew Floor
NR/CIV/SD/1333-B	Cross Girder and Trimmer Girder Details 25° to 50° Skew Floor
NR/CIV/SD/1340-B	Bearings - Notes
NR/CIV/SD/1341-B	Standard Bearings Details
NR/CIV/SD/1350-B	Steelwork Protective Treatment - Notes
NR/CIV/SD/1351-B	Steelwork Protective Treatment Details
NR/CIV/SD/1352-B	Bearing Protective Treatment Details
NR/CIV/SD/1360-B	Concrete and Reinforcement Details - Notes
NR/CIV/SD/1361-B	Concrete Details for Square Floor
NR/CIV/SD/1362-B	Concrete Details for 0° to 25° Skew Floor Sheet 1 of 2 Parallel Ribs

NR/CIV/SD/1363-B	Concrete Details for 0° to 25° Skew Floor Sheet 2 of 2 Fanned Ribs
NR/CIV/SD/1364-B	Concrete Details for 25° to 50° Skew Floor
NR/CIV/SD/1365-B	Reinforcement Details for Square Floor
NR/CIV/SD/1366-B	Reinforcement Details for 0° to 25° Skew Floor Sheet 1 of 2 Parallel Ribs
NR/CIV/SD/1367-B	Reinforcement Details for 0° to 25° Skew Floor Sheet 2 of 2 Fanned Ribs
NR/CIV/SD/1368-B	Reinforcement Details for 25° to 50° Skew Floor
NR/CIV/SD/1370-B	Waterproofing Details - Notes
NR/CIV/SD/1371-B	Waterproofing Details
NR/CIV/SD/1381-B	Filler Rail Details

NR/CIV/SD/TUM/1300-C	Technical User Manual For Standard Half Through Underbridges U-Type. Standard Detail and Design Drawings
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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.	