Supplementary Information

The following information is associated with Network Rail Standard:
NR CIV/SD/812 Rev A

Additional Content Access

Click the link below to access CAD version of this drawing.

CAD Drawing

- CIV/SD/812

If you have any questions, or need assistance, please contact **IHS Support**

Information accessed via the links above is the property of the Copyright holder

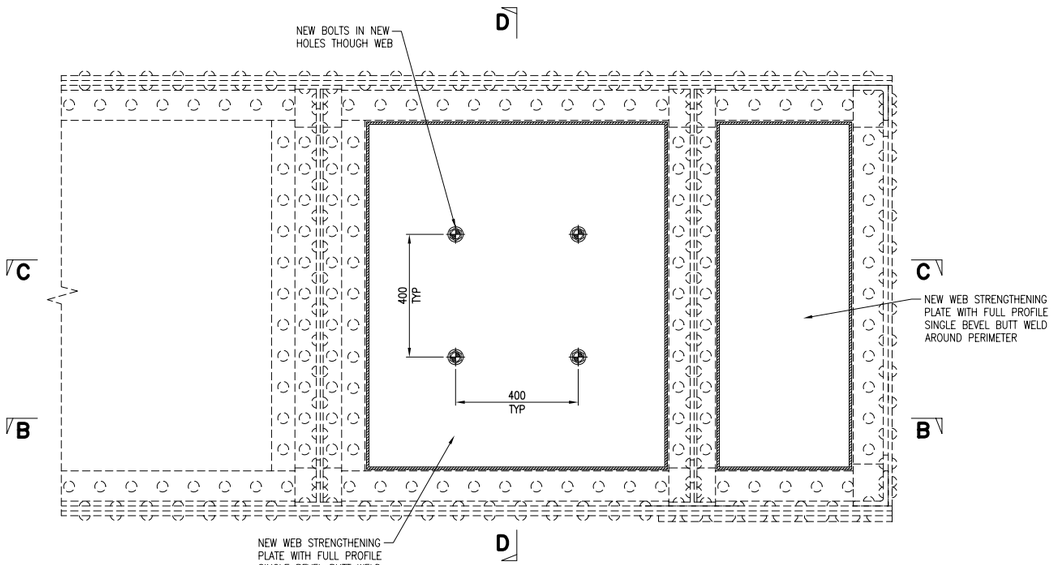
IHS Additional Content Page

Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-CIV-SD-812 ISSUE A 2012

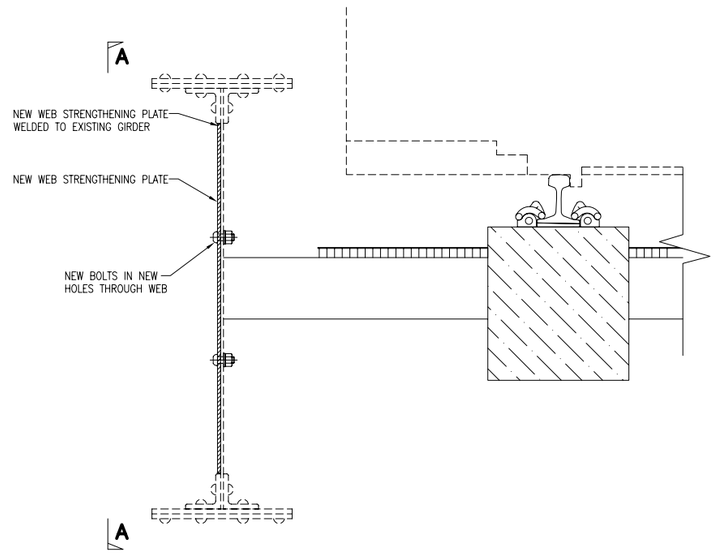
Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 19:39:32 MDT

Full document details: NR NR-CIV-SD-812 ISSUE A 2012



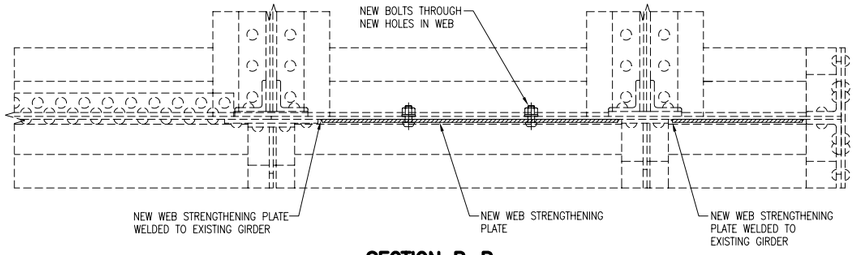
ELEVATION A–A

SCALE 1:10



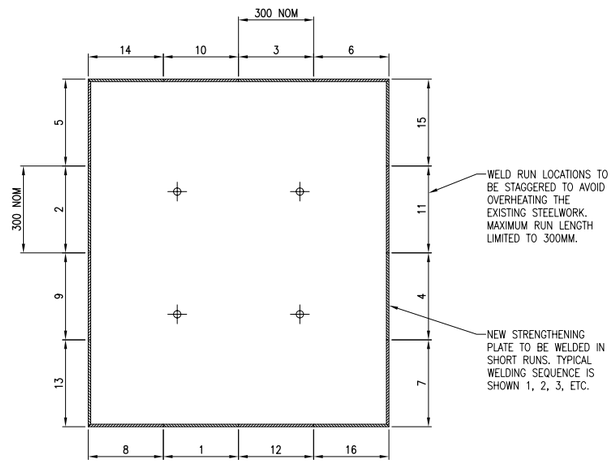
SECTION D–D

SCALE 1:10



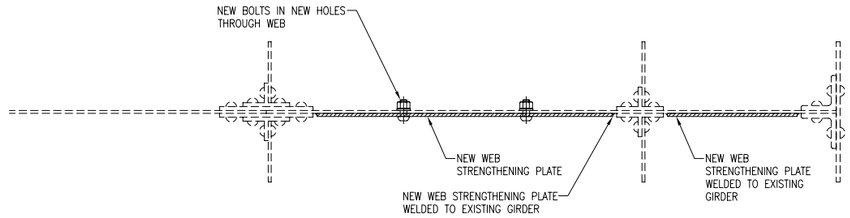
SECTION B–B

SCALE 1:10



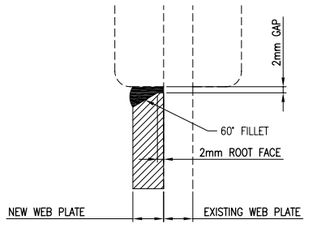
WELDING SEQUENCE

SCALE 1:10



SECTION C–C

SCALE 1:10



BUTT WELD DETAIL

SCALE 1:1

GENERAL GOOD PRACTICE GUIDANCE FOR WELDING OF METALLIC STRUCTURES IS AS FOLLOWS:

a. THE SURFACES TO BE WELDED, AND THE SURROUNDING MATERIAL FOR A DISTANCE OF AT LEAST 20MM SHALL BE FREE FROM SCALE, DIRT, GREASE, PAINT, HEAVY RUST OR OTHER SURFACE DEPOSIT. BLAST CLEANING WOULD BE THE PREFERRED METHOD AS OTHER LOCAL HAND TOOL TECHNIQUES CAN OFTEN LEAVE DELETERIOUS MATERIAL IN CREVICES.

b. ANY IRREGULARITY OF THE FUSION FACES SHALL BE SATISFACTORILY DRESSED BY CHIPPING, FILLING OR GRINDING.

c. THE WELDING SEQUENCE SHALL BE SUCH THAT DISTORTION, OR THE TENDENCY TO DISTORT IS REDUCED TO A MINIMUM.

d. ALL SLAG SHALL BE REMOVED FROM EACH RUN OF WELD METAL BEFORE ANOTHER RUN IS SUPERIMPOSED.

e. NO HAMMERING OF THE WELD METAL SHALL BE PERMITTED EXCEPT SUCH LIGHT HAMMERING AS IS REQUIRED FOR DE–SLAGGING.

f. TACK WELDS, WHERE NECESSARY, SHALL BE SUITABLE FOR INCORPORATION IN THE FINISHED WELD.

g. UNLESS SUITABLE PROTECTION IS IN PLACE, WELDING SHALL NOT BE CARRIED OUT DURING INCLEMENT WEATHER.

h. PERIMETER WELDING OF WEB PLATES USUALLY TAKES THE FORM OF A SERIES OF HORIZONTAL AND VERTICAL WELDS AROUND THE PLATE. LONGER HORIZONTAL WELDS ARE USUALLY CARRIED OUT FIRST AS THIS PROVIDES MORE HEAT BUT THE RESTRAINT IS LESS. THIS IS FOLLOWED BY SHORTER VERTICAL WELDS WITH THE FINAL TWO VERTICAL WELDS BEING THE FURTHEST DISTANCE APART TO PROVIDE MORE AVAILABILITY FOR THE MATERIAL TO STRAIN.

i. TEMPLATES TO BE PROVIDED IN ADVANCE TO MINIMISE WELD PREPARATION AND ALIGNMENT REQUIREMENTS. WELD PREPARATION TO BE KEPT TO A MINIMUM SO THAT THE HEAT INPUT IS BETTER MANAGED AND THEREFORE THE RISK OF TEARING MINIMISED.

j. WELD PREPARATIONS TO MAKE DUE ALLOWANCE FOR SHRINKAGE EFFECTS.

k. CONSIDERATION TO BE GIVEN TO GRINDING TOE RADIUS OF ANGLES FOLLOWED BY BUTTERING AS A PRE–OPERATION SO THAT ALL FOLLOWING RESTRAINED WELDS ARE MORE IN THE PLANE OF THE FLANGE TO REDUCE THE RISK OF TEARING.

NOTE

TWO SIDED WEB STRENGTHENING IS PREFERRED TO BALANCE OUT LOAD EFFECTS AT THE CONNECTIONS. THE DESIGNER MAY CONSIDER SINGLE SIDED WEB STRENGTHENING PROVIDED THAT THE OUT OF BALANCE LOADS ARE CONSIDERED THROUGH THE CONNECTIONS TO THE EXISTING STRUCTURE AND LOAD PATHS THROUGH SPLICE PLATES, STIFFENERS AND THE LIKE ARE UNDERSTOOD.

DRAWING No. NR/CIV/SD/812

NOTES

GENERAL NOTES

1. THIS DRAWING SHOWS A TYPICAL EXAMPLE OF WEB STRENGTHENING USED TO GENERATE ADDITIONAL CAPACITY TO EXISTING METALLIC LONGITUDINAL GIRDERS.

2. THE SIZES AND DIMENSIONS SHOWN ON THIS DRAWING RELATE TO EITHER A TYPICAL EDGE OR CENTRE LONGITUDINAL GIRDER. THE CONFIGURATION OF STRENGTHENING PLATE IS THE RESPONSIBILITY OF THE DESIGNER.

3. ALL EXISTING PLATES, STIFFENERS AND CONFIGURATION OF THE GIRDER ARE TO BE CONFIRMED ON SITE BY THE DESIGNER.

SPECIFICATION

1. FOR SPECIFICATION REFER TO DRG. NR/CIV/SD/801.

DESIGN ASSUMPTIONS

1. THE DESIGNER SHALL BE RESPONSIBLE FOR THE DESIGN OF THE WEB STRENGTHENING SYSTEM WHICH SHALL ADDRESS AS A MINIMUM THE FOLLOWING.

   A) LATERAL CLEARANCES FOR ACCESS TO THE WORKS
   B) 'LOCKED IN' PERMANENT LOAD STRESSES
   C) CONDITION OF EXISTING WEB PANEL
   D) CLEARANCES BETWEEN BOLTS
   E) EXTENT AND SEQUENCE OF RIVET REPLACEMENT IF REQUIRED
   F) INTEGRITY OF FLOOR CONNECTIONS

2. THE DESIGNER SHALL CHECK THE VARIOUS STAGES IN THE CONSTRUCTION SEQUENCE TO ENSURE THE INTEGRITY OF THE GIRDER AND OTHER CONNECTING PARTS ARE MAINTAINED THROUGHOUT THE WORKS.

3. THE DESIGNER SHALL SPECIFY THE SLIP FACTOR (μ) REQUIRED FOR FAYING SURFACES TO SATISFY THE DESIGN.

4. THE DESIGNER SHALL CHECK THE NUMBER OF RIVETS OR BOLTS THAT CAN BE REMOVED AT ANY ONE TIME UNDER THE LOADING REGIME FOR THE GIVEN WORK ITEM.

Rev	Date	Description of revision	Design'd	C'kd
A	22.06.12	FIRST ISSUE	MK	AGW
P2	01.07.11	DRAFT PUBLICATION ISSUE	MK	AGW
P1	24.02.11	ISSUED FOR COMMENT	MK	AGW

Network Rail
Network Rail Infrastructure Ltd
Registered Office:
Kings Place
90 York Way
London
N1 9AG

Approved	Name	Position	Signature	Date
	Paul Clark	Head of Engineering Infrastructure Projects Central Region	P.C.	June 12

Master copy with original signatures held by Network Rail HQ CIVIL ENGINEERING STANDARD DESIGN

© COPYRIGHT NETWORK RAIL 2012

METALLIC STRUCTURE REPAIRS STANDARD DRAWINGS

WELDED WEB STRENGTHENING CROSS GIRDER INTERFACE

Scale	AS SHOWN	
Drawing Number	NR/CIV/SD/812	A

Documents
Document Sharing Hub

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 19:39:32 MDT

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS