Supplementary Information

The following information is associated with Network Rail Standard:
NR CIV/SD/815 Rev A

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CAD Drawing

- CIV/SD/815

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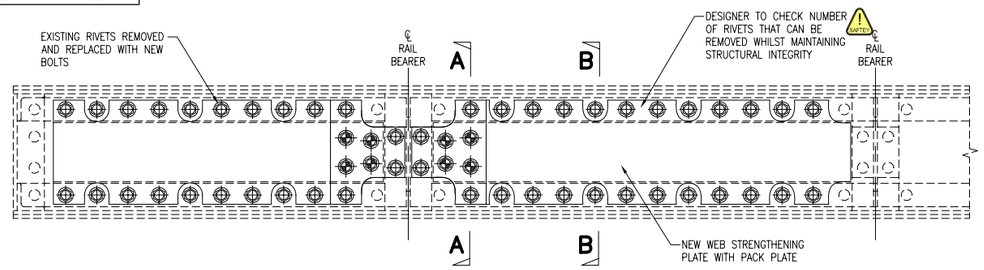

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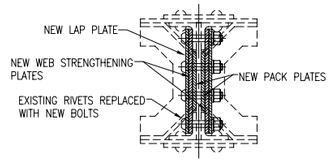

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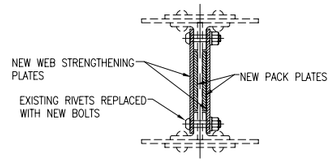

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TYPICAL WEB PANEL STRENGTHENING

1. THE FOLLOWING INSTALLATION SEQUENCE HAS BEEN DEVELOPED ON THE BASIS THAT:
   - THE PREPARATORY WORKS ARE TO BE CARRIED OUT (IN THE MAIN) DURING NORMAL WORKING HOURS, DURING WHICH TRAINS WILL BE OPERATING OVER THE STRUCTURE. THE CONTRACTOR IS TO BE AWARE THAT THE STRUCTURE WILL BE LIVE AND ALL NECESSARY PROTECTION TO TRAINS / WORKFORCE SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF THE WORKS.
   - ALL PREPARATORY WORKS CAN BE UNDERTAKEN OUTSIDE OF POSSESSIONS.
   - CONNECTIONS ARE TO BE CARRIED OUT DURING IN BETWEEN TRAIN PERIODS / POSSESSIONS WITH NO TRAIN MOVEMENT.
   - REAMING OF HOLES IS TO BE CARRIED OUT DURING IN BETWEEN TRAIN PERIODS.
   - STEELWORK INSTALLATION IS TO BE CARRIED OUT DURING POSSESSIONS WITH NO TRAIN MOVEMENTS.
   - THE ERECTION SEQUENCE OF EACH INDIVIDUAL PART AND THE CONNECTIONS TO THE EXISTING STEELWORK IS SUCH TO MAINTAIN THE EXISTING STRUCTURES INTEGRITY AND TO PREVENT THE BUILD UP OF LOCKED IN STRESSES.

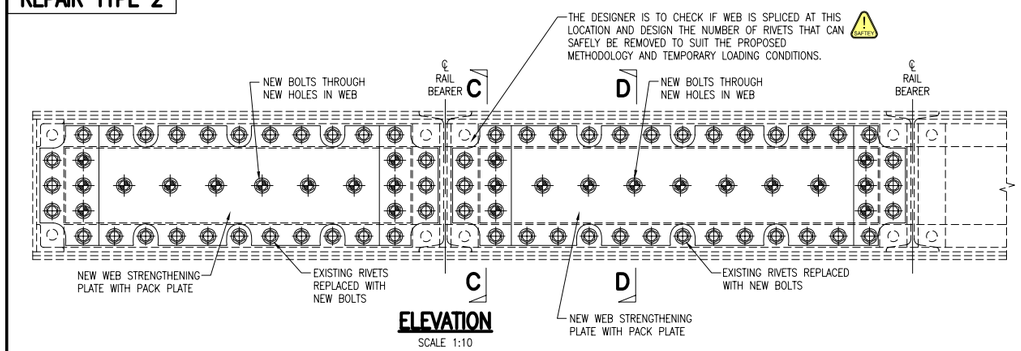
WORKS OUTSIDE OF POSSESSIONS

2. REMOVE EXISTING PROTECTIVE PAINT FROM THE ELEVATION OF THE CROSS GIRDER TO RECEIVE THE PLATES.
3. TEMPORARILY INSTALL NEW PACK PLATES INTO CORRECT POSITION AND DRILL ALL NEW HOLES.
4. REMOVE NEW PACK PLATES AND CLEAN DOWN FAYING SURFACE AND REMOVE ALL SWARF AND THE LIKE.
5. REMOVE FLANGE ANGLE CONNECTING RIVETS WHERE NOT ATTACHED TO PROPOSED STRENGTHENING / LAP PLATE ONE AT A TIME. INSTALL PERMANENT BOLT AND FULLY TIGHTEN UP.
6. REMOVE REMAINING FLANGE ANGLE CONNECTING RIVETS THAT ARE TO BE ATTACHED TO PROPOSED STRENGTHENING / LAP PLATE ONE AT A TIME. INSTALL TEMPORARY BOLT AND FULLY TIGHTEN UP, NOTING THAT REAMING OF HOLES AND TIGHTENING OF BOLTS ARE TO BE CARRIED OUT IN BETWEEN TRAINS.

DURING MAIN POSSESSION (NO TRAIN MOVEMENTS)

7. IMMEDIATELY PRIOR TO INSTALLING NEW STRENGTHENING PLATES, THE TEMPORARY BOLTS CAN BE REMOVED AND PLATES OFFERED UP INTO POSITION. INSTALL PERMANENT BOLTS AND TORQUE.

REPAIR TYPE 2



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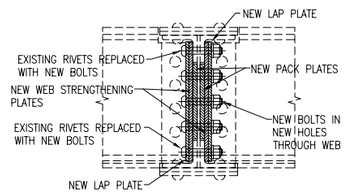
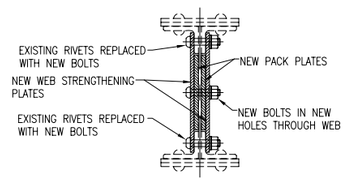


SECTION C–C
SCALE 1:10



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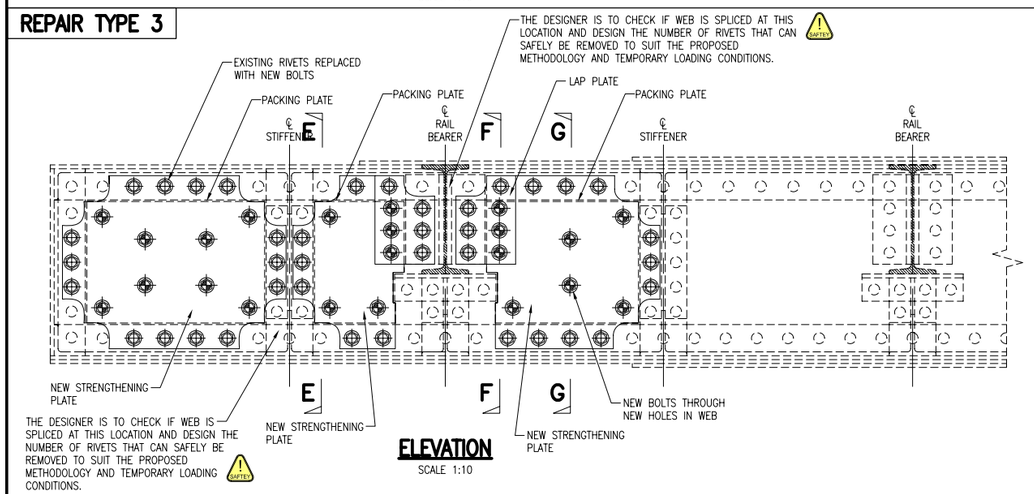

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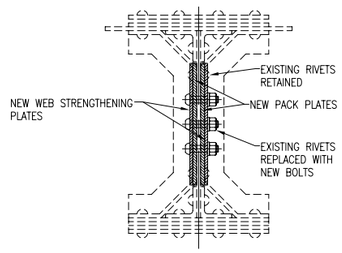

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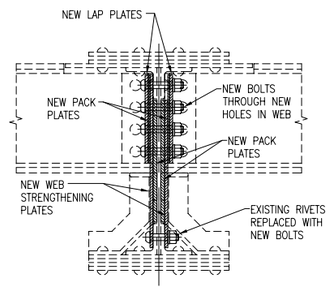

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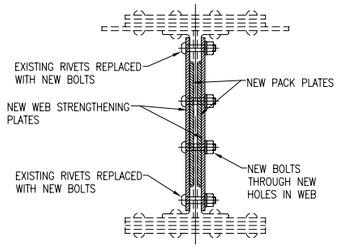

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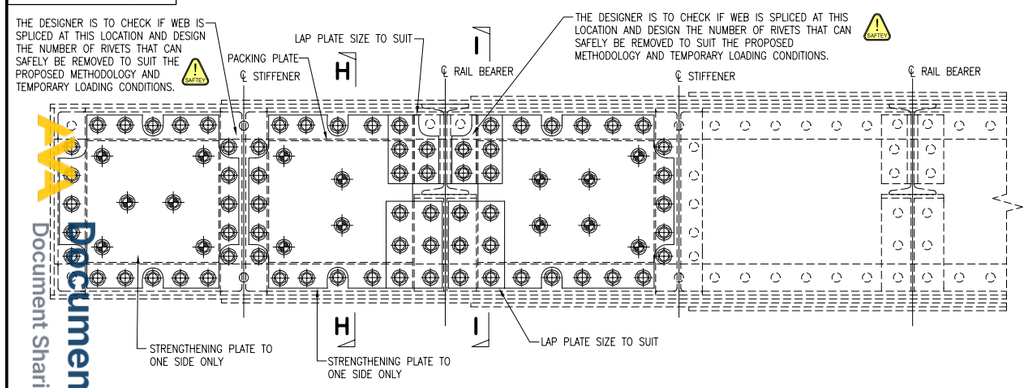

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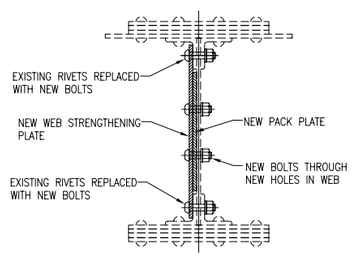

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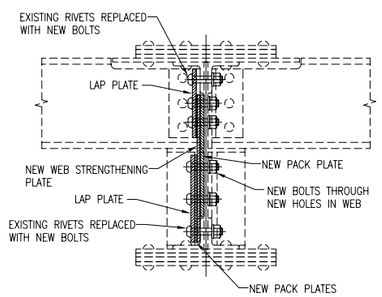

SECTION I–I
SCALE 1:10

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/815

NOTES

GENERAL NOTES

1. THIS DRAWING SHOWS A TYPICAL EXAMPLE OF WEB STRENGTHENING USED TO GENERATE ADDITIONAL CAPACITY TO EXISTING METALLIC CROSS OR RAIL GIRDERS.
2. THE SIZES AND DIMENSIONS SHOWN ON THIS DRAWING RELATE TO EITHER A TYPICAL CROSS OR RAIL 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. (SAFETY)
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. (SAFETY)

NOTE

- DENOTES NEW BOLT IN EXISTING HOLE REAMED TO SUIT.
- DENOTES NEW BOLT IN PRE DRILLED HOLE.
- DENOTES EXISTING RIVET TO BE LEFT IN PLACE.

Rev	Date	Description of revision	Design'd	C'kd
A	22.06.12	FIRST ISSUE	MK	AGW
P3	01.07.11	DRAFT PUBLICATION ISSUE	MK	AGW
P2	14.04.11	ISSUED FOR FORM A	MK	AGW
P2	24.02.11	ISSUED FOR COMMENT	MK	AGW
P1	24.01.11	DRAFT ISSUE	MK	AGW

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METALLIC STRUCTURE REPAIRS STANDARD DRAWINGS

CROSS GIRDER WEB STRENGTHENING DETAILS

Scale	AS SHOWN
Drawing Number	NR/CIV/SD/815 A

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