



SIM, Combined Projects – Gantry Repairs Methodology – Rev E 21.03.25

Repair 1

1. Temporary propping installed to centre of beam prior to works commencing.
2. Cut top of existing rivet head off with an angle grinder to create flat surface for mag drill.
3. Setup mag drill over rivets to be removed.
4. Drill out existing rivets. 4no at a time.
5. De mount mag drill.
6. Install dome headed bolts from underside of top flange. Bolts will be M24 x 40 or 50mm. Sized to match existing bolts.
7. Install nut from top of side of flange.
8. Install dummy dome head to bolt and nut on top side of flange so it appears to be a rivet.

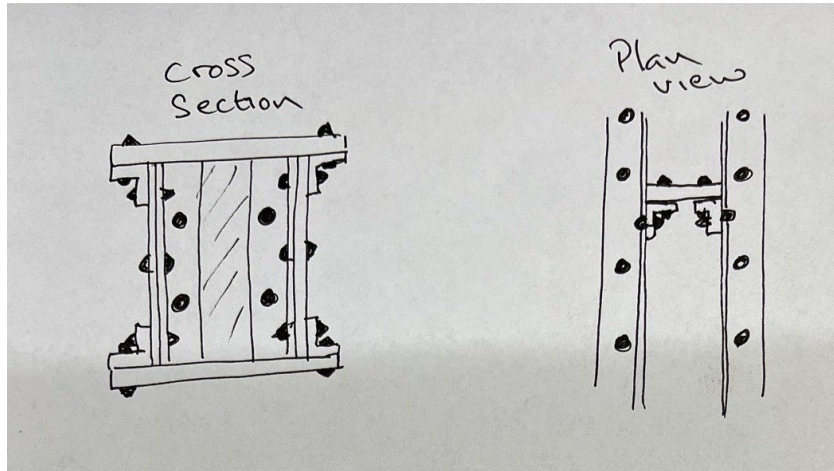
See below photo as an example of repair 1 location:



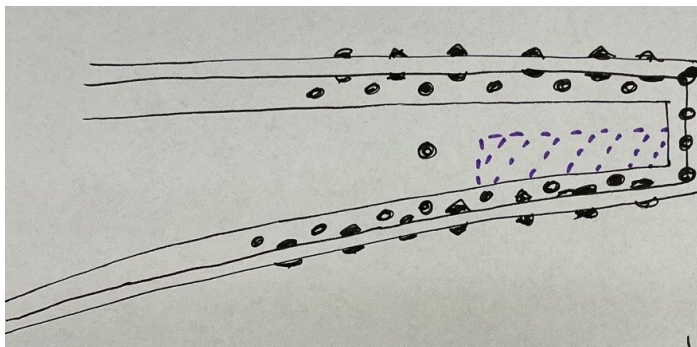
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Repair 2

Existing detail of gantry steel sections:

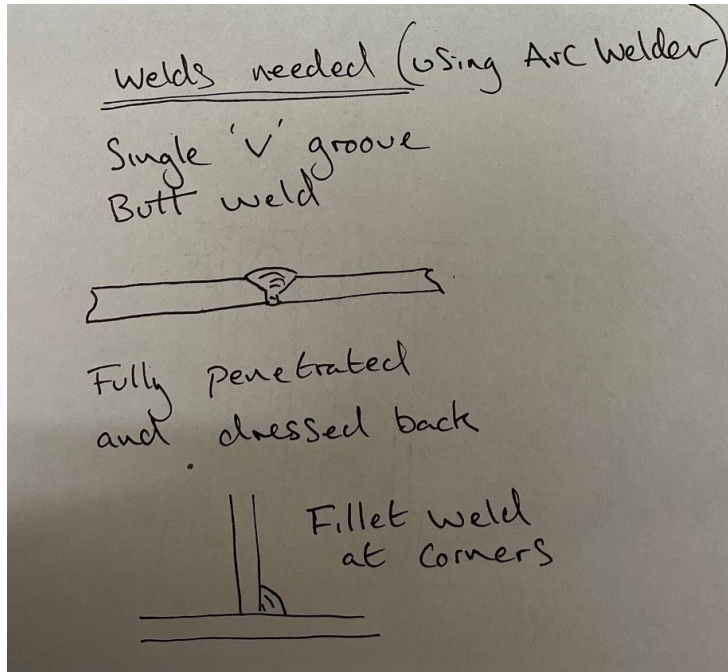


1. Temporary propping installed to centre of beam prior to works commencing.
2. Carefully remove steel c-section to make repair more accessible. Store for reinstall once repair works are completed. See photo 2e showing the non-original and non-structural C section.
3. Identify extent of corroded steel by cutting back and using calipers to find where the steel thickness is matching the existing steel thickness.
4. Produce plate to match extent of steel removed. This will be fabricated off site.
5. Lay in the replacement steel plate into the section previously removed and fully weld the plate. See below sketch.



6. Plate to plate weld will be single 'V' groove full penetration butt weld as per below sketch. Fillet weld to be used to weld plate to steel flanges. See below sketch.

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7. All rivets in this location will be replaced with dome headed bolts and made to look like a dummy rivet. Bolts will be M24 x 40 or 50mm.
8. Where the angle is also corroded this will also be cut out and an additional steel welded to the face of the replacement plate and then fully welded to the in-situ. Again, dome headed bolts will be installed as dummy rivets.
9. The previously removed steel c-section will be reinstalled in its original configuration.
10. 12mm hole drilled through bottom flange of steel beam at lowest point between each vertical stiffener to allow water to escape all voids.

See below photos of the repair 2 locations identified:





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2c	2d
	
2e	

Repair 3

Sections of handrail highlighted in yellow to have metal bars replaced with new. See below images for the west and east crane beams.

Highlighted sections to be cut out and then new sections of metal bar installed in its place.

This is to be welded in place in-situ.



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West Crane Beam



East Crane Beam



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Repair 4

1. Rake out and clean with angle grinder to get back to good material before welding
2. Weld up to a point to allow for shaping back to desired falls. Shaping back to be complete using a grinder.



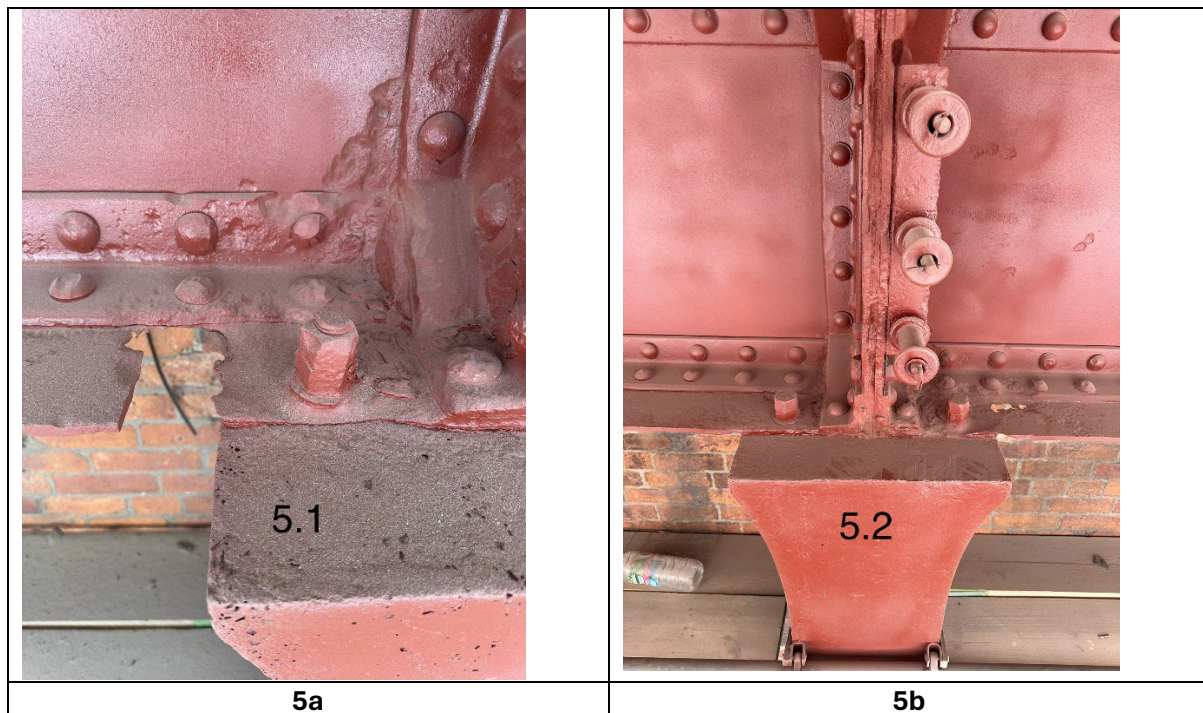


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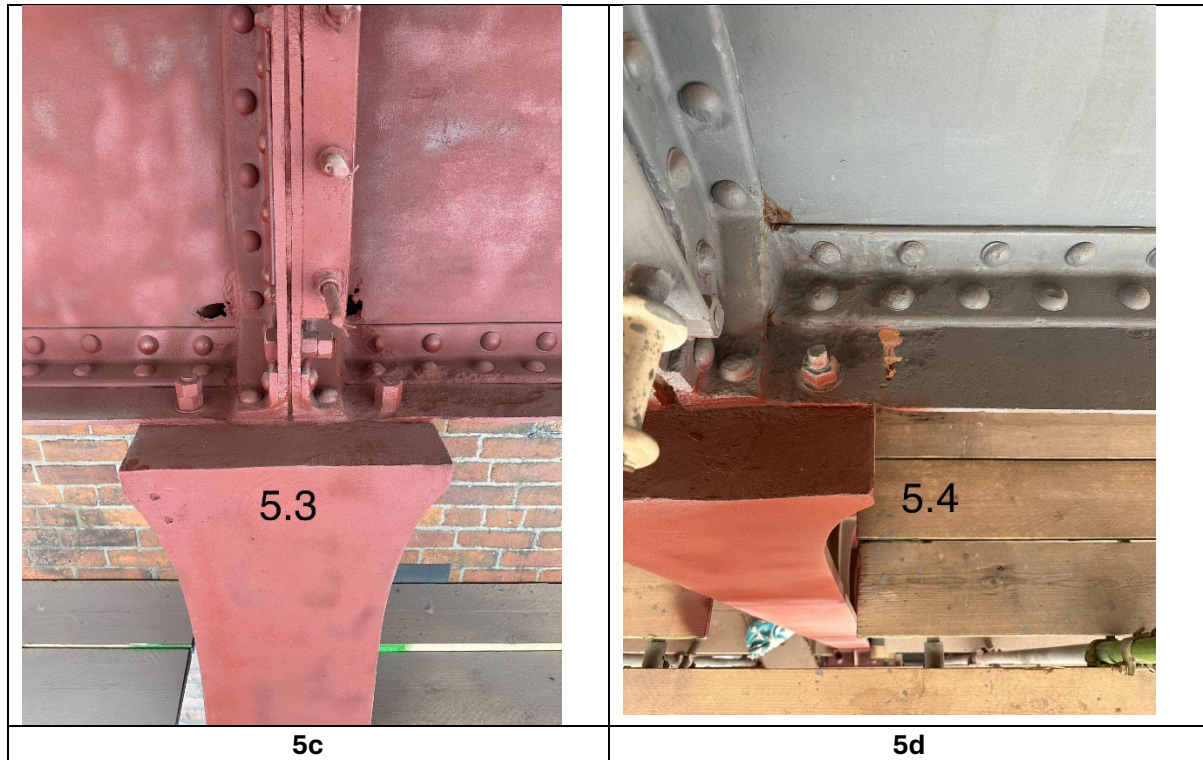
4

Repair 5

1. Complete site measure and pre-prepare plates off site. Holes installed to new plates to match existing rivet locations.
2. Remove existing rivets (Grind off and knock out rivets).
3. Remove bolts to head of column.
4. Offer the plate up to the location it is to be installed.
5. Mark centres of new rivets.
6. Drill location of new rivets with mag-drill.
7. Install plate into correct position and clamp into place ready for fixing.
8. Install bolts (replacement rivets). All rivets in this location will be replaced with dome headed bolts and made to look like a dummy rivet. Bolts will be M24 x 40 or 50mm.
9. Install replacement bolt to head of column.



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Repair 6

1. 12mm hole drilled through bottom flange of each crane beam at lowest point of midspan to allow water to escape all voids. Hole to avoid existing rivets.

Repair 7

1. Plaques removed before repair work to beam is commenced.
2. Defective area of beam to be cut out to a uniform shape to the full extent of degraded material.
3. Steel straps welded to the inside of beam to act as grounds to aid position of new steel inlay.
4. Beam drilled at the top and bottom of strap locations and pool welded to fix straps into position.
5. New steel plate cut to match original. All edges 'u' prepped and arc welded in position. Welds to be FPBW (full penetration but welds). All welds to be ground back flush.
6. Welds to be tested at time of repairs prior to decoration.
7. Plaques flattened and then repaired using a braze repair and dressed back to finish. Cracking / aging of plaques will still be legible post-repair. The intent is not that the plaques look brand new.
8. Plaques reinstalled using bolts to match existing.
9. Area fully redecorated.



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Repair 8

For details of this repair please refer to Buro Happold drawing SIM- BHE-GA-XX-SK-S-0008.

1. Strap installed to hanging frame to keep it in its current location when existing hook is removed.
2. Template for new 5mm plate to be made and clamped into position so drill hole can be marked in the correct location. New plate will be sized so that it matches the size of the existing L-angle.
3. Template taken to workshop and new 5mm plate manufactured. Hole pre-drilled in correct location.
4. Existing hook removed from current position and profile traced to assist with fabrication of new bracket.
5. New bracket fabricated but hook section extended by 50mm to ensure it is long enough to sit on sound metal.
6. New plate and hook decorated to match gantry.
7. 5mm plate clamped into correct location onsite.
8. Hook installed through existing hole and pre-drilled hole in the 5mm plate with 50mm bearing as required.
9. Nut installed to underside of hook.