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Example 1
- outstand to built-up rivetted diagonal, with rivets for connection to incoming cross bracing
- angle to inside runs between continuous diagonals in opposite direction, typically with 3 bays of X-bracing
- at least 2 holes per length of outstand

Example 2
- loss of section to outer angle in this example, across 2 bays of X-bracing
- at least 2 holes per length of outstand

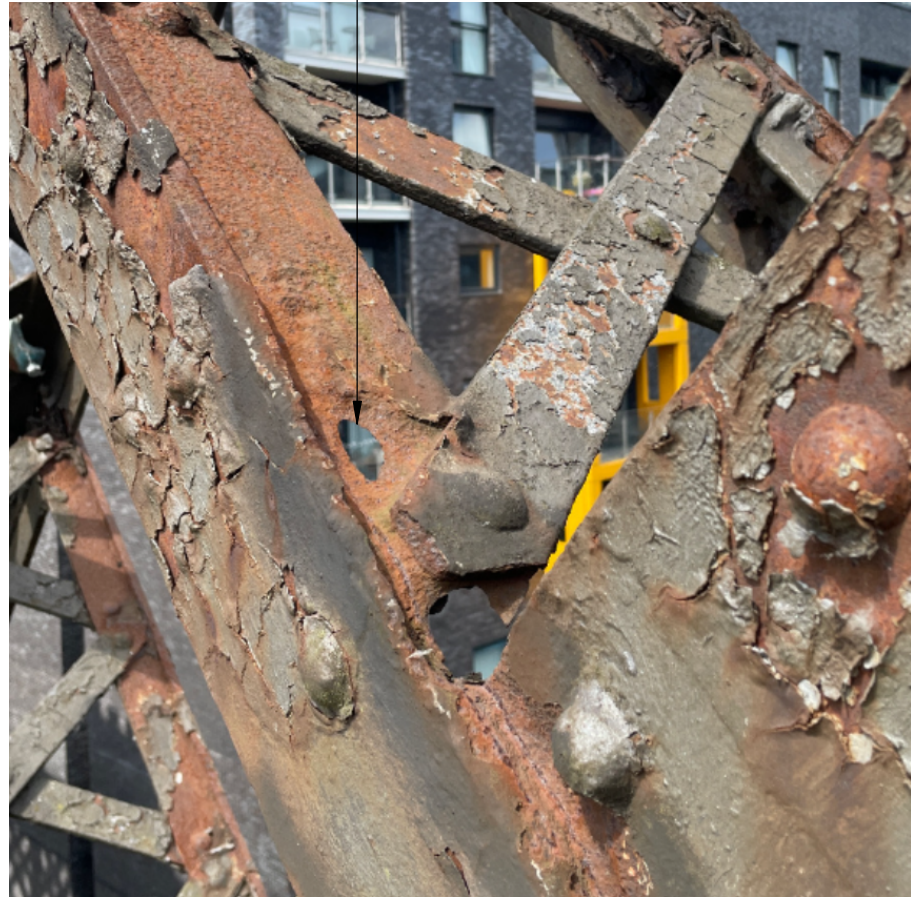


Note conditions with outstand running through to rear of opposing diagonal

Example 3
- loss of section to inner angle, either side of X-bracing connection
- at least 2 holes per length of outstand

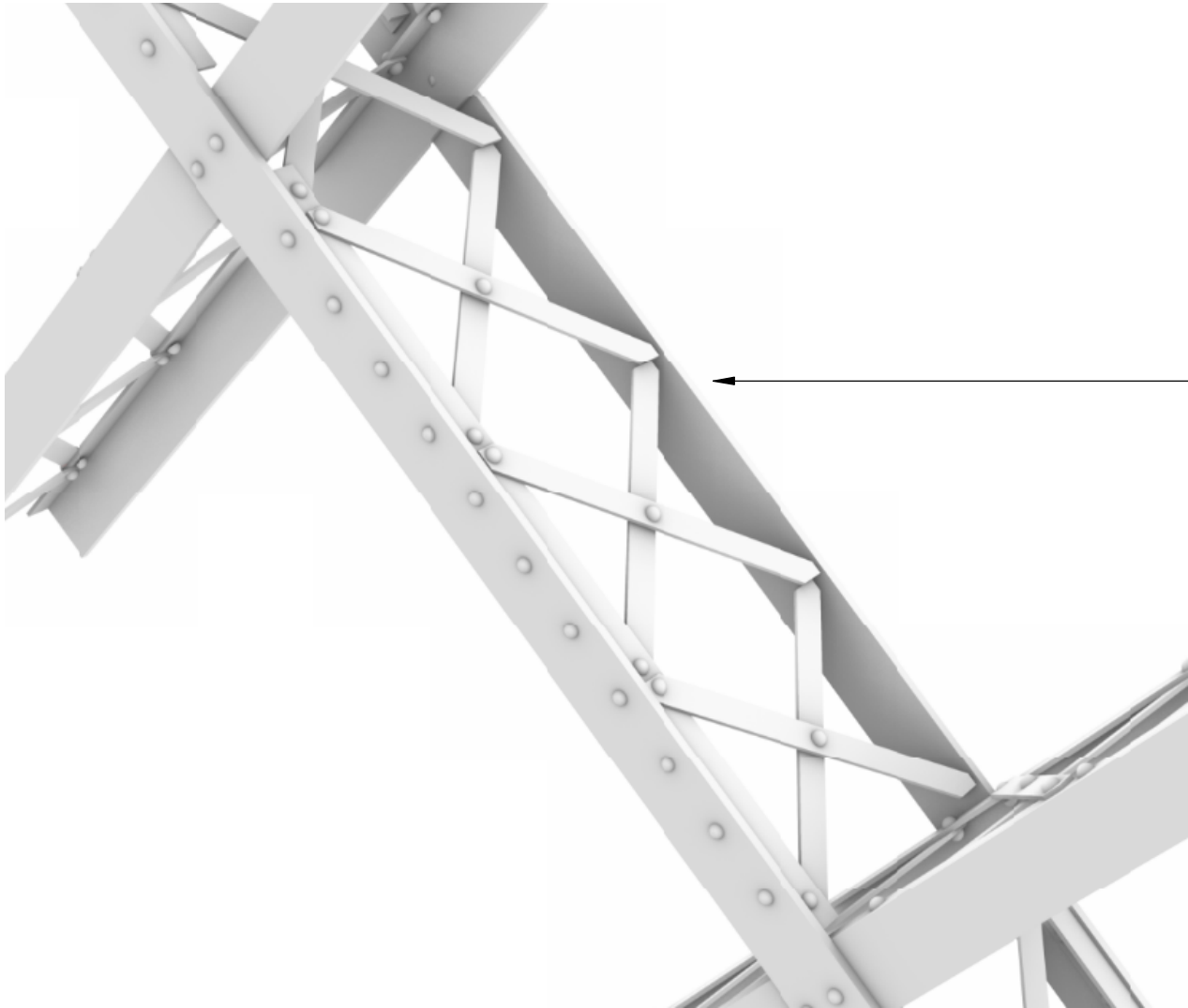
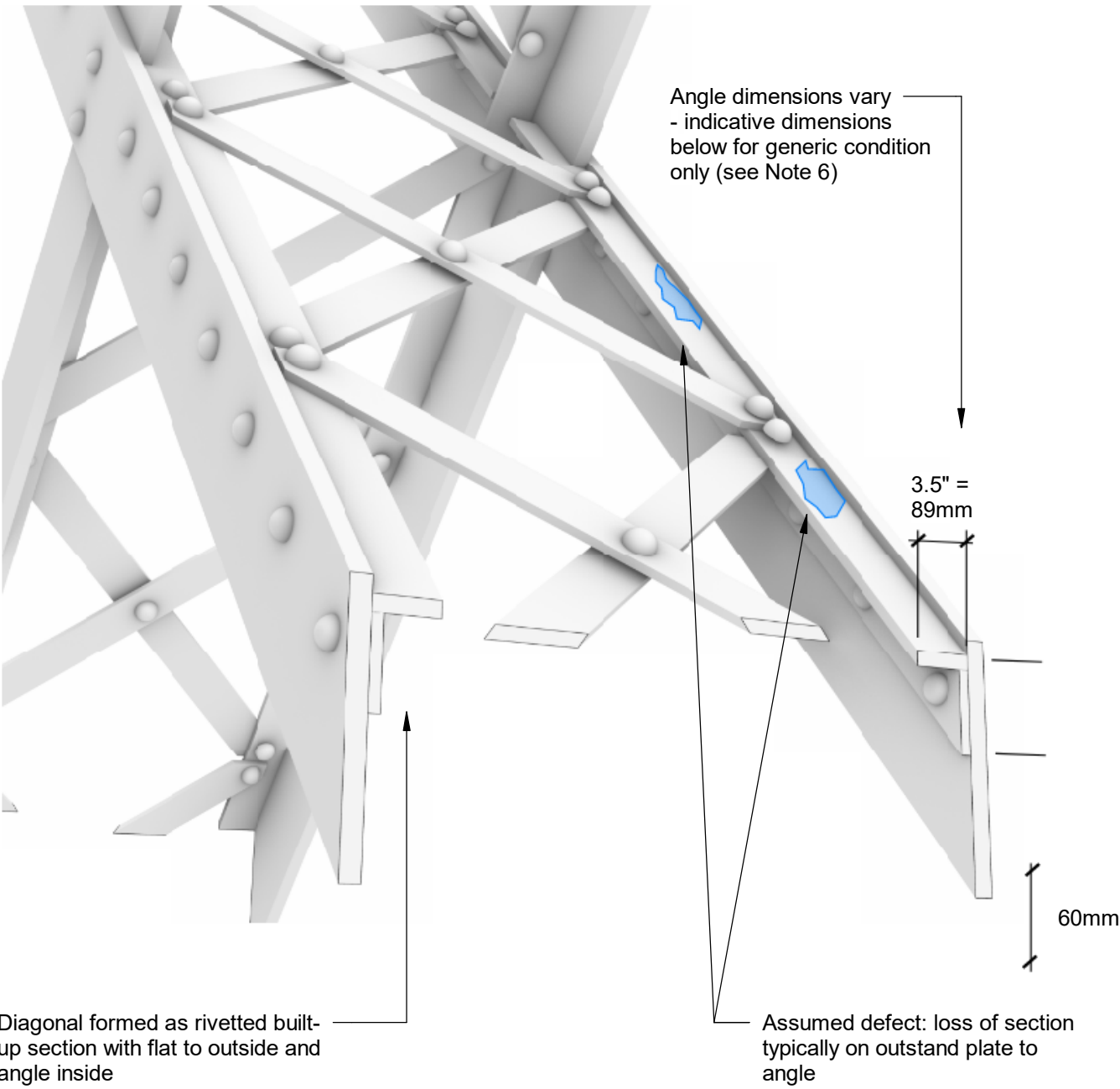


Example 4
- minor loss of section to inner angle to local area only
- only 1 hole per length of outstand
- remaining plate in reasonable condition
- no remedial required for this example

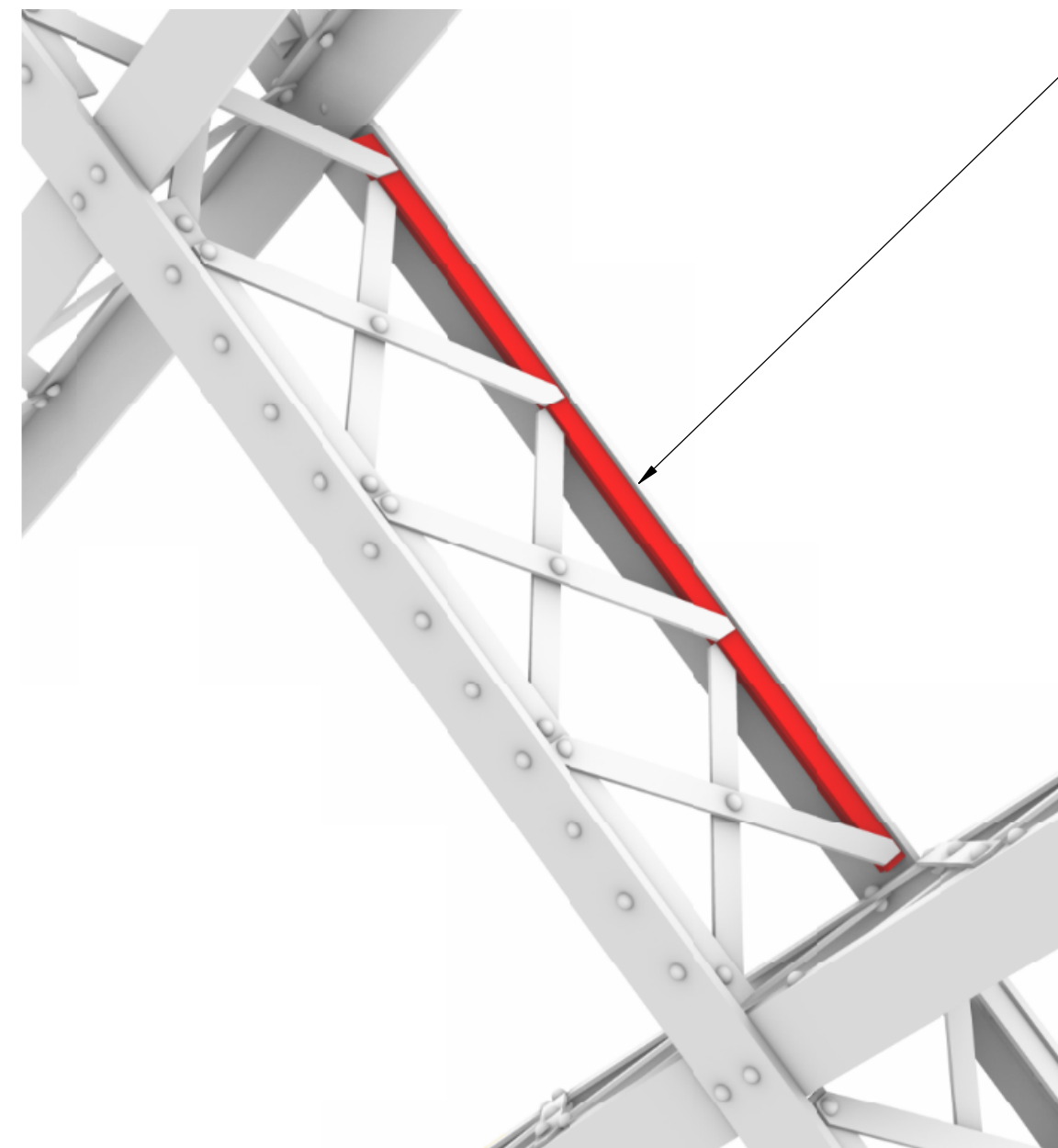


NOTE:
Defect examples taken from Arup 2024 visual surveys. Each represents a discrete example at a unique diagonal. Defect locations to be identified by re-survey.

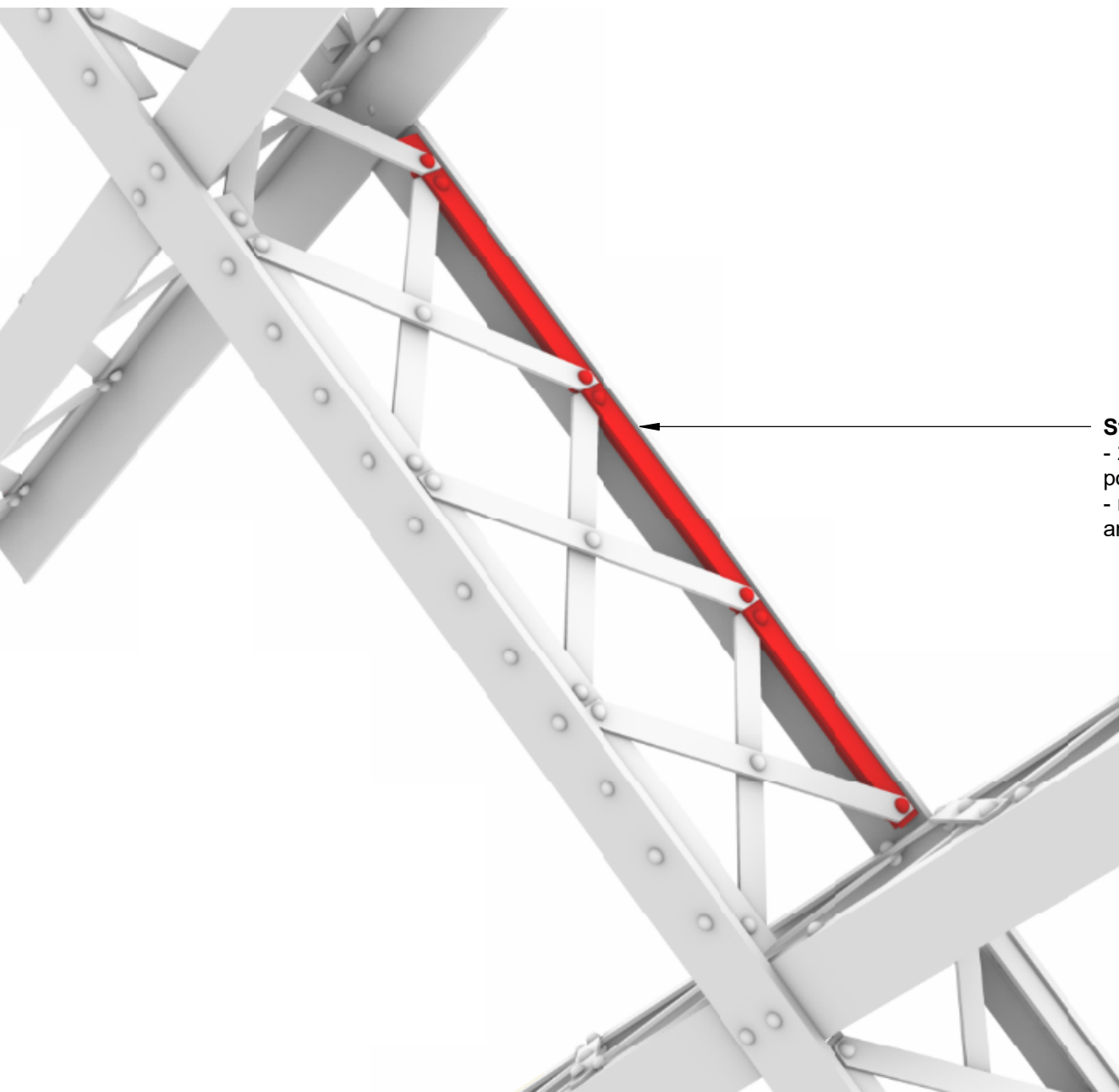
DEFECT EXAMPLES
NTS



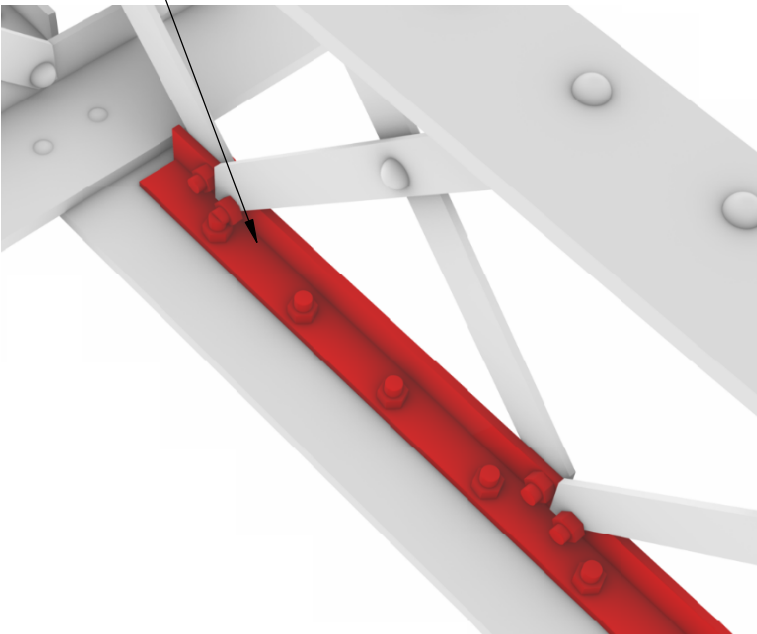
Step 1
- corroded angle (assumed to built-up rivetted diagonal) assumed removed in whole between opposite diagonals, i.e. across 3 bays of X-bracing
- existing rivets to X-bracing, and from corroded angle into flat, to be over-reamed and removed



Step 2
- replacement steel angle in same position
- to be same thickness and dimensions as existing
- to be carefully offered between free ends of X-bracing where possible, assuming some movement to free plates
- Note: option to install angle in smaller lengths could be reviewed upon review of buildability



Step 3
- 24mm dia holes drilled through new angle in position of previous rivets
- new M22 HSFG dome-headed bolts from new angle into existing plates



REMEDIAL DETAIL
NTS

NOTE:
Lattice diagonal section sizes and configurations vary between spans and along each span. Remedial drawn for generic example at intersection between 1No. rivetted built-up section (flat plus angle) and 1No. continuous angle.

Notes:

- These drawings shall be read in conjunction with all relevant Engineer's and Architect's drawings and with all relevant specifications
- Existing condition drawn with dimensions from original archive drawings. All existing dimensions to be verified by the Contractor prior to fabrication or construction.
- Drawing to be read in colour.
- Do not scale from this drawing
- For structural nomenclature refer to drawing CVI-ARUP-ZZ-ZZ-DR-S-1055. For structural notation of spans/beams/piers refer to drawing CVI-ARUP-ZZ-ZZ-DR-S-1056

H&S / CDM Risks:

- Specific risks highlighted thus:
- existing paintwork contains lead
 - limited structural capacity of viaduct deck plates
 - existing ballast contaminated with lead and hydrocarbons
 - working at height above water and public areas
- Refer to Arup risk register for further details.

Legend:

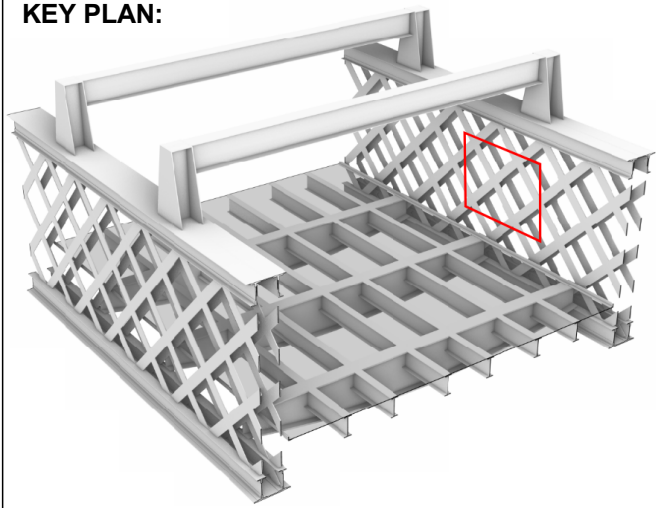
- Existing structure
- unchanged unless noted otherwise
- Proposed remedial
- Indicative extent of defect
- typical loss of section or thickness due to corrosion
- Indicative packing plates
- where required

NOTE:

The remedial details shown consider the most likely corrective intervention based on the expected type/extent of defect. Extent of defect to be confirmed pending future brush down, removal of debris, and subsequent tactile surveys. Further defect types and consequent remedials may also be identified.

LOCATION / NUMBER OF REMEDIALS REQUIRED:
- TBC
- Refer to general notes drawing CVI-ARUP-ZZ-XX-DR-S-0001 for background context for proposed remedials

KEY PLAN:



T1	14/08/24	RR	GH	Preliminary Issue
Rev	Date	Chkd	Appd	Issue Notes

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Client

The National Trust

Project Title

Castlefield Viaduct
Phase 2

Drawing Title

Remedials
Lattice Girders
Diagonal Outstands

Scale at A1	1 : 100	Drawn By	Author
Role	Structural		
Status	S2 - For Information		
Arup Job No	282210	Rev	T1
ID	CVI-ARUP-ZZ-ZZ-DR-S-4012		