NETWORK RAIL

Additional Examination

ELR: COL	Contract Mileage: 189 m 0825 yds 37.50 ch	Struc. Ref: 65
Examination Type: Additional Exam	NR ID: 12010422	Exam Date: 23/07/2024
GPS:		OS Ref: SJ8383397490
Structure Name: VIADUCT	Type: BU	Exam ID: 3788089
Route: London North Western		Complete Exam: no

Section A: To Be Completed By The Examining Organisation

HIDDEN PARTS NOT EXAMINED (EXCLUDING FOUNDATIONS)	Part	Reason
1	30% of soffit	Due to cladding - tenanted structure

ITEM	DESCRIPTION	LOCATION	Est. Cost £ +/- 20%	Priority Within	Quantity	Severity	Probability	Risk Score	Works Category
1	Ensure as a minimum the full soffit is free on any PNE's. Once that has been achieved, check whether fracture E to the low mileage was supposed to be stitched and repointed under WI 2082978? If so, liaise with deliverer (AMCO) and works delivery regarding this.	Throughout the soffit and fracture E	5000	6mths	2unit	3	4	S12	Brickwork/Stone Repairs
2	Continue with the 3 monthly monitoring of the soffit until renewal	Soffit of COL-65	1000	6mths	1unit	3	4	E12	Other
3	Develop renewal plan - for under ringing the arch	COL-65	1000	6mths	1unit	3	4	E12	Other
4	Continue liaising with the interface management team and Arch Co, ensuring there is plan going forward for the duration of the additional until the arch has been under rung (note this will be also the case for COL-63, COL-64, COL-66 and COL-67), renewal is provisionally scheduled for CP7 year 3 (2026/27)	COL-65	1000	6mths	1unit	3	4	E12	Other
5	Create new individual A3 additional remit for this structure. Currently using the previous additional group remit that included COL-63 through to COL-66	CARRS and Additional Exam Tracker	1000	6mths	2unit	2	2	E4	Other
6	Review failed repair to fracture D and G and next additional to see if they have deteriorated. Options to consider are instructing brickwork repairs (for AMCO to carry out) or instruct Accolade to install additional monitoring to the soffit	High mileage lower haunch and crown (fracture D) and High mileage haunch (fracture G)	3000	6mths	3unit	3	4	S12	Brickwork/Stone Repairs

Data in this table prior to this examination date is imported from CES, Amey does not verify its completeness or accuracy

No	Description	Location	Exam Date	Access Gained	Exam Type	Rec Raised	Risk Score	Access Req'd	Deter - ioration	Repaired	Flagged for closure	Engineer Comments

No	Description	Location	Exam Date	Access Gained	Exam Type	Rec Raised	Risk Score	Access Req'd	Deter - ioration	Repaired	Flagged for closure	Engineer Comments
1	9No. longitudinal fractures. 2 open 10mm+ with distortion of profile, wetness and loss of material	Arch barrel		Yes	ADDIT		12	Yes	No Deterioration	No	N	No deterioration noted since the last examination. See WI1942145 in CARRS renewal
1	9No. longitudinal fractures. 2 open 10mm+ with distortion of profile, wetness and loss of material	Arch barrel	23/07/2012	No	V		9	Yes	Baseline	No	N	Taken from the Detailed of 28/02/2008. Stitching and tie bars recommended. Not viewed at this examination.
1	9No. longitudinal fractures. 2 open 10mm+ with distortion of profile, wetness and loss of material	Arch barrel	29/04/2013	No	D		9	Yes	N/A	No	N	unknown no access to view.
1	9No. longitudinal fractures. 2 open 10mm+ with distortion of profile, wetness and loss of material	Arch barrel	08/02/2014	No	V		9	Yes	Not Viewed	No	N	Taken from the Detailed of 28/02/2008. Stitching and tie bars recommended. Not viewed at this examination.
1	9No. longitudinal fractures. 2 open 10mm+ with distortion of profile, wetness and loss of material	Arch barrel	11/04/2015	No	V		9	Yes	Not Viewed	No	N	Not viewed
1	9No. longitudinal fractures. 2 open 10mm+ with distortion of profile, wetness and loss of material	Arch barrel	21/03/2017	No	V		9	Yes	Not Viewed	No	N	Unable to view.
1	9No. longitudinal fractures. 2 open 10mm+ with distortion of profile, wetness and loss of material	Arch barrel	03/11/2017	No	V		9	Yes	Not Viewed	No	N	Unable to view.
1	9No. longitudinal fractures. 2 open 10mm+ with distortion of profile, wetness and loss of material	Arch barrel	25/11/2021	Yes	P.A.N		12	Yes	Yes	No	N	Further significant deterioration. Description updated. PAN LNW UD 1363.
1	9No. longitudinal fractures. 2 open 10mm+ with distortion of profile, wetness and loss of material	Arch barrel	25/11/2021	Yes	D		12	Yes	Yes	No	N	Further deterioration, fracture aperture has increased with distortion to profile noted and loss of brickwork. Some previous JL fractures have sealed with calcite. Updated from PAN form raised during

No	Description	Location	Exam Date	Access Gained	Exam Type	Rec Raised	Risk Score	Access Req'd	Deter - ioration	Repaired	Flagged for closure	Engineer Comments
1	9No. longitudinal fractures. 2 open 10mm+ with distortion of profile, wetness and loss of material	Arch barrel	19/08/2023	Yes	V		12	Yes	Cannot Determine	No	N	Cannot determine at time of examination. See WI1942145 in CARRS renewal
1	9No. longitudinal fractures. 2 open 10mm+ with distortion of profile, wetness and loss of material	Arch barrel	23/07/2024	Y	ADDIT	Y	12	Y	Little Deterioration	N	N	Work has been under WI 2082978, fractures D and G seem to have failed.
2	Open joints and fractures	Parapets and spandrels	23/07/2012	Yes	V		4	No	Baseline	No	N	Taken from the Detailed of 28/02/2008. Pointing recommended. Risk reduced from 8 to 2x2=4
2	Open joints and fractures	Parapets and spandrels	29/04/2013	Yes	D		4	No	N/A	Yes	N	some repairs appear to have been carried out.
2	Open joints and fractures	Parapets and spandrels	08/02/2014	No	V		4	No	Not Viewed	Yes	N	Not seen at exam
2	Open joints and fractures	Parapets and spandrels	11/04/2015	Yes	V		4	No	No	No	N	Old standing with no deterioration
2	Open joints and fractures	Parapets and spandrels	21/03/2017	Yes	V		4	No	No	No	N	no change
2	Open joints and fractures	Parapets and spandrels	03/11/2017	Yes	V		4	No	No	No	N	Old standing with no deterioration
2	Open joints and fractures	Parapets and spandrels	25/11/2021	Yes	D		4	No	Yes	No	N	Some slight deterioration.
2	Open joints and fractures	Parapets and spandrels	19/08/2023	Yes	V		4	No	No	No	N	No deterioration noted at the time of examination.
3	Unexamined parts - Internal elements sheeted, Downside restricted.	Internal elements, Downside	23/07/2012	No	V		1	Yes	Baseline	No	N	Unexamined parts, not viewed at this examination.
3	Unexamined parts - Internal elements sheeted, Downside restricted.	Internal elements, Downside	29/04/2013	No	D		1	Yes	N/A	No	N	sheets need removing toallow internal inspection.
3	Unexamined parts - Internal elements sheeted, Downside restricted.	Internal elements, Downside	08/02/2014	Yes	V		1	Yes	N/A	No	N	Sheeted over so unable to view internal elements
3	Unexamined parts - Internal elements sheeted, Downside restricted.	Internal elements, Downside	11/04/2015	Yes	V		1	Yes	N/A	No	N	No change
3	Unexamined parts - Internal elements sheeted, Downside restricted.	Internal elements, Downside	21/03/2017	Yes	V		1	Yes	N/A	No	N	Unable to view.
3	Unexamined parts - Internal elements sheeted,	Internal elements, Downside	03/11/2017	Yes	V		1	Yes	N/A	No	N	No change

No	Description	Location	Exam Date	Access Gained	Exam Type	Rec Raised	Risk Score	Access Req'd	Deter - ioration	Repaired	Flagged for closure	Engineer Comments
	Downside restricted.											
3	Unexamined parts - Internal elements sheeted, Downside restricted.	Internal elements, Downside	25/11/2021	Yes	D		9	Yes	No	No	N	70% of soffit examined. Some previously recorded fractures not able to be viewed.
3	Unexamined parts - Internal elements sheeted, Downside restricted.	Internal elements, Downside	19/08/2023	Yes	V		9	Yes	Cannot Determine	No	N	Cannot determine at time of examination. See WI1994794 in CARRS at RS1
5	Separation fracture between face ring and spandrel wall	US elevation, HM haunch	25/11/2021	Yes	D		6	No	Baseline	No	N	New tracked defect
5	Separation fracture between face ring and spandrel wall	US elevation, HM haunch	19/08/2023	Yes	V		6	No	No	No	N	No deterioration at the time of examination. See WI1994793 in CARRS at RS9
6	Vertical fractures to parapet. 1m L x HL from string course. FH x 5-10mm with 1m2 of 10mm displacement to wall and 1 no string stone.	US elevation, midspan and above HM pier respectively.	25/11/2021	Yes	D		9	No	Baseline	No	N	Old standing, new to tracker. No change.
6	Vertical fractures to parapet. 1m L x HL from string course. FH x 5-10mm with 1m2 of 10mm displacement to wall and 1 no string stone.	US elevation, midspan and above HM pier respectively.	19/08/2023	Yes	V		9	No	No	No	N	No deterioration at the time of examination. See WI1994793 in CARRS at RS9
7	Loose brick at height	US elevation, HM pier, below padstone.	25/11/2021	Yes	D		5	No	Baseline	No	N	New tracked defect
7	Loose brick at height	US elevation, HM pier, below padstone.	19/08/2023	Yes	V		5	No	Cannot Determine	No	N	No deterioration at the time of examination. See WI1994793 in CARRS at RS9

Engineers Notes

Continue with the 3 monthly monitoring of this arch.
Ensure prior to carrying out the next additional, the soffit is free of any PNE's.
Little deterioration noted to fracture D at 2 location - the repairs carried out under WI 2082978 has failed at the high mileage lower haunch (20mm change, fracture length 970mm now whereas it was 950mm). New fracture at the crown 350mm (refer to photos 13-17).
Also confirm if fracture E at the low mileage was supposed to have been stitched and repointed as part of the works under WI 2082978. If so, liaise with the deliverer (AMCO) and works delivery as to why this was not done.
At the next additional, see if the known failed repairs of fractures D and G have deteriorated. If so, consider either instructing more brickwork repairs for AMCO to carry out or instruct Accolade to install additional monitoring on these fractures.
Liaise with SAE on how best to produce the A3 remit for the new individual additional i.e., are we wanting the examiner to have access to

NetworkRail	NETWORK RAIL Additional Examination	NetworkRail
ELR: COL	**Contract Mileage: 189 m 0825 yds 37.50 ch**	**Struc. Ref: 65**

Exam ID	3788089	**Exam Date**	23/07/2024	**SAD ID**	12010422
Name:		VIADUCT			

EXAMINER COMMENTS

Defect(s) present on this structure

I confirm that the previous detailed and visual reports have been reviewed and the dates of said reports are given in this report.

Please note that the previous additional examination dated 17/04/2024 was also reviewed at this time, however there is no previous additional date, option or tab present in Alarm 2".

The last Detailed Examination was incomplete

Parts not examined at last detailed exam:

30% of cladding to soffit could not be accessed.

Pier faces tiled and cladded both sides and to adjacent spans faces.

[redacted]

ADDITIONAL GENERAL COMMENTS

Additional Exam: COL 65

(Exam previously encompassed structure COL/63 to COL/66 but has been put against 63 for reporting) These have now been individually broken down into single spans.

These spans are owned by Arch Co but currently (23/07/24) empty. Internal cladding to be removed locally around fractures where possible and left down. Plastic sheeting to cover areas where water ingress is an issue. Renewal strategy to be confirmed.

All seen
Small areas of soffit sheeting remained in place at this examination to both the high and low mileage lower haunch approximately 10% not seen. Trackside elements, piers and the downside elevation have not been viewed as part of this examination.

Continuation Sheet
Initial Exam Date: 17/05/2022

Current Examination Date: 23/07/2024

Change: One new area of failed repair to the crown of defect D x 350mm in length.
One previous repair has increased in length but by only 20mm (was 950mm now 970mm).

Trigger Levels: Trigger level not met.

Network Rail Instruction: 3 Monthly examinations.
Visual examination of fractures from mezzanine levels. Tapping around fractures with pole. Marking up of plan drawings from most recent detailed exams.

Summary:
There is electronic monitoring being undertaken to the the longitudinal fracture adjacent the upside face rings with five sensors in place.
Two number repairs have previously partially failed with H/L fractures present to the high mileage lower haunch, one of these shows a minor amount of deterioration at this examination. There is one new area of missing mortar to the crown x 350mm in length (please see the defect sketch for all information).

Other:
No changes in loading or the surrounding environment observed since the previous examination.
Please note that extensive water damage is an issue to the mezzanine floor with the wooden and plastered ceiling failing in various areas and standing water present to the ground floor, please see photos P30 to P32.

Defects
Please see the defects sketch for all fractures noted at the time of this examination.

METHOD OF EXAM/TOOLS USED

Examination undertaken from mezzanine floor level using tapping pole and lighting.

NEW DEFECT(S)

NONE

PREVIOUSLY RECORDED SIGNIFICANT (OPEN) DEFECT(S)

NONE

PREVIOUS RECOMMENDATION(S)

- See Recommendation(s) below

NONE

ELR: COL	Contract Mileage: 189 m 0825 yds 37.50 ch	Struc. Ref: 65

Monitoring Devices Present (if Yes - see Element detail for advice)	
Date Tab	No
Plumb Points	No
Avongards	No
Inclinometers	No
Total stations	Yes

KEY

General

Dia. – Diameter
G.L – Ground Level
M.H – Manhole
N.F.D – No Further Deterioration
WL – Water Level

Col – Column
No. – Number
O/S – Old Standing
S.S.D – Shows Slight Deterioration

Masonry and Concrete

H – Hollow
H/L – Hairline
L.T.H – Loose to Hammer
O.J – Open Joints
DT – Date Tab
Sp. – Spall

Fractures
V.F – Vertical Fracture
V.S.F – Vertical Stepped Fracture
B.J.F – Bed Joint Fracture
D.F – Diagonal Fracture
D.S.F – Diagonal Stepped Fracture
HF – Horizontal Fracture
X<>mm – displaced by <> mm. *(+/- indicates direction of displacement)*

New / Worsened Fracture (line thickness to reflect fracture width) *(Red Line)*

Old Standing Fracture – NFD (line thickness to reflect fracture width) *(Blue Line)*

Spalling / Missing Brickwork *(Light Grey)*

Open Joints *(Yellow)*

Bulging / Out of Plumb / Displacement *(Brown)*

Indications of wetness *(Light Blue)*

H — Hollow / Drummy *(Black outline of area with "H")*

Date Tab / Avonguard (must also show installation date & reading) *(Black)*

Metal

MG – Main Girder
XG – Cross Girder
BF – Bottom Flange
TF – Top Flange
CI – Cast Iron
WI – Wrought Iron
Corr – Corrosion
Lam – Lamination
LOS – Loss of Section
KE – Knife Edge

Corrosion / Lamination *(Light Orange)*

Fractures / Tears / Cracked Welds *(Red Line)*

Loss of Section / Buckling *(Red)*

COL/63 PRIVATE

ELR:	COL	Structue ID:	63	Elevation Photo	Defect Photo

Description:	PRIVATE				
Mileage:	189.0798	Area:	Central East		
Asset Type:					
Exam ID:	3425413	Start Date:	06/05/2022		
Frequency of Detailed Exams:	6 Yearly				
Severity:	4	Probability:	3	Risk Score:	12
Frequency:	0 Years	6 Months	0 Days		
Engineer:	Mark Brundle, Marcus Dockray				





Type of Exam	Additional Visual Exam

Method of Visual Exam
Visual examination of fractures from mezzanine levels. Tapping around fractures with pole. Marking up of plan drawings from most recent detailed exams.

Defect	Cause of Defect	Consequence of Failure
Multiple Longitundinal fractures throughout Spans 63-66.	Overloading	Debris falling into buisnessess and line restrictions.

Trigger Level Cause for Action	Action Steps
Any lengethening or widening of fractures clear from ground level. new missing/loose brickwork. Significant increase in water penetration.	Targeted brickwork repairs.

Remote Monitoring			
Supplier:	0		
Initial Costs(£)	0	Ongoing Costs (£)pa	0
Frequency of Measurement:	0		
Specification			
0			

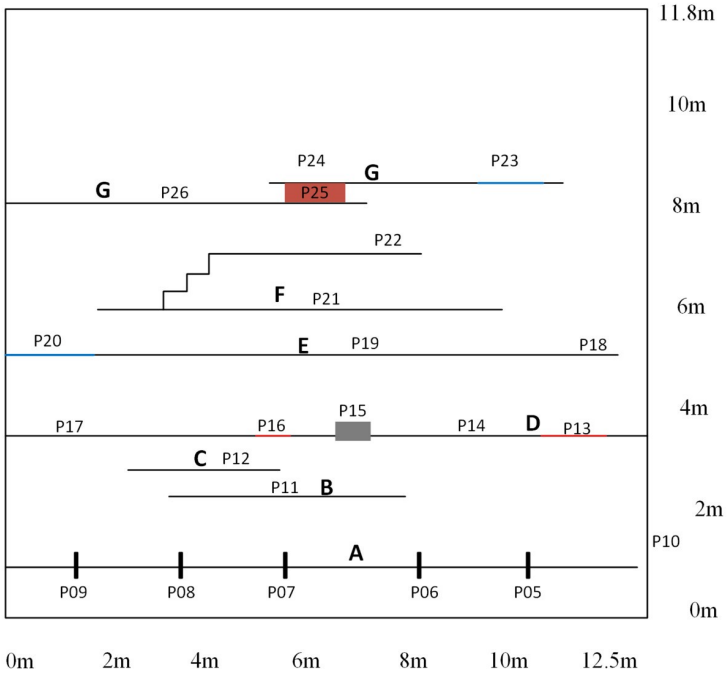
Remove Additional Exam When...	Comments
Structural renewal.	Exam encompases structure COL/63 to COL/66, but has been put against 63 for reporting. Spans are owned by Arch Co but currently (22/04/22) empty. Internal cladding to be removed locally around fractures where possible and left down. Plastic sheeting to cover areas where water ingress is an issue. Renewal strategy to be confirmed.

COL 65
Soffit defects
Sketch 1
Soffit general photos P02 and P03

NTS

◄ Low Mileage

Downside



Upside

Examiner comments

Defect A has electronic monitoring attached to the structure with five measuring stations present, the fracture is not visible due to sheet timber secured into place.

Heavy active seepage present from fractures A and H x 8m² in total.

Defects

A- This fracture is not visible, there is timber sheeting in place obscuring this from view, there are five number measuring locations noted to this fracture which is wired into a monitoring station adjacent the high mileage pier please see photos P04 – P10.

B- Longitudinal fracture located 2.2 metres in from the upside face rings has been stitched and repointed with the repairs fully intact photo P11. (This fracture was previously open H/L x 4 metres in length).

C- Longitudinal fracture located 3 metres in from the upside face rings has been stitched and repointed with the repairs fully intact photo P12. (This fracture was previously open H/L-1mm x 4 metres in length).

D- Longitudinal fracture located 3.5 metres in from the upside face rings has been stitched and repointed, this repair has failed to the high mileage lower haunch x 970mm in length O.S S.S.D this was previously 950mm in length and to the crown x 350mm in length, new defect, photos P13 – P17. (This fracture was previously open H/L-3mm x 12.5 metres in length)

E- Longitudinal fracture located 5 metres in from the upside face rings has been partially stitched and repointed, the low mileage last 2 metres of this fracture has not been repointed, all areas repointed remain fully intact photos P18 – P20. (This fracture was previously open 2-5mm x 12.5 metres in length).

F- Y Shaped longitudinal fracture located 6 metres in from the face rings has been stitched and repointed with the repairs fully intact photos P21 and P22. (This fracture was previously open H/L-1mm x 6 metres in length)

G-Two number longitudinal fractures have been stitched and repointed, this repair has failed to the high mileage haunch x 1.5 metres in length O.S N.F.D, photos P23 – P26. (These fracture was previously open 1-2mm x 2 metres in length and 1-3mm x 4 metres in length)

-There is also loss of profile between the two fractures up to 10mm x 0.4m² O.S N.F.D photo P25.

Notes

Please see photos P27 to P29 for the trackside view of this structure and the dimensions for the tracks in relation to the upside parapet.



Photo 1: P01 Upside elevation 23-07-24



Photo 2: P02 Soffit general view from the upside 23-07-24



Photo 3: P03 Soffit general view from the downside 23-07-24



Photo 4: P04 Defect A is not visible some repairs appear to have been carried out with timber left in situ with five monitoring locations 23-07-24



Photo 5: P05 Monitoring device to fracture A 23-07-24



Photo 6: P06 Monitoring device to fracture A 23-07-24



Photo 7: P07 Monitoring device to fracture A 23-07-24



Photo 8: P08 Monitoring device to fracture A 23-07-24



Photo 9: P09 Monitoring device to fracture A 23-07-24



Photo 10: P10 Monitoring station 23-07-24



Photo 11: P11 Fracture B has been stitched and repointed and remains intact 23-07-24



Photo 12: P12 Fracture C has been repointed and stitched 23-07-24



Photo 13: P13 Fracture D repair has failed to the high mileage lower haunch 23-07-24



Photo 14: P14 Fracture D has been stitched and repointed 23-07-24

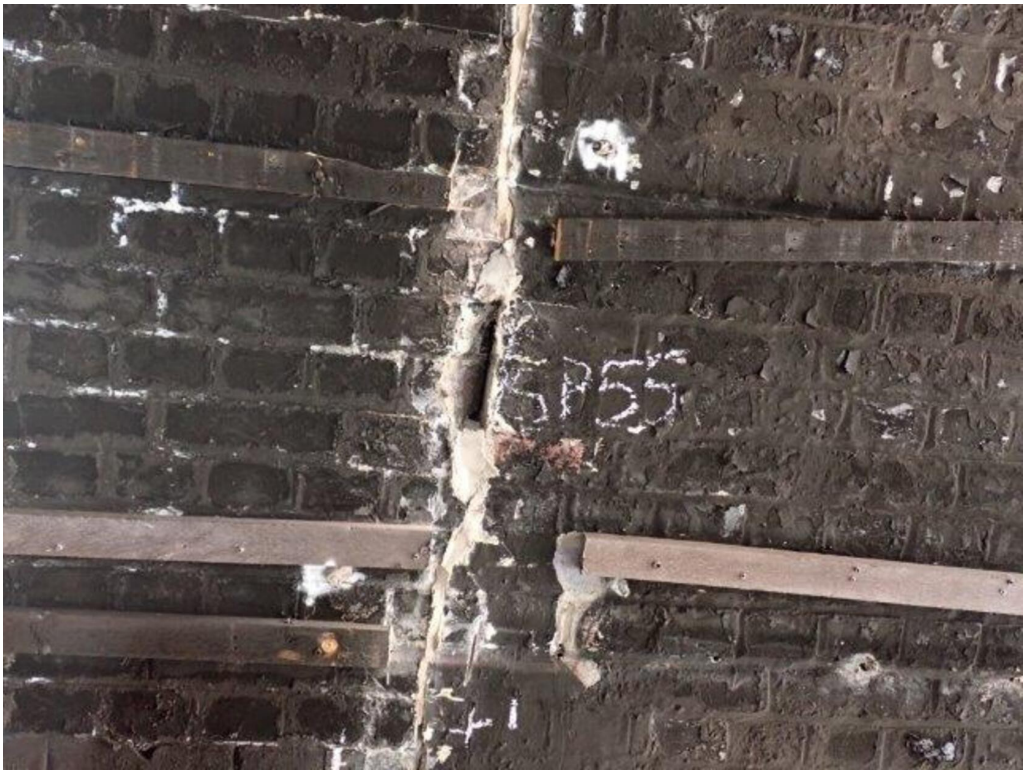


Photo 15: P15 Fracture D has been stitched and repointed 23-07-24



Photo 16: P16 Fracture D repair has failed to the crown 23-07-24



Photo 17: P17 Fracture D has been stitched and repointed 23-07-24



Photo 18: P18 Fracture E has been stitched and repointed 23-07-24



Photo 19: P19 Fracture E has been stitched and repointed 23-07-24



Photo 20: P20 Fracture E, low mileage section not repointed or stitched 23-07-24



Photo 21: P21 Fracture F has been stitched and repointed 23-07-24



Photo 22: P22 Fracture F has been stitched and repointed 23-07-24



Photo 23: P23 Fracture G repointing has fractured to the lower haunch 23-07-24



Photo 24: P24 Fracture G has been stitched and repointed 23-07-24



Photo 25: P25 Fracture G with displaced down brickwork to the crown between the two fractures 23-07-24

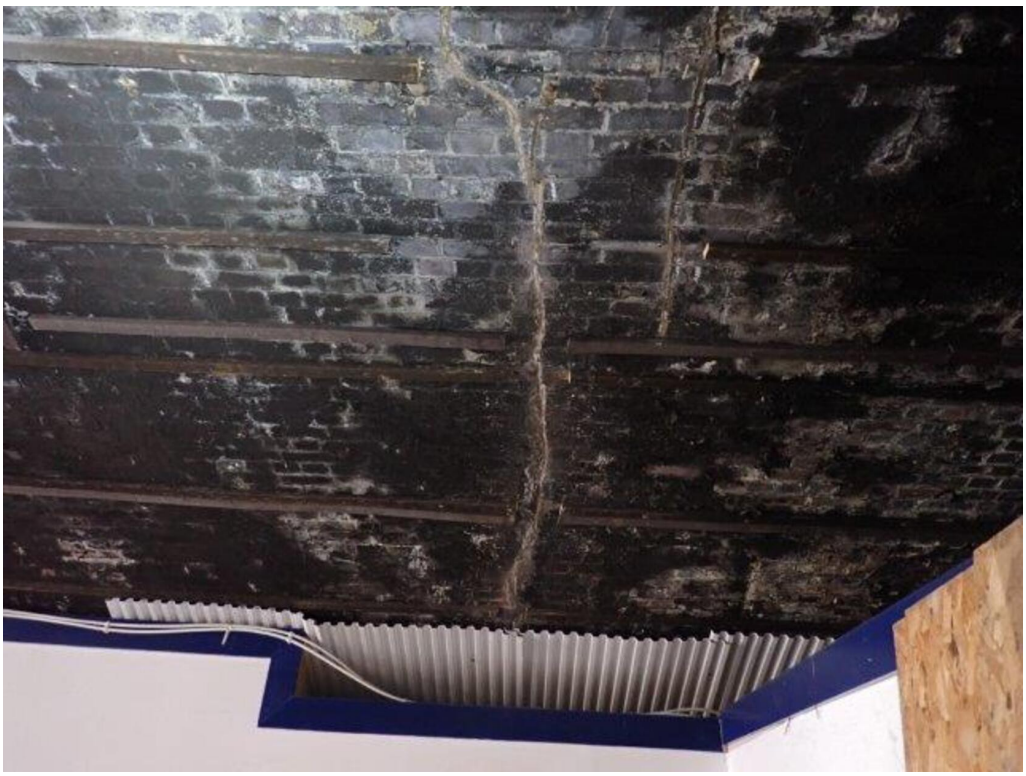


Photo 26: P26 Fracture G has been stitched and repointed 23-07-24

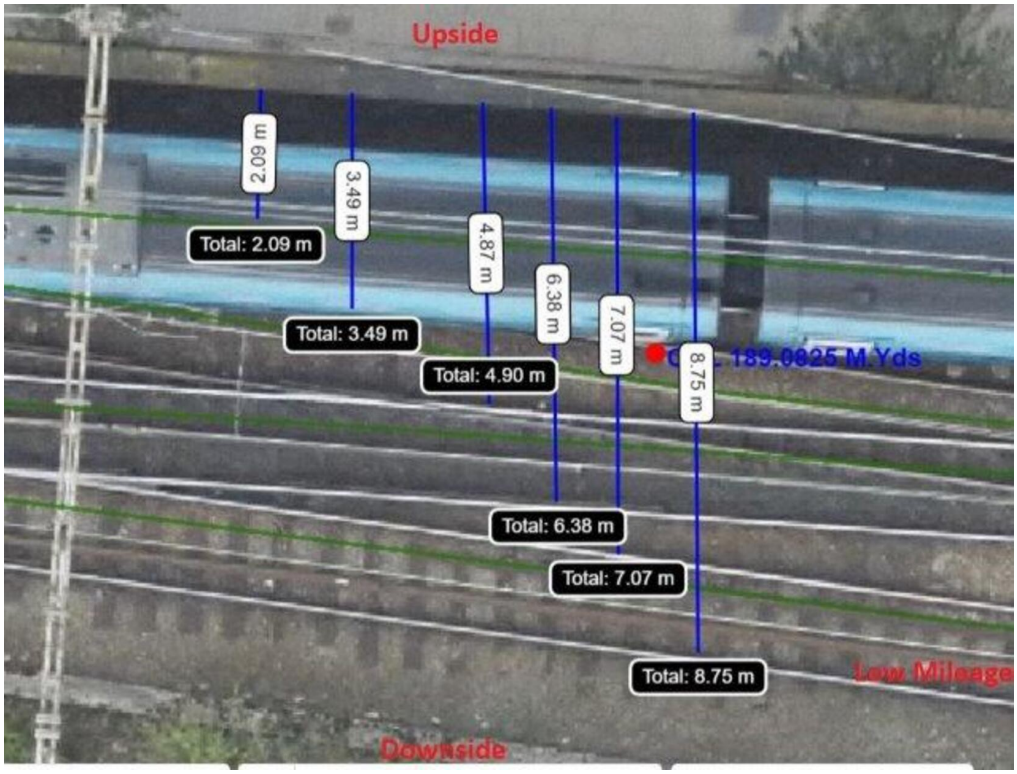


Photo 27: P27 Topside measurements of track locations in relation to the defects 10-01-24



Photo 28: P28 Topside layout aerial view from high mileage looking towards low mileage 10-01-24



Photo 29: P29 Topside layout aerial view from low mileage looking towards low mileage 10-01-24

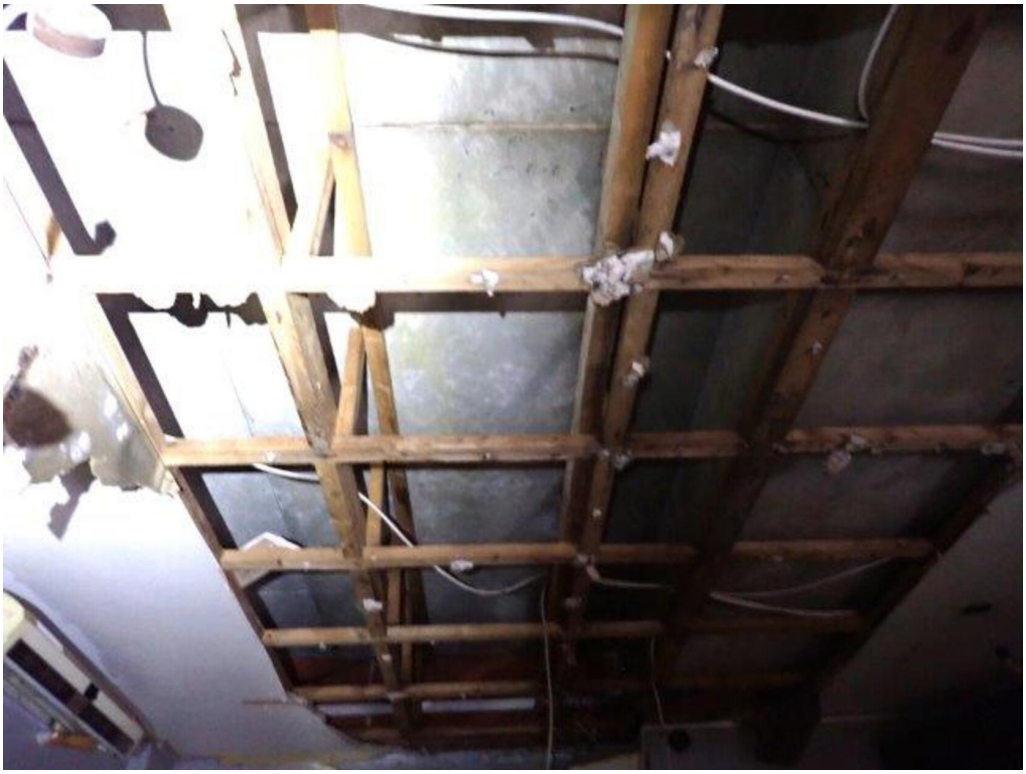


Photo 30: P30 The underside of the mezzanine floor is collapsing due to water ingress into the structure 23-07-24



Photo 31: P31 The underside of the mezzanine floor is collapsing due to water ingress into the structure 23-07-24



Photo 32: P32 Standing water to the ground floor in various locations 23-07-24