



BRIDGE & STRUCTURE EXAMINATION REPORT



Additional Examination

ELR: GSW

Contract Mileage: 106 m 1481 yds 67.32 ch

Struc. Ref

161/343

Examination Type: Additional Exam

NR ID: 11007068

Exam Date: 30-Nov-2020

Area: Scotland West

BRS: 0

OS Ref: NY1863366475

Structure Name: ANNAN VIADUCT

Type: BV

Exam ID: 3110274

Route: Gretna - Glasgow Central (via Kilmarnock)

Complete Exam: N/A

Section A: To Be Completed By The Examining Organisation

HIDDEN PARTS NOT EXAMINED (EXCLUDING FOUNDATIONS)		Part				Reason			
ITEM	DESCRIPTION	LOCATION	Est. Cost £ +/- 20%	Priority Within	Quantity	Severity	Probability	Risk Score	Works Category
1	Undertake immediate repair or carry out renewal of damaged gabion / nose mattress with reinstatement of concrete.	Per 3 LM face from the upstream pier nose From 0 to 4m	0.00			4	3	M12	Other
2	Carry out hand pointing and date tabbing repairs to fractures.	Per 3 - Downs de, HM and LM face	0.00			2	4	S8	Hand Pointing

History of Live Significant Defects

No	Description	Location	Exam Date	Access Gained	Exam Type	Rec Raised	Risk Score	Access Req'd	Deterioration	Repaired	Flagged for Closure	Engineer Comments
1	Dropped stones	Spans 1 2 and 4 arch barrels	07/02/10	N	D	NV	10	N/A	Baseline	N	N	
1	Dropped stones	Spans 1 2 and 4 arch barrels	16/02/12	N	U WAT	NV	10	N/A	NV	N	N	Not viewed at UW Exam
1	Dropped stones	Spans 1 2 and 4 arch barrels	09/03/12	N	V	NV	10	N/A	NV	N	N	No access to inspect
1	Dropped stones	Spans 1 2 and 4 arch barrels	10/02/13	Y	D	Y	12	N	Y	N	N	Repair
1	Dropped stones	Spans 1 2 and 4 arch barrels	23/04/13	Y	U WAT	NV	12	N	NV	N	N	Not viewed at UW exam
1	Dropped stones	Spans 1 2 and 4 arch barrels	10/01/14	Y	V	Y	12	N	NV	N	N	Masonry Repairs
1	Dropped stones	Spans 1 2 and 4 arch barrels	23/10/14	N	V	Y	8	Y	NV	N	N	Unable to view
1	Dropped stones	Spans 1 2 and 4 arch barrels	27/03/15	N	U WAT	N	8	Y	NV	N/A	N	Outwith U Wat remit
1	Dropped stones	Spans 1 2 and 4 arch barrels	27/09/15	Y	D	Y	12	Y	N	N	N	
1	Dropped stones	Spans 1 2 and 4 arch barrels	15/08/16	N/A	U WAT	Y	12	Y	N/A	N/A	N	Out with U Wat remit
1	Dropped stones	Spans 1 2 and 4 arch barrels	23/09/16	N	V	Y	12	Y	NV	N	N	Unable to view
1	Dropped stones	Spans 1 2 and 4 arch barrels	09/05/17	N/A	U WAT	Y	12	Y	N/A	N/A	N	Out with remit of U Wat
1	Dropped stones	Spans 1 2 and 4 arch barrels	01/12/17	Y	V	Y	12	Y	N	N	N	Secure
1	Dropped stones	Spans 1 2 and 4 arch barrels	10/10/18	Y	D	Y	6	Y	N	N	N	Dropped stones have been pointed up Continue to monitor for any future movement
1	Dropped stones	Spans 1 2 and 4 arch barrels	07/06/19	N/A	U WAT	Y	6	Y	N/A	N/A	N	Defect out with U Wat remit
1	Dropped stones	Spans 1 2 and 4 arch barrels	23/10/19	Y	V	Y	6	Y	N	N/A	N	Dropped stones have been pointed up Continue to monitor for any future movement
1	Dropped stones	Spans 1 2 and 4 arch barrels	23/10/19	Y	V	Y	6	Y	N	N	N	Dropped stones have been pointed up Continue to monitor for any future movement

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1	Dropped stones	Spans 1 2 and 4 arch barrels	25/10/19	Y	V	Y	6	Y	Cannot Determine	N/A	N	Consider mitigation for previously reported defects which are unseen during this exam
1	Dropped stones	Spans 1 2 and 4 arch barrels	14/09/20	N/A	U W A T	Y	6	Y	N/A	N/A	N	Defect out with UWE remit
5	Defective weep pipes	Throughout spandrels piers	10/02/13	Y	D	Y	10	N	Baseline	N	N	Extend or renew to deflect water away from structure
5	Defective weep pipes	Throughout spandrels piers	23/04/13	Y	U W A T	NV	10	N	NV	N	N	Not viewed at UW exam
5	Defective weep pipes	Throughout spandrels piers	10/01/14	Y	V	Y	10	Y	Y	N	N	Water Controlk
5	Defective weep pipes	Throughout spandrels piers	23/10/14	Y	V	Y	10	Y	NV	N	N	Unable to view
5	Defective weep pipes	Throughout spandrels piers	27/03/15	N	U W A T	N	10	Y	NV	N/A	N	Outwith U Wat remit
5	Defective weep pipes	Throughout spandrels piers	27/09/15	Y	D	N	4	Y	N	N	N	Defects are not considered significant enough to make any recommendations or instigate repairs before next examination
5	Defective weep pipes	Throughout spandrels piers	15/08/16	N/A	U W A T	N	4	Y	N/A	N/A	N	Out with U Wat remit
5	Defective weep pipes	Throughout spandrels piers	23/09/16	Y	V	N	4	Y	N	N	N	Defects are not considered significant enough to make any recommendations or instigate repairs before next examination
5	Defective weep pipes	Throughout spandrels piers	09/05/17	N/A	U W A T	N	4	Y	N/A	N/A	N	Out with remit of U Wat
5	Defective weep pipes	Throughout spandrels piers	01/12/17	Y	V	N	4	Y	N	N	N	Defect is not considered significant at this time
5	Defective weep pipes	Throughout spandrels piers	10/10/18	Y	D	N	4	Y	N	N	N	Defect is not considered significant at this time
5	Defective weep pipes	Throughout spandrels piers	07/06/19	N/A	U W A T	N	4	Y	N/A	N/A	N	Defect out with U Wat remit
5	Defective weep pipes	Throughout spandrels piers	23/10/19	Y	V	N	4	Y	Y	N/A	N	Defect is not considered significant at this time
5	Defective weep pipes	Throughout spandrels piers	23/10/19	Y	V	N	4	Y	Y	N	N	Defect is not considered significant at this time
5	Defective weep pipes	Throughout spandrels piers	25/10/19	Y	V	N	4	Y	Y	N/A	N	Defect shows little deterioration therefore not considered significant enough to warrant repair work prior to next examination
5	Defective weep pipes	Throughout spandrels piers	14/09/20	N/A	U W A T	N	4	Y	N/A	N/A	N	Defect out with UWE remit
7	Damaged gabions/reno mattress with loss of infill	Surrounding Piers 1 2 3	09/05/17	Y	U W A T	Y	8	N	Baseline	N/A	N	Repair
7	Damaged gabions/reno mattress with loss of infill	Surrounding Piers 1 2 3	01/12/17	N	V	Y	8	N	NV	N/A	N	Outwith the remit of a visual exam
7	Damaged gabions/reno mattress with loss of infill	Surrounding Piers 1 2 3	03/10/18	Y	U W A T	Y	8	Y	N	N	N	NFD 3m3 loss to piers 2 and 3 Repair/replenish

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7	Damaged gabions/reno mattress with loss of infill	Surrounding Piers 1 2 3	10/10/18	Y	D	Y	8	Y	N	N	N	Outwith remit of detailed exam
7	Damaged gabions/reno mattress with loss of infill	Surrounding Piers 1 2 3	07/06/19	Y	U W A T	Y	8	Y	N	N	N	NFD noted
7	Damaged gabions/reno mattress with loss of infill	Surrounding Piers 1 2 3	23/10/19	Y	V	Y	8	Y	Y	N	N	Repair
7	Damaged gabions/reno mattress with loss of infill	Surrounding Piers 1 2 3	23/10/19	Y	V	Y	8	Y	Y	N	N	Repair
7	Damaged gabions/reno mattress with loss of infill	Surrounding Piers 1 2 3	25/10/19	Y	V	Y	8	Y	Cannot Determine	N	N	Consider mitigation for previously reported defects which are unseen during this exam
7	Damaged gabions/reno mattress with loss of infill	Surrounding Piers 1 2 3	14/09/20	Y	U W A T	Y	8	Y	Y	N	N	SSD
8	Bank erosion (15mL x 2 0mD)	HM bank US (DStr)	03/10/18	Y	U W A T	Y	8	N	Baseline	N	N	Consider protecting
8	Bank erosion (15mL x 2 0mD)	HM bank US (DStr)	10/10/18	Y	D	Y	8	N	N	N	N	Outwith remit of detailed exam
8	Bank erosion (15mL x 2 0mD)	HM bank US (DStr)	07/06/19	Y	U W A T	N	4	N	N	N	N	NFD noted
8	Bank erosion (15mL x 2 0mD)	HM bank US (DStr)	23/10/19	Y	V	N	8	N	Y	N	N	monitor at future exams
8	Bank erosion (15mL x 2 0mD)	HM bank US (DStr)	23/10/19	Y	V	Y	8	N	Y	N	N	monitor at future exams
8	Bank erosion (15mL x 2 0mD)	HM bank US (DStr)	25/10/19	Y	V	Y	8	N	Y	N	N	Contonue to monitor
8	Bank erosion (15mL x 2 0mD)	HM bank US (DStr)	14/09/20	Y	U W A T	Y	8	N	Y	N	N	Now 15m x 2m
9	Fractures to bullnose	Pier 3 Downside HM and LM face	10/10/18	Y	D	Y	8	N	Baseline	N	N	Point up Consider introduced strengthening
9	Fractures to bullnose	Pier 3 Downside HM and LM face	07/06/19	Y	U W A T	Y	8	N	N	N	N	NFD noted
9	Fractures to bullnose	Pier 3 Downside HM and LM face	23/10/19	Y	V	Y	8	N	Y	N	N	Stitch and grout
9	Fractures to bullnose	Pier 3 Downside HM and LM face	25/10/19	Y	V	Y	8	N	Y	N	N	Stitch and grout
9	Fractures to bullnose	Pier 3 Downside HM and LM face	14/09/20	Y	U W A T	Y	8	N	N	N	N	NFD noted
10	Faded LC plates	Trackside Downside H/M Upside L/M	10/10/18	Y	D	Y	5	N	Baseline	N	N	Replace
10	Faded LC plates	Trackside Downside H/M Upside L/M	07/06/19	N/A	U W A T	Y	5	N	N/A	N/A	N	Defect out with U Wat remit
10	Faded LC plates	Trackside Downside H/M Upside L/M	23/10/19	Y	V	Y	1	N	Y	N/A	N	Defect not deemed significant enough to warrant repair
10	Faded LC plates	Trackside Downside H/M Upside L/M	25/10/19	Y	V	N	1	N	Y	N/A	N	Defect not deemed significant enough to warrant repair
10	Faded LC plates	Trackside Downside H/M Upside L/M	14/09/20	N/A	U W A T	N	1	N	N/A	N/A	N	Defect out with UWE remit
11	Parapet out of plumb Coping level dropped	Span 5 Downside Parapet	10/10/18	Y	D	Y	6	N	Baseline	N	N	Consider monitoring



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11	Parapet out of plumb Coping level dropped	Span 5 Downside Parapet	07/06/19	N/A	U W A T	Y	6	N	N/A	N/A	N	Defect out with U Wat remit
11	Parapet out of plumb Coping level dropped	Span 5 Downside Parapet	23/10/19	Y	V	Y	6	N	Y	N/A	N	Monitor
11	Parapet out of plumb Coping level dropped	Span 5 Downside Parapet	25/10/19	Y	V	Y	6	N	Cannot Determine	N/A	N	Consider mitigation for previously reported defects which are unseen during this exam
11	Parapet out of plumb Coping level dropped	Span 5 Downside Parapet	14/09/20	N/A	U W A T	Y	6	N	N/A	N/A	N	Defect out with UWE remit
12	Spalling and voiding	LM up and downstream retaining walls	07/06/19	Y	U W A T	Y	8	N	Baseline	N/A	N	Masonry repairs
12	Spalling and voiding	LM up and downstream retaining walls	23/10/19	Y	V	Y	8	N	N/A	N/A	N	Added at subsequent exam Score maintained
12	Spalling and voiding	LM up and downstream retaining walls	25/10/19	Y	V	Y	8	N	N/A	N/A	N	Added at subsequent exam Score maintained
12	Spalling and voiding	LM up and downstream retaining walls	14/09/20	Y	U W A T	Y	10	N	Y	N	N	Repair
13	Damaged gabion basket with loss of infill approx 3m3 with associated scour	Pier 3 LM face at the upstream end from 0m to 4m	25/10/19	Y	V	Y	12	N	N/A	N/A	N	Added at subsequent exam Score maintained UD/1717
13	Damaged gabion basket with loss of infill approx 3m3 with associated scour	Pier 3 LM face at the upstream end from 0m to 4m	14/09/20	Y	U W A T	Y	12	N	N/A	N/A	N	Raised at this exam
13	Damaged gabion basket with loss of infill approx 3m3 with associated scour	Pier 3 LM face at the upstream end from 0m to 4m	14/09/20	Y	P A N	Y	12	N	Baseline	N/A	N	Repair or renew U/D1717

Engineers Notes

Signed Redacted			Name Steven Wilson			Date 14-Dec-2020		
For Employer								



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Contract Mileage: 106 m 1481 yds 67.32 ch

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Structure Type BV

Network Rail ID 11007068

Rpt ID 10183

Exam ID 3110274

OS Ref: NY1863366475 BRS: Name: ANNAN VIADUCT

Exam Date

Line: Gretna - Glasgow Central (via Kilmarnock)

30/11/2020

Frequency

Reason For Examination:

Last Add t ona 16/10/2020

1 Monthly

CP6Y2-SCO-STR-059

The examiner should record any deterioration in condition or development of defects or other factors, which might place at risk the rail traffic, customers, staff or the public at large. Special reference should be made to those structures or parts of structures whose condition may require action before the next examination.

Examiner General Comments

REMIT – Underwater around Pier 3 only. Check for signs deterioration since last exams. Particular attention to be paid to: Pier 3 LM face, scour potential and condition of adjacent damaged reno mattress and infill.

Redacted

Has all of the structure been examined? No

SIGNED

(If no, state reasons below)

Viewed within remit of additional

EXAMINERS NAME Michael Dunn

DATE 7 Dec 2020

Amey Comments & Recommendations

Notes for attention

See attached Summary Sheet

Further action required / query

No action required at present

Redacted

Signed

Engineer Steven Wilson

Date 14-Dec-2020

Network Rail Comments & Actions

Signed

SME

Date

Additional Examination**ELR: GSW****Contract Mileage: 106 m 1481 yds 67.32 ch****Struc. Ref****161/343****Pier 3****Aprons**

Gabion baskets situated around the base of the pier on all sides.

Below water level at the time of the examination.

- O/S 0m and 4m to the upstream end, the top of the baskets are open and approx. 3sqm of fill has been lost. This has allowed the basket to deform and push up diverting the water into the pier face. SSD the bags have further deformed since the last exam (Photo 5-7)

- O/S 0.5m³ loss throughout the baskets fronting the upstream nose, now with associated tear 500mm L this area was probed to 700mm depth at this exam. SSD (Photo 8)

Pier 3

Fair condition.

Masonry construction.

Corbelled course below water level.

Downside (Downstream) Nose (Photo 9)

- O/S 2no vertical fractures each 2.5m L x 1-3mm W located to the LM side with associated spalling. NFD

- O/S Isolated spalling 0.3m² x 80mm D to the HM side. NFD

Upside (Upstream) Nose (Photo 10)

- O/S Isolated spalling 500mm L x 200mm H x 300mm D to the nose. Not seen at this exam.

- O/S 1m² joint loss x 100mm D located throughout the nose. NFD

Dumfries Station (low mileage) Face (Photo 11)

- O/S 2no vertical fractures totalling 4.5m L x 2-10mm W located to the downstream end of the face. NFD

- O/S 1no vertical fracture 300mm L x 2mm W located 1.5m from the downstream nose, below water level at the time of the examination. NFD

- O/S 2no through block fractures each 800mm L x 2-10mm W located 2.2-2.5m from the downstream nose, below water level at the time of examination. NFD

- O/S 1no through block fracture 400mm L x 3-5mm W to the centre of the pier face, below water level at the time of the examination. NFD

- O/S 4m² joint loss x 200mm D located throughout the pier face NFD.

- O/S 1.5m² spalling x 60mm typical D located throughout the pier face, typically worse at and below water level to the upstream half. NFD

Annan Station (high mileage) Face (Photo 12)

- O/S 2.5m² joint loss x 200mm D located throughout the pier face. NFD

- O/S 2no vertical fractures totalling 2.5m L x 2-5mm W located to the downstream end of the face, with associated spalling 1.5m H x 400mm W x 60mm D. NFD

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P01 - Upstream elevation



P02 - View upstream

Additional Examination

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P03 - Downstream elevation



P04 - View downstream

Additional Examination

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P05 - Deformed gabion baskets



P06 - Deformed gabion baskets

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P07 - Deformed gabion baskets



P08 - Loss of fill to gabions

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P09 - Pier 3 downstream nose



P10 - Pier 3 upstream nose

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P11 - Pier 3 low mileage face



P12 - Pier 3 high mileage face