A1 Birtley to Coal House

Scheme Number: TR010031

Applicant's Responses to ExA's Second Written Questions - Appendix 2.0H - Structure Options Report 8 - North Side Overbridge

Planning Act 2008

Rule 8(1)(b)

Infrastructure Planning (Examination Procedure Rules) 2010

Volume 7

April 2020

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Examination Procedure Rules) 2010

A1 Birtley to Coal House Development Consent Order 20[xx]

Applicant's Response to ExA's Second Written Questions - Appendix 2.0H - Structure Options Report 8 - North Side Overbridge

Rule number:	Rule 8(1)(b)
Planning Inspectorate Scheme Reference	TR010031
Application Document Reference	N/A
Author:	A1 Birtley to Coal House Project Team, Highways England

Version	Date	Status of Version
Rev 0	20 April 2020	Application Issue

A1

Birtley to Coal House Improvement Scheme

Structure Option Report 8

North Side Overbridge

Structure no. (/A1//439.70//)

STKEY 8887

Registered office Bridge House, 1 Walnut Tree Close, Guildford, GU1 4LZ
Highways England Company Limited registered in England and Wales number 09346363

March 2018

A1 BIRTLEY TO COAL HOUSE IMPROVEMENT SCHEME

STRUCTURE OPTION REPORT 8

NORTH SIDE OVERBRIDGE

Highways England

Date: March 2018

Project No: HE PIN 551462
WSP Ref: 70015226

Prepared for:

Highways England
Lateral
8 City Walk
Leeds
West Yorkshire
LS11 9AT

Three White Rose Office Park
Millshaw Park Lane
Leeds
LS11 0DL

Tel: +44 (0) 113 395 6200
Fax: +44 (0) 113 395 6201
www.wsp.com

QUALITY MANAGEMENT

ISSUE/REVISION SUITABILITY	FIRST ISSUE P01 S1	REVISION 1	REVISION 2	REVISION 3
Remarks	Issue for comments	Final Issue – End of Stage 3 – Prelimary Design		
Date	November 2017	March 2018		
Prepared by	Shehed Al-Shalechy	Giovanna Brunetti Barchetta		
Signature	SAL	GBB		
Checked by	Hitan Mistry	Hitan Mistry		
Signature	HM	HM		
Authorised by	Nigel Rawcliffe	Nigel Rawcliffe		
Signature	NR	NR		
Project number	PIN: 551462 WSP ref: 70015226			
Report number	HE551462-WSP-SBR-BR009-RP-S-0001			
File reference	HE551462-WSP-SBR-BR009-RP-S-0001_P02			

PRODUCTION TEAM

CLIENT (HIGHWAYS ENGLAND)

Major Projects Senior Responsible Owner	Patrick Moran
Major Projects Programme Manager	Patrick Moran
Major Projects Project Manager	Nicola Wilkes
RIS Area 14 Coordinator	Graeme Watt
Senior User Representative	Simon Brown

WSP

RIS Area 14 Programme Director	Darren Powell
RIS Area 14 Programme Manager	TBA
Project Director	Darren Powell
Project Manager	Nigel Rawcliffe

TABLE OF CONTENTS

APPENDICES

EXECUTIVE SUMMARY

WSP have been commissioned under the CDF contract to progress the Stage 3 Preliminary design works to increase the capacity of the route between A1 Junction 65 (Birtley) to Junction 67 (Coalhouse). The scheme involves upgrading from the existing Dual 2-Lane All-Purpose provision to a Dual 3-Lane All-Purpose Provision for this section of the road.

North Side Overbridge is included in the A1 Junction 65 (Birtley) to Junction 67 (Coalhouse) improvement scheme.

North Side structure comprises two span composite pre-stressed concrete box girders with in-situ concrete deck. The decks are simply supported between reinforced concrete abutments and reinforced concrete pier incorporating trapezoidal voids, all on spread foundations.

The structure comprises span one (Northbound) of 23.87m with critical headroom of 5.17 metres, and span two (Southbound) of 24.20m with critical headroom of 6.27 metres.

Consideration is currently being given to increasing the capacity of the A1 running under the structure whilst remaining within the existing cross section. This will incorporate a reduction of the central reserve and verges to accommodate the new widened cross section of the A1. This may also involve the permanent removal of safety barriers (currently safeguarding supports) to provide sufficient width to increase lane capacity.

This study has shown the proposed new A1 highway alignment/cross section can be accommodated under the existing North Side Bridge without the need for major structural modifications.

A provisional impact assessment of the pier in accordance with BD48/93 shows the pier is able to sustain the vehicular impact loads. Therefore it would be permissible for the pier to not be safe guarded by safety barriers providing additional width for alignment modifications if required.

The review of previous inspection reports, showed the structure to generally be in good condition with no significant defects that may impact the integrity/loading bearing capacity of the bridge. However some outstanding maintenance actions have been identified.

It is recommended that the following be undertaken to verify the findings of this reports and identify further works required at North Side Overbridge as the scheme progresses:

- Liaison with HE regarding what outstanding maintenance items (if any) should be incorporated as part of the A1 Birtley to Coalhouse Improvement Scheme. This would ensure cost and programme implications to undertake the design and implementation of outstanding maintenance is accurately accounted for during further development of the scheme.
- Completion of the pier impact assessment under full technical approval. This would enable the result to be certified and inform the scheme as it progresses.

1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 WSP has been commissioned by Highways England to develop a scheme proposal for the A1 Birtley to Coal House Improvement Scheme.

1.1.2 The scheme development forms the part of Newcastle/Gateshead Western Bypass (NGWB) is located on the A1 between Junction 65 (Birtley) to Junction 80 (Seaton Burn). The scheme is part of Highway England's strategic road network serving the metropolitan area of Tyne and Wear.

1.1.3 The project is located between the Junction 65 and Junction 67 on the NGWB having a stretch of 4.2km in length. The existing carriageway layout is:

- Southbound: Two lanes between Junction 67 (Coal House) and Junction 66 (Eighton Lodge) with an additional approaching lane between North Side Overbridge and Junction 66. Three Lanes between Junction 66 (Eighton Lodge) and Junction 65 (Birtley). The existing speed limit is 50mph between Junction 67 (Coal House) and North Side Overbridge and 70 mph thereafter.
- Northbound: Two lanes with a lane gain/drop between Junction 65 (Birtley) and Junction 66 (Eighton Lodge) and two lanes between Junction 66 (Eighton Lodge) and Junction 67 (Coal House). The existing speed limit is 50mph throughout.

1.1.4 The A1 NGWB is one of the most congested highway links in the North- East region with more than 110,000 vehicles using the route every day on the busiest section. Therefore, the junction has been identified as requiring the improvement to its existing layout in order to achieve the scheme objective.

1.1.5 At present, the junction has a significant adverse impact on; journey time reliability at peak time, route resilience, safety and environmental impacts.

1.1.6 The scheme objectives for the Junction improvement are structured around the Government's main objectives for transport, being

- To increase the capacity of the A1 between Junction 65 (Birtley) to Junction 67 (Coalhouse) from existing two lanes to three full standard lanes – to improve the safety for all road users and contribute to the Government's current safety strategy targets.
- Lanes gain/drop between the Junctions
- Replacement of the Allerdene Bridge to achieve optimum whole life costs taking in account future maintenance and operation, and disruption to users.
- New Junction layout at Coalhouse

1.1.7 The existing Allerdene Railway Bridge has a number of inherent design/construction deficiencies which cannot be easily resolved due to the complex structural form (half joints) and site constraints. The intention is for the existing Allerdene Bridge to be replaced as part of the A1 Birtley to Coalhouse Improvement Scheme.

1.1.8 Two alignment options were assessed for the replacement of Allerdene Bridge. These are:

- Option 1A - Replacement of Allerdene Railway Bridge as close as possible to the existing structure to enable the retention of Coal House interchange.
- Option 1B - Widening/Replacement of Allerdene Railway Bridge with a wider structure in its existing location and retention of Coal House Interchange and the existing alignment as far as is possible.

1.1.9 Works undertaken during PCF Stage 2 – Route Selection, confirmed Option 1A was the preferred option to be progressed onto the next stage and beyond. Refer to Appendix A for schematic plans of the preferred route.

1.1.10 The scheme is currently progressing within PCF Stage 3: Preliminary Design. The existing North Side Overbridge, located at junction 65 Birley of the A1, is one of the many existing structures impacted by the proposed improvements to the A1 alignment which includes the upgrading from the existing Dual 2-Lane All-Purpose provision to a Dual 3-Lane All-Purpose Provision for this section of the road.

1.2 REPORT OBJECTIVES

1.2.1 This Structures Options Report has been prepared to assess the constraints/challenges associated with increasing the capacity of the A1 running under North Side Overbridge whilst remaining within the existing cross section available.

1.2.2 The report shall confirm the structural modifications (if any) required to North Side Overbridge to accommodate the new highway alignment.

1.2.3 Upon confirmation and sign off, this report shall provide Highways England with sufficient information/justification for seeking approval/funding to progress the scheme within the next stage of development.

2. EXISTING STRUCTURE

2.1 GENERAL DESCRIPTION

2.1.1 North Side Overbridge (commissioned in 1971) is defined in SMIS with the following discrete structure number and key:

- /A1//439.70//
- STKEY 8887

2.1.2 North Side Overbridge carries the A1231 Northbound and Southbound carriageway over the A1.

2.1.3 The structure comprises a two span simply supported composite pre-stressed concrete box girder with in-situ concrete deck type construction. The Northbound and Southbound decks are divided into two structurally independent decks by a central longitudinal movement joint.

2.1.4 Span one covers the A1 northbound carriageway and is 23.87m. Span two covers the southbound carriageway and is 24.20m.

2.1.5 The end supports comprise Reinforced Concrete cantilever abutment walls. The central pier incorporating trapezoidal voids.

2.1.6 Independent RC cantilever wing walls are located at the four corner of the bridge and are orientated such that they are parallel to the A1. The abutments/ pier & wing walls are all found on spread foundations.

2.1.7 The decks are fixed in both directions at the centre pier by dowels and are free to move at both abutments. Elastomeric bearings are provided at both the abutments and central pier.

2.1.8 Record drawings indicate the existing aluminium parapets comprise group P2, 113kph, type parapets with mesh infill (equivalent to current N2 containment in accordance with TD19/06). The central reserve and verge pier are currently safeguarded via a tension corrugated type safety barriers.

2.1.9 Refer to Appendix B for existing As built records

2.2 STRUCTURE CAPACITY

2.2.1 Reference to the structures management information system (SMIS) records indicate the structure was originally design to sustain full HA and 30 units HB with associated HA loading.

2.2.2 The structure has not been previously assessed and the abnormal load capacity for STGO/SO remains unknown.

2.3 STATUTORY UNDERTAKERS INFORMATION

2.3.1 Details of existing services within the scheme boundary are shown on the following service information plans provided in Appendix C.:

- HE551462-WSP-VUT-BCH-DR-D-00001
- HE551462-WSP-VUT-BCH-DR-D-00002
- HE551462-WSP-VUT-BCH-DR-D-00003

2.3.2 Service information indicates the following service ducts are carried within the deck of North Side Overbridge.

- British Telecom (BT110) services located in the verge of the southbound deck.
- Northern Power grid services (NP113) located within the verge of the A123, Southbound deck.
- Virgin Media network service (V107) located within the verge of the A123, northbound deck.

2.4 MAINTENANCE & INSPECTION SUMMARY

2.4.1 The SMIS database shows records of the following inspections for the existing structure:

INSPECTION TYPE	INSPECTION DATE	AGENT
Principal Inspection	04/02/2013	A-One+ - Area 14 (Reviewed)
General Inspection	23/08/2011	A-One+ - Area 14 (Reviewed)
General Inspection	01/07/2009	A-One+ - Area 14 (Reviewed)
Principal Inspection	04/07/2007	A-One+ - Area 14 (Reviewed)
General Inspection	27/07/2005	A-One+ - Area 14 (Reviewed)
General Inspection	13/02/2004	A-One+ - Area 14 (Reviewed)
Principal Inspection	12/06/2001	Shown on records but not reviewed.
General Inspection	02/10/1998	Shown on records but not reviewed.
General Inspection	21/10/1997	Shown on records but not reviewed.
General Inspection	02/10/1996	Shown on records but not reviewed.
General Inspection	08/03/1996	Shown on records but not reviewed.
Principal Inspection	29/04/1993	Shown on records but not reviewed.
General Inspection	10/01/1990	Shown on records but not reviewed.
General Inspection	08/07/1988	Shown on records but not reviewed.
General Inspection	01/10/1986	Shown on records but not reviewed.
Principal Inspection	01/10/1982	Shown on records but not reviewed.
General Inspection	01/10/1981	Shown on records but not reviewed.

2.4.2 The SMIS database shows records of the following maintenance actions for the existing structure:

- 1990 - Parapets replaced with Aluminium P2 by Lindley Ltd.
- 1993 - Major refurbishment including concrete repairs, waterproofing and joint renewal. Silane impregnation of concrete surfaces.

2.4.3 In summary, the reviewed inspection reports indicate the structure is in good condition with no significant defects that impact the integrity/load bearing capacity of the bridge. However outstanding maintenance actions have been recorded in the last PI dated 2013 that will eventually need to be addressed to prolong the service life of the structure.

2.4.4 The table below (Table 2-1) highlights the outstanding maintenance works tabulated in the latest PI dated 2013. We note that the recommended action date to complete these works was January 2015 and therefore has now lapsed. At the least it is expected some of the safety critical defects associated with the parapets/safety barriers will be rectified prior to this scheme progressing on site, March 2020.

2.4.5 Assuming most of the maintenance works are not scheduled to be completed, it would be prudent to consider incorporating some of the outstanding maintenance works to be undertaken during the A1 Birtley to Coalhouse Improvement Scheme, thereby taking advantage of the traffic management that will be required to facilitate the site works. This would need to be balanced against the potential impact on the cost/construction programme and disruption to the connecting local road network (carriageway level works).

2.4.6 Final confirmation of outstanding maintenance items to be included within the scheme will be subject to confirmation/approval from the HE.

Principal Inspection Report for North Side (/A1//439.70//)

(Authorised)

Reviewed Maintenance Actions confirmed through this and outstanding from other Inspections

N.B. The Origin of Work for each of these Maintenance Actions is Routine Inspection (currently Principal, General, Special and Monitoring).

Maintenance Object	Security Mesh	**Maintenance Action**	Install
Estimated Cost	£20,000	**Recomm. Action Date**	01/01/2015
Priority Category	3	**Risk Score**	64
Comments	Extensive pigeon excrement and nesting to bearing shelves and central section of pier - clean off & install anti bird measures.		
Maintenance Object	Drainage System	**Maintenance Action**	Repair
Estimated Cost	£5,000	**Recomm. Action Date**	01/01/2015
Priority Category	3	**Risk Score**	64
Comments	Clean out pipes and investigate seepage		
Maintenance Object	Concrete	**Maintenance Action**	Repair
Estimated Cost	£30,000	**Recomm. Action Date**	01/01/2015
Priority Category	3	**Risk Score**	63
Comments	Carry out concrete repairs, fill holes and remove chisel		
Maintenance Object	Expansion Joint	**Maintenance Action**	Replace
Estimated Cost	£50,000	**Recomm. Action Date**	01/01/2015
Priority Category	3	**Risk Score**	61
Comments	Replace expansion joints in 2no dual c/ways (rd over) and relay settled kerb		
Maintenance Object	Safety Fence	**Maintenance Action**	Install
Estimated Cost	£200,000	**Recomm. Action Date**	01/01/2015
Priority Category	3	**Risk Score**	42
Comments	Install safety fence to above A1231 carriageway		
Maintenance Object	Parapet	**Maintenance Action**	Protect
Estimated Cost	£5,000	**Recomm. Action Date**	01/01/2015
Priority Category	3	**Risk Score**	39
Comments	Install barrier to stop any access to the north west corner		
Maintenance Object	Wingwall	**Maintenance Action**	Repair
Estimated Cost	£1,500	**Recomm. Action Date**	01/01/2015
Priority Category	3	**Risk Score**	27
Comments	Carryout repairs to north east wing wall		
Maintenance Object	Main Beam	**Maintenance Action**	Repair
Estimated Cost	£7,500	**Recomm. Action Date**	01/01/2015
Priority Category	3	**Risk Score**	25
Comments	Fill in drill holes to beams and wing wall		
Maintenance Object	Sealant	**Maintenance Action**	Replace
Estimated Cost	£7,500	**Recomm. Action Date**	01/01/2015
Priority Category	3	**Risk Score**	25
Comments	Mastic sealants debonding and splitting - replace.		

Table 2-1: Outstanding maintenance works tabulated in the latest PI dated 2013

3. PIER IMPACT ASSESSMENT

3.1 GENERAL

3.1.1 A impact assessment of the pier was undertaken to inform the preliminary design process and confirm whether:

- The pier need to be safeguarded against impact
- The pier need to be strengthened to sustain impact loads – in the event that safety barriers cannot be deployed due to insufficient width
- The pier can sustain impact loading and therefore it would be permissible to transition safety barriers directly into the end of the piers.

3.2 ASSESSMENT COMMENTARY

3.2.1 The pier was assessed for vehicle collision loads in accordance with BD48/93.

3.2.2 The pier was analysed as a free cantilever slab by hand using normal linear elastic analysis. Impact loading was derived using the Quasi-static approach provided in BD48/93.

3.2.3 Applied bending and shear effects were compared against capacities derived in accordance with BD44/15.

3.3 ASSESSMENT RESULTS

3.3.1 The assessment confirmed the pier is able to sustain the vehicle collision loads in accordance with BD48/93. Therefore:

- The pier does not require safeguarding via a safety barrier
- It would be permissible for the safety barrier to transition into the end of the pier and allow for the pier to act as a barrier against impact.

4. PROPOSED NEW HIGHWAY ALIGNMENT

4.1 GENERAL

4.1.1 Refer to Appendix E for details of the existing and proposed highway alignment through North Side Overbridge.

4.1.2 The new highway alignment comprising additional lane capacity could be accommodated within the existing clearance envelope via the following:

- Encroachment and reduction of the central reserve
- Encroachment and reduction of the verges
- Reduction in lane widths

4.1.3 The headroom clearance based on the new alignment would also be in excess of the minimum maintained headroom of 5.03 as stipulated in Table 6.1 of TD27/05.

4.1.4 In summary the new highway alignment can be accommodated without necessitating major structural modification to North Side Overbridge. Therefore the impact on existing services within deck (refer to section 2.2 of the report) would be limited.

4.1.5 Construction work at the structure could potentially be limited to reconstruction of the verges and central reserve to suit the new alignment. The pier impact assessment has confirmed the pier does not require safe guarding by barriers and these could be made to transition into the supports.

4.1.6 The pier would be acceptable to act as a barrier on the basis they can sustain impact loads and they also fulfil the definition of a smooth traffic face finish as specified in TD19/06.

5. CONCLUSION & RECOMMENDATIONS

5.1 CONCLUSION

5.1.1 The study has shown the proposed new A1 highway alignment/cross section can be accommodated under the existing North Side Overbridge without the need for major structural modifications.

5.1.2 The initial impact assessment of the pier confirms the pier is able to sustain the vehicular impact loads. Therefore it would be permissible for pier to not be safe guarded by safety barriers providing additional width for alignment modifications if required.

5.1.3 The review of previous inspection reports, showed the structure to generally be in good condition with no significant defects that may impact the integrity/loading bearing capacity of the bridge. However some outstanding maintenance actions have been identified.

5.1.4 Prior to detailed design, confirmation is required from the HE regarding outstanding maintenance items (if any) that need to be incorporated as part of the A1 Birtley to Coalhouse Improvement Scheme.

5.1.5 This would ensure cost and programme implications to undertake the design and implementation of outstanding maintenance items is accurately accounted for during further development of the scheme.

5.2 RECOMMENDATION

5.2.1 The following should be undertaken to further verify the findings of this report and any further works required to North Side Overbridge.

- Liaison with the HE to confirm outstanding maintenance actions (if any) to be included as part of this scheme and therefore developed accordingly at detailed design.
- Completion of the pier impact assessment under full technical approval. This would enable the result to be certified and inform the scheme as it progresses.

Appendix A

INDICATIVE SCHEMATIC PLANS OF THE PREFERRED ROUTE

APPENDIX A-1

INDICATIVE SCHEMATIC PLANS OF THE PREFERRED ROUTE

DO NOT SCALE

Millimetres 0 10 100

A1

Showing indicatively Gantries SG001&SG002 at chainages -1460 & -480 respectively
AIP - Tubular Steel Cantilever Gantries
STKEY TBC
Ref SOR09

Gantry SG003
AIP - Tubular Steel Cantilever Gantry
STKEY TBC
Ref SOR09

Retaining wall 1
AIP - Reinforced Concrete Wall
STKEY TBC
Ref SOR10

Gantry SG004
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Gantry SG005
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Kingsway Viaduct Underbridge
OS Grid Ref: 424900E, 558550N
STKEY 16271
Structure No. A1/433.30
AIP - Kingsway Viaduct
Ref SOR01

JUNCTION 67 - COALHOUSE
(424955,558553)

Retaining wall 5
AIP - Continuous Bored Piles Retaining Wall
STKEY TBC
Ref SOR10

Gantry SG006
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Retaining wall 2
AIP - Sheet Piles Retaining Wall
STKEY TBC
Ref SOR10

CR Retaining wall 1
STKEY TBC
Ref SOR10

Retaining wall 3
AIP - Reinforced Earth Retaining Wall
STKEY TBC
Ref SOR10

Retaining wall 4
AIP - Reinforced Earth Retaining Wall
STKEY TBC
Ref SOR10

Allerdene Culvert
OS Grid Ref: 425370E, 558520N
STKEY 8879
Structure No. A1/443.30
AIP - Allerdene Culvert
Ref SOR02

Allerdene Railway Underbridge
OS Grid Ref: 425480E, 558489N
STKEY 8880
Structure No. A1/443.00/Q
AIP - Allerdene Railway Bridge
Ref SOR03

Smithy Lane Overbridge
OS Grid Ref: 425760E, 558280N
STKEY 16439
Structure No. A1/442.50
AIP - Smithy Lane Overbridge
Ref SOR04

Gantry SG007
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Gantry SG008
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Gantry SG009
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Gantry SG010
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

ALLERDENE CULVERT EXTENSION AND DRAINAGE DITCH TO BE REALIGNED.

PROPOSED ALLERDENE UNDERBRIDGE TO BE CONSTRUCTED OFFLINE.

KINGSWAY SOUTH
SAINSBURY'S
CHOWDENE BANK
BANESLEY LANE
COACH ROAD
LAMESLEY ROAD
RIVER TEAM
SMITHY LANE
EAST COAST MAINLINE
EXTENT OF WORKS
A1 SB
A1 NB
CUTLINE A
CUTLINE B

KEY
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED RETAINING WALL
- PROPOSED HIGHWAYS FENCE LINE
- RETAINED EXISTING HIGHWAYS FENCE LINE
- REMOVED EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED DRAINAGE DITCH
- NETWORK RAIL LAND BOUNDARY

Rev.	Date	Description	By	Chk'd	App'd
P01	05/09/16	FOR INFORMATION	JAC		
P02	07/09/16	MINOR AMENDMENTS TO BNKS & STRUCTURES, CHAINAGE ADDED	JWL	CP	NGR
P03	07/09/16	ISSUED FOR PUBLIC CONSULTATION	JWL	SG	NGR
P04	10/02/17	DESIGN DEVELOPMENT POST PUBLIC CONSULTATION	JWL	SG	NGR

WSP PARSONS BRINCKERHOFF
Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL
Tel: +44 (0)113 395 6200
© WSP UK Ltd
www.wsp-pb.com

Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE WITH RETENTION OF COAL HOUSE JCT GENERAL ARRANGEMENT SHEET 1 OF 3

Scale	Drawn	Checked	Approved	Authorised
1:1250	J.Longmore	S.Ghosh	N.Rawcliffe	---
Original Size	Date	Date	Date	Date
A1	10/02/17	10/02/17	10/02/17	---

Drawing Status: INITIAL STATUS OR WIP — Suitability: S0

Drawing Number: Project HE551462 | Originator WSP | Volume HGN | Location BCH | Type DR | Role D | Number 10004 | Project Ref. No. | Revision P04

Millimetres 100 0 10

DO NOT SCALE

A1

CR Retaining wall 2
STKEY TBC
Ref SOR10

Gantry SG011
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Gantry SG013
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Gantry SG012
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

CR Retaining wall 3
STKEY TBC
Ref SOR10

Eighton Lodge Slip Road Underbridge
OS Grid Ref: 426527E, 557592N
STKEY 16441
Structure No. A1/440.90//6
AIP - Widening of Eighton Lodge North & Slip Road Underbridges
Ref SOR05

ANGEL OF THE NORTH

A167 DURHAM ROAD

EXTENT OF WORKS

CUTTING B

CUTTING C

CUTTING D

A1 SB

A1 NB

KEY

- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED HIGHWAYS FENCE LINE
- EXISTING HIGHWAYS FENCE LINE
- REMOVED EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED FOOTPATH DIVERSION
- EXISTING FOOTPATH
- PROPOSED SIGNAL
- EXISTING SIGNAL

Gantry SG014
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Eighton Lodge North Underbridge
OS Grid Ref: 426682E, 557517N
STKEY 16440
Structure No. A1/441.00
AIP - Widening of Eighton Lodge North & Slip Road Underbridges
Ref SOR05

JUNCTION 66 - EIGHTON LODGE
(426739,557494)

Eighton Lodge South Underbridge
OS Grid Ref: 426801E, 557466N
STKEY 8883
Structure No. A1/440.90
AIP - Widening of Eighton Lodge South Bridge
Ref SOR05

Longbank Bridleway Underbridge
OS Grid Ref: 427169E, 557294N
STKEY 26280
Structure No. A1/440.80
AIP - Longbank Underpass
Ref SOR06

Gantry SG016
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

B1296 LONG BANK

A167 DURHAM ROAD

EXTENT OF WORKS

EXTENT OF WORKS

EXTENT OF WORKS

A1 SB

A1 NB

CUTTING C

CUTTING D

EIGHTON LODGE CULVERT; STRUCTURE KEY 15468. STRUCTURE IS APPROXIMATELY 18m BELOW GROUND LEVEL SO WILL BE UNAFFECTED.

A167 NEWCASTLE BANK

Gantry SG015
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

CR Retaining wall 4
STKEY TBC
Ref SOR10

Gantry SG017
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

NORTH DENE

LONG BANK

Rev.	Date	Description	By	Chk'd	App'd
P01	05/09/16	FOR INFORMATION	JAC		
P02	07/09/16	MINOR AMENDMENTS TO BNKS & STRUCTURES, CHAINAGE ADDED	JWL	CP	NGR
P03	07/09/16	ISSUED FOR PUBLIC CONSULTATION	JWL	SG	NGR
P04	10/02/17	DESIGN DEVELOPMENT POST PUBLIC CONSULTATION	JWL	SG	NGR

WSP PARSONS BRINCKERHOFF
Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL
Tel: +44 (0)113 395 6200
www.wsp-pb.com

Client

Working on behalf of highways england

Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE WITH RETENTION OF COAL HOUSE JCT GENERAL ARRANGEMENT SHEET 2 OF 3

Scale	Drawn	Checked	Approved	Authorised
1:1250	J.Longmore	S.Ghosh	N.Rawcliffe	---
Original Size	Date	Date	Date	Date
A1	10/02/17	10/02/17	10/02/17	---

Drawing Status: INITIAL STATUS OR WIP

Suitability: S0

Drawing Number
Project: HE551462 | Originator: WSP | Volume: HGN
Location: BCH | Type: DR | Role: D | Number: 10005

Project Ref. No.

Revision: P04

Millimetres 100 0 10

DO NOT SCALE

A1

North Dene Footbridge
OS Grid Ref: 427538E, 557089N
STKEY 8886
Structure No. A1/440.30
AIP - North Dene Footbridge
Ref SOR07

Gantry SG018
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Retaining wall 6
AIP- King Post Retaining Wall
STKEY TBC
Ref SOR10

Gantry SG020
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Gantry SG019
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

NEW BUILDING DEVELOPEMENT

CRATHIE

A1 SB
A1 NB
CUTLINE E

North Side Overbridge
OS Grid Ref: 428090E, 556770N
STKEY 8887
Structure No. A1/439.70
AIP - North Side Bridge
Ref SOR08

EXTENT OF WORKS

JUNCTION 65 - BIRTLEY
(428150,556714)

A1231 SB
A1231 NB
A1(M) SB
A1(M) NB
A194(M) NB

KEY

- EXISTING STRUCTURE
- PROPOSED RETAINING WALL
- PROPOSED HIGHWAYS FENCE LINE
- EXISTING HIGHWAYS FENCE LINE
- REMOVED EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED FOOTPATH DIVERSION
- EXISTING FOOTPATH
- PROPOSED SIGNAL
- EXISTING SIGNAL

Rev.	Date	Description	By	Chk'd	App'd
P01	05/09/16	FOR INFORMATION	JAC		
P02	07/09/16	MINOR AMENDMENTS TO EWKS & STRUCTURES, CHAINAGE ADDED	JWL	CP	NGR
P03	07/09/16	ISSUED FOR PUBLIC CONSULTATION	JWL	SG	NGR
P04	10/02/17	DESIGN DEVELOPMENT POST PUBLIC CONSULTATION	JWL	SG	NGR

WSP PARSONS BRINCKERHOFF
Three White Rose Office Park,
Millshaw Park Lane,
Leeds,
LS11 0DL
Tel: +44 (0)113 395 6200
www.wsp-pb.com

Client
Working on behalf of
highways england

Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE WITH RETENTION OF COAL HOUSE JCT GENERAL ARRANGEMENT SHEET 3 OF 3

Scale	Drawn	Checked	Approved	Authorised
1:1250	J.Longmore	S.Ghosh	N.Rawcliffe	---
Original Size	Date	Date	Date	Date
A1	10/02/17	10/02/17	10/02/17	---

Drawing Status: INITIAL STATUS OR WIP
Suitability: S0

Drawing Number
Project: HE551462
Originator: WSP
Volume: HGN
Location: BCH
Type: DR
Role: D
Number: 10006
Project Ref. No.
Revision: P04

Appendix B

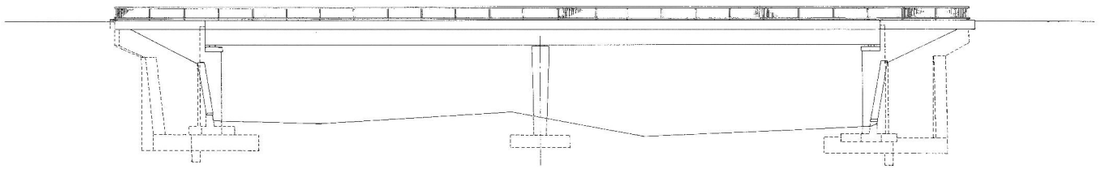
AS BUILT INFORMATION

APPENDIX B-1

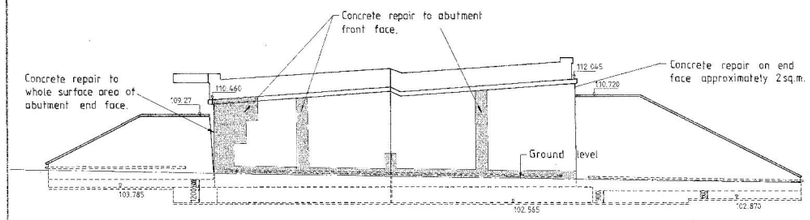
AS BUILT INFORMATION

ROAD No. A1

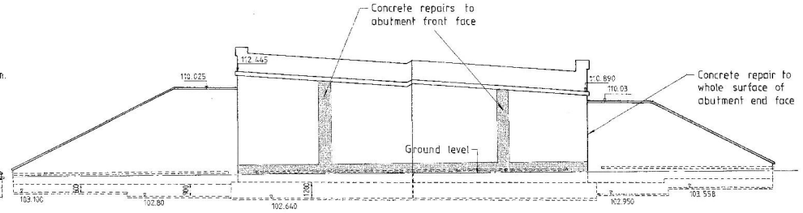
DRAWING No. MW/B756/17



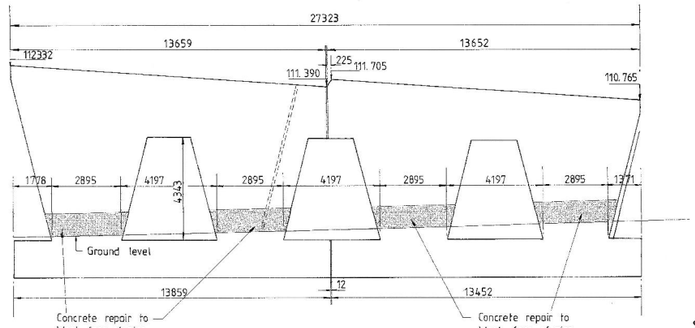
EAST ELEVATION



ELEVATION OF SOUTH ABUTMENT AND WINGWALLS

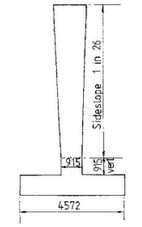


ELEVATION OF NORTH ABUTMENT AND WINGWALLS



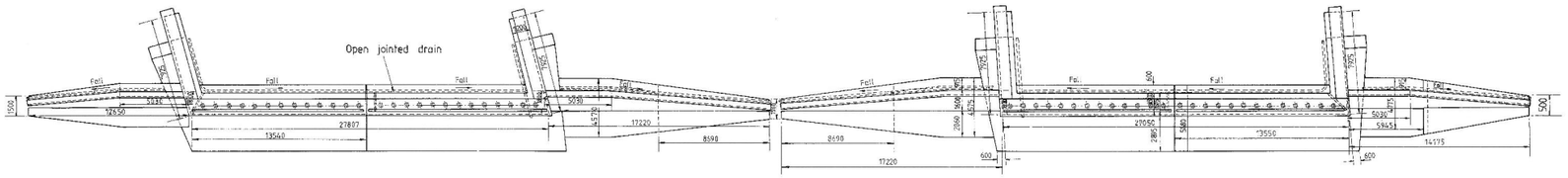
ELEVATION ON CENTRE PIER

N.T.S.



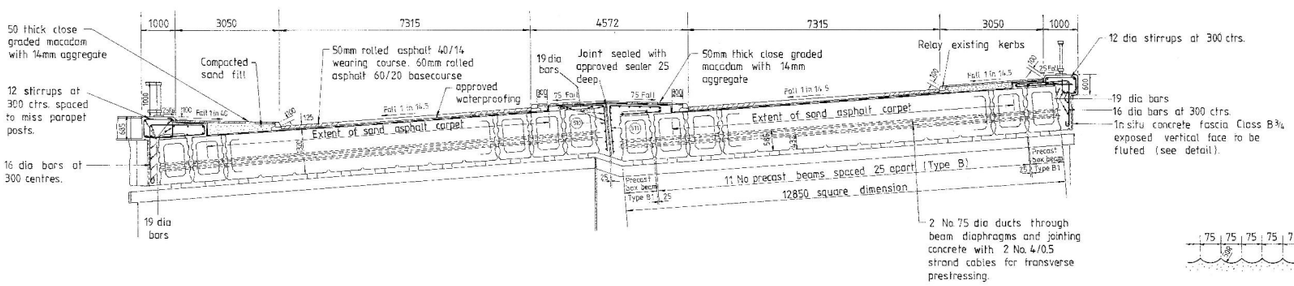
SECTION THROUGH CENTRE PIER

N.T.S.



PLAN

PLAN

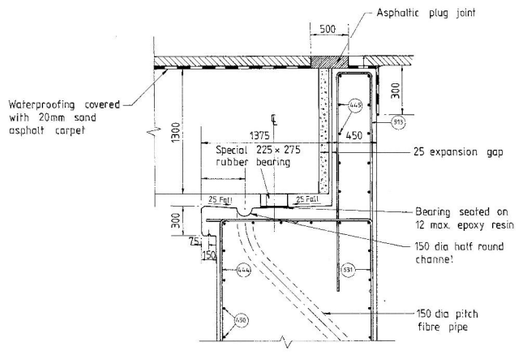


PROPOSED SECTION THROUGH DECK

N.T.S.

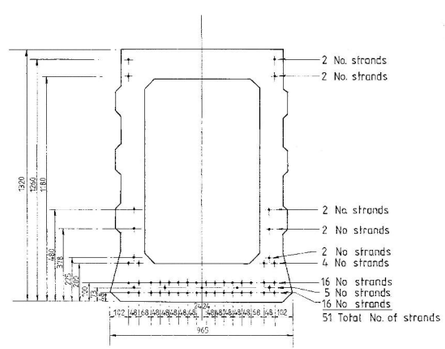
DETAIL OF VERTICAL FLUTING ON FASCIA

N.T.S.



DETAIL OF EXPANSION JOINT

N.T.S.



STRAND LAYOUT FOR BEAMS A, A1, A2, B, B1 & B2

SHEET SUFFIX	AMENDMENTS	DATE

SCHEME TITLE

NORTHSIDE BRIDGE MAINTENANCE

DRAWING TITLE

MAINTENANCE DETAILS - 1993

DEPARTMENT OF TRANSPORT

AGENT:- DURHAM COUNTY COUNCIL

D.J. Newbegin M.Sc., C.Eng.,
Director of Environment, County Hall, Durham DH1 5UQ.

SCALE:- N.T.S.			
DRAWN J.W.C.	DATE Sept '92	ROAD No.	A1
TRACED J.E.J.	DATE Sept '92	DRAWING No.	MW/B756/17
CHECKED	DATE		

NORTHSIDE
LAY OUT PLAN.

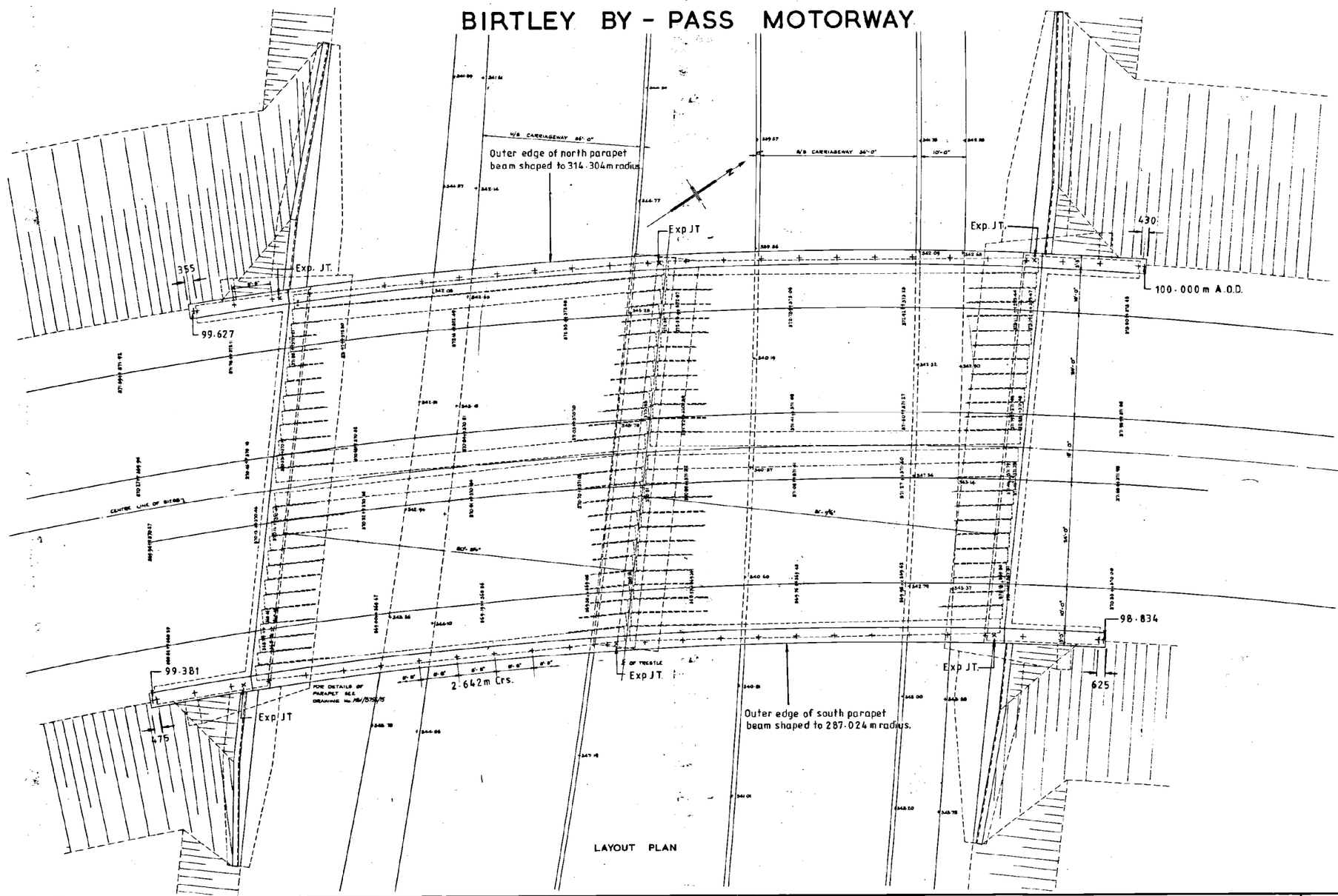
7

DRG Nº
MW/B756/4

MINISTRY OF TRANSPORT

Agents :- DURHAM COUNTY COUNCIL

BIRTLEY BY - PASS MOTORWAY



LAYOUT PLAN

SCALE: ⅛" TO 1'-0"

AMENDMENTS	BRIDGE No. 756 – NORTH SIDE LAYOUT PLAN	DRAWING NUMBER MW / B756 / 4	W. H. B. COTTON M.I.C.E. COUNTY ENGINEER & SURVEYOR COUNTY HALL DURHAM

NORTHSIDE

SETTING OUT DETAILS

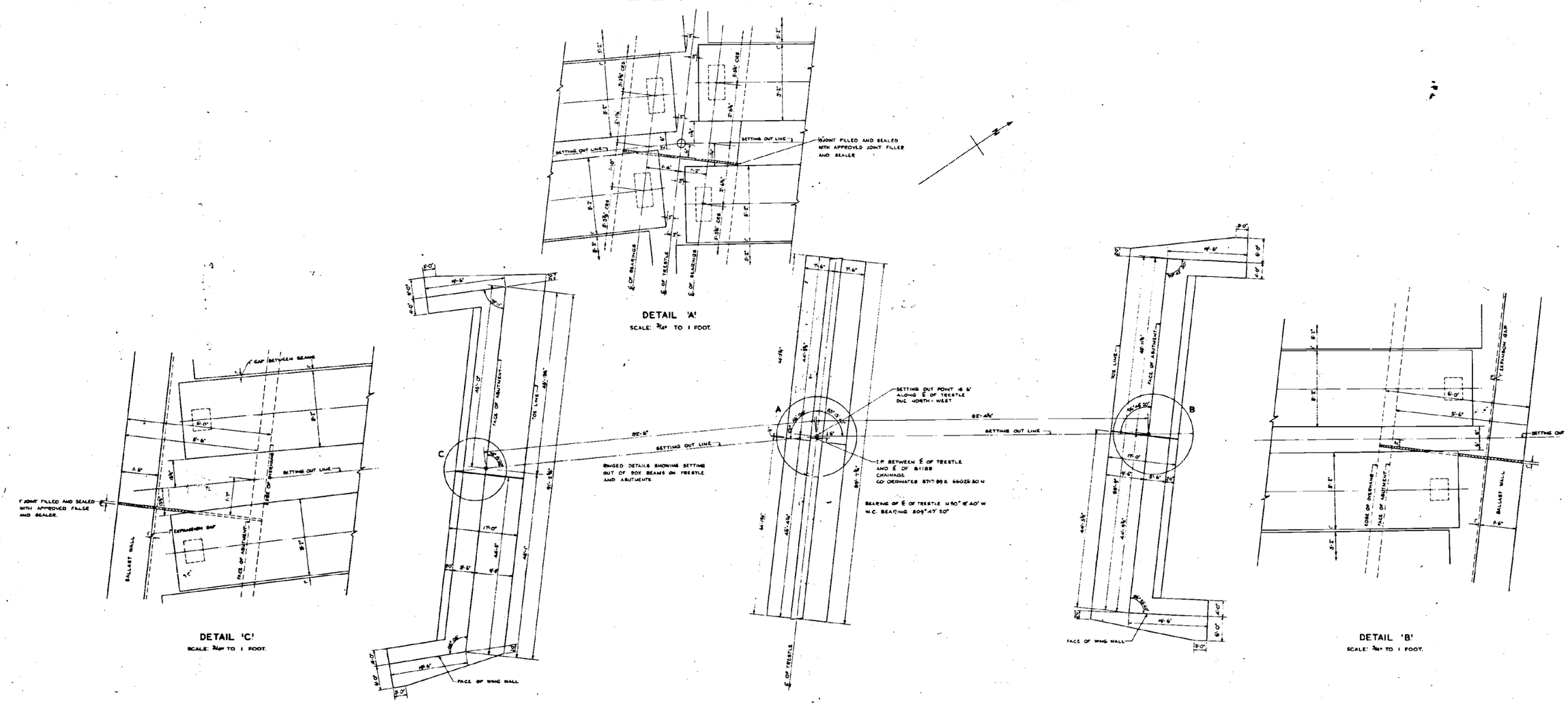
DRG. Nº

MW/B756/5.

MINISTRY OF TRANSPORT

Agents :- DURHAM COUNTY COUNCIL

BIRTLEY BY-PASS MOTORWAY



SCALES AS NOTED

AMENDMENTS	BRIDGE No. 756 — NORTH SIDE SETTING OUT DETAILS	DRAWING NUMBER MW / B756 / S	W. H. B. COTTON M.I.C.E. COUNTY ENGINEER & SURVEYOR COUNTY HALL DURHAM

NORTHSIDE

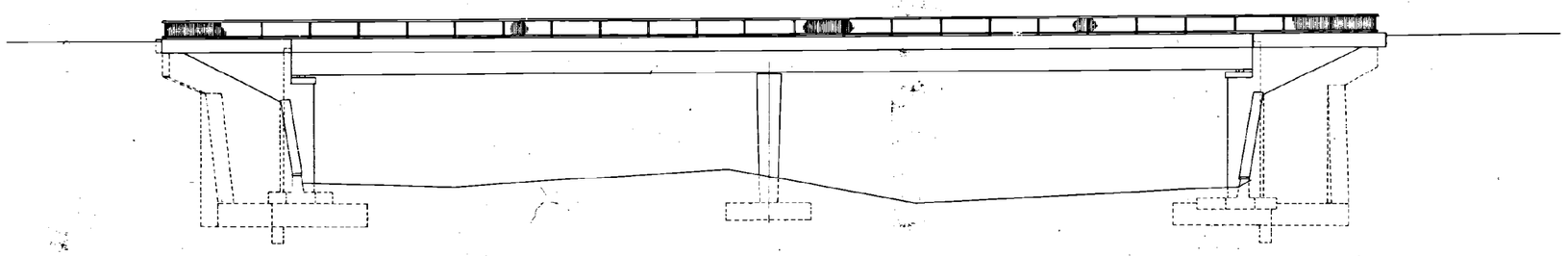
ELEVATION OF BRIDGE AND DETAILS OF ABUTMENTS AND WING WALLS

DRG. Nº MW/B756/6

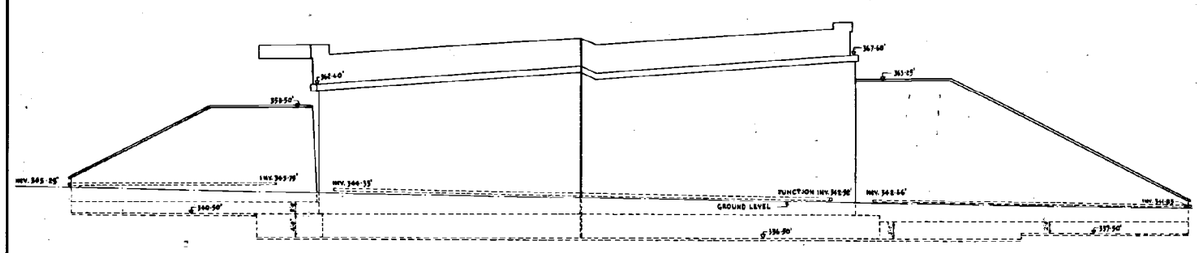
MINISTRY OF TRANSPORT

Agents :- DURHAM COUNTY COUNCIL

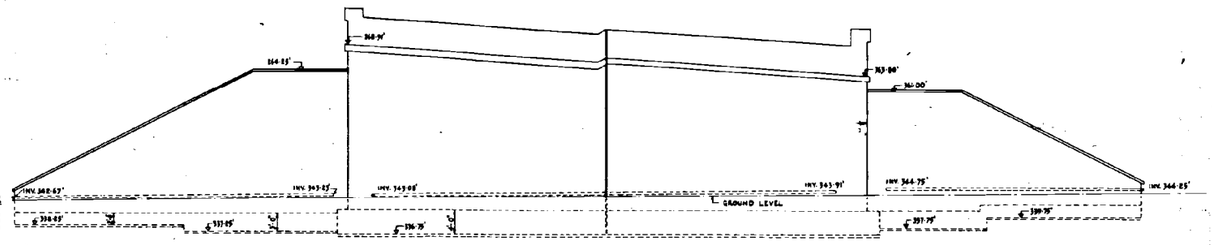
BIRTLEY - BY-PASS MOTORWAY



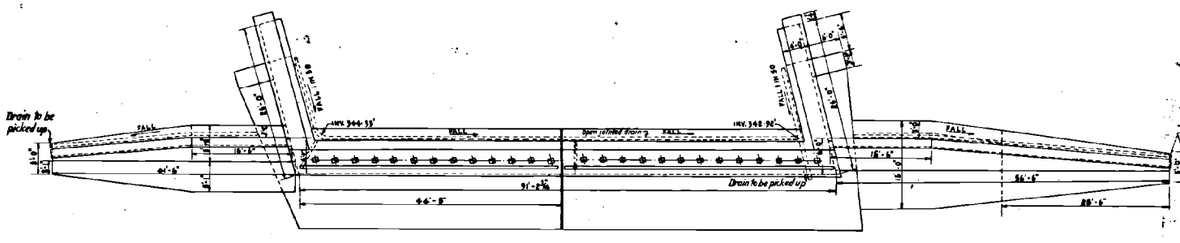
EAST ELEVATION



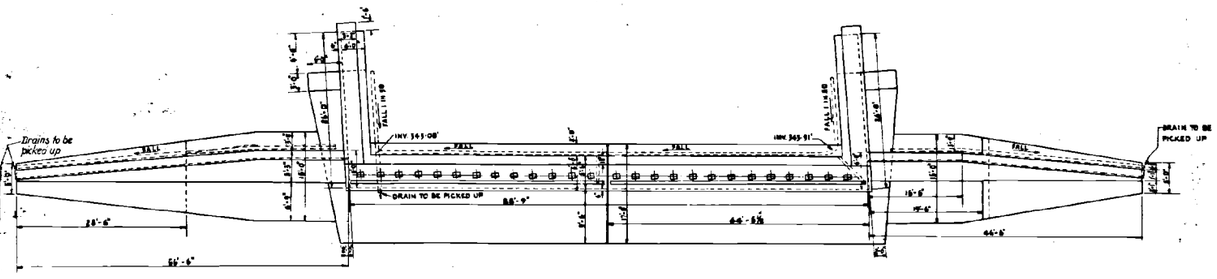
ELEVATION OF SOUTH ABUTMENT AND WING WALLS



ELEVATION OF NORTH ABUTMENT AND WING WALLS



PLAN



PLAN

SCALE:- 1/8 TO 1'-0"

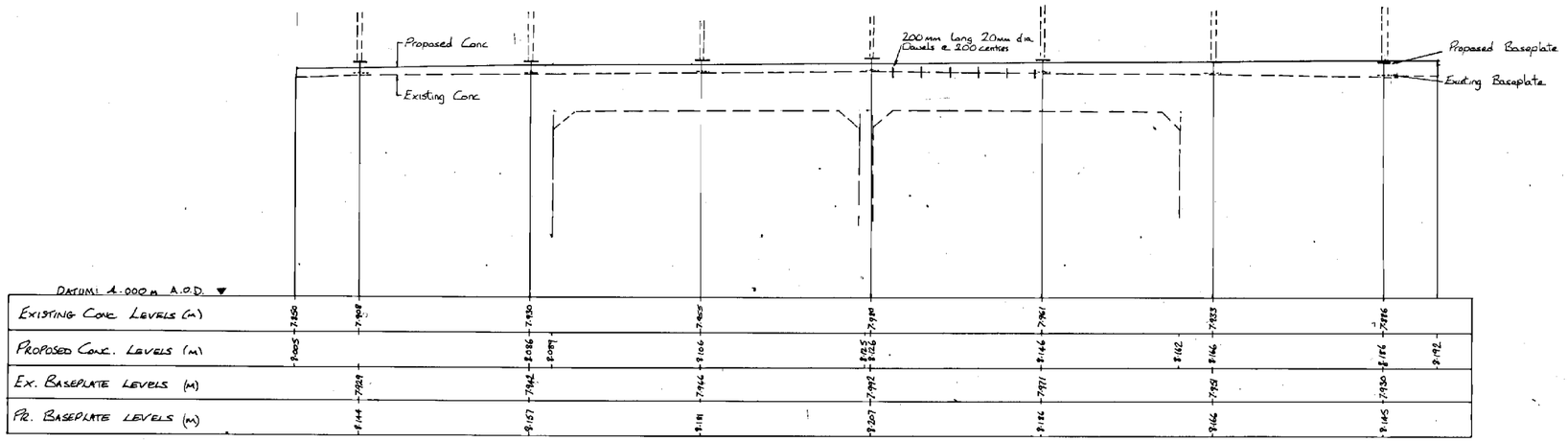
AMENDMENTS

BRIDGE No. 756 — NORTH SIDE.

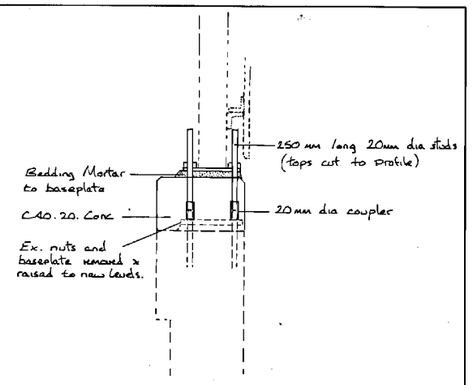
ELEVATION OF BRIDGE & DETAILS OF ABUTMENTS & WING WALLS.

DRAWING NUMBER MW/B756/6

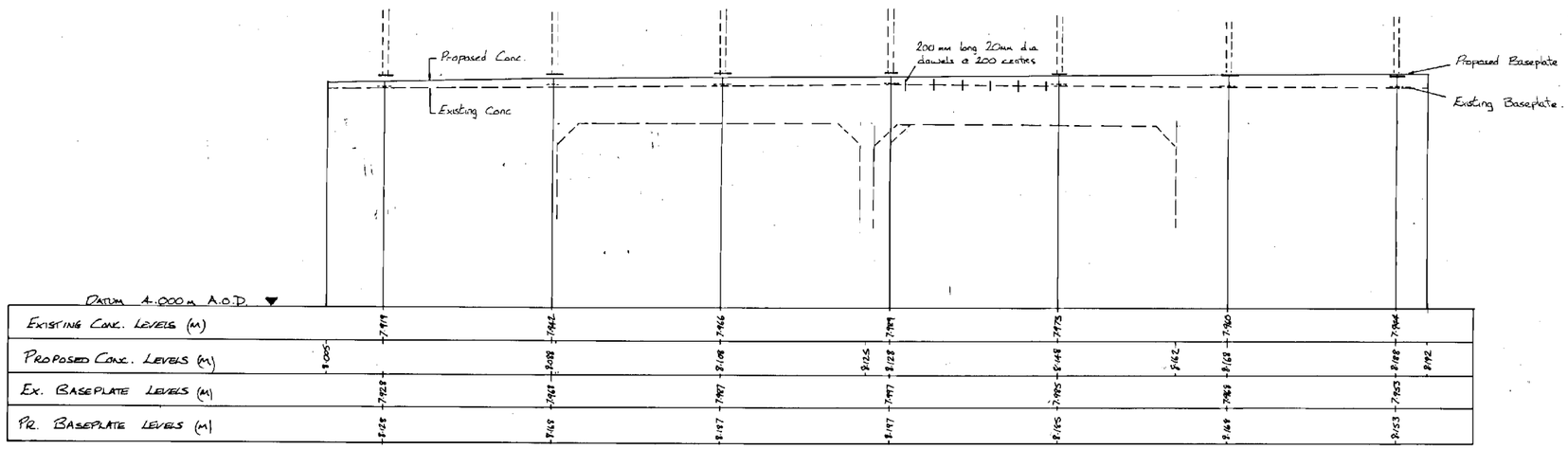
W. H. B. COTTON M.I.C.E.
COUNTY ENGINEER & SURVEYOR
COUNTY HALL
DURHAM



SOUTH ELEVATION (viewing north)
Scale 1:50



SECTION THROUGH EDGE BEAM
Scale 1:10



NORTH ELEVATION (viewing north)
Scale 1:50

NOTES
1. All baseplate levels are to underside of plates

GATESHEAD
METROPOLITAN BOROUGH

ENGINEERING SERVICES DEPARTMENT

TITLE
1st 3rd 5th AVENUES - BRIDGES RECONSTRUCTION

3rd Avenue - Edge beam & Parapet details

DRAWN	WP	SCALE
CHECKED		As Shown
DATE	July 91	

Director of Engineering Services
C. JEFFREY, B.Sc., C.Eng., M.I.C.E., M.I.H.T.
Civic Centre
Gateshead NE8 1HH

DRAWING No. E/159/960/23.

E/159/960/23

NORTHSIDE

SECTION THROUGH DECK AND DETAILS

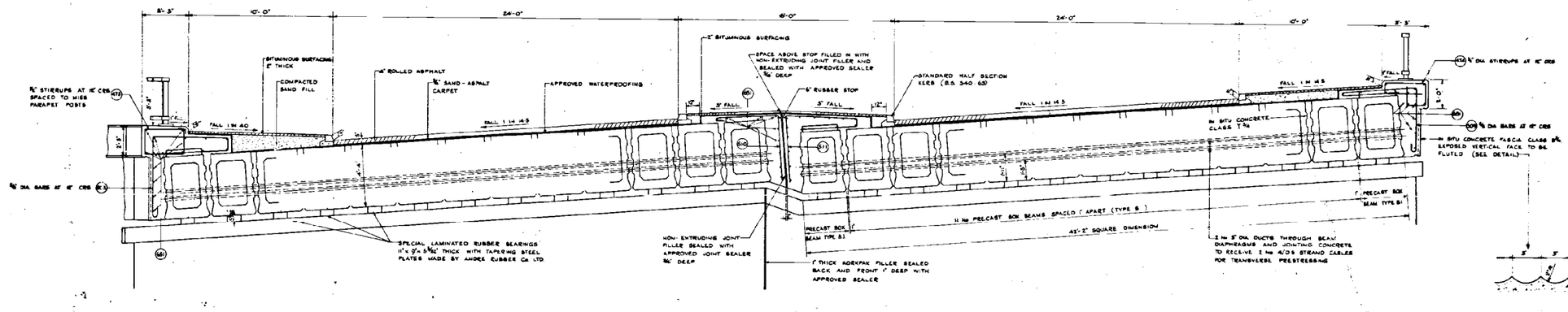
DRG. Nº

MW/B756/7

MINISTRY OF TRANSPORT

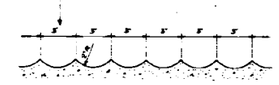
Agents :- DURHAM COUNTY COUNCIL

BIRTLEY BY-PASS MOTORWAY



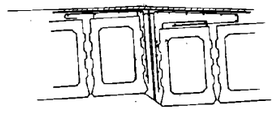
TYPICAL SECTION THROUGH WEST SPAN OF DECK

SCALE: 3/32" TO 1 FOOT.

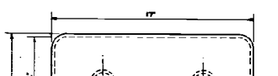


DETAIL OF VERTICAL FLUTING ON FASCIA.

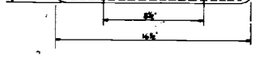
SCALE: 3" TO 1 FOOT



NARROWEST GAP BETWEEN BEAMS



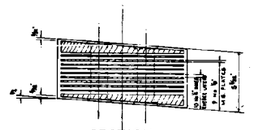
SECTION



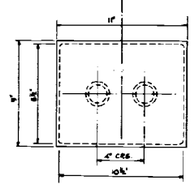
PLAN

SCALE: 1/4 FULL SIZE

FIXED END RUBBER BEARING AS STANDARD BEARING BS/34/G MADE BY ANDRE RUBBER Co. LTD.



SECTION



PLAN

SCALE: 1/4 FULL SIZE

EXPANSION END RUBBER BEARING AS SPECIAL BEARING BY ANDRE RUBBER Co. LTD.

NOTE:
HOLES ON BEARINGS MARKED DOTTED ARE STRUCTURALLY NOT REQUIRED

SCALES AS NOTED

AMENDMENTS	BRIDGE No. 756 — NORTH SIDE SECTION THROUGH DECK AND DETAILS.	DRAWING NUMBER MW/B756/7	W. H. B. COTTON M.I.C.E. COUNTY ENGINEER & SURVEYOR COUNTY HALL DURHAM

NORTHSIDE

DECK PLAN

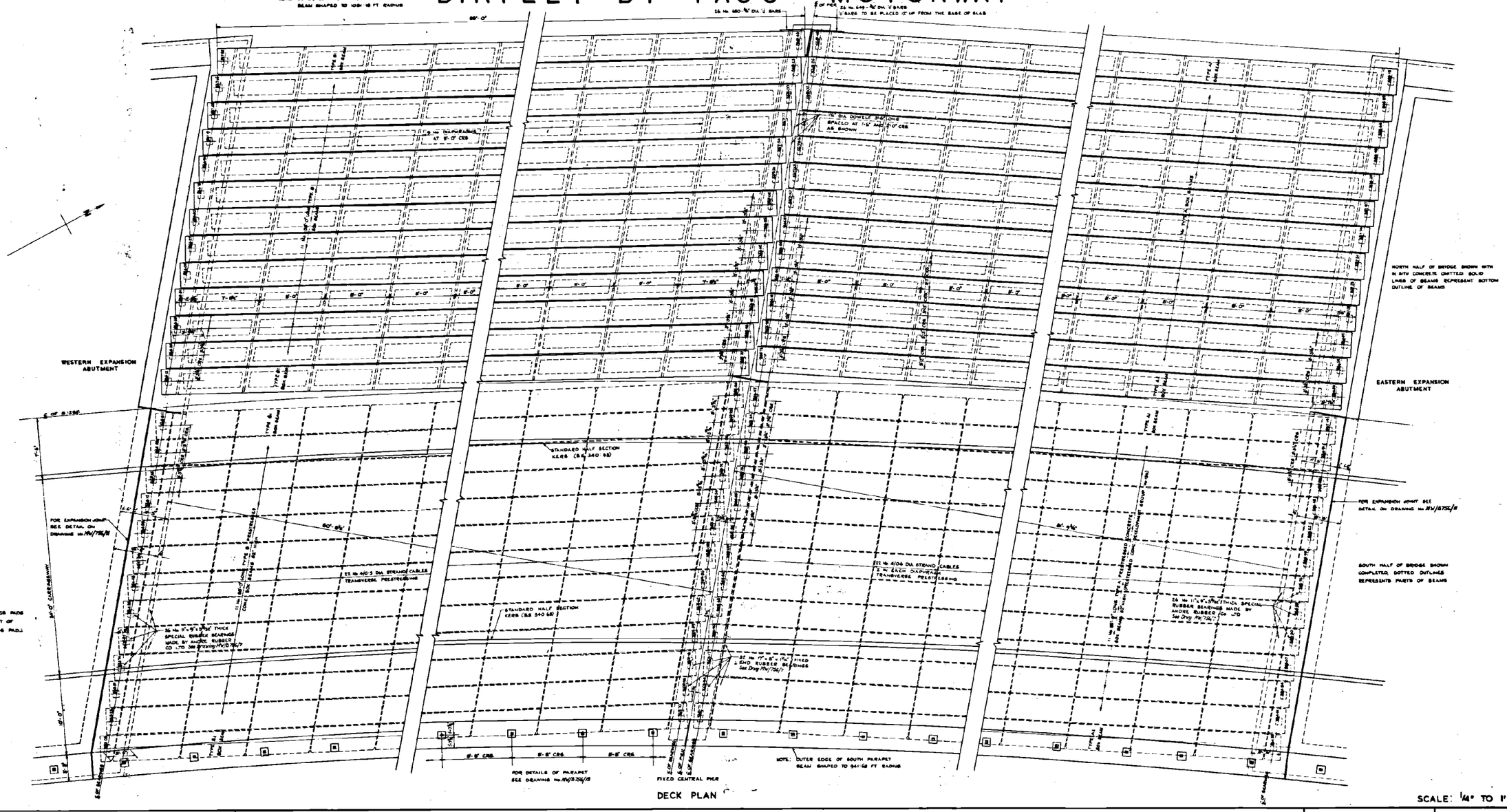
DRG. Nº

MW/B756/8

MINISTRY OF TRANSPORT

Agents :- DURHAM COUNTY COUNCIL

BIRTLEY BY-PASS MOTORWAY



DECK PLAN

SCALE: 1/4" TO 1'-0"

AMENDMENTS	BRIDGE No. 756 — NORTH SIDE DECK PLAN	DRAWING NUMBER MW/B756/8	W. H. B. COTTON M.I.C.E. COUNTY ENGINEER & SURVEYOR COUNTY HALL DURHAM

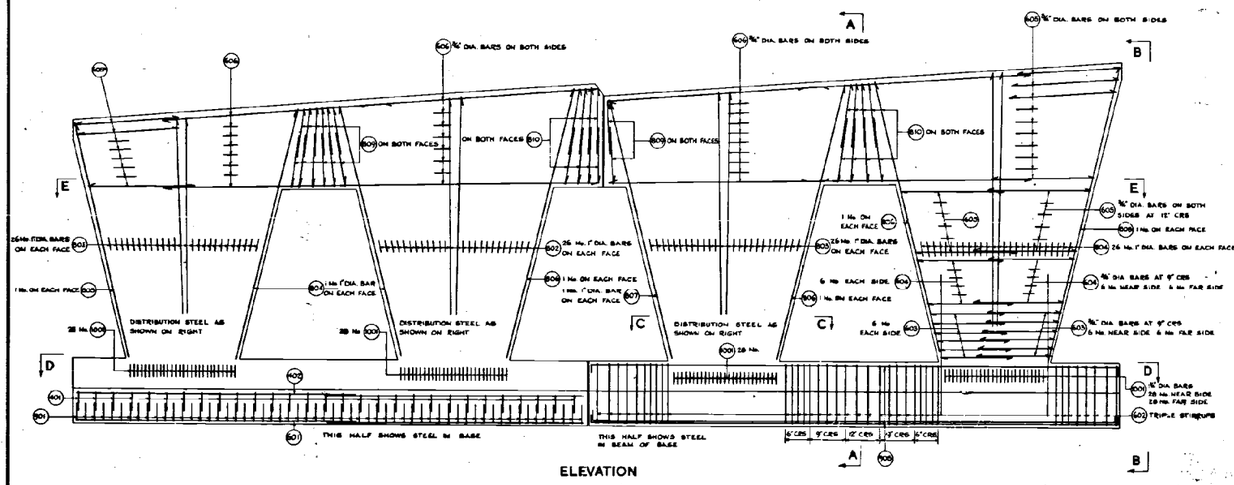
NORTHSIDE

DETAILS OF PIER.

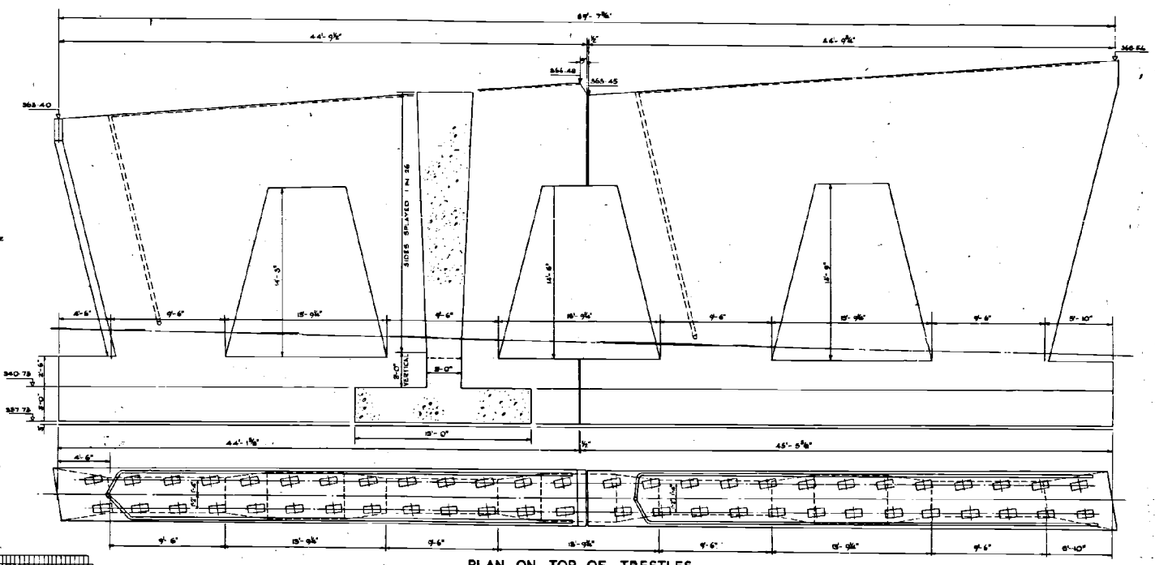
DRG. Nº MW/B756/9

MINISTRY OF TRANSPORT — Agents:- DURHAM COUNTY COUNCIL

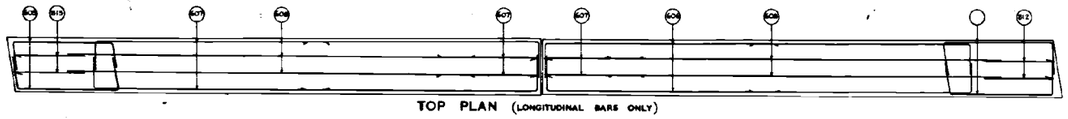
BIRTLEY BY-PASS MOTORWAY



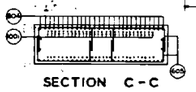
ELEVATION



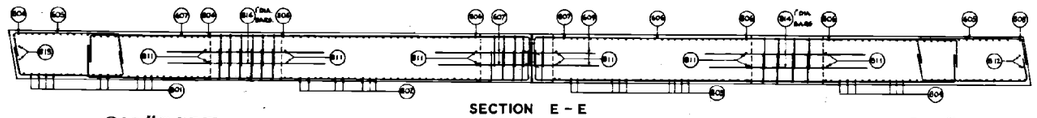
PLAN ON TOP OF TRESTLES



TOP PLAN (LONGITUDINAL BARS ONLY)

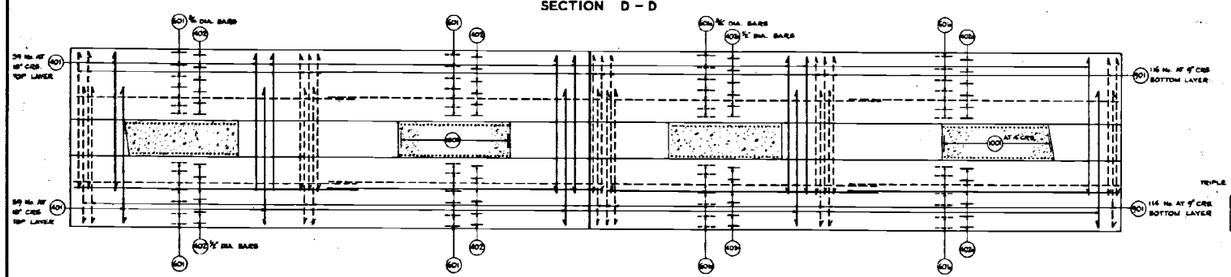


SECTION C-C

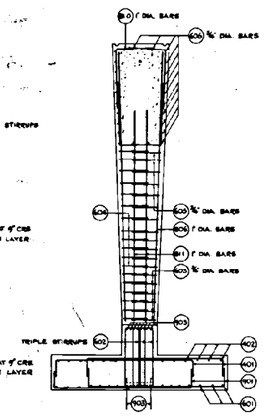


SECTION E-E

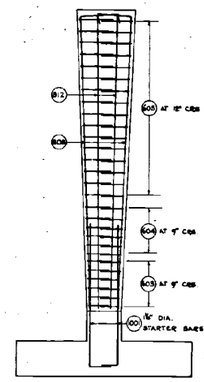
SECTION D-D



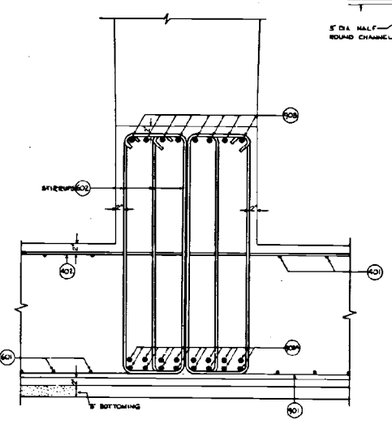
REINFORCEMENT OF BASE

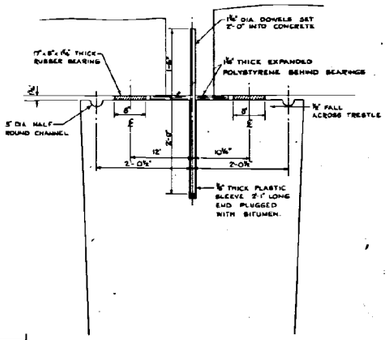


SECTION A-A



ELEVATION B-B





AMENDMENTS

BRIDGE No. 756 NORTH SIDE

DETAILS OF PIER

DRAWING NUMBER

MW/B756/9

W. H. B. COTTON M.I.C.E.
COUNTY ENGINEER & SURVEYOR
COUNTY HALL
DURHAM

NORTHSIDE

REINFORCEMENT DETAILS OF WING WALLS.

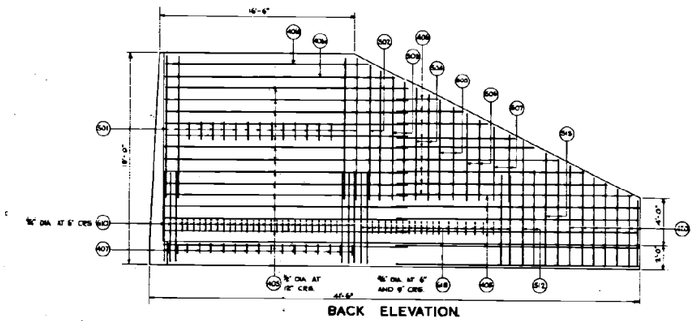
DRG. Nº

MW/B 756/10.

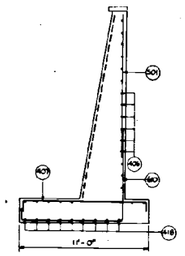
MINISTRY OF TRANSPORT

Agents :- DURHAM COUNTY COUNCIL

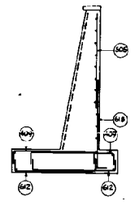
BIRTLEY BY-PASS MOTORWAY



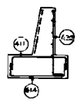
BACK ELEVATION.



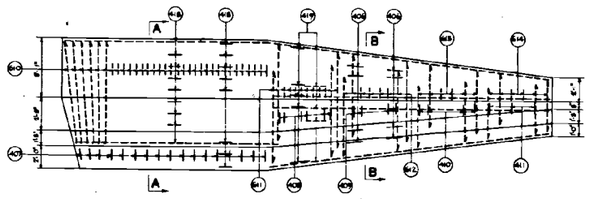
SECTION A - A.



SECTION B - B.

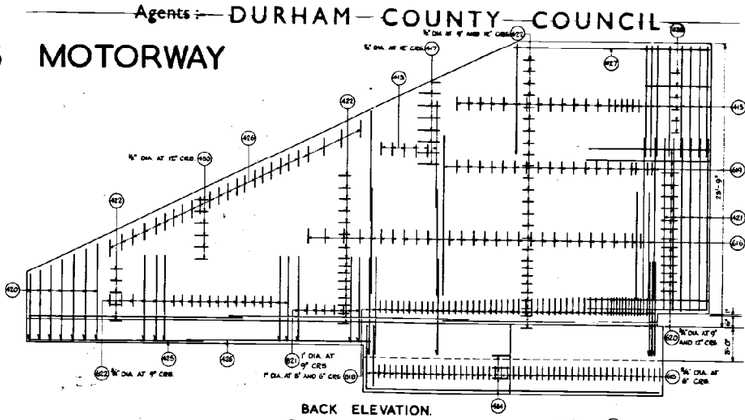


END ELEVATION.

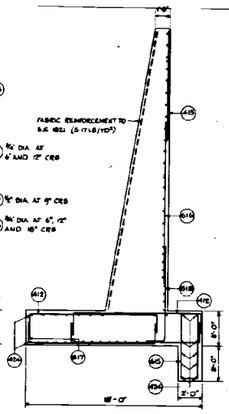


PLAN (SHOWING BASE REINFORCEMENT)

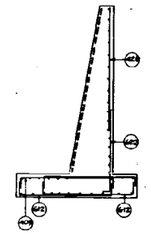
REINFORCEMENT OF S.E. WING WALL



BACK ELEVATION.



SECTION C - C.



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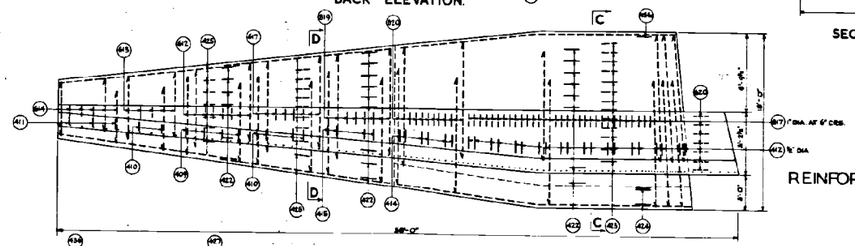
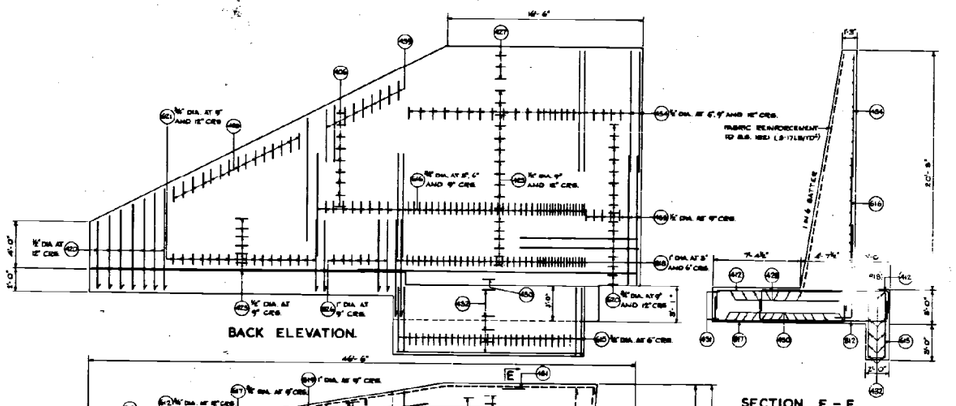


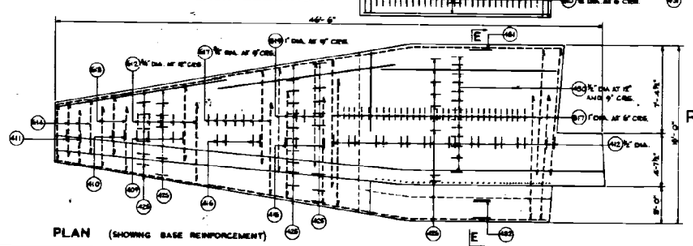
PLAN (SHOWING BASE REINFORCEMENT)

REINFORCEMENT OF S.W. WING WALL



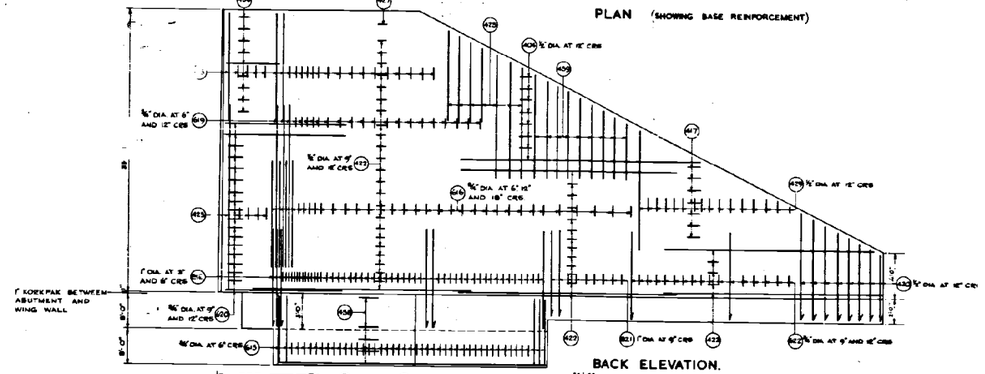
BACK ELEVATION.

SECTION E - E.

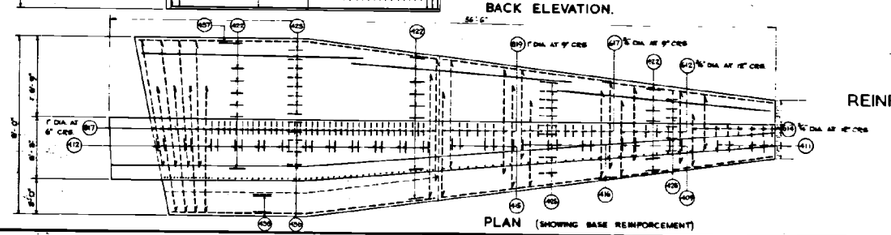


PLAN (SHOWING BASE REINFORCEMENT)

REINFORCEMENT OF N.E. WING WALL



BACK ELEVATION.



PLAN (SHOWING BASE REINFORCEMENT)

REINFORCEMENT OF N.W. WING WALL

SCALE: 1/4" TO 1'-0"

AMENDMENTS

BRIDGE No. 756 — NORTH SIDE

REINFORCEMENT DETAILS OF WING WALLS

DRAWING NUMBER

MW/B 756/10

W. H. B. COTTON M.I.C.E.
COUNTY ENGINEER & SURVEYOR
COUNTY HALL
DURHAM

NORTH SIDE

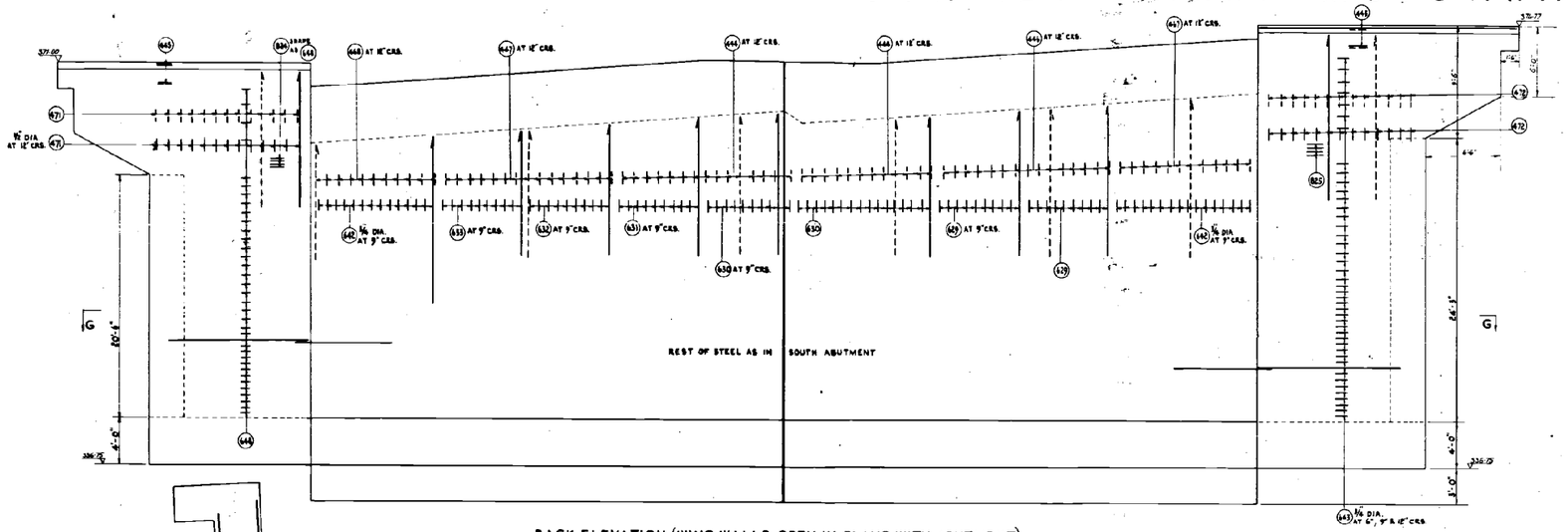
REINFORCEMENT DETAILS OF NORTH ABUTMENT

DRG. Nº MW/B756/11

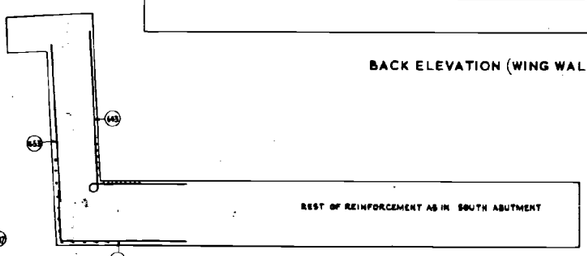
MINISTRY OF TRANSPORT

Agents :- DURHAM COUNTY COUNCIL

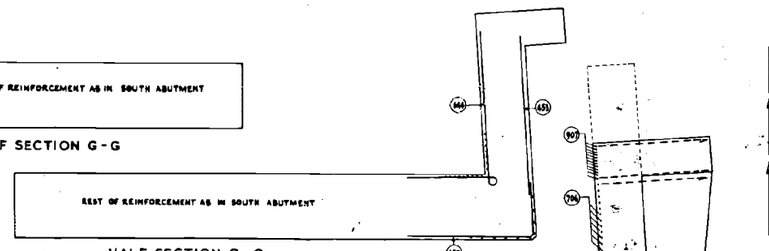
BIRTLEY BY-PASS MOTORWAY



BACK ELEVATION (WING WALLS OPEN IN PLANE WITH ABUTMENT)

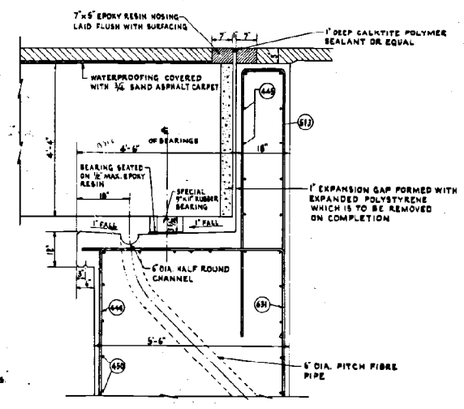


HALF SECTION G-G



HALF SECTION G-G

BASE REINFORCEMENT



DETAIL OF EXPANSION JOINT

SCALE- 3/4 TO 1'-0"

AMENDMENTS	BRIDGE No. 756 — NORTH SIDE REINFORCEMENT DETAILS OF NORTH ABUTMENT	DRAWING NUMBER MW/B756/11	W. H. B. COTTON M.I.C.E. COUNTY ENGINEER & SURVEYOR COUNTY HALL DURHAM

NORTHSIDE

REINFORCEMENT DETAILS OF SOUTH ABUTMENT.

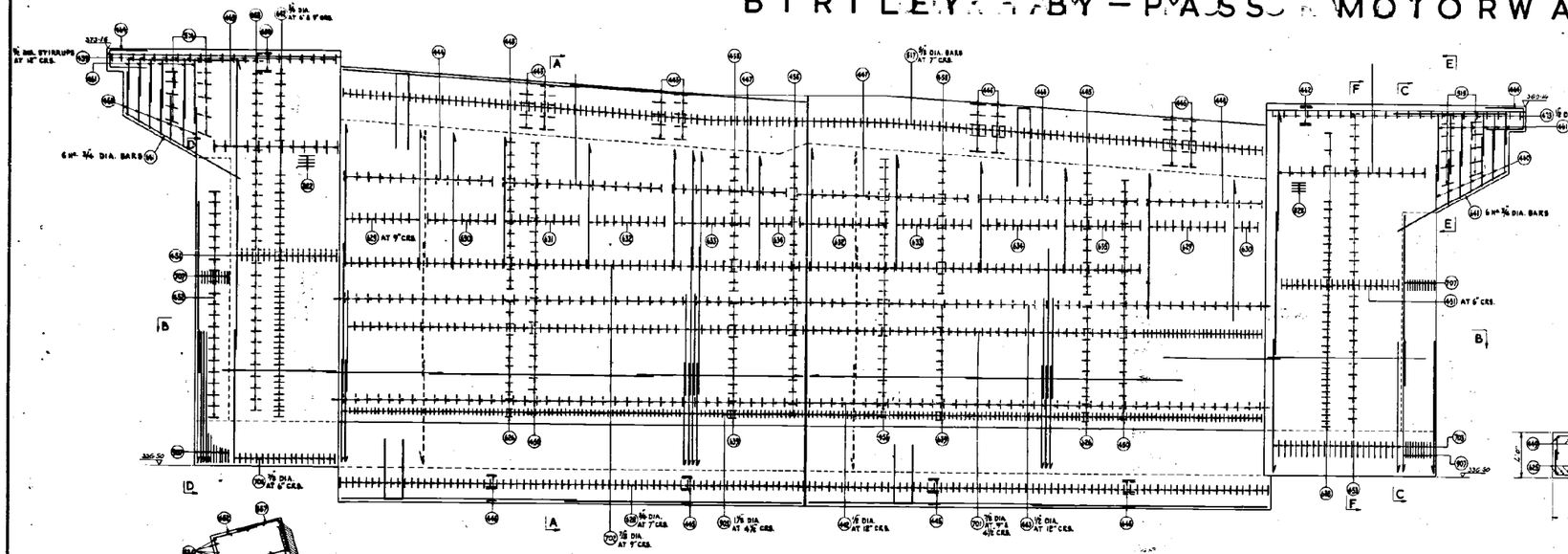
DRG. Nº

MW/B756/12.

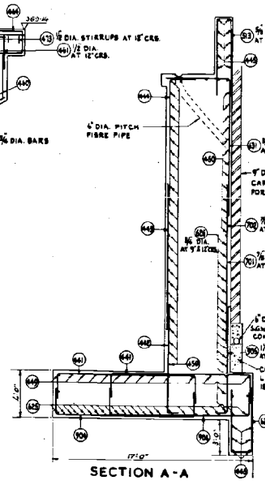
MINISTRY OF TRANSPORT

Agents :- DURHAM COUNTY COUNCIL

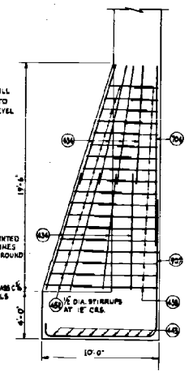
BIRTLEY BY-PASS MOTORWAY



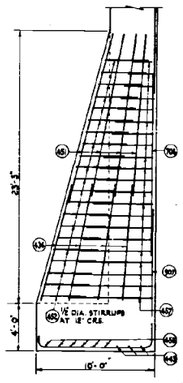
BACK ELEVATION (WING WALLS OPEN IN PLANE WITH ABUTMENT)



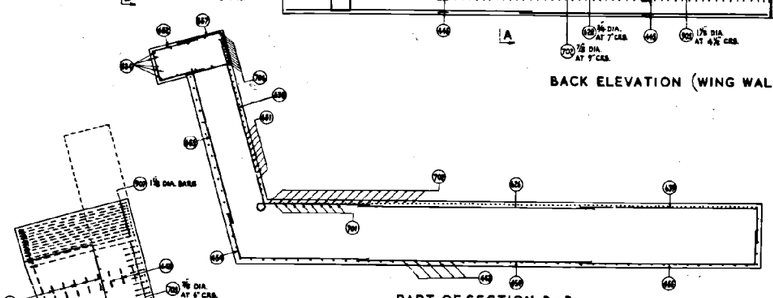
SECTION A-A



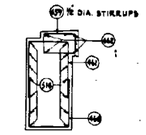
SECTION C-C



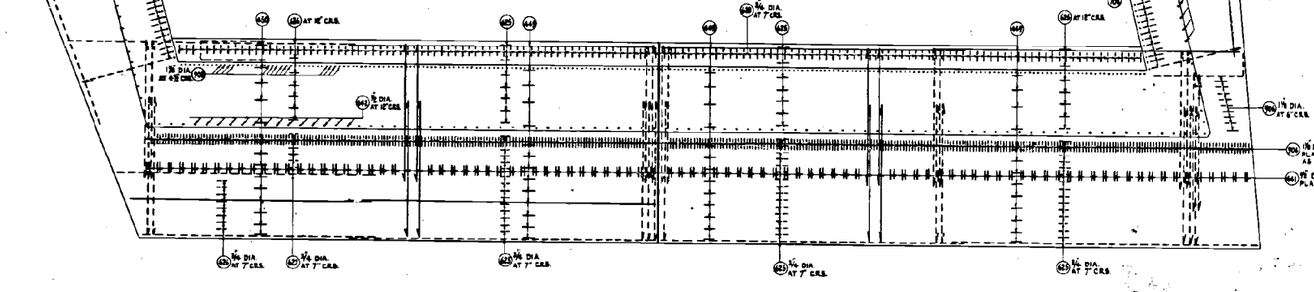
ELEVATION D-D



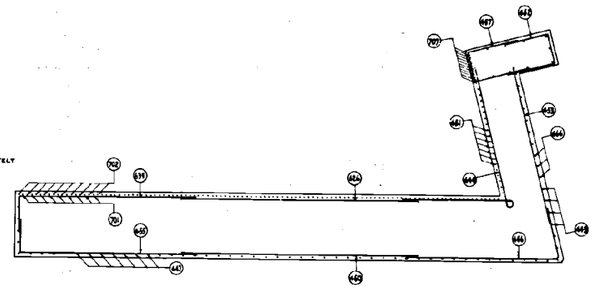
PART OF SECTION B-B



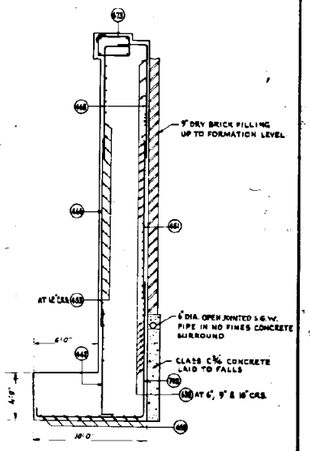
SECTION E-E



BASE REINFORCEMENT



PART OF SECTION B-B



SECTION F-F

AMENDMENTS	BRIDGE No. 756 — NORTH SIDE REINFORCEMENT DETAILS OF SOUTH ABUTMENT	DRAWING NUMBER MW/B756/12	W. H. B. COTTON M.I.C.E. COUNTY ENGINEER & SURVEYOR COUNTY HALL DURHAM

NORTHSIDE

DETAILS OF PRESTRESSED BOX BEAM (P.C.D.G. SECTION Nº 13b.)

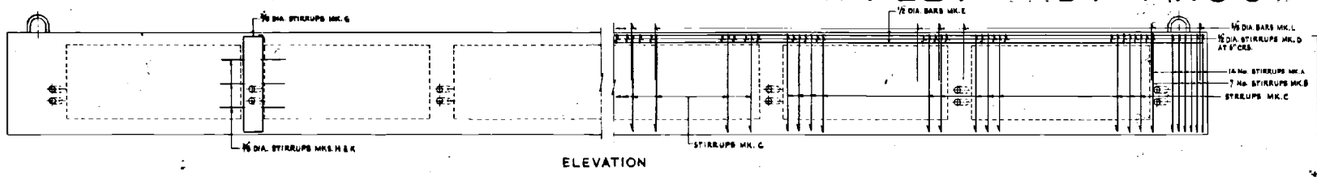
DRG. Nº

MW/B756/13.

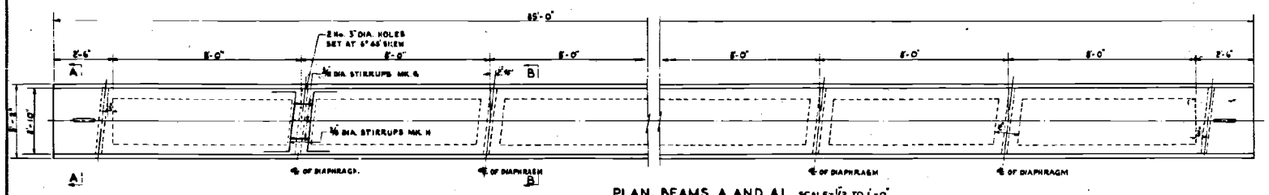
MINISTRY OF TRANSPORT

Agents:- DURHAM COUNTY COUNCIL

B I R T L E Y BY-PASS MOTORWAY

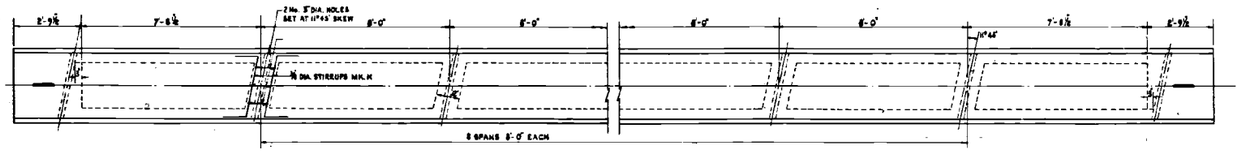


ELEVATION



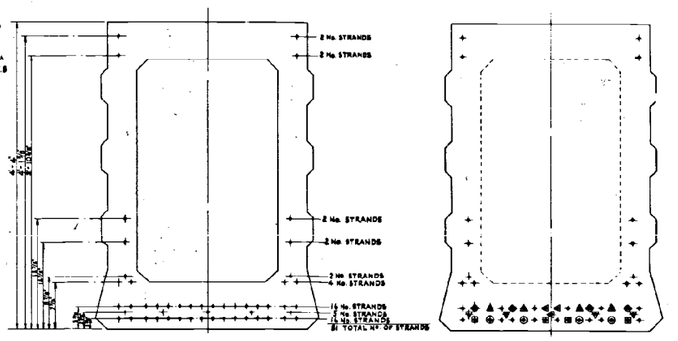
PLAN, BEAMS A AND A1 SCALE-½" TO 1'-0"

22 No. CONCRETE BOX BEAMS AS DRAWN ——— MARK A,
2 No BOX BEAMS AS DRAWN AND NOTED - MARK A1, 2 No BOX BEAMS AS DRAWN AND NOTED MARK A2.



PLAN, BEAMS B AND B1 SCALE-½" TO 1'-0"

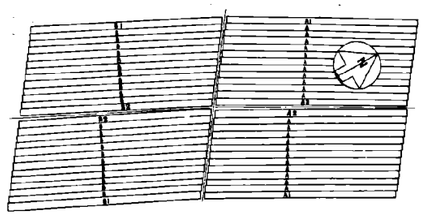
22 No. CONCRETE BOX BEAMS AS DRAWN ——— MARK B,
2 No BOX BEAMS AS DRAWN AND NOTED - MARK B1, 2 No BOX BEAMS AS DRAWN AND NOTED - MARK B2.



STRAND LAYOUT FOR BEAMS A, A1, A2, B, B1 & B2

MEMBER (MRK.)	BAR MARK	TYPE & SIZE	No. OF MEMBS.	No. OF BARS EACH	TOTAL No.	LENGTH OF EACH BAR FT.	LENGTH OF EACH BAR INS.	SHAPE ALL DIMENSIONS ARE IN ACCORDANCE WITH B.S. 1478 UNLESS OTHERWISE STATED
BEAMS	A	M8	52	28	1456	18'	11"	
BEAMS	B	M3	52	14	728	11'	11"	
BEAMS	C	M3	52	86	4472	12'	7"	
BEAMS TOP FLANGE	D	M4	52	114	5928	6'	9"	
BEAMS TOP FLANGE	E	M4	52	32	1664	22'	5"	STRAIGHT
BEAMS SIDE WEBS	F	M3	104	12	1248	22'	5"	STRAIGHT
BEAMS DIAPHRAGMS	G	M3	364	3	1092	10'	6"	
BEAMS A, A1 & A2 DIAPHRAGMS	H	M3	182	6	1092	4'	8"	
BEAMS B, B1 & B2 DIAPHRAGMS	K	M3	182	6	1092	4'	8"	
BEAMS A1, A2, B1 & B2	L	M3	8	88	664	7'	5"	
BEAMS PROVISIONAL	M	M12	52	2	104	10'	9"	

BENDING SCHEDULE

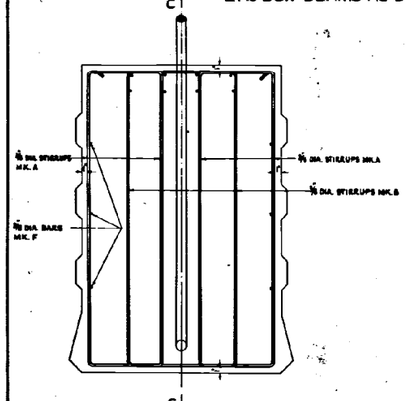


BEAM LAYOUT
NOT TO SCALE

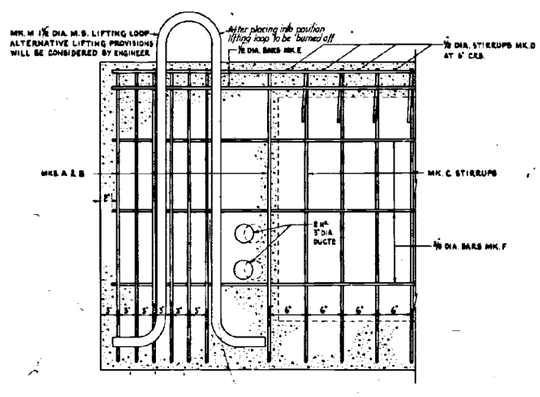
ORDER OF DEBONDING STRANDS

4 No.	STRANDS	DEBONDED	15'-0" FROM ENDS OF BEAM SHOWN THUS ●
4 No.	-	-	10'-0" ◆
4 No.	-	-	7'-0" ▲
4 No.	-	-	5'-0" ■
4 No.	-	-	1'-0" ▼
2 No.	-	-	-

TEST LOADS AND PREDICTED CAMBER		
TEST LOAD AT EACH ⅛ SPAN POINT	MAX. DEFL. AT CENTRE AT 28 DAYS	PREDICTED CAMBER AT 28 DAYS
36·3 TONS	4½ INCHES	2⅝ INCHES

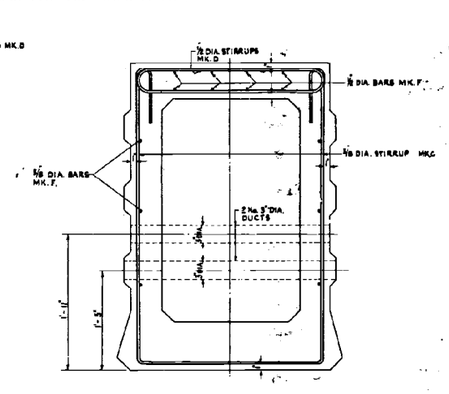


SECTION A-A



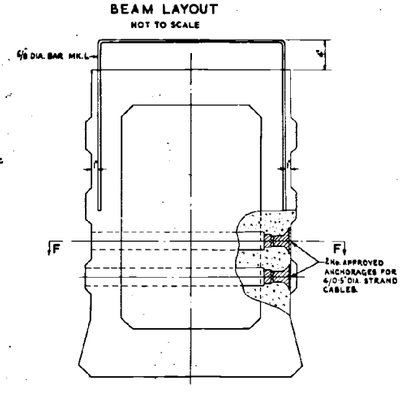
SECTION C-C

DETAIL AT END OF ALL BEAMS
SCALE:-1½ TO 1'-0"

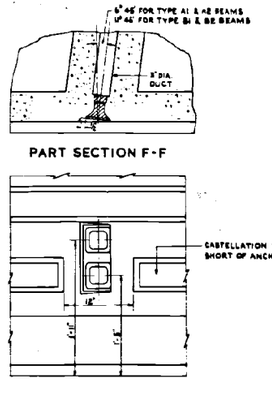


SECTION B-B
SCALE:- 1½ TO 1'-0"

BEAMS A AND B



SECTION B-B
SCALE:- 1½ TO 1'-0"



PART SECTION F-F

PART ELEVATION SHOWING ANCHORAGE
SCALE:- 1½ TO 1'-0"

BEAMS A1 & B1 WITH STRESSING ANCHORAGE
BEAMS A2 & B2 WITH DEAD END ANCHORAGE

NOTES:-

1. BEAM SECTION IS THAT RECOMMENDED BY PRESTRESSED CONCRETE DEVELOPMENT GROUP - STANDARD BOX BEAM Nº 13b
2. CONCRETE TO BE X ⅜
   CUBE STRENGTH AT TRANSFER = 5500 LB / SQ. IN.
   CUBE STRENGTH AT 28 DAYS = 7000 LB/SQ. IN.
3. PRESTRESSING STRAND TO BE 0.5" DIA.
   MIN. BREAKING LOAD = 37000 LB.
   INITIAL DESIGN LOAD = 25900 LB.
4. LIFTING HOOKS (IF MADE AS SHOWN) TO BE BURNT OFF AFTER ERECTION.
5. PREDICTED CAMBER AT 28 DAYS IS FOR BEAM SUPPORTED AT ITS DESIGN BEARING POINTS AND SUBJECT TO S.W. ONLY.
6. STRANDS TO BE LEFT PROJECTING 3" OUT OF EACH END OF BEAM
7. STRAND ANCHORAGES ON BEAMS A1, A2, B1 & B2 ARE TO INCLUDE ANY BEARING PLATES AND WEDGES NECESSARY TO ANCHOR STRANDS AFTER TENSIONING

SCALES AS NOTED.

AMENDMENTS

BRIDGE No. 756 — NORTH SIDE
DETAILS OF PRESTRESSED BOX BEAM (P.C.D.G. SECTION No. 13b)

DRAWING NUMBER
MW/B756/13

W. H. B. COTTON M.I.C.E.
COUNTY ENGINEER & SURVEYOR
COUNTY HALL
DURHAM

Appendix C

STATUTORY UNDERTAKES INFORMATION

APPENDIX C-1

STATUTORY UNDERTAKERS DRAWINGS

DO NOT SCALE

Millimetres 100 0 10

A1

JUNCTION 67 - COALHOUSE
(424955,558553)

KINGSWAY VIADUCT UNDERBRIDGE; STRUCTURE KEY 16271. STRUCTURE TO BE WIDENED TO ACCOMMODATE PROPOSED CARRIAGEWAY WIDTH.

ALLERDENE CULVERT; STRUCTURE KEY 8879. STRUCTURE TO BE EXTENDED TO ACCOMMODATE PROPOSED ALIGNMENT.

ALLERDENE RAILWAY UNDERBRIDGE; STRUCTURE KEY 8880. BRIDGE TO BE DEMOLISHED FOLLOWING THE CONSTRUCTION OF THE OFFLINE REPLACEMENT.

SMITHY LANE OVERBRIDGE; STRUCTURE KEY 16439. RETENTION / REPLACEMENT OF BRIDGE AND REALIGNMENT OF SMITHY LANE TO BE CONFIRMED DURING DESIGN DEVELOPMENT. INDICATIVE LOCATION SHOWN FOR POTENTIAL REPLACEMENT BRIDGE.

RIVER TEAM CULVERT - TO BE EXTENDED TO ACCOMMODATE NEW JUNCTION LAYOUT.

ALLERDENE CULVERT EXTENSION AND DRAINAGE DITCH TO BE REALIGNED.

PROPOSED ALLERDENE UNDERBRIDGE TO BE CONSTRUCTED OFFLINE.

KEY

- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED RETAINING WALL
- PROPOSED HIGHWAYS FENCE LINE
- EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- NETWORK RAIL LAND BOUNDARY
- PROPOSED DRAINAGE DITCH
- PROPOSED FOOTPATH DIVERSION
- EXISTING FOOTPATH
- PROPOSED SIGNAL
- EXISTING SIGNAL
- BT — BT DUCT
- IC — INSTALCOM
- W — NORTHUMBRIAN WATER COMBINED
- W — NORTHUMBRIAN WATER FOUL
- W — NORTHUMBRIAN WATER ABANDONED
- W — NORTHUMBRAIN WATER SURFACE
- W — NORTHUMBRIAN WATER TREATED
- W — NORTHUMBRIAN WATER DISTRIBUTION
- W — NON NORTHUMBRIAN WATER PRIVATE
- G — NORTHERN GAS LOW PRESSURE
- G — NORTHERN GAS MEDIUM PRESSURE
- G — NORTHERN GAS INTERMEDIATE PRESSURE
- G — NORTHERN GAS REGIONAL HIGH PRESSURE
- T — VIRGIN MEDIA CABLE
- E — NORTHHERN POWER GRID CABLE
- C — VODAFONE CABLE
- IC01 — UTILITY REFERNCE

NOTES

1. LOCATION OF SERVICE PLANT SHOWN ON THIS DRAWING HAS BEEN OBTAINED FROM C2 STATUTORY UNDERTAKERS RETURNS AND IS SHOWN INDICATIVELY. THE STATUTORY UNDERTAKERS ARE TO SATISFY THEMSELVES OF THE LOCATION AND EXTENTS OF SERVICE PLANT.
2. REFER TO SECTION 3.10 OF THE TECHNICAL APPRAISAL REPORT FOR DETAILS OF THE DIVERSION WORKS PROPOSED.
3. ALL DIAMETERS OF WATER MAINS ARE MEASURED IN MILLIMETERS UNLESS OTHERWISE STATED.

Rev.	Date	Description	By	Chk'd	App'd
P01.1	14/12/16	DRAFT	---	---	---

WSP
PARSONS BRINCKERHOFF
Three White Rose Office Park,
Millshaw Park Lane,
Leeds,
LS11 0DL
Tel: +44 (0)113 395 6200
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www.wsp-pb.com

Client
Working on behalf of
highways england

Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE
EXISTING STATUTORY UNDERTAKERS APPARATUS

DRAFT

Scale	Designed	Checked	Authorised
1:12	---	---	---
Original Size	Drawn	Date	Date
A1	---		---

Drawing Status: Initial Status of WIP
Suitability: S0

Drawing Number
Project: HE551462
Originator: WSP
Volume: VUT
Location: BCH
Type: DR
Role: D
Number: 00001
Project Ref. No.
Revision: P01.1

Millimetres 100 0 10

DO NOT SCALE

A1

ANGEL OF THE NORTH

A167 DURHAM ROAD

A1 SB

A1 NB

EXTENT OF WORKS

CUTLINE B

CUTLINE C

CUTLINE D

EIGHTON LODGE SLIP ROAD UNDERBRIDGE; STRUCTURE KEY 16441. STRUCTURE TO BE WIDENED TO ACCOMMODATE PROPOSED CARRIAGEWAY WIDTH.

B1296 LONG BANK

JUNCTION 66 - EIGHTON LODGE (426739,557494)

NG109

VF102

V104

V105

NG110

EIGHTON LODGE NORTH UNDERBRIDGE; STRUCTURE KEY 16440. STRUCTURE TO BE WIDENED TO ACCOMMODATE PROPOSED CARRIAGEWAY WIDTH.

EIGHTON LODGE SOUTH UNDERBRIDGE; STRUCTURE KEY 8883. STRUCTURE TO BE WIDENED TO ACCOMMODATE PROPOSED CARRIAGEWAY WIDTH.

LONGBANK BRIDLEWAY UNDERBRIDGE; STRUCTURE KEY 26280. STRUCTURE TO BE EXTENDED TO ACCOMMODATE PROPOSED CARRIAGEWAY ALIGNMENT.

NW110

NW111

NP108

BT107

NORTH DENE

LONG BANK

EIGHTON LODGE CULVERT; STRUCTURE KEY 15468. STRUCTURE IS APPROXIMATELY 18m BELOW GROUND LEVEL SO WILL BE UNAFFECTED.

A167 NEWCASTLE BANK

KEY

- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED RETAINING WALL
- PROPOSED HIGHWAYS FENCE LINE
- EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- NETWORK RAIL LAND BOUNDARY
- PROPOSED DRAINAGE DITCH
- PROPOSED FOOTPATH DIVERSION
- EXISTING FOOTPATH
- PROPOSED SIGNAL
- EXISTING SIGNAL
- BT — BT DUCT
- IC — INSTALCOM
- W — NORTHUMBRIAN WATER COMBINED
- W — NORTHUMBRIAN WATER FOUL
- W — NORTHUMBRIAN WATER ABANDONED
- W — NORTHUMBRAIN WATER SURFACE
- W — NORTHUMBRIAN WATER TREATED
- W — NORTHUMBRIAN WATER DISTRIBUTION
- W — NON NORTHUMBRIAN WATER PRIVATE
- G — NORTHERN GAS LOW PRESSURE
- G — NORTHERN GAS MEDIUM PRESSURE
- G — NORTHERN GAS INTERMEDIATE PRESSURE
- G — NORTHERN GAS REGIONAL HIGH PRESSURE
- T — VIRGIN MEDIA CABLE
- E — NORTHHERN POWER GRID CABLE
- C — VODAFONE CABLE
- IC01 — UTILITY REFERNCE

NOTES

1. LOCATION OF SERVICE PLANT SHOWN ON THIS DRAWING HAS BEEN OBTAINED FROM C2 STATUTORY UNDERTAKERS RETURNS AND IS SHOWN INDICATIVELY. THE STATUTORY UNDERTAKERS ARE TO SATISFY THEMSELVES OF THE LOCATION AND EXTENTS OF SERVICE PLANT.
2. REFER TO SECTION 3.10 OF THE TECHNICAL APPRAISAL REPORT FOR DETAILS OF THE DIVERSION WORKS PROPOSED.
3. ALL DIAMETERS OF WATER MAINS ARE MEASURED IN MILLIMETERS UNLESS OTHERWISE STATED.

Rev.	Date	Description	By	Chk'd	App'd
P01.1	14/12/16	DRAFT	---	---	---

WSP PARSONS BRINCKERHOFF
Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL
Tel: +44 (0)113 395 6200
www.wsp-pb.com

Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY
EXISTING STATUTORY UNDERTAKERS APPARATUS

DRAFT

Scale: 1:12	Drawn: ---	Checked: ---	Authorised: ---
Original Size: A1	Date: ---	Date: ---	Date: ---
Drawing Status: Initial Status or WIP			Suitability: S0

Drawing Number Project	Originator	Volume	Project Ref. No.
HE551462	WSP	VUT	
BCH Location	DR Type	D Role	00002 Number
			Revision: P01.1

Millimetres 100 0 10

DO NOT SCALE

A1

NORTH DENE FOOTBRIDGE; STRUCTURE KEY 8886. STRUCTURE TO BE TAKEN DOWN AND REPLACED.

NORTH SIDE OVERBRIDGE; STRUCTURE KEY 8887. THE PROPOSED ALIGNMENT MUST FIT BETWEEN THE EXISTING SUPPORTS TO AVOID RECONSTRUCTION.

NEW BUILDING DEVELOPEMENT

JUNCTION 65 - BIRTLEY
(428150,556714)

BT108 BT109 BT110

NP109 NP110 NP111 NP113

NW112 NW113 NW114

V106 V107

CRATHIE

EXTENT OF WORKS

A1 SB A1 NB A1(M) SB A1(M) NB A1231 SB A1231 NB

CUTLINE A CUTLINE B CUTLINE C CUTLINE D CUTLINE E

KEY

- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED RETAINING WALL
- PROPOSED HIGHWAYS FENCE LINE
- EXISTING HIGHWAYS FENCE LINE
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3. ALL DIAMETERS OF WATER MAINS ARE MEASURED IN MILLIMETERS UNLESS OTHERWISE STATED.

Rev.	Date	Description	By	Chk'd	App'd
P01.1	14/12/16	DRAFT	---	---	---

WSP
PARSONS BRINCKERHOFF
Three White Rose Office Park,
Millshaw Park Lane,
Leeds,
LS11 0DL
Tel: +44 (0)113 395 6200
www.wsp-pb.com

Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE
EXISTING STATUTORY UNDERTAKERS APPARATUS

DRAFT

Scale 1:1	Drawn	Checked	Authorised ---
Original Size A1		Date	Date ---
Drawing Status			Suitability
Initial Status of WIP			S0

Drawing Number				Project Ref. No.
Project	Originator	Volume		
HE551462	WSP	VUT		Revision
Location BCH	Type DR	Role D	Number 00003	P01.1

Appendix D

EXISTING STRUCTURE PHOTOGRAPH PLAN

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APPENDIX D-1

EXISTING STRUCTURE PHOTOGRAPH PLAN

Plan View


North Elevation


South Elevation


General View of Pier

General View of Carriageway

wsp

Project:
A1 Birtley to Coal House Improvement Scheme

Title:
North Side Bridge

Appendix E

EXISTING AND PROPOSED CROSS SECTION

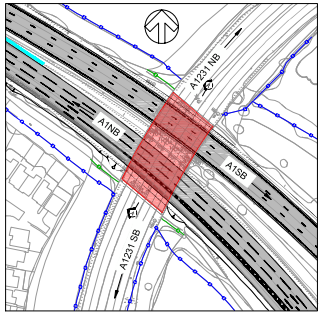
highways england

APPENDIX E-1

EXISTING AND PROPOSED CROSS SECTION

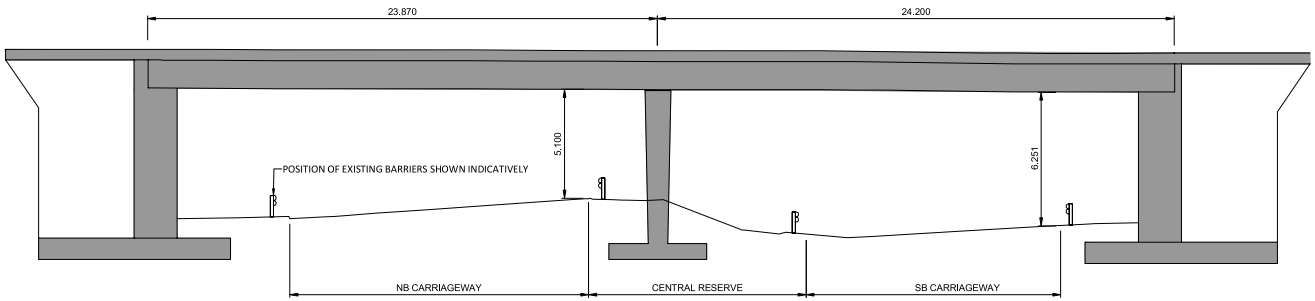
DO NOT SCALE

Millimetres 0 10 100

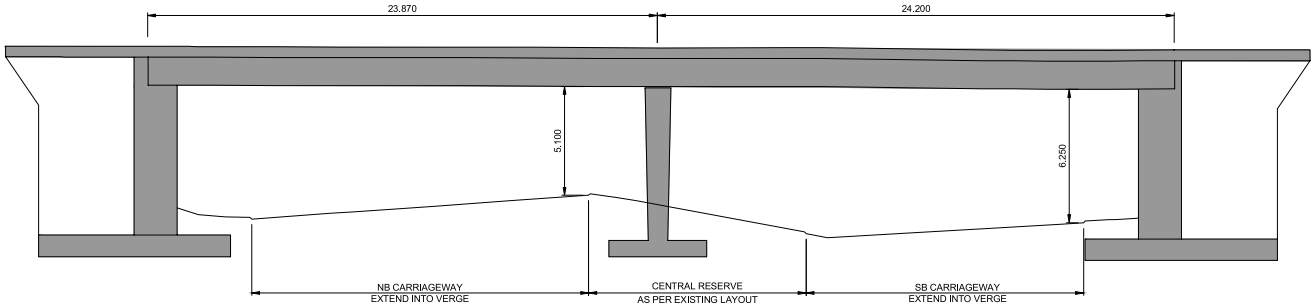


KEY PLAN
NOT TO SCALE

LEGEND
- EXISTING CARRIAGEWAY
- PROPOSED CARRIAGEWAY
- NORTH SIDE BRIDGE



EXISTING LONG SECTION A-A
NOT TO SCALE



PROPOSED LONG SECTION A-A
NOT TO SCALE

1) ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE

2) DO NOT SCALE IN CASE OF DOUBTS, OMISSIONS OR ERRORS SEEK CLARIFICATION FROM THE DESIGN

3) THIS DRAWING PROVIDES DETAILS OF THE EXISTING NORTH SIDE OVER BRIDGE AND IS BASED ON THE FOLLOWING INFORMATION
- TOPOGRAPHICAL SURVEY
  HE551462-WSP-HGN-BCH-M2-D-00036
  BY LONGDIN AND BROWNING (SURVEYS) Ltd. APRIL 2016

4) PROPOSED HIGHWAY CROSS SECTION IS BASED ON PRELIMINARY DESIGN INFORMATION. FINAL ALIGNMENT TO BE CONFIRMED AT DETAILED DESIGN

Rev.	Date	Description	By	Chk'd	App'd
P01.1	15/11/17	FIRST ISSUE	RAy	HMi	HMi

SOUTH ELEVATION
NOT TO SCALE

NORTH ELEVATION
NOT TO SCALE

Three White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL, UK
T+ 44 (0) 113 395 6200, F+ 44 (0) 113 395 6201
wsp.com

Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: STKEY 8887 NORTH SIDE OVERBRIDGE EXISTING AND PROPOSED HIGHWAY ALIGNMENT SECTIONS

Scale	Drawn	Checked	Approved	Authorised
NOT TO SCALE	RAy	HMi	HMi	---
Original Size	Date	Date	Date	Date
	15/11/17	15/11/17	15/11/17	15/11/17

Drawing Status: INITIAL STATUS OR WIP
Suitability: S0

Drawing Number: Project HE551462 | Originator WSP | Volume SBR
Location BR009 | Type DR | Role S | Number 00001
Project Ref. No.
Revision: P01.1

Appendix F

WSP/HE KEY CORRESPONDENCES

APPENDIX F-1

WSP/HE CORRESPONDENCES

Brunetti Barchetta, Giovanna

From:	Sunderland, Martin <Martin.Sunderland@highwaysengland.co.uk>
Sent:	24 November 2017 15:21
To:	Mistry, Hitan
Cc:	Al-Shalechy, Shehed; Mulla, Imtiaz; Gladstone, Peter; Akram, Irfan; Mehta, Rakesh; Wilkes, Nicola; Dennis, Stephen
Subject:	RE: A1B2CH - Issue of the Northside OB SOR and Progress to date 22-11-17

Hitan

Good afternoon to you, and thank you for the enclosed Structures Options Report for Northside Overbridge.

I confirm acceptance of the Structures Options Report for Northside Overbridge including the recommendations to complete the pier impact assessments, and also liaison with the HE asset manager for Area 14 to discuss the outstanding maintenance actions highlighted in table 2-1.

In terms of Headroom, he report mentions that the existing measured critical headroom is 5.17m under span one Northbound, and section 4.4.3 states that “the headroom clearance based on the new alignment would also be in excess of the minimum maintained height of 5.03 metres”.

I would like to stress to the project team that although 5.03m (16ft 6inch) is the minimum maintained height mentioned in table 6.1 of TD 27/05 , it is not the standard that we want to aim for, but is just the minimum bridge height that does not require bridge height signs. Any opportunity for us to increase the clearance at a bridge should be explored, or in this instance at the very least maintain the existing clearance.
If we are planning to renew the surfacing over the existing carriageway I would hope that we are also planning to mill the existing pavement and only put back what we take off, and not overlay, thereby reducing the existing clearance.

regards

Martin Sunderland
Safety, Engineering & Standards
Senior Structures Advisor
Highways England | Lateral | 8 City Walk | Leeds | LS11 9AT
Tel: 0300 470 6165 | [redacted]
Web: http://www.highways.gov.uk

Learn more about Structures Delivery by visiting our Portal Homepage
A web version of this Homepage is currently unavailable.

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From: Mistry, Hitan [mailto:Hitan.Mistry@wsp.com]
Sent: 22 November 2017 17:55
To: Sunderland, Martin
Cc: Al-Shalechy, Shehed; Mulla, Imtiaz; Gladstone, Peter; Akram, Irfan; Mehta, Rakesh; Wilkes, Nicola; Dennis,

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If you have any enquiries about this document A1BirtleytoCoalhouse@highwaysengland.co.uk or call 0300 470 4580*.

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These rules apply to calls from any type of line including mobile, BT, other fixed line or payphone. Calls may be recorded or monitored.

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Highways England Company Limited registered in England and Wales number 09346363