

The background of the page is a vibrant red. It is decorated with several abstract geometric shapes and circles in shades of blue and green. In the top left, there is a green quarter-circle and a blue circle. In the top right, there is a blue circle with a white center and a dark blue rectangle. In the bottom left, there is a blue circle with a white center and a dark blue rectangle. In the bottom right, there is a large green quarter-circle and a red circle with a white border. The text is positioned in the upper left quadrant of the red background.

**Appendix J2**  
Preliminary Design Report  
- Mill Road Bridge

National Transport Authority  
**Blanchardstown to City Centre  
Core Bus Corridor Scheme**  
Preliminary Design Report - Mill  
Road Bridge

Issue | 25 April 2022

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 268401

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**ARUP**

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# 1 Introduction

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## 1.1 Design Brief

Arup has been appointed by the National Transport Authority (NTA) to undertake a preliminary design of the proposed Blanchardstown to City Centre Core Bus Corridor (CBC) Scheme (hereinafter referred to as the ‘Proposed Scheme’) of the BusConnects CBC network. Arup’s appointment includes the preliminary design of structures including modifications, on this Proposed Scheme.

This report includes the considerations and assumptions made during the preparation of the preliminary design of the Mill Road Bridge, TII Structure Ref. FG-N03-010.00, which is on the Blanchardstown to City Centre Core Bus Corridor.

## 1.2 Project Background

The BusConnects Dublin Programme is a plan to transform Dublin’s bus system, with the Core Bus Corridor (CBC) project providing 230km of dedicated bus lanes and 200km of cycle tracks across sixteen of the busiest bus corridors in and out of the city centre. The project is fundamental to addressing the congestion issues in the Dublin region with the population due to grow by 25% by 2040. In June 2018 the National Transport Authority (NTA) published the Core Bus Corridors Project Report, which set out the vision for the provision of bus lanes and cycle tracks on sixteen key bus corridors.

The Blanchardstown to City Centre CBC is identified in this document as forming part of the radial Core Bus Network. The BusConnects Dublin Core Bus Network is shown in Figure 1.

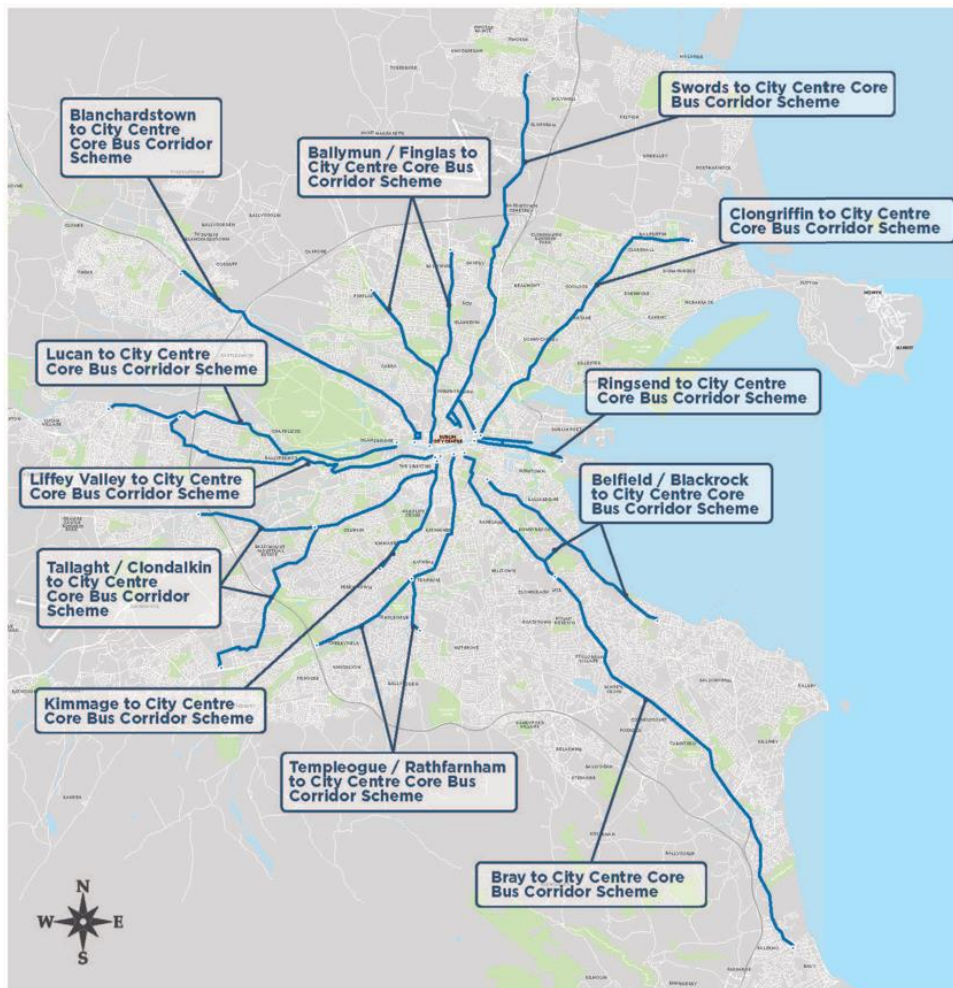


Figure 1: BusConnects Dublin Radial CBC Network

The Proposed Scheme commences at Junction 3 (Blanchardstown / Mulhuddart) southbound off-slip from the N3. The Proposed Scheme proceeds along the R121 Blanchardstown Road South into the Blanchardstown Shopping Centre.

From a new terminus to the north-west of Blanchardstown Shopping Centre the Proposed Scheme is routed onto the N3 Navan Road via the Snugborough Road junction and follows the N3 and Navan Road as far as the junction with the Old Cabra Road. From here, the Proposed Scheme is routed along Old Cabra Road, Prussia Street, Manor Street and Stoneybatter to the junction with King Street North. The core bus corridor is then routed via Blackhall Place as far as the junction with Ellis Quay, where it joins the prevailing traffic management regime on the North Quays. At the Stoneybatter / Brunswick Street North junction, cyclists proceed along Brunswick Street North, George's Lane and Queen Street as far as Ellis Quay/Arran Quay.

### 1.3 Previous Studies

The first non-statutory public consultation on the BusConnects CBCs took place on a phased basis between November 2018 to May 2019. The second round of public consultations occurred between March 2020 to April 2020. A third round of public consultations then followed between November 2020 and December 2020.

Consultation with the principal project stakeholders (i.e. Dublin City Council, Fingal County Council, Transport Infrastructure Ireland, An Garda, Utility companies and the National Transport Authority) has also taken place.

A desktop study was undertaken to identify the existing structures within the project extents, with site inspections undertaken where information was limited.

### 1.4 Extent of Bridge Works

The existing Mill Road Bridge comprises of two reinforced concrete slab decks, one for each carriageway, which are integral with inclined reinforced concrete abutment walls on spread foundations. The scheme proposals include the extension of the abutment walls and spread foundations and widening of the bridge deck slabs to the outside and inside, closing the central opening between the two existing decks.

### 1.5 Consultation with TII Structures Section

The proposed bridge widening works was presented to TII Structures Section for review and comment. Following this review and a follow up meeting with TII (held on the 6/07/2021), it was agreed that the proposal presented in this report and the associated drawings was suitable for this widening proposal.

In addition to the proposal presented in this report, the following actions were agreed:

- Undertake a visual assessment of the existing structure to record defects and arrange for any necessary repairs.
- Undertake a structural assessment to assess impact of proposed widening works on the existing structure.
- Review the current Standards to assess whether there are any non-conformances associated with the existing structure, which may impact on the proposed works.

TII Structures Section has agreed in principle to the proposals in this report subject to the above actions being undertaken.

## 2 Site and Function

### 2.1 Site Location

The Mill Road Bridge is located on the N3 Navan Road, which forms part of the Proposed Scheme. The location of the bridge is shown below in Figure 2.

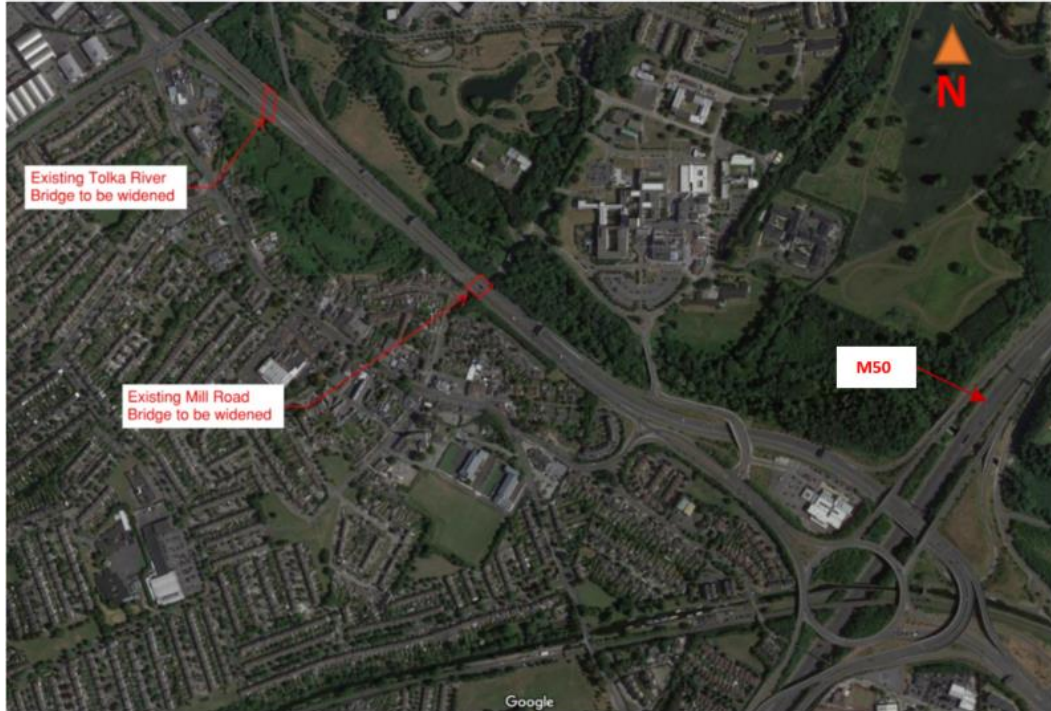


Figure 2: Mill Road Bridge Location

### 2.2 Function of the Structure and Obstacles Crossed

The Mill Road Bridge carries the N3 Navan Road mainline over the Mill Road.

### 2.3 Choice of Location

The Blanchardstown to City Centre CBC has been identified as one of the radial core bus corridors forming the BusConnects scheme. The extent of the carriageway widening for the scheme proposals covers the location of the existing Mill Road Bridge on the N3 Navan Road.

### 2.4 Site Description and Topography

The Mill Road Bridge is located on the N3 Navan Road which is a dual carriageway on a straight alignment. At the location of the structure both the east-bound and west-bound carriageways consists of three lanes.





Figure 3: View of Existing Bridge (Southern Elevation)

## 2.5 Vertical and Horizontal Alignments

The preliminary design along the N3 Navan Road have been developed to match the existing alignment, at the location of the Mill Road Bridge, the N3 is on a straight alignment with a vertical incline.

The vertical and horizontal alignments of the carriageways that cross the Mill Road Bridge are shown in Table 1 below.

Table 1: Vertical & Horizontal Alignments

Carriageway	Horizontal Alignment	Vertical Alignment
N3 Navan Road West-bound	Straight	0.7%
N3 Navan Road East-bound	Straight	- 0.7%

## 2.6 Cross-Sectional Dimensions

Details of the proposed cross-section of the N3 carriageways over Mill Road Bridge are shown in Table 2 below.

Table 2: Cross-sectional dimensions for the proposed adjustments to the N3 Carriageway

Southern Verge	N3 West-bound	Central Reserve	N3 East-bound	Northern Verge
2.0m Raised Verge	bus lane (varies) 3.75 – 3.80m + island (varies) 1.75 – 2.55m + 3 x 3.5m lanes + 0.6m hard strip = 16.6 - 17.5m	Varies 2.85 – 2.94m	3.8m bus lane + 2.0m raised island + 0.6m hard strip + 3 x 3.5m lanes + 0.6m hard strip = 17.5m	2.0m Raised Verge

## 2.7 Underground and Overground Services

### 2.7.1 Existing Services

Details of the confirmed existing services based on utility provider records at the Mill Road Bridge are shown and described in Figure 4 and Table 3.

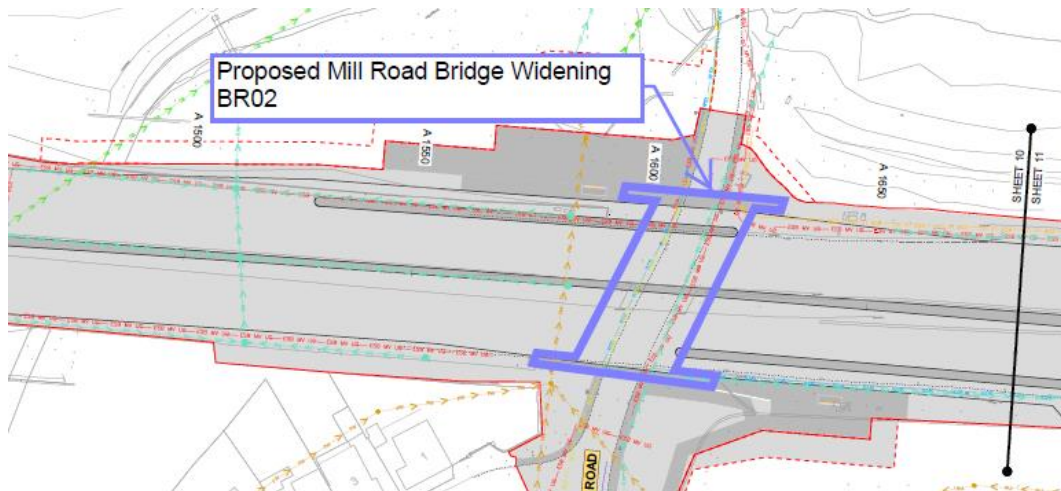


Figure 4: Existing Services Location of Mill Road Bridge

Table 3: Existing Services at location of Mill Road Bridge

Services	Location	Notes
Stormwater	Underground	Stormwater drain on N3 west-bound carriageway that connects into stormwater drain on Mill Road
Watermain	Underground	Watermain on N3 west-bound carriageway that transitions onto Mill Road
Foul Water	Underground	Foul water crossing beneath the proposed south-western abutment wingwall
LV + MV Electricity	Underground	ESB medium voltage cable on Mill Road. Additional ESB medium voltage cable and low voltage cable transition from Mill Road onto east-bound carriageway.
Eir Telecoms	Underground	Eir ducting beneath western verge on Mill Road.

These existing services will need to be temporarily diverted or relocated to suit the proposed widening works.

## 2.7.2 Proposed Services

The services proposed to be carried by the bridge structure, located within the 2m wide raised verges each side of the bridge, are summarised in the table below.

Table 4: Proposed services carried across the bridge

Services	Location	Notes
MV Electrical Power	Raised Verge on both sides of bridge	1 x 110mm OD duct
Street Lighting Power	Raised Verge on both sides of bridge	1 x 110mm OD duct
Comms Power	Raised Verge on both sides of bridge	2 x 110mm OD duct
Comms	Raised Verge on both sides of bridge	4 x 110mm OD duct
Spare	Raised Verge on both sides of bridge	2 x 110mm OD duct

## 2.8 Geotechnical Summary

A historic Ground Investigation Report: Navan Road at Mill Road, Location Plan and Borehole Details (Drawing no 928/1, Oct 85, John B. Barry + Partners Consulting Eng.) is available.

Supplementary geotechnical ground investigations were undertaken adjacent to this bridge site. Boreholes R5-RC03 & R5-RC04 and trial pits TP05B & TP06 were used to prepare the Geotechnical Summary of the site.

The ground profile comprises gravelly clay overlying weathered rock approximately 0.9-1.7m below ground level. Medium strong to strong Mudstone forms the bedrock approximately 1.3-2.3m below ground level.

The existing geotechnical information together with the additional supplementary ground investigations is considered adequate for the design of the bridge foundations. No additional GI is recommended at this bridge site.

## **2.9 Hydrogeology Summary**

Not applicable.

## **2.10 Archaeological Summary**

An Environmental Impact Assessment Report (EIAR) is currently being produced as a separate commission. This EIAR will assess whether the proposed design has any impact on archaeological sites in the area.

## **2.11 Environmental Summary**

An Environmental Impact Assessment (EIA) is currently being prepared for this project. Outcomes from this EIA will be reviewed and incorporated once determined.

## 3 Structure and Aesthetics

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### 3.1 General Description

The existing Mill Road Bridge comprises of two reinforced concrete slab decks, which are integral with inclined reinforced concrete abutment walls on spread foundations.

The bridge is to be extended to the north and the south, with the abutment walls, foundations and bridge decks being extended, widening the existing structure. The deck slabs will also be extended to their inside, closing the central opening between the two existing decks.

The proposed extension on the abutment wall and spread foundations will match the dimensions of the existing, with an 800mm thick reinforced concrete abutment wall, inclined at a 1:3 gradient, on 750mm deep, 5.0m wide reinforced concrete pad foundation.

The bridge extensions at the northern end are both approx. 7.2m in length. The alignment of the north abutment extensions will crank from the alignment of the existing abutments by 12.5° to accommodate the alignment of Mill Road below.

The bridge extensions at the southern end are approx. 5.0m on the eastern abutment and approx. 4.1m on the western abutment. The abutment extensions will continue on the same alignment as the existing.

Partial demolition of the existing abutment walls and wingwalls is required to enable the extension of the structure. The proposed abutment wall and pad foundations will be monolithically connected to the existing via post installed, 'drill and fix' reinforcement.

Reinforced concrete wingwalls will extend from the ends of the abutment walls parallel to the edge of the proposed carriageway. The wingwalls will have a sculptured finish and will support reinforced concrete parapet edge beams.

The extension of the bridge decks will require the demolition of the outer edges of the deck, including the verge plinth and the lower inclined face of the outer edge of the deck. Post installed, 'drill and fix' reinforcement will form a monolithic connection between the existing bridge deck and the new extended bridge deck.

The deck extensions to the inside and outside edges will follow the 2.5% cross fall of the existing deck. The extended deck at the outer edge will taper from 650mm to 250mm, and a parapet upstand will be provided.

The two deck slabs will be extended towards the inside and joined monolithically to close up the opening and form one continuous deck slab.

Partial demolition of the back face of the abutment walls is required to place additional reinforcement to enable the extension of the deck slabs into the central opening.

### 3.1.1 Historic structural information

Existing design drawings are available for this bridge, dated 1986.

The concrete strength nominated on the drawings is Grade 40.

Reinforcement is called up as “Y” bars, suggesting high yield bars to BS 4466:1969, however no material strength or standard is referenced on the drawings.

### 3.1.2 Existing Condition

The latest Eirspan Inspection Report (PI FG-N03-010.00 – 2017) shows the bridge to be in a good condition overall.

#### FG-N03-010.00 Mill Road Bridge

<b>Remarks:</b>															
The structure comprises separate decks on a common abutments. A lightwell is located in the central median between the decks. Width of carriageway includes only traffic lanes. A bus lane (3.00m) is present on the east side, a hardshoulder is present on the west side (3.00m). The east (left) side carriageway width is 7.3m, west (right) side carriageway width is 7.6m. Span at west side = 16.34m and at east side = 16.66m.															
<b>Chronological Overview</b>		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Date	Activity	Br	Ex	Fo	Pa	Em	Wi	Ab	Pi	Be	De	Be	Ri	Ot	St
Remarks															
14 Sep 2012	Principal inspection	1	0	0	0	1	1	2	-	-	0	-	-	0	2
02 Nov 2017	Principal inspection	0	0	-	0	0	0	1	-	-	0	-	-	-	1

Figure 5: Extract from Eirspan Inspection Report

### 3.1.3 Options Considered

Three options for widening the bridge at Mill Road were considered as follows:

- Demolish and reconstruct the bridge:  
The general condition of the structure and the presence of a continuous foundation and abutment wall between the two bridges favoured a widening solution. The option of demolishing and reconstructing the bridge was also discounted due to the extent of works required and the disruption to the N3.
- Widen the bridge deck using precast girders and cast insitu deck slab.  
This option considered placing precast TY beams and making them integral with the abutment wall. This option was discounted due to the significant

lateral stiffness between the proposed and existing deck along with aesthetic considerations.

- Widen the bridge deck using cast insitu slab, similar to the existing form of construction.

This option was favoured as it allowed the existing form of construction to be simply extended. This provides a continuity of lateral stiffness and also allows the aesthetics of the bridge to be maintained. The sloping cantilever deck slab which tapers the parapet edge beam also limits the impact on headroom clearances for this structure.

This option would require temporary scaffolding to construct the deck slab and will impose some localised restrictions to Mill Road during construction. It is likely that the N3 will also be impacted during construction works associated with widening the bridge deck. Temporary lane alterations (reduced verge, narrowed lanes, single lane closure) may be required subject to traffic management plans and constructability reviews.

### 3.1.4 Structural Assessment

A comparative structural assessment was carried out to assess the impact the proposed widening works would have on the existing structure. The assessment showed that the existing structure would not be adversely affected by the proposed widening works. Refer to the Structural Assessment Report (BCIDC-ARP-STR\_ZZ-0005\_BR\_02-RP-CB-0020) for further information.

## 3.2 Aesthetic Considerations

The soffits of the existing bridge decks are haunched toward the abutment walls and taper toward the outer edges. The proposed deck extensions will match the haunch profile of the existing deck and will taper to the outside edges to resemble the existing

The proposed wingwalls will have a sculptured finish to resemble the existing.

## 3.3 Proposals for the Recommended Structure

### 3.3.1 Proposed Category

Category 2

### 3.3.2 Span Arrangements

The span of the proposed bridge extension will match that of the existing bridge which has a span of approx. 14.0m. The span varies across the width of the structure due to the inclined abutments walls and haunched deck profile.

### 3.3.3 Minimum Headroom Provided

DN-GEO-03036 requires a minimum maintained headroom clearance of 5.03m for existing overbridges, which is to be provided across the full width of the Mill Road carriageway and adjacent raised verges/footpaths.

A comprehensive survey of the bridge soffit levels was undertaken and used to check existing clearances at this structure. Refer to the figure below which identifies the minimum clearances at both the bottom of kerb and back of the raised verge.

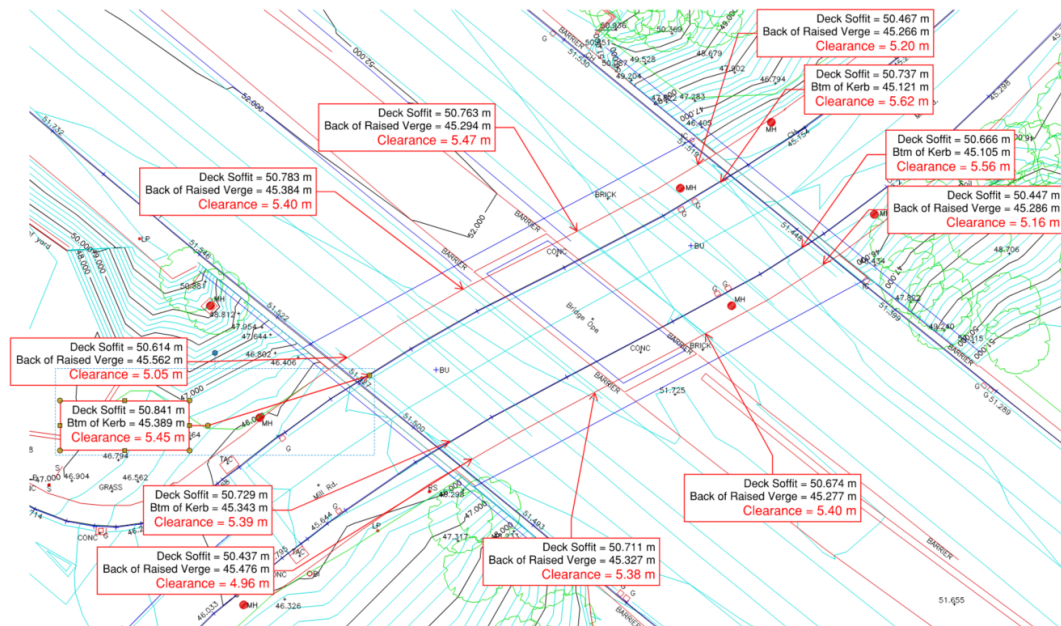


Figure 6: Existing vertical clearances to deck soffit

The haunched deck slabs and inclined abutment walls mean that the critical location on the cross section is at the outer edge of the clearance envelope, close to the abutments. The vertical clearances shown above are all within the 5.03m minimum required with the exception of the south-eastern corner, which measures at 4.96m. This is measured to the back of the existing footpath as shown below.



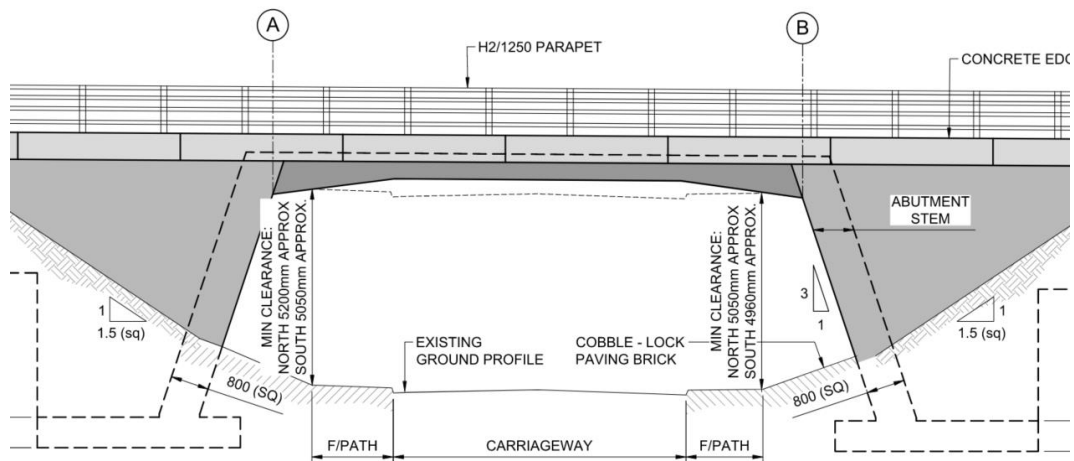


Figure 7: Vertical clearance envelope

It is proposed to maintain the existing clearances at the southern end by maintaining the fold line in the soffit of the deck and extending the cantilever. This will ensure that the existing minimum clearance of 4.96m will not be reduced.

The extension on the northern end will slightly reduce the existing clearances along this edge, but will be detailed so that it does not encroach on the minimum threshold of 5.03m.

### 3.3.4 Approaches Including Run-On Arrangements

No run-on slab arrangements are proposed.

### 3.3.5 Foundation Type

The abutment walls and wingwalls will be supported on spread pad footings.

### 3.3.6 Substructure

The substructure will comprise of reinforced concrete abutment walls on spread pad foundations.

### 3.3.7 Superstructure

The superstructure will comprise of a single insitu reinforced concrete deck slab. The deck slab will be tapered towards the outside edges and haunched towards the inclined abutment walls where they will form an integral connection.

### 3.3.8 Articulation Arrangements, Joints and Bearings

The extended deck slabs and abutment walls will form monolithic connections with the existing. The deck slabs will be integral with the abutment walls.

### 3.3.9 Vehicle Restraint System and Parapets

There is no requirement to cater for cyclists on this section of the road, hence the outside edge bridge parapets will be steel, 1250mm high, H2 parapets.

The median barrier on the bridge will comprise a 900mm high H2 concrete step barrier, which is a continuation of the median barrier configuration used on the approaches to the bridge.

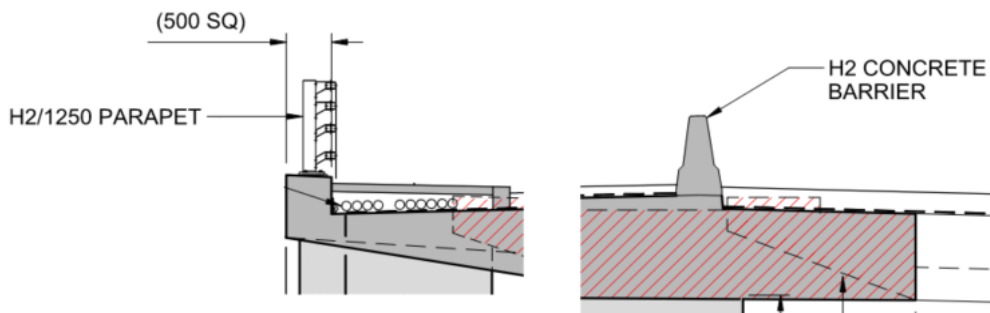


Figure 8: Proposed bridge parapets

The VRS on the approach and departure from the bridge parapets will be provided in accordance with TII Publication DN-REQ-03034.

A noise barrier will be attached to the outside face of the parapet edge beam along the southern side of the bridge. The noise barrier will be set back to accommodate the working width of the barrier.

### 3.3.10 Drainage

Back of wall drainage will be provided behind the abutment walls and discharged to the road drainage system along Mill Road. The connectivity with the existing back of wall drainage system will need to be reviewed during construction once the system is exposed.

Carriageway and verge surfacing across the structure will have a 2.5% crossfall, matching the adjacent highway surfacing. This will enable surface water drainage which will feed into the wider highway drainage network.

### 3.3.11 Durability

The concrete elements of the structure are expected to require minimal maintenance during its 120-year design life.

### 3.3.12 Sustainability

Recycled GGBS will be used in the design and construction of some of the concrete elements of the structure leading to a more sustainable structure overall.

The bridge comprises elements (concrete and steel) which can be recycled at the end of its design life.

### **3.3.13 Inspection and Maintenance**

Minimal maintenance is expected for all concrete elements.

The extended structure is expected to fall under the Eirspan Bridge Management System.

## 4 Safety

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### 4.1 Traffic Management During Construction Including Land for Temporary Diversions

Detailed traffic management proposals will be developed at detail design stage by the appointed Contractor in consultation with their Designers and the consent for the diversions and/or road closures will be sought from the appropriate local authority.

### 4.2 Safety During Construction

The Designer will take account of the General Principles of Prevention, as specified in the Schedule 3 of the Safety, Health and Welfare at Work Act 2005, liaise with the Project Supervisor appointed by the Client for the Design Process and the Project Supervisor appointed for the Construction Stage and carry out all other duties as required by Clause 15 of the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013).

### 4.3 Safety in use

Bridge parapets will be provided across the length of the structure.

### 4.4 Lighting

No lighting columns along the N3 are proposed at the location of the bridge.

There are currently 4 No. bulk head light fixtures installed beneath the bridge to provide illumination to Mill Road below. While it is proposed to retain these fixtures, the closing of the central median above will have an impact on lighting beneath the bridge as any spill lighting from above will be lost.

To mitigate this, it is proposed to install an additional 2No. lighting fixtures at the central median position. The replacement of the existing units with new LED type fittings is also proposed.

It is proposed to use the existing cabling and run a surface mounted steel conduit for each new fixture from one of the existing units.

## 5 Design Assessment Criteria

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### 5.1 Actions

#### 5.1.1 Permanent Actions

Permanent Actions shall be in accordance with IS EN 1991-1-1:2002 and the associated National Annex.

#### 5.1.2 Snow, wind and Thermal Actions

Snow actions shall not be considered due to geographical locations as outlined in IS EN 1990 and the National Annex.

Wind actions shall be in accordance with IS EN 1991-1-4.

Thermal actions shall be in accordance with IS EN 1991-1-5.

#### 5.1.3 Actions relating to normal traffic

Normal traffic actions shall be in accordance with Load Models LM1, LM2 and LM4 from IS EN 1991-2:2003 and the associated National Annex.

#### 5.1.4 Actions relating to abnormal traffic

Abnormal traffic actions shall be in accordance with Load Model LM3 from IS EN 1991-2:2003 and the associated National Annex.

Special vehicle model SV196 will be used as recommended by TII Publication GE-POL-01008.

#### 5.1.5 Footway Live Loading

Footway Live loading shall be in accordance with IS EN 1991-2:2003 and the associated National Annex.

#### 5.1.6 Provision for exceptional abnormal traffic

No exceptional abnormal loads are to be provided for.

#### 5.1.7 Accidental Loads

Accidental wheel loading and vehicular impact loading in accordance with IS EN 1991-2:2003 shall be considered for the design of the structure.

### **5.1.8 Actions during construction**

Traffic Actions shall be in accordance with IS EN 1991-2:2002 and the associated National Annex.

### **5.1.9 Any Special Loading Not Covered Above**

Not applicable.

### **5.2 Authorities Consulted and any Special Conditions Required**

None.

### **5.3 Propose Departures from Standard**

None.

### **5.4 Propose methods of dealing with aspects not covered by Standards**

Not applicable.

## 6 Ground Conditions

The Geotechnical Category for the Mill Road Bridge is assessed as Category 2.

A historic Ground Investigation Report: Navan Road at Mill Road, Location Plan and Borehole Details (Drawing no 928/1, Oct 85, John B. Barry + Partners Consulting Eng.) is available.

Supplementary geotechnical ground investigations were undertaken adjacent to this bridge site. Boreholes R5-RC03 & R5-RC04 and trial pits TP05B & TP06 were used to prepare the Geotechnical Summary of the site. These logs are also included in Appendix B of the report.

The existing geotechnical information together with the additional supplementary ground investigations is considered adequate for the design of the bridge foundations. No additional GI is recommended at this bridge site.

The ground profile at this bridge site is summarised in Table 5 and Table 6 below.

Table 5: Ground Profile Summary at south side of Mill Road Bridge

Ground Strata Description	Depth to the top of the stratum (mBGL)	Elevation At the top of the stratum (mOD)	Thickness of the stratum (m)
Topsoil	0.00	46.70	0.20
Firm greyish brown slightly sandy gravelly CLAY with frequent angular to subangular cobbles. Gravel is angular to subangular fine to coarse	0.20	46.50	0.70
Bedrock Weak to medium strong thinly laminated dark grey fine-grained calcareous MUDSTONE. Distinctly weathered	0.90	45.80	0.40
Bedrock Medium strong to strong thinly laminated dark grey fine-grained calcareous MUDSTONE with occasional specs of pyrite. Partially to distinctly weathered.	1.30	45.40	Not Available

Table 6: Ground Profile Summary at north side of Mill Road Bridge

<b>Ground Strata Description</b>	<b>Depth to the top of the stratum (mBGL)</b>	<b>Elevation At the top of the stratum (mOD)</b>	<b>Thickness of the stratum (m)</b>
Topsoil	0.00	45.40	0.20
Made Ground Brown gravelly clayey fine to coarse Sand with occasional angular to subangular cobbles, rootlets and occasional fragments of metal, plastic and red brick	0.20	45.20	1.50
Brown sandy clayey angular to subangular fine to coarse GRAVEL with some angular to subangular cobbles. (possible weathered rock)	1.70	43.70	0.55
Bedrock Medium strong to strong thinly laminated dark grey fine-grained calcareous MUDSTONE. Partially to distinctly weathered with occasional calcite veining	2.25	43.15	Not Available

The proposed bridge pad foundations will be founded on rock. Preliminary design calculations estimate less than 2mm of differential settlement between new and existing works. Hence, a pad foundation is considered acceptable for the widening of this bridge.



## 7 Drawings and Documents

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### 7.1 List of all Documents Accompanying the Submission

Relevant documents are included as appendices to this report.

#### Appendix A - Drawings

The following drawings are included as part of this submission.

Table 7: Drawing List

Drawing Number	Drawing Title
BCIDC-ARP-STR_GA-0005_BR_02-DR-CB-0002	General Arrangement Sheet 1
BCIDC-ARP-STR_GA-0005_BR_02-DR-CB-0003	General Arrangement Sheet 2
BCIDC-ARP-STR_GA-0005_BR_02-DR-CB-0004	General Arrangement Sheet 3
BCIDC-ARP-STR_GA-0005_BR_02-DR-CB-0005	General Arrangement Sheet 4

#### Appendix B – Geotechnical Information

#### Appendix C – Existing Bridge Drawings




## Appendix A

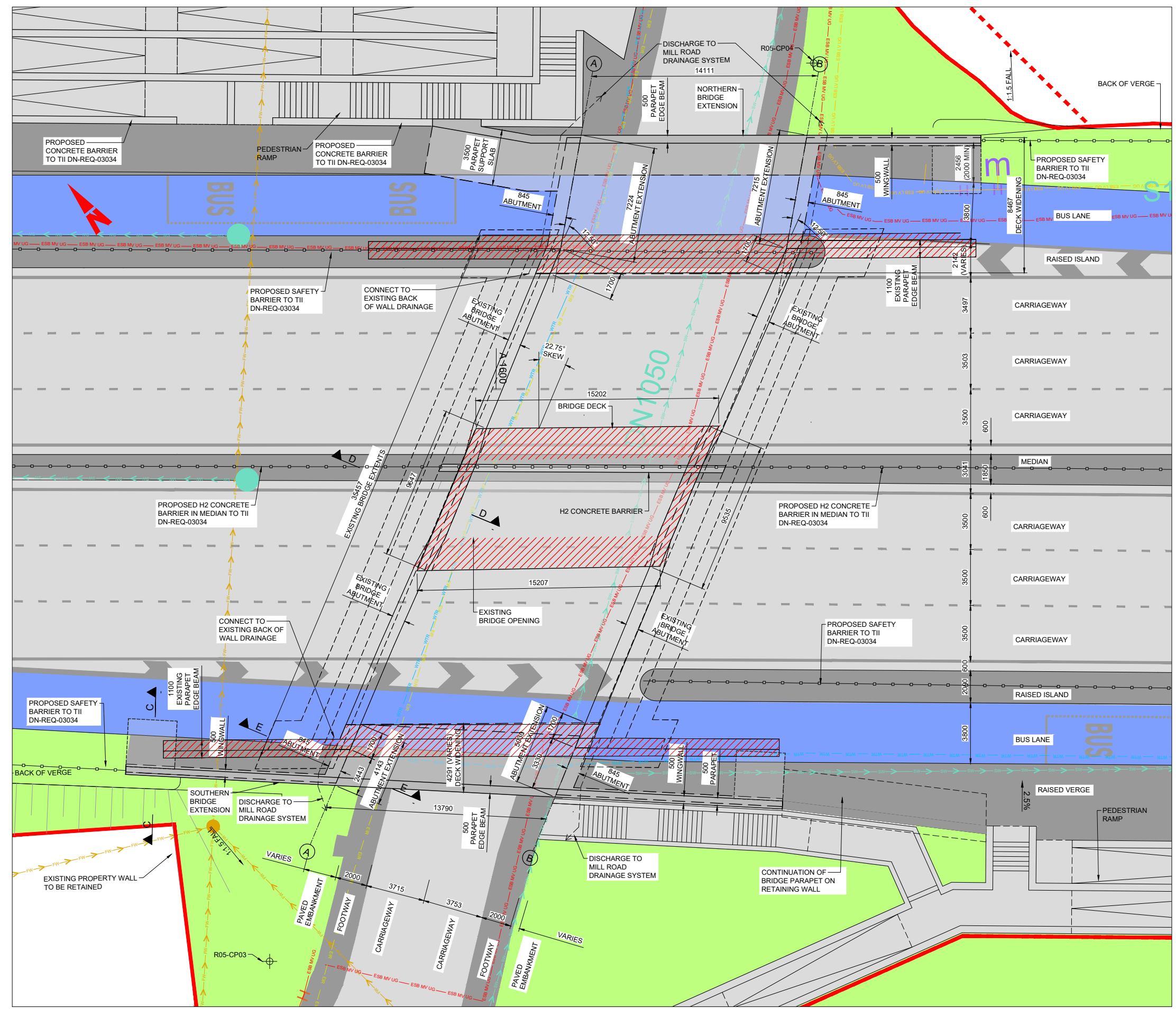
### Drawings

**NOTES:**

- ALL DIMENSIONS ARE SHOWN IN MILLIMETRES UNLESS NOTED OTHERWISE.
- ALL LEVELS ARE SHOWN IN METRES ABOVE ORDNANCE DATUM.
- STRUCTURE IS FULLY INTEGRAL.
- STRUCTURE CONCRETE TO BE C40/50.
- WATERPROOFING:
  - THE EXISTING BRIDGE DECK WATERPROOFING SHALL BE INSPECTED AND REPLACED OR REPAIRED WHERE REQUIRED.
  - BRIDGE DECK WATERPROOFING SHALL BE APPLIED TO NEW AREAS OF THE DECK AND SHALL LAP ONTO EXISTING WATERPROOFING.
  - BRIDGE DECK WATERPROOFING SHALL BE SPRAY APPLIED AND SATISFY THE REQUIREMENTS OF DN-STR-03009 & DN-STR-03012.
  - ALL OTHER BURIED CONCRETE SURFACES SHALL BE TREATED WITH TWO COATS OF EPOXY RESIN WATERPROOFING PAINT IN ACCORDANCE WITH TII CC-SPW-01700
- ALL EXPOSED CONCRETE SHALL BE IMPREGNATED WITH A HYDROPHOBIC PORE LINER IN ACCORDANCE WITH TII CC-SPW-01700.
- ALL EXISTING CONCRETE SURFACES WHICH ARE REQUIRED TO FORM CONSTRUCTION JOINTS WITH THE PROPOSED WORKS ARE TO BE SCABBLED AND CLEANED.
- BREAKING BACK OF THE EXISTING STRUCTURAL CONCRETE SHALL BE UNDERTAKEN USING METHODS THAT WILL NOT IMPACT ON THE STRUCTURAL PERFORMANCE OF THE EXISTING CONCRETE AND WILL RETAIN EXISTING REINFORCEMENT UNDAMAGED WHERE NECESSARY.
- EXPOSED FACES OF WINGWALLS TO HAVE F4 PATTERNED PROFILE FINISH, SIMILAR TO EXISTING.
- LOCALISED SOFT SPOTS, IF PRESENT, TO BE EXCAVATED AND REPLACED WITH CLASS 6N2.

**LEGEND:**

-  AREA OF EXISTING BRIDGE TO BE DEMOLISHED
-  RED LINE BOUNDARY
-  TEMPORARY BOUNDARY FOR CONSTRUCTION



**PLAN ON PROPOSED BRIDGE EXTENSIONS**  
SCALE: 1:125

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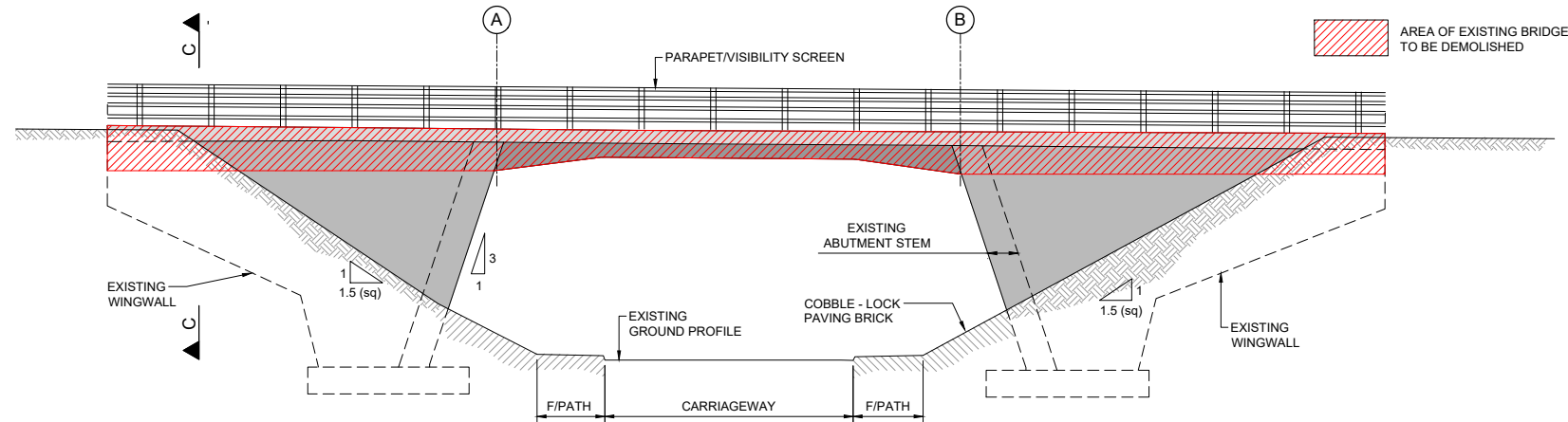
Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	BM	CG	BD	ISSUE FOR PHASE 4: PLANNING

 Údarás Náisiúnta Iompair National Transport Authority		Engineering Designer 		
Date	Scale	Drawn	Checked	Approved
04/04/2022	As Shown @ A1 As Shown @ A3	BM	CG	BD
Project Code	Originator Code	QMS Code	268401-00	
BCIDC	ARP			

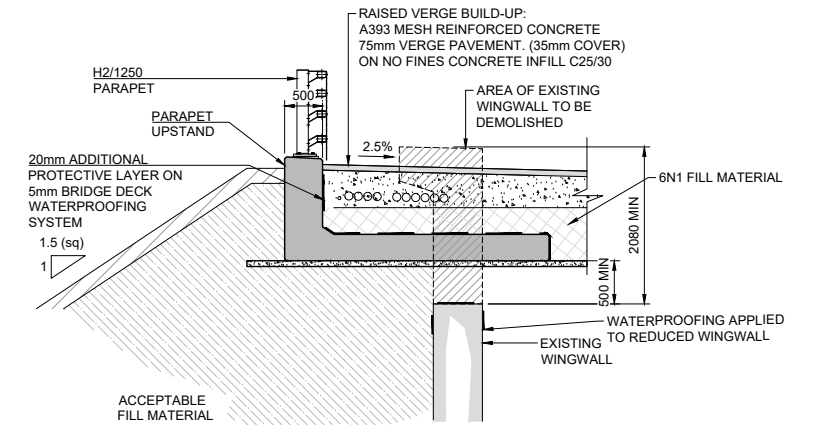
Programme Title <b>BUSCONNECTS DUBLIN</b> <b>CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>	
Drawing Title BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME BR_02 MILL ROAD BRIDGE GENERAL ARRANGEMENT SHEET 1	
Drawing File Name	Sheet Number
BCIDC-ARP-STR_GA-0005_BR_02-DR-CB-0002	01 of 01
Status	Rev
A	M01

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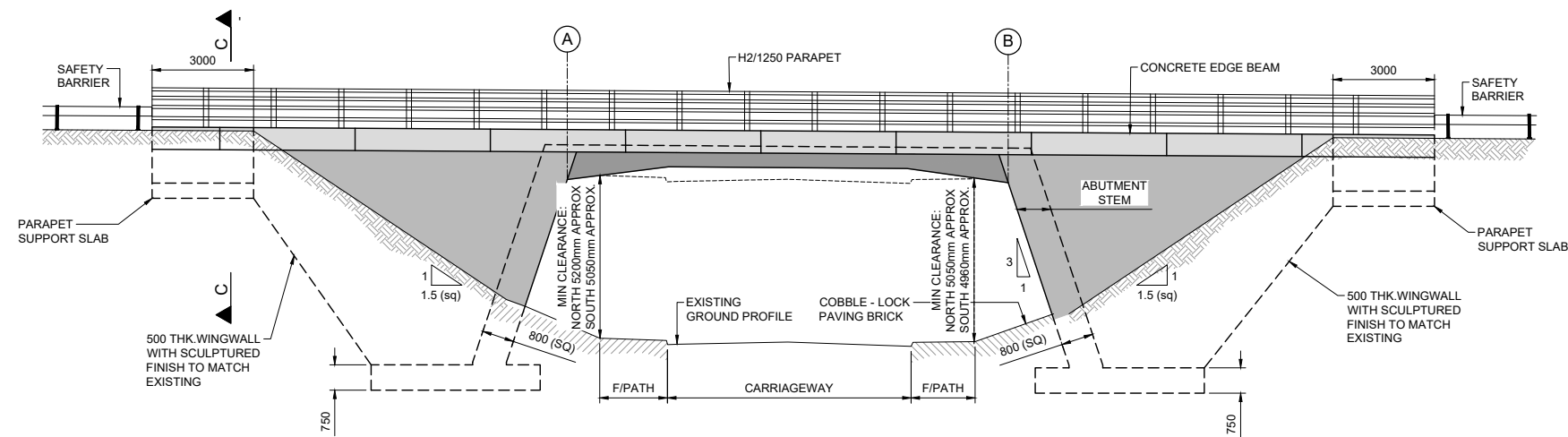
- NOTES:**
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  - ALL LEVELS ARE SHOWN IN METRES ABOVE ORDNANCE DATUM.



**TYPICAL ELEVATION OF EXISTING BRIDGE**  
SCALE: 1:100



**SECTION C-C**  
SCALE: 1:50



**TYPICAL ELEVATION OF PROPOSED BRIDGE EXTENSION**  
SCALE: 1:100

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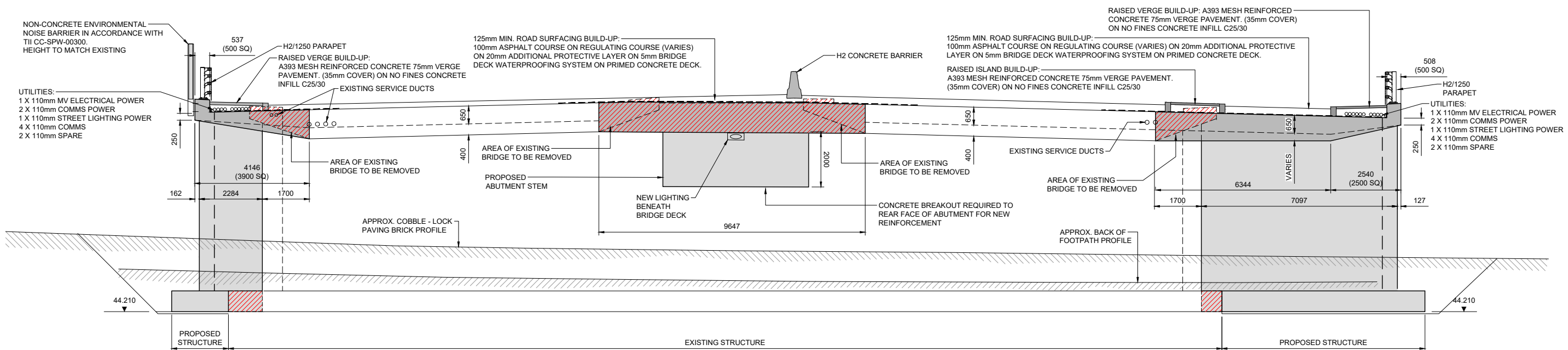
Client

Engineering Designer

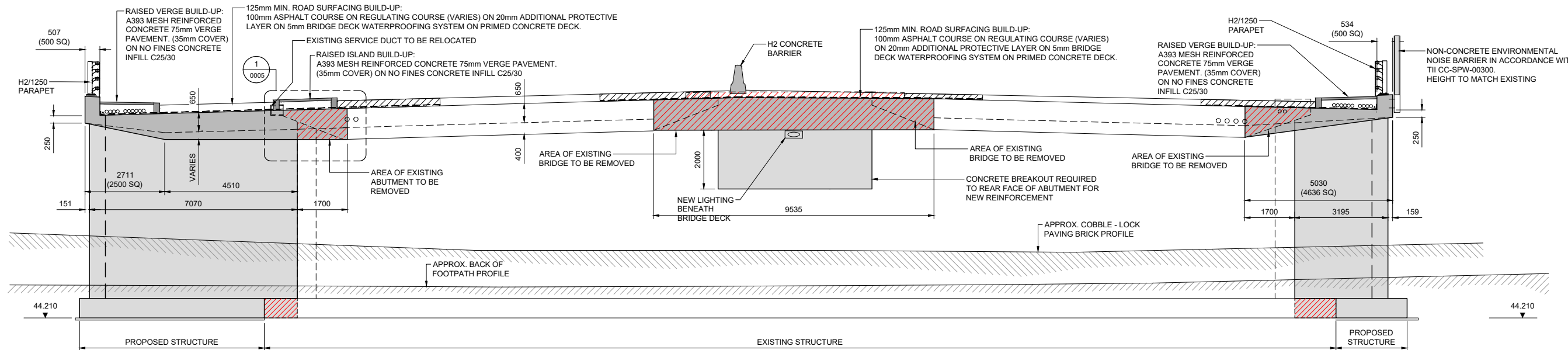
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		<b>CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>		
Drawing Title		BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME		
		BR_02 MILL ROAD BRIDGE		
		GENERAL ARRANGEMENT SHEET 2		
Date	Scale As Shown @ A1 As Shown @ A3	Drawn PK	Checked CG	Approved BD
04/04/2022				
Project Code BCIDC	Originator Code ARP	QMS Code	268401-00	
Drawing File Name		Sheet Number	Status	Rev
BCIDC-ARP-STR_GA-005_BR_02-DR-CB-0003		01 of 01	A	M01

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**ELEVATION ALONG GRIDLINE A (WEST ABUTMENT)**  
SCALE: 1:75



**ELEVATION ALONG GRIDLINE B (EAST ABUTMENT)**  
SCALE: 1:75

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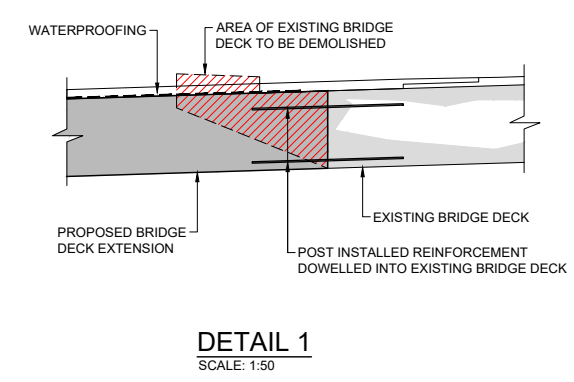
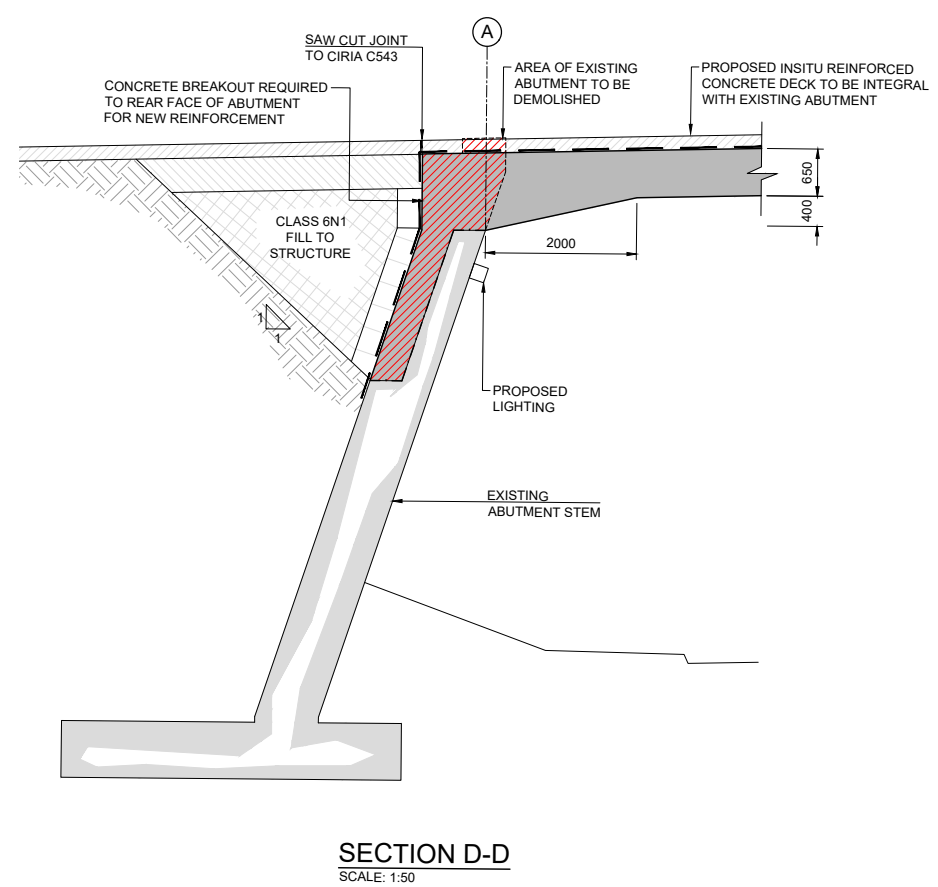
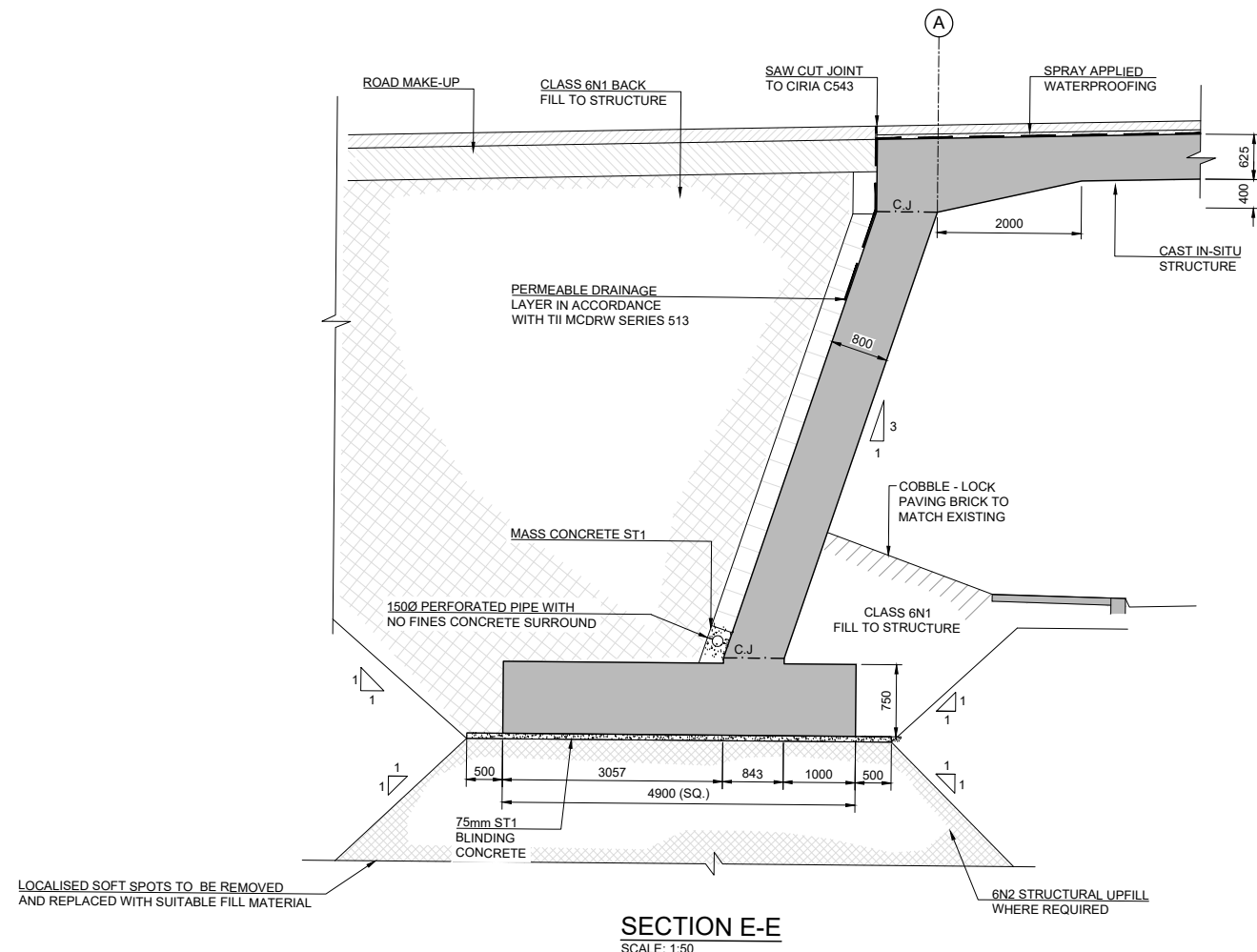
Rev	Date	Drn	Chk'd	App'd	Description
M01	04/04/2022	BM	CG	BD	ISSUE FOR PHASE 4: PLANNING

Client <b>NTA</b> Udarás Náisiúnta Iompair National Transport Authority		Engineering Designer <b>ARUP</b>		
Date 04/04/2022	Scale As Shown @ A1 As Shown @ A3	Drawn BM	Checked CG	Approved BD
Project Code BCIDC	Originator Code ARP	QMS Code 268401-00		

Programme Title <b>BUSCONNECTS DUBLIN CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>				
Drawing Title BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME BR_02 MILL ROAD BRIDGE GENERAL ARRANGEMENT SHEET 3				
Drawing File Name BCIDC-ARP-STR_GA-0005_BR_02-DR-CB-0004	Sheet Number 01 of 01	Status A	Rev M01	

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Date	04/04/2022	Scale	As Shown @ A1 As Shown @ A3	Drawn	PK	Checked	CG	Approved	BD
Project Code	BCIDC	Originator Code	ARP	QMS Code	268401-00				

<b>Programme Title</b> <b>BUSCONNECTS DUBLIN</b> <b>CORE BUS CORRIDORS INFRASTRUCTURE WORKS</b>			
<b>Drawing Title</b> BLANCHARDSTOWN TO CITY CENTRE CORE BUS CORRIDOR SCHEME BR_02 MILL ROAD BRIDGE GENERAL ARRANGEMENT SHEET 4			
Drawing File Name	BCIDC-ARP-STR_GA-005_BR_02-DR-CB-0005	Sheet Number	01 of 01
Status	A	Rev	M01

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## **Appendix B**

### **Geotechnical Information**

<h1>ARUP</h1>	Job No.	Sheet No.	Rev.
	268401-00		
Job Title	Member/Location		
Bus Connects			
Calculation	Drg. Ref.		
Mill Road Bridge			
	Made by	Date	Chd.
	OA	05/11/2020	MMCE

### Background Data

Historic Ground Investigation Report - Navan Road Bridge at Mill Road, Location Plan and Borehole Details (Drawing no 928/1, Oct 85, John B.Barry+Partners Consulting Eng. )

Links: [FG-N03-010.00Dwgs.pdf](#)  
[\\global\europa\Dublin\jobs\268000\268401-00\5\\_ External\5-03 Project Manager\2020-04-01 0005 TII Bridge Info\Mill Road Bridge\](#)

### Site Specific GI (GII 2020)

Links: [R05\\_TP06.pdf](#)  
[R05\\_RC03.pdf](#)  
[R05\\_RC04.pdf](#)  
[R05\\_TP05B.pdf](#)  
[\\global\europa\Dublin\jobs\268000\268401-00\7\\_ Site Related Activities\7-02 Site Investigations\01\\_Draft logs\](#)

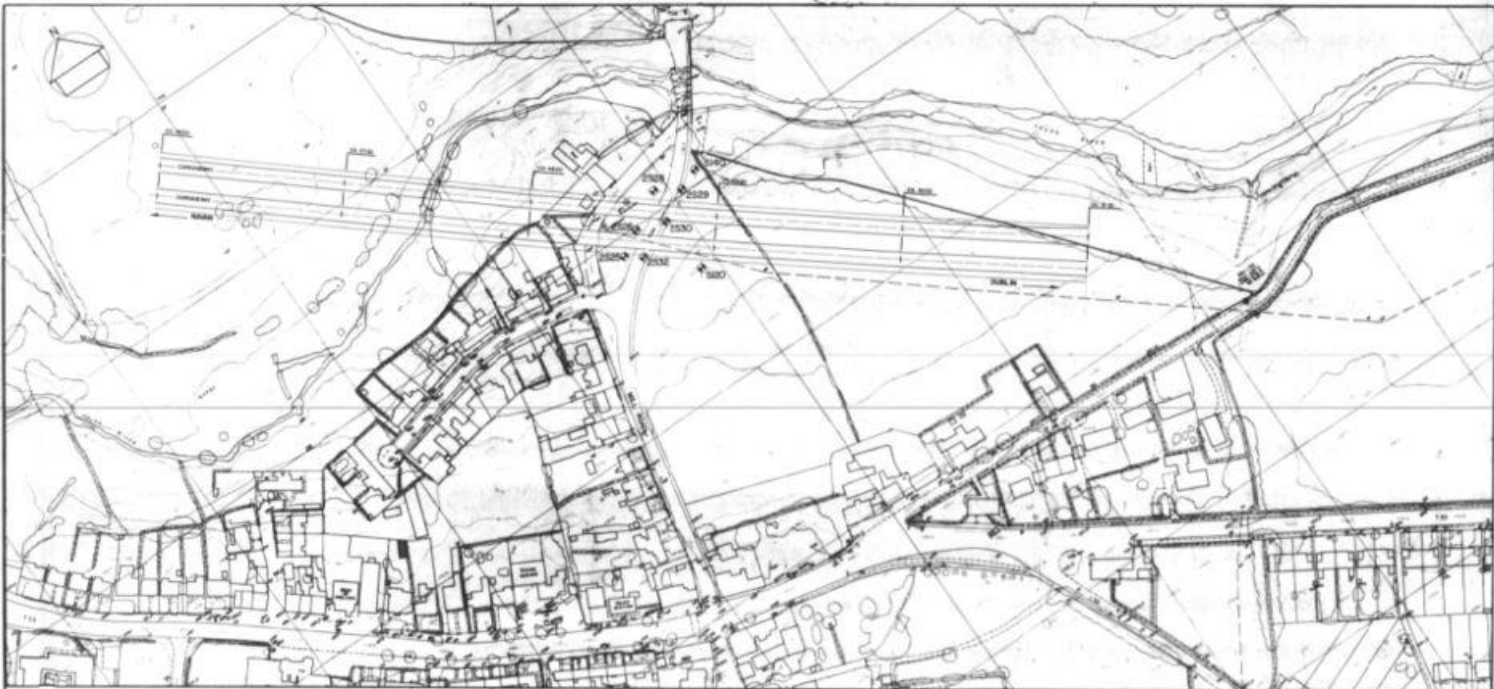
Table 17-1: Proposed Ground Profile for structure no. 17 - Mill Road underbridge footings at Ch.A1+590 to A1+630-LHS+RHS (Profile at the North)

Descriptions	Depth to the top of the stratum (mBGL)	Elevation At the top of the stratum (mOD)	Thickness of the stratum (m)
Topsoil	0.00	45.40	0.20
Made Ground Brown gravelly clayey fine to coarse Sand with occasional angular to subangular cobbles, rootlets and occasional fragments of metal, plastic and red brick	0.20	45.20	1.50
Brown sandy clayey angular to subangular fine to coarse GRAVEL with some angular to subangular cobbles (possible weathered rock)	1.70	43.70	0.55
Bedrock Medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE. Partially to distinctly weathered with occasional calcite veining	2.25	43.15	Not Available

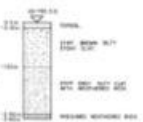
Table 17-4: Proposed Ground Profile for structure no. 17 - Mill Road Underbridge footings at Ch.A1+590 to A1+630-LHS+RHS (Profile at the South side )

Ground Profile	Descriptions	Depth to the top of the stratum (mBGL)	Elevation At the top of the stratum (mOD)	Thickness of the stratum (m)
	Topsoil	0.00	46.70	0.20
	Firm greyish brown slightly sandy gravelly CLAY with frequent angular to subangular cobbles. Gravel is angular to subangular fine to coarse	0.20	46.50	0.70
	Bedrock Weak to medium strong thinly laminated dark grey fine grained calcareous MUDSTONE. Distinctly weathered	0.90	45.80	0.40
	Bedrock Medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE with occasional specs of pyrite. Partially to distinctly weathered	1.30	45.40	Not Available

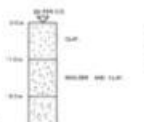




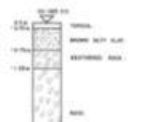
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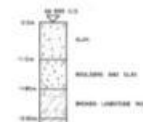
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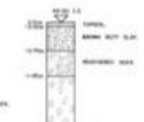
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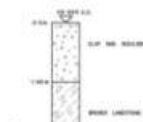
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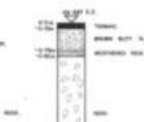
2528



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2530



2532

APPROVED TO BE CONSTRUCTED  
 JOHN S. BARRY & PARTNERS  
 CONSULTING ENGINEERS  
 FRANKLIN SQUARE  
 DUBLIN 2, IRELAND  
 TEL. 01 272 1118

revision:	no.	date	by
<b>JOHN S. BARRY &amp; PARTNERS</b> Consulting Engineers Franklin Square, Dublin 2, Ireland. Tel. 01 272 1118			
client DUBLIN COUNTY COUNCIL			
project NAUN ROAD BRIDGE AT MILL ROAD.			
title LOCATION PLAN AND BOREHOLE DETAILS.			
drawn by S.N.	checked by P.S.		
scale HOOD 1:50	date OCT. '85		
stage DESIGN	fig no 005 / 1.		



Navan Rd

N3

N3

R5 RC04 TP 06

R5 RC03 TP05

Herbert Rd

Herbert Rd

Mill Rd

Navan Rd



Machine : Beretta T44 Flush : Water Core Dia: 68 mm Method : Rotary Cored	Casing Diameter 98mm cased to 10.10m	Ground Level (mOD) 46.58	Client National Transport Authority	Job Number 9754-07-20
	Location 708178.6 E 738712.8 N	Dates 17/11/2020	Project Contractor Ground Investigations Ireland	Sheet 1/2

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30				NI		46.38 46.28	(0.20) 0.20 0.30	Brown slightly sandy slightly gravelly TOPSOIL with occasional rootlets		
0.70	90	40	26	20			(1.00)	MADE GROUND: Brown slightly sandy gravelly Clay with frequent angular cobbles. Gravel is angular to subangular fine to coarse		
1.30						45.28	1.30	Weak to medium strong thinly laminated dark grey fine grained calcareous MUDSTONE. Distinctly weathered 0.30m-0.70m BGL - Mostly Non Intact 0.70m-1.30m BGL - F1: Very closely spaced, 60° to 80°, undulating smooth		
2.00				6				Medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE with occasional specs of pyrite. Partially to distinctly weathered 1.30m-3.00m BGL - F1: Very closely to closely spaced, 60° to 80°, undulating smooth		
3.00	100	76	53							
3.50				4						
4.60	100	77	73					3.00m-4.60m BGL - F1: Closely to medium spaced, 60° to 80°, undulating smooth		
5.00				NI						
5.30								4.60m-5.30m BGL - Mostly Non Intact		
6.50	100	79	65				(8.80)			
8.00				3						
	100	100	85							
8.00								5.30m-10.10m BGL - F1: Closely to medium spaced, 10° to 40°, undulating smooth to rough		
9.50	100	91	79							
	100	95	77							

<b>Remarks</b> Borehole complete at 10.10m BGL Borehole backfilled upon completion	Scale (approx)	Logged By
	1:50	PC
	<b>Figure No.</b> 9754-07-20.R05-RC03	



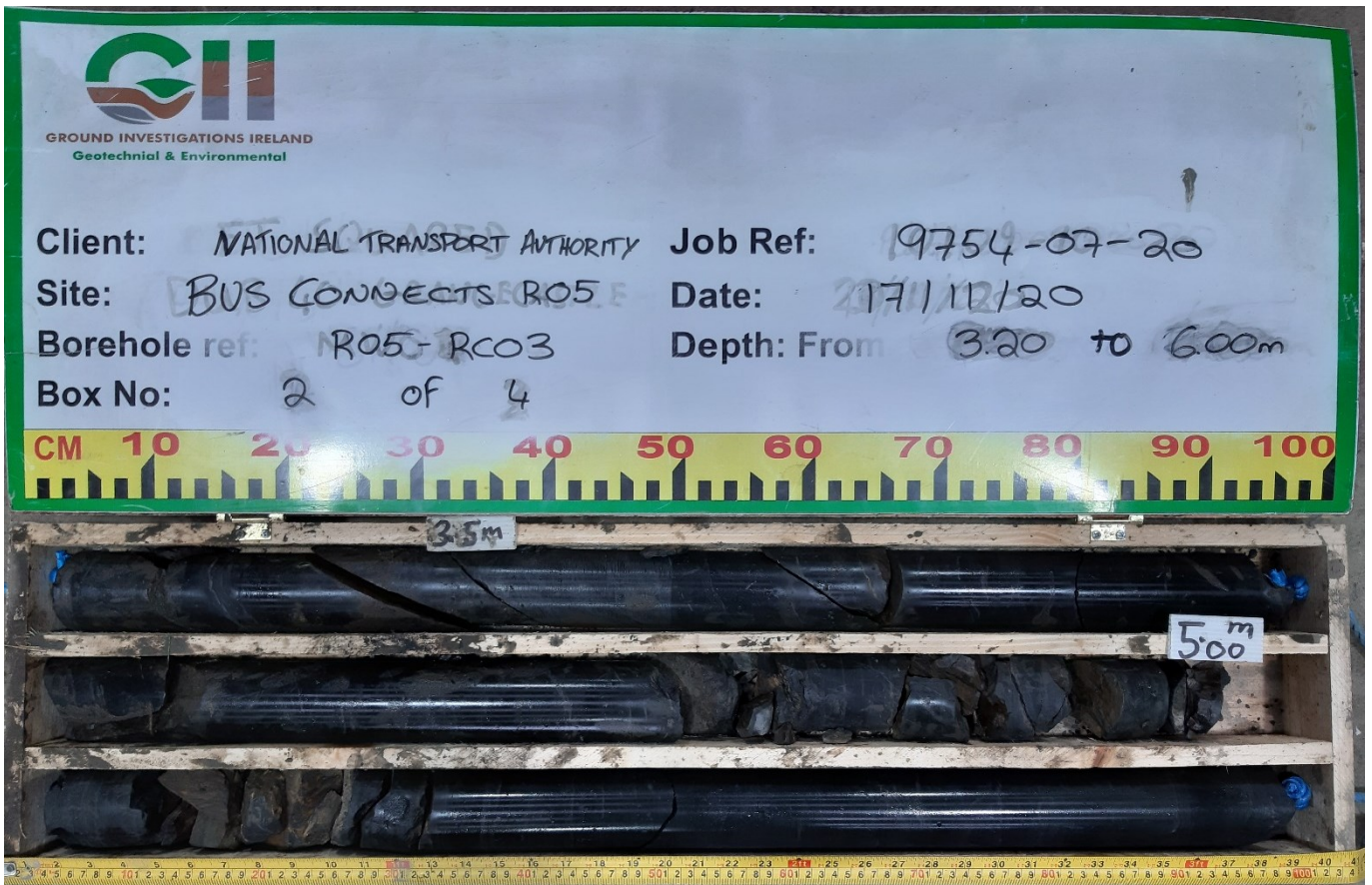
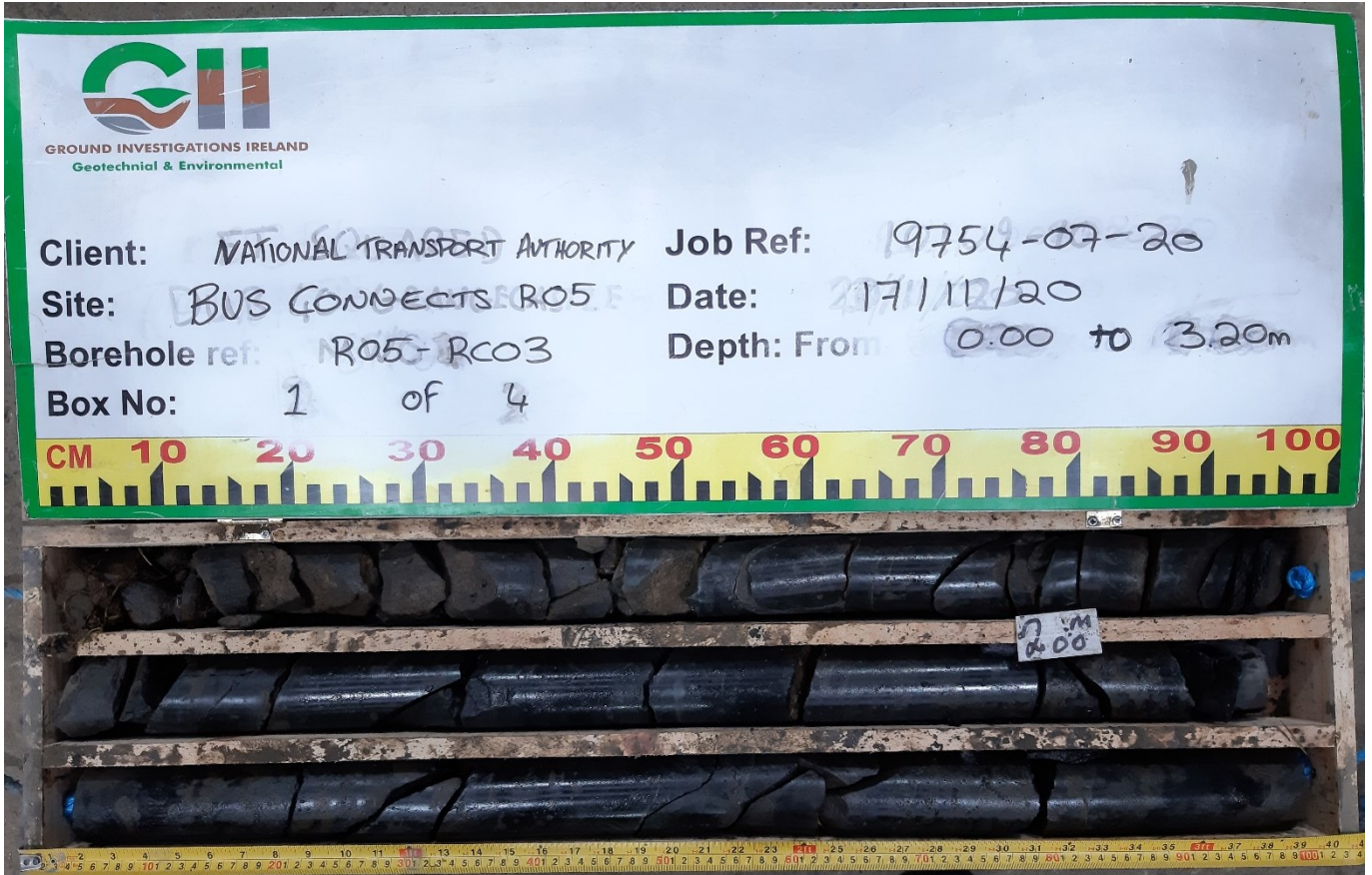
Machine : Beretta T44		Casing Diameter 98mm cased to 10.10m		Ground Level (mOD) 46.58		Client National Transport Authority		Job Number 9754-07-20	
Flush : Water		Location 708178.6 E 738712.8 N		Dates 17/11/2020		Project Contractor Ground Investigations Ireland		Sheet 2/2	
Core Dia: 68 mm									
Method : Rotary Cored									

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.10						36.48	10.10	Complete at 10.10m		

Remarks Borehole backfilled upon completion	Scale (approx)	Logged By
	1:50	PC
Figure No. 9754-07-20.R05-RC03		

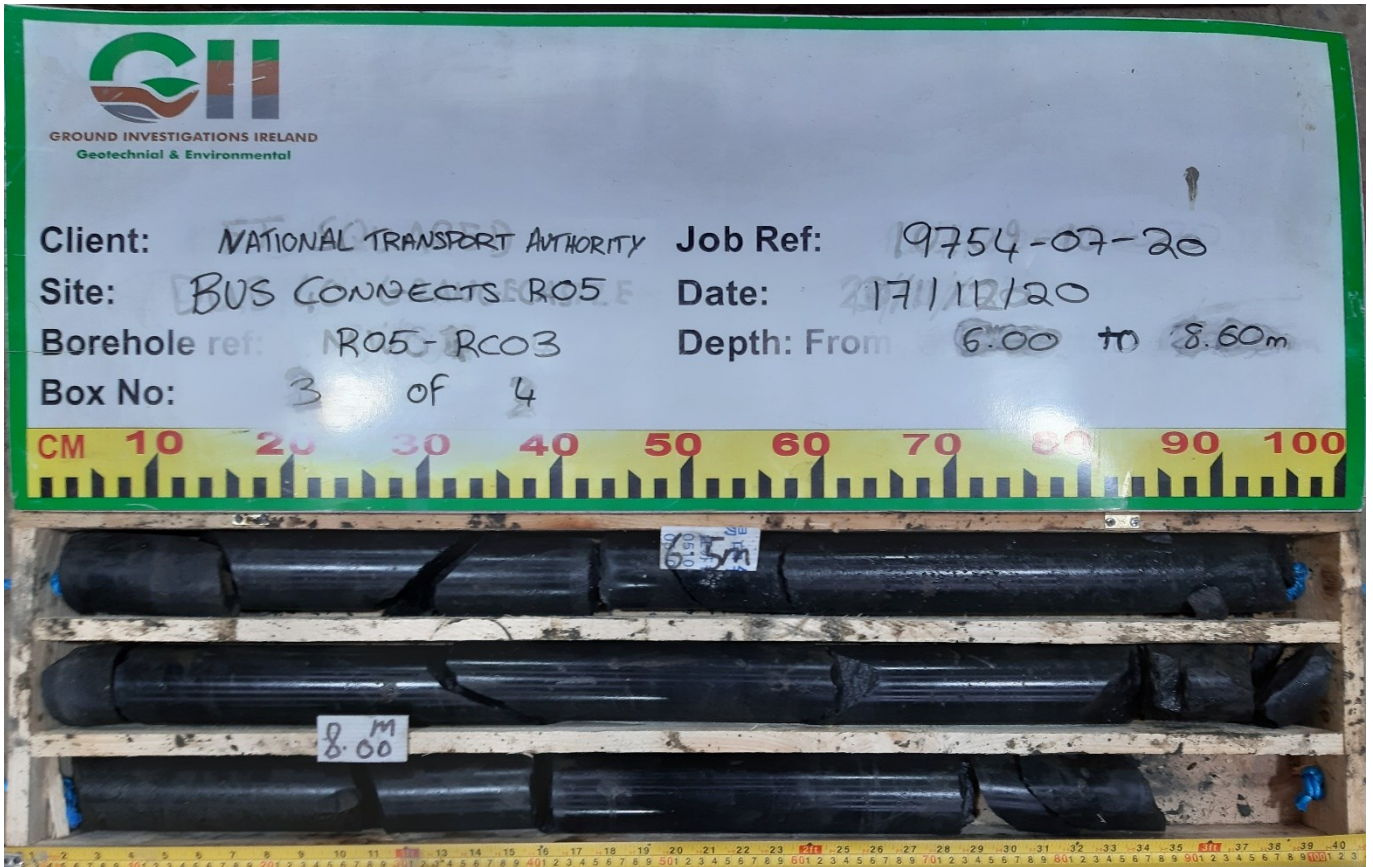
Bus Connects Route 5 – Rotary Core Photographs

R5-RC03



# Bus Connects Route 5 – Rotary Core Photographs

## R5-RC03





Machine : Beretta T44 Flush : Water Core Dia: 68 mm Method : Rotary Cored	Casing Diameter 98mm cased to 10.00m	Ground Level (mOD) 45.40	Client National Transport Authority	Job Number 9754-07-20
	Location 708240 E 738732.9 N	Dates 17/11/2020	Project Contractor Ground Investigations Ireland	Sheet 1/2

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.70	68	0	0	MNI		44.70	(0.70)	Brownish grey angular to subangular fine to coarse GRAVEL with occasional angular to subangular cobbles			
2.00							0.70	Weak thinly laminated dark grey fine grained calcareous MUDSTONE. Distinctly weathered			
2.25							(1.55)	0.70m-2.25m BGL - Mostly Non Intact			
3.50	100	73	73	3		43.15	2.25	Medium strong to strong thinly laminated dark grey fine grained calcareous MUDSTONE. Partially to distinctly weathered with occasional calcite veining			
4.50	100	48	37	MNI				2.25m-4.50m BGL - F1: Closely to medium spaced, 20° to 50°, undulating rough with occasional clay infilling/staining			
5.00								4.50m-5.00m BGL - Mostly Non Intact			
6.50	100	73	61				(7.75)	2.25m-4.50m BGL - F1: Closely to medium spaced, 20° to 50°, undulating rough with occasional clay infilling/staining			
8.00	100	92	75	3				5.00m-9.00m BGL - F1: Closely to medium spaced, 40° to 60°, undulating smooth to rough with occasional clay infilling/staining			
9.00	100	63	63	MNI				9.00m-9.50m BGL - Mostly Non Intact			
9.50	100	100	100	1				9.50m-10.00m BGL - F1: Closely spaced, 10°			

<b>Remarks</b> Borehole complete at 10.00m BGL 50mm slotted standpipe installed from 3.40m to 1.00m BGL with pea gravel surrounds, plain standpipe installed from 1.00m BGL to ground level with bentonite surrounds and flush cover	Scale (approx)	Logged By
	1:50	PC
	Figure No. 9754-07-20.R5-RC04	



Machine : Beretta T44 Flush : Water Core Dia: 68 mm Method : Rotary Cored		Casing Diameter 98mm cased to 10.00m	Ground Level (mOD) 45.40	Client National Transport Authority	Job Number 9754-07-20
		Location 708240 E 738732.9 N	Dates 17/11/2020	Project Contractor Ground Investigations Ireland	Sheet 2/2

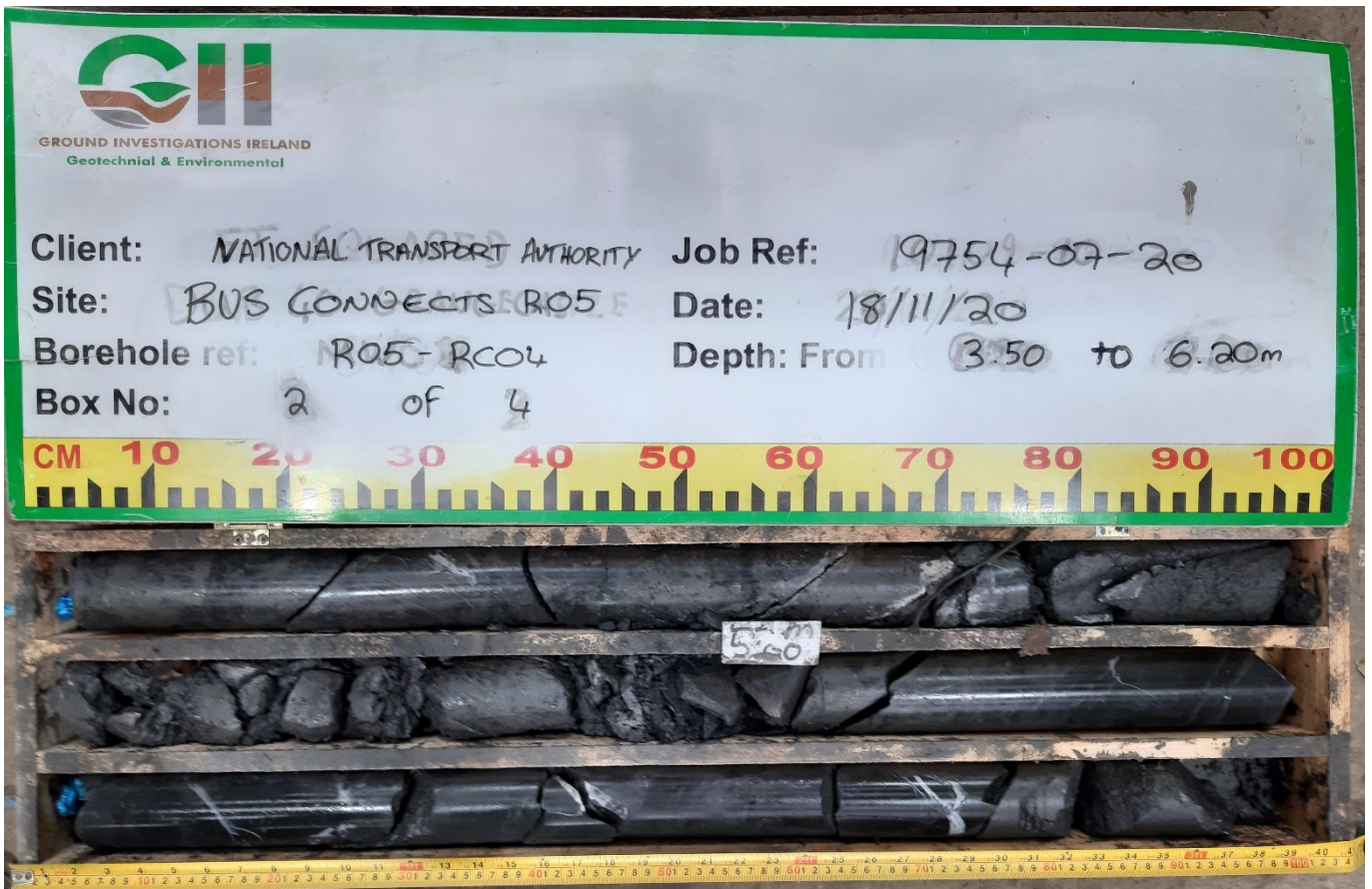
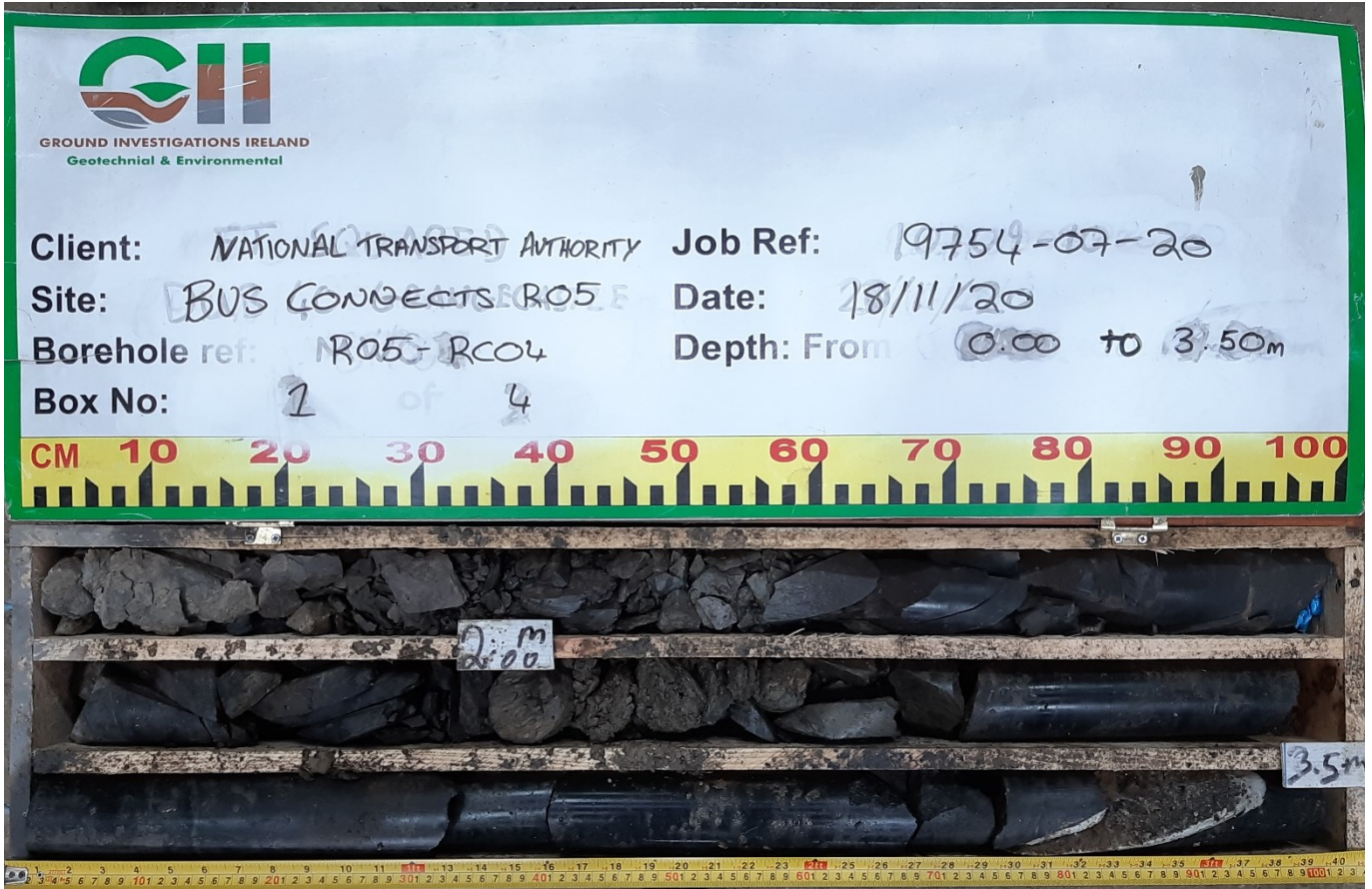
Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						35.40	10.00	to 20°, undulating smooth to rough with occasional clay staining Complete at 10.00m			

Remarks	Scale (approx)	Logged By
	1:50	PC
Figure No. 9754-07-20.R5-RC04		



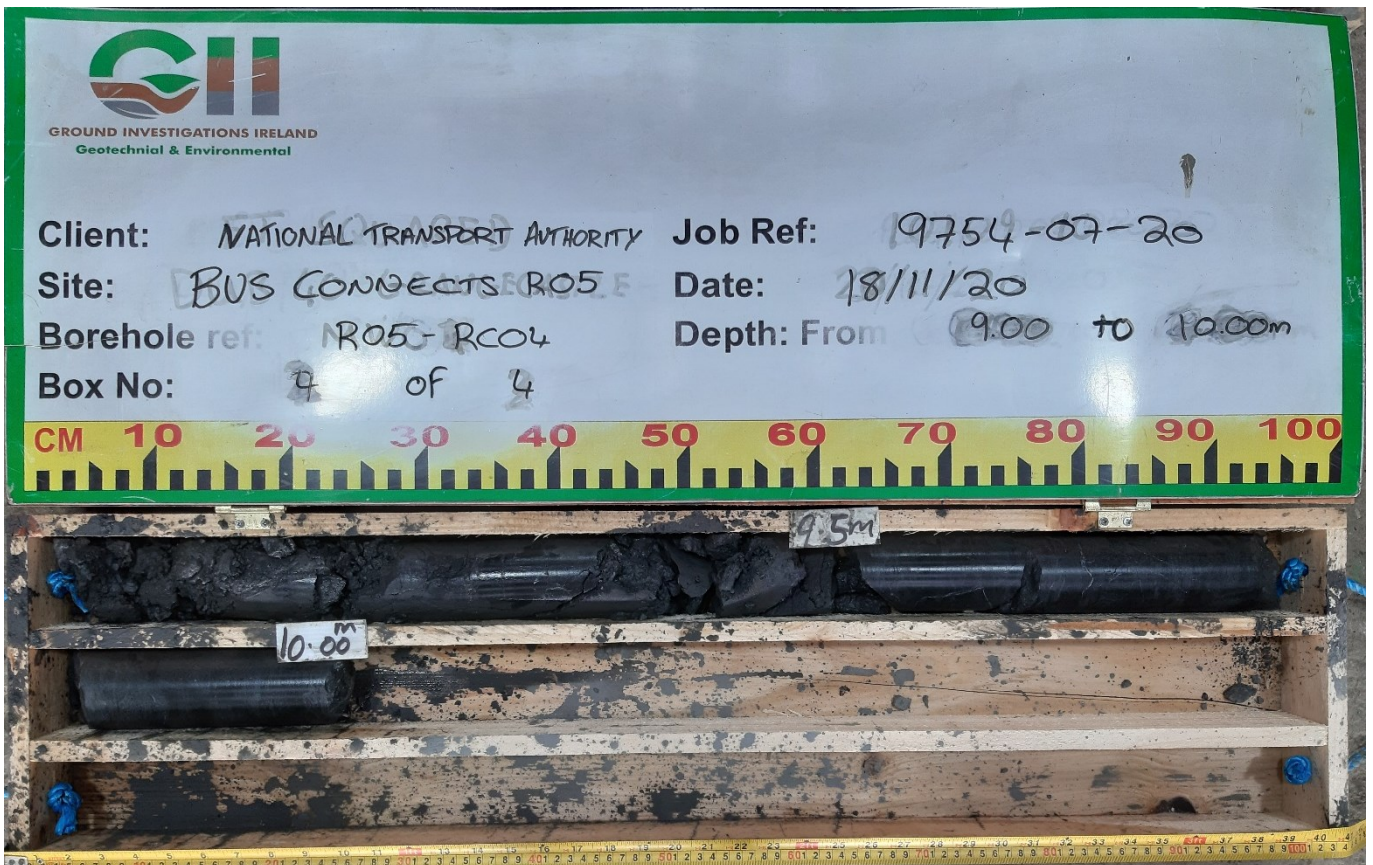
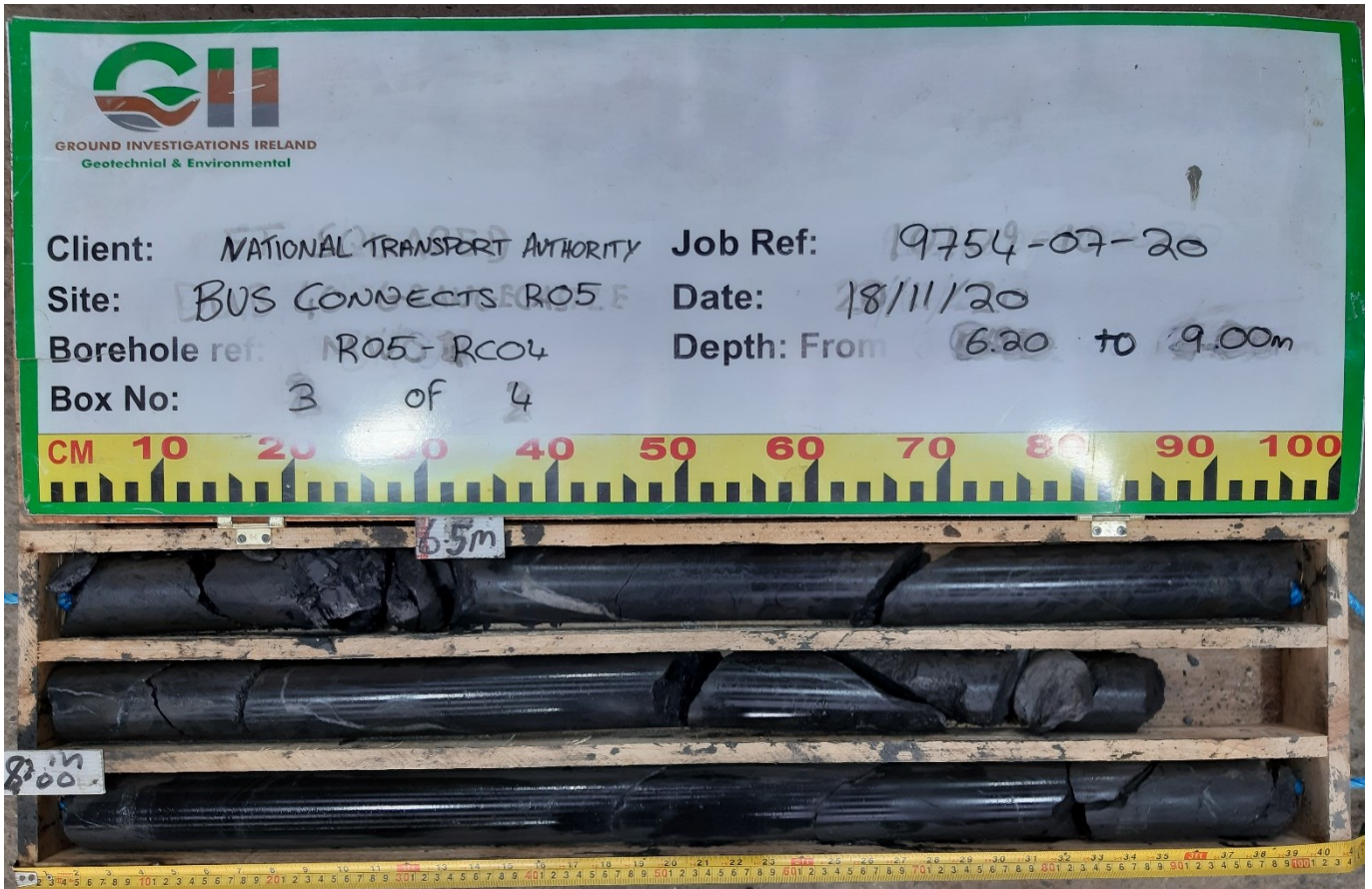
Bus Connects Route 5 – Rotary Core Photographs

R5-RC04



Bus Connects Route 5 – Rotary Core Photographs

R5-RC04





Machine : 3T Tracked Excavator Method : Trial Pit	Dimensions 1.50m (L) x 0.30m (W) x 0.90m (D)	Ground Level (mOD) 46.70	Client National Transport Authority	Job Number 9754-07-20
	Location 708176.9 E 738710.5 N	Dates 16/11/2020	Project Contractor Ground Investigations Ireland	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.90 0.90	B EN			46.50 45.80	(0.20) 0.20 (0.70) 0.90	Brown slightly sandy slightly gravelly TOPSOIL with occasional rootlets Firm greyish brown slightly sandy gravelly CLAY with frequent angular to subangular cobbles. Gravel is angular to subangular fine to coarse Obstruction: presumed rock Complete at 0.90m		

<b>Plan</b> 	<b>Remarks</b> Trial pit terminated at 0.90m BGL due to an obstruction on presumed rock Trial pit stable No groundwater encountered Trial pit backfilled upon completion	
		<b>Scale (approx)</b> 1:25

**Bus Connects Route 5 – Trial Pit Photographs**

**TP05B**



**Bus Connects Route 5 – Trial Pit Photographs**

**TP05B**





Machine : 3T Tracked Excavator Method : Trial Pit	Dimensions 1.50m (L) x 0.30m (W) x 2.00m (D)	Ground Level (mOD)	Client National Transport Authority	Job Number 9754-07-20
	Location	Dates 16/11/2020	Project Contractor Ground Investigations Ireland	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	EN T				(0.20) 0.20	Dark greyish brown slightly sandy slightly gravelly TOPSOIL with frequent rootlets		
1.00 1.00	B T				(1.50)	MADE GROUND: Brown gravelly clayey fine to coarse Sand with occasional angular to subangular cobbles, rootlets and occasional fragments of metal, plastic and red brick		
1.50	EN				1.70	Brown sandy clayey angular to subangular fine to coarse GRAVEL with some angular to subangular cobbles (possible weathered rock)		
2.00 2.00	B T				2.00	Obstruction: boulder or possible rock Complete at 2.00m		

<b>Plan</b> .	<b>Remarks</b> Trial pit terminated at 2.00m BGL due to obstruction on a boulder or possible rock Trial pit stable No groundwater encountered during excavation Trial pit backfilled upon completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>PC</td> <td>9754-07-20.R5-TP06</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	PC
Scale (approx)	Logged By	Figure No.				
1:25	PC	9754-07-20.R5-TP06				

**Bus Connects Route 5 – Trial Pit Photographs**

**TP06**



**Bus Connects Route 5 – Trial Pit Photographs**

**TP06**





## Appendix C

### Existing Drawings

FCCA/RDD/23

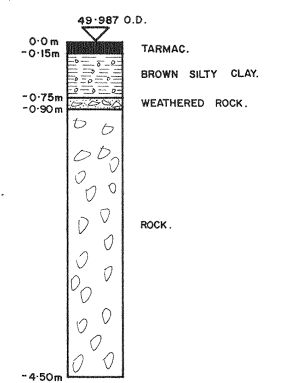
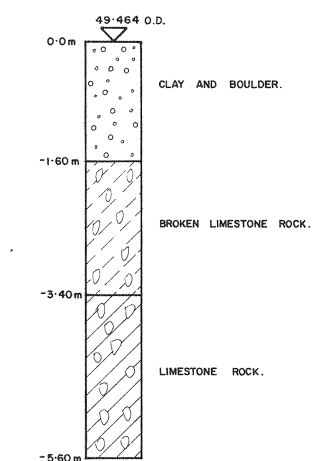
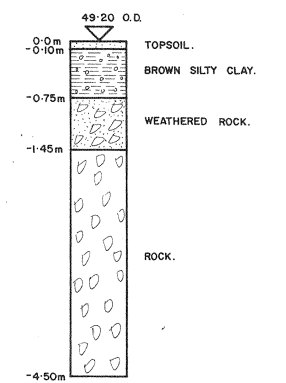
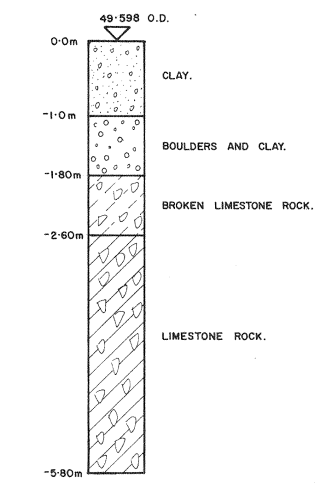
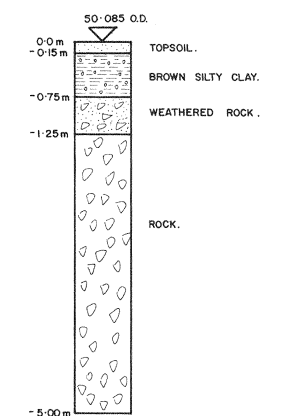
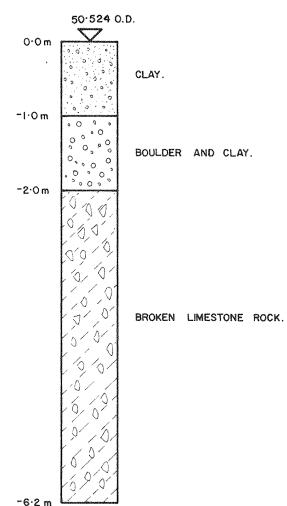
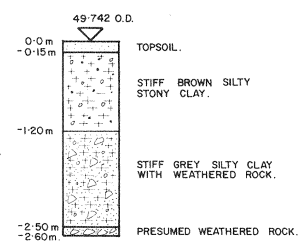
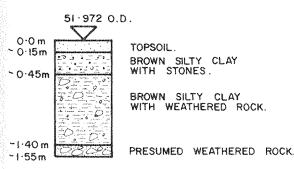
# DUBLIN COUNTY COUNCIL



## NAVAN ROAD BRIDGE AT MILL ROAD.

NAVAN ROAD CONTRACT - ASHTOWN TO CLONEE  
BOOK No. 6.

John B. Barry & Partners  
Consulting Engineers  
Tramway House  
Dartry  
Dublin 6.



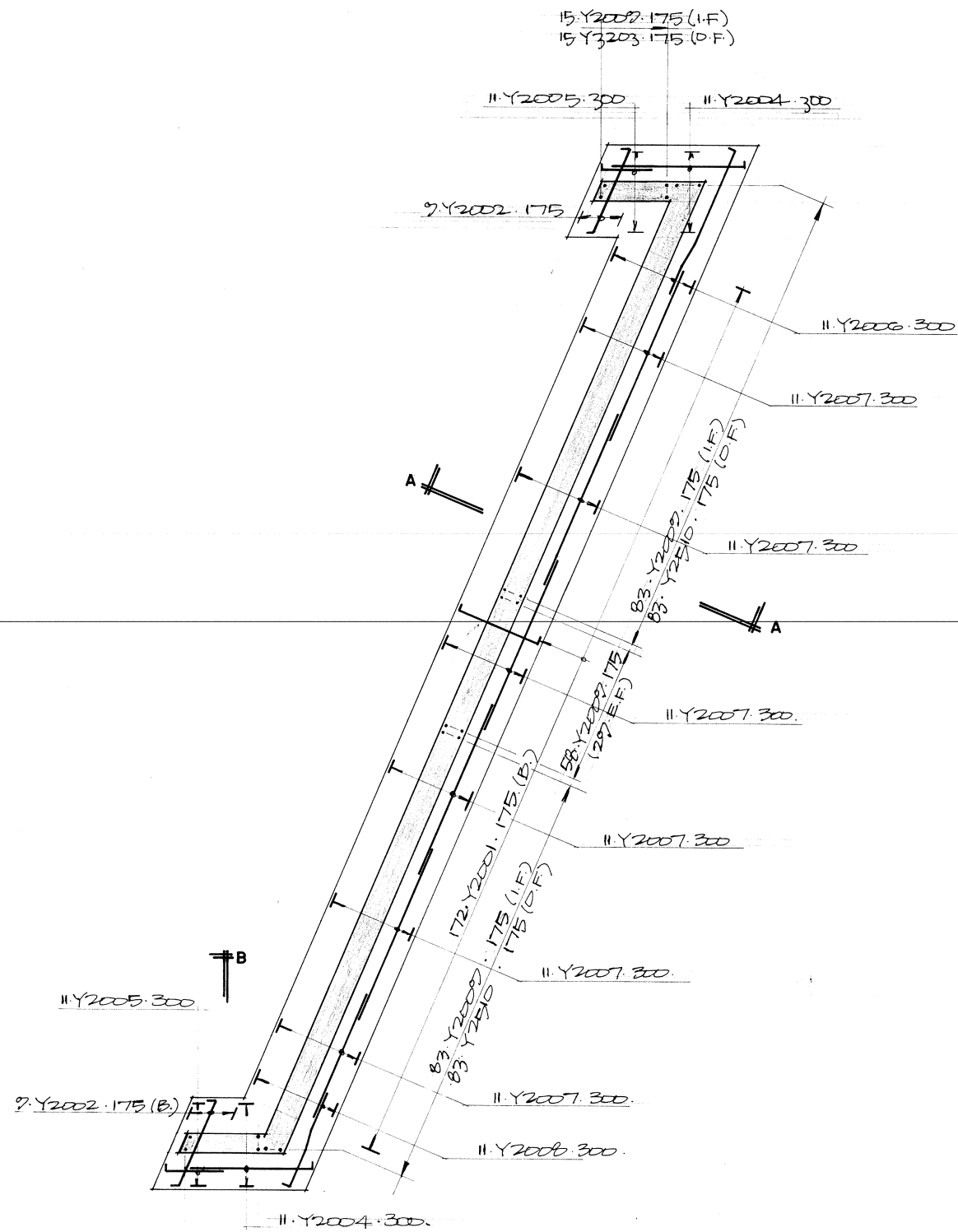
REFERRED TO IN CONTRACT  
 Dated 24 day of 19 84  
 [Signature]  
 For Contractor  
 Council

revisions	inl.	date	rev.
<b>JOHN B. BARRY + PARTNERS</b> Consulting Engineers Tramway House, Dartry, Dublin 6. Tel. 975716			
client DUBLIN COUNTY COUNCIL.			
project NAVAN ROAD BRIDGE AT MILL ROAD.			
title LOCATION PLAN AND BOREHOLE DETAILS.			
drawn by	S.N.	checked	P.S.
scales	HOOO 1:50	date	OCT. '85
stage	DESIGN	drg. no.	928 / 1.

Figured dimensions only to be taken from this drawing. All dimensions to be checked on site.

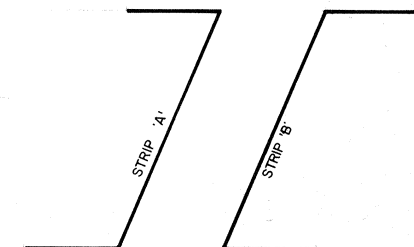
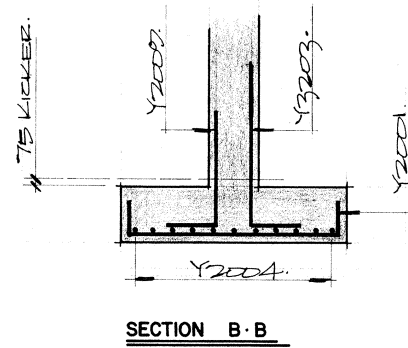
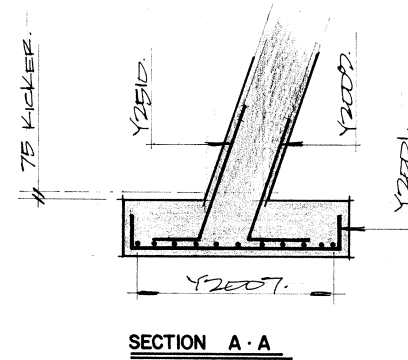
**NOTES**

COVER TO MAIN REINF.:  
 FOUNDATIONS: 50mm  
 WALLS: 40mm  
 CONC. TO BE GRADE 40  
 KICKER TO BE 75mm  
 E.F. DENOTES EACH FACE.  
 O.F. DENOTES OUTSIDE FACE.  
 I.F. DENOTES INSIDE FACE.



15 Y2002.175 (I.F.)  
 15 Y3203.175 (O.F.)

DETAILS OF STRIP 'A'  
 STRIP 'B' SIMILAR BUT HANDED.

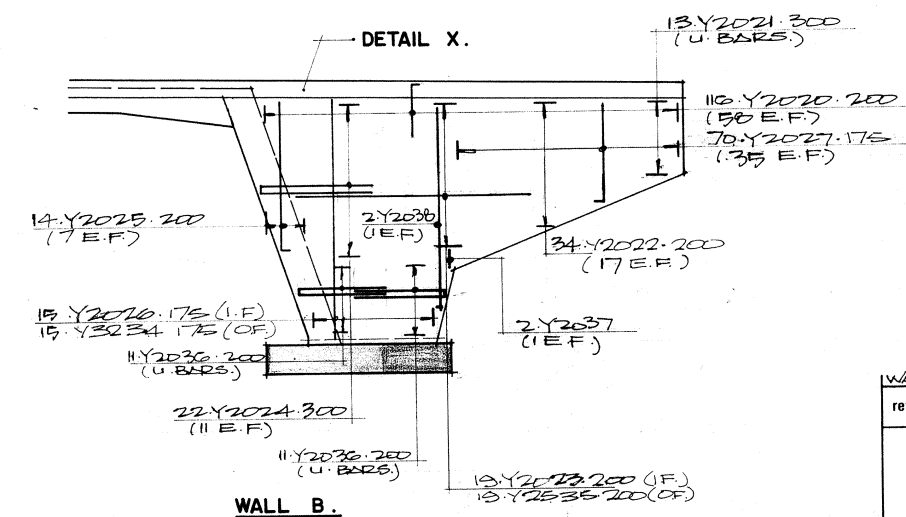
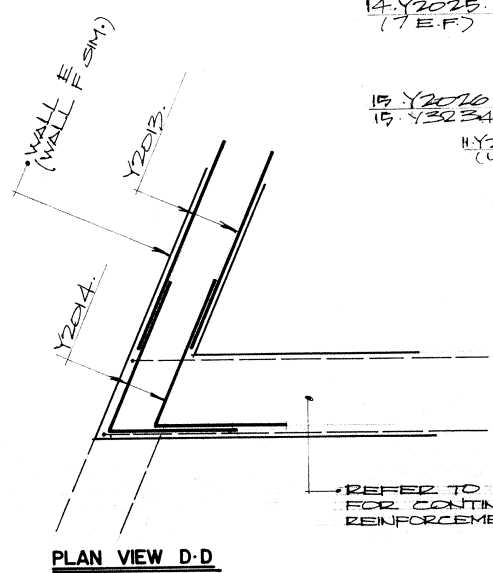
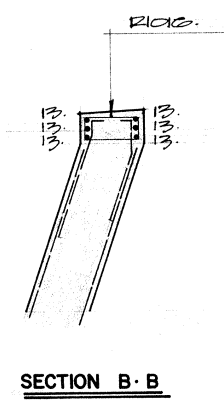
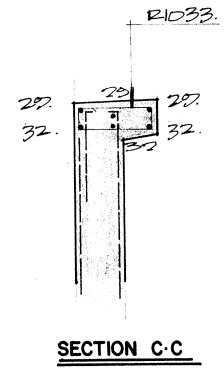
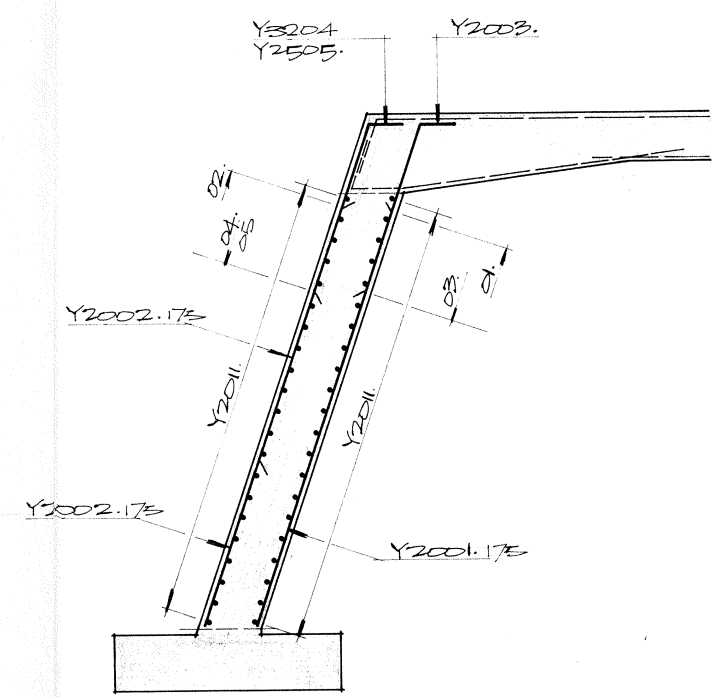
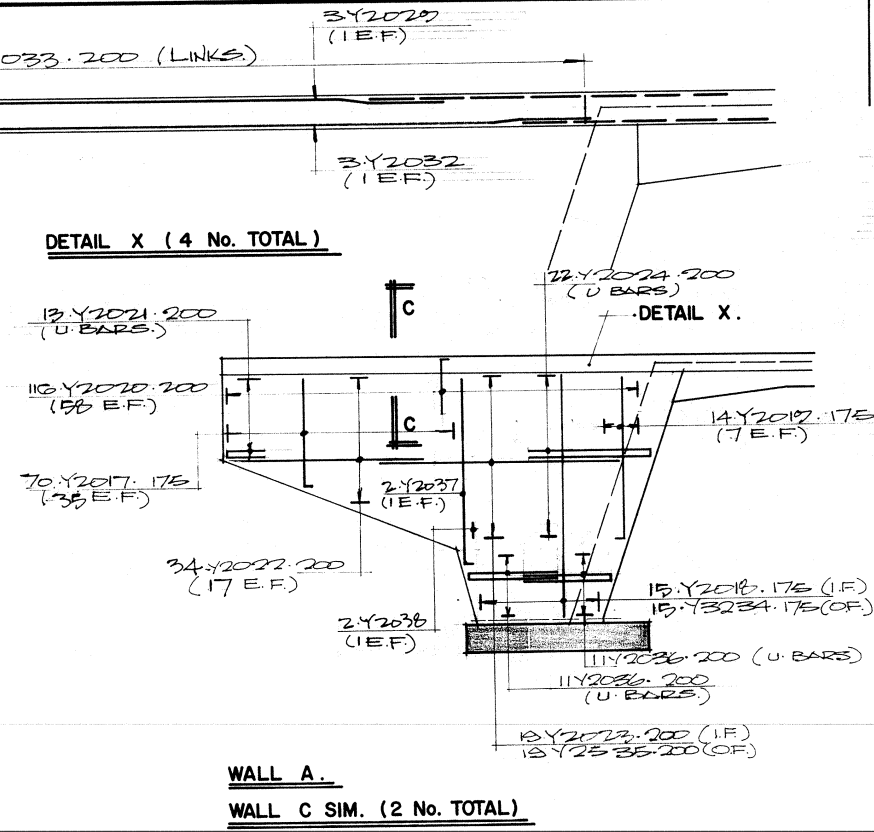
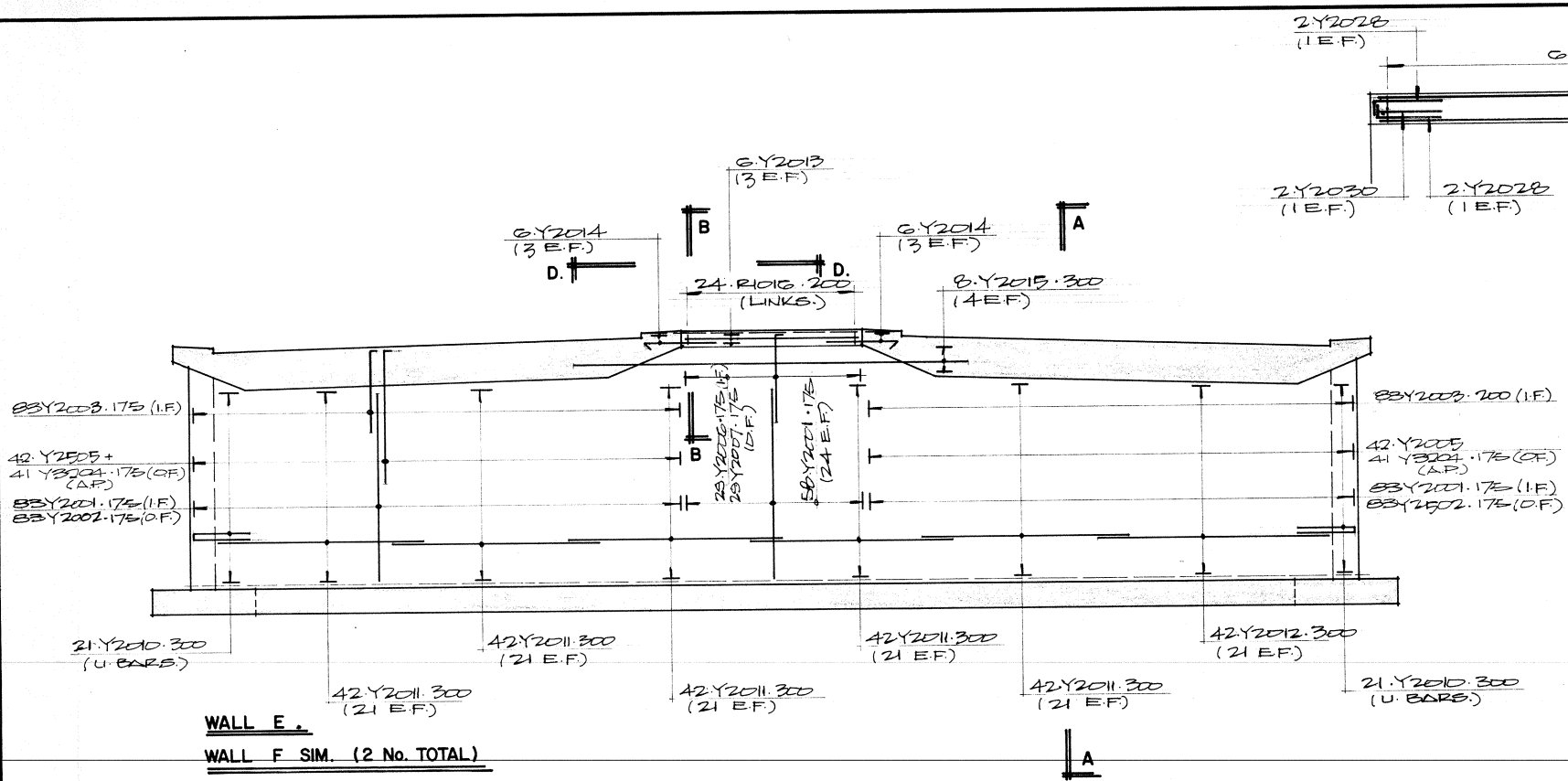


KEY PLAN.

revisions	incl.	date	rev.
<b>JOHN B. BARRY + PARTNERS</b> Consulting Engineers Tramway House, Dartry, Dublin 6. Tel. 975716			
client DUBLIN COUNTY COUNCIL.			
project NAVAN ROAD BRIDGE AT MILL ROAD.			
title R.C. DETAILS OF FOUNDATIONS.			
drawn by S.N.	checked PS.		
scales 1:100 1:50	date MAY '86		
stage DESIGN	drg. no. 928 / 21	rev.	

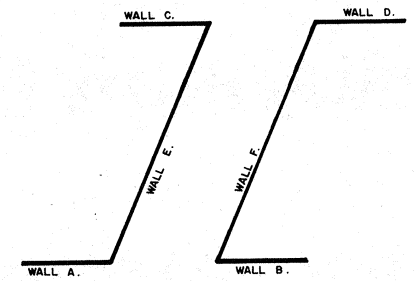
Figured dimensions only to be taken from this drawing. All dimensions to be checked on site.

**NOTES**  
 CONC. TO BE GRADE 40  
 COVER TO MAIN REINF. TO BE 40mm  
 KICKER TO BE 75mm  
 E.F. DENOTES EACH FACE.  
 I.F. DENOTES INTERNAL FACE.  
 O.F. DENOTES OUTSIDE FACE.



**WALL B.**  
**WALL D SIM. (2 No. TOTAL)**

REFER TO SLAB DETAILS FOR CONTINUATION OF REINFORCEMENT.

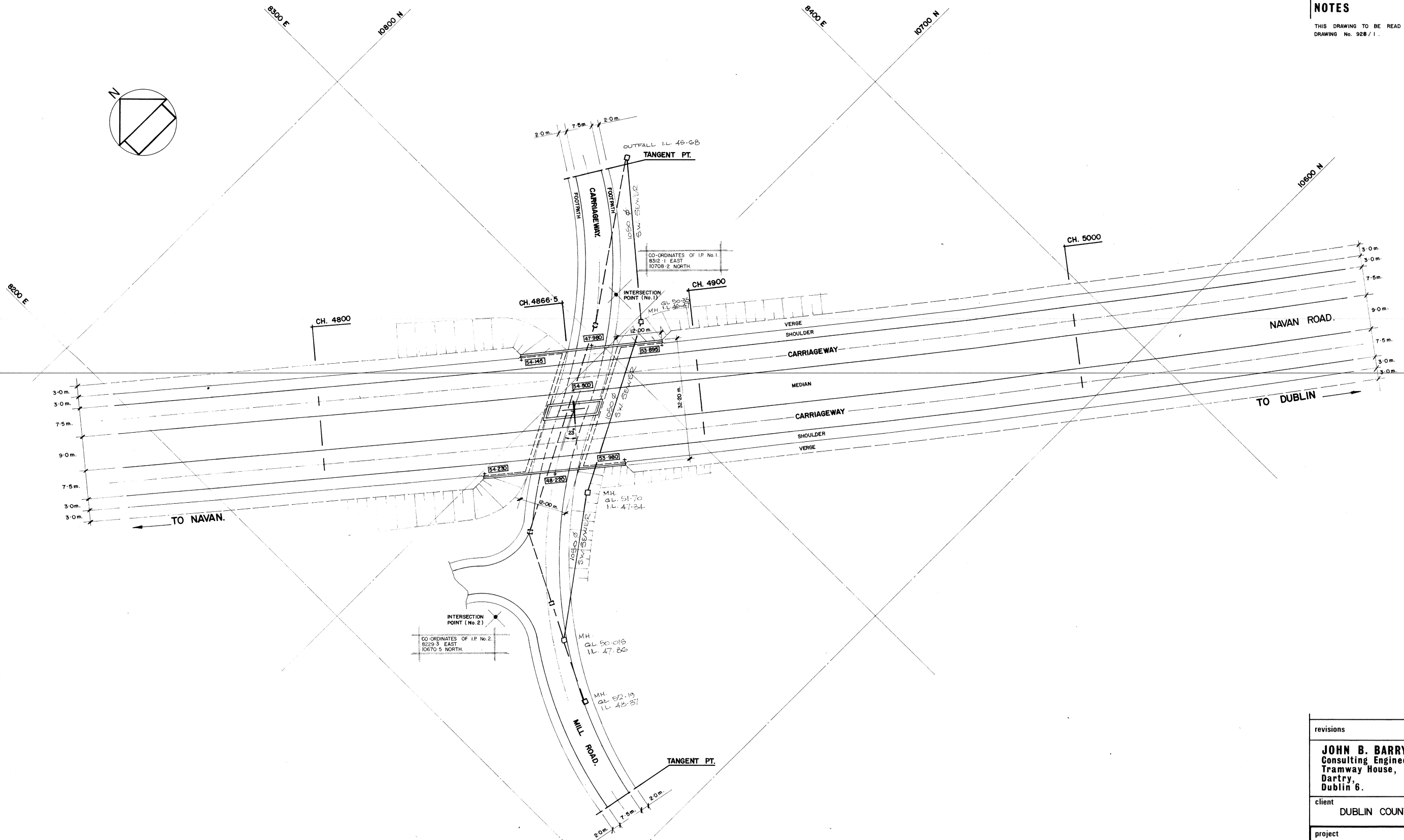
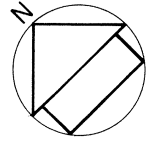


WALLS A-D ALTERED SN. 26557 A.			
revisions	incl.	date	rev.
<b>JOHN B. BARRY + PARTNERS</b> Consulting Engineers Tramway House, Dartry, Dublin 6. Tel. 975716			
client <b>DUBLIN COUNTY COUNCIL</b>			
project <b>NAVAN ROAD BRIDGE AT MILL ROAD.</b>			
title <b>R.C. DETAILS OF WALLS.</b>			
drawn by <b>S.N.</b>	checked <b>PS.</b>		
scales <b>1:100</b>	date <b>MAY '86</b>		
stage <b>DESIGN</b>	drg. no. <b>928 / 22</b>	rev.	

Figured dimensions only to be taken from this drawing. All dimensions to be checked on site.

**NOTES**

THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No. 928 / 1.



**ROAD LAYOUT**

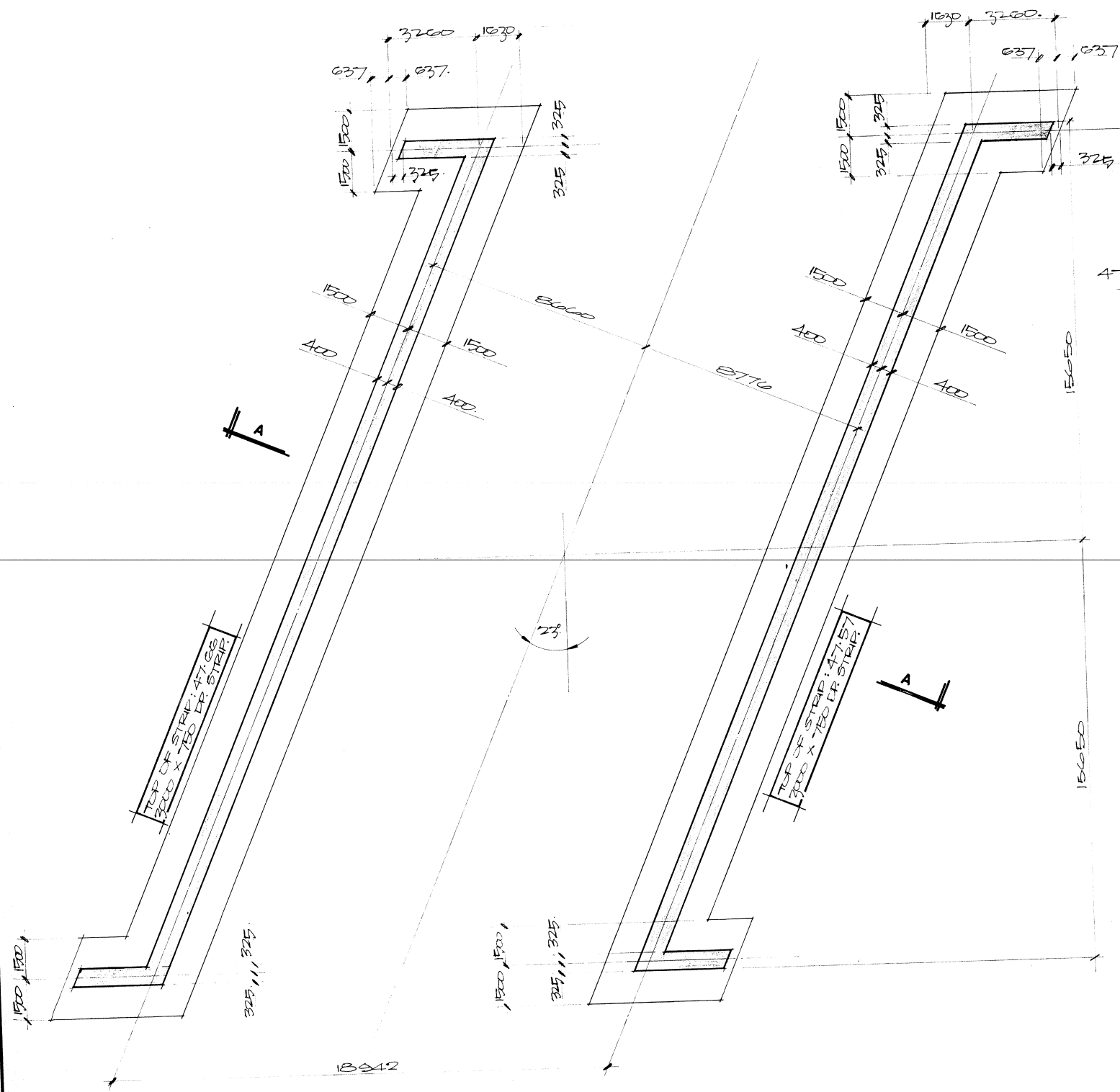
SCALE 1:500

revisions	incl.	date	rev.
<p><b>JOHN B. BARRY + PARTNERS</b>            Consulting Engineers            Tramway House,            Darty,            Dublin 6. Tel. 975716</p>			
<p>client            DUBLIN COUNTY COUNCIL</p>			
<p>project            NAVAN ROAD BRIDGE AT            MILL ROAD</p>			
<p>title            ROAD LAYOUT</p>			
drawn by	S.N.	checked	P.S.
scales	1:500	date	OCT. '85
stage	DESIGN	drg. no.	928 / 6
		rev.	

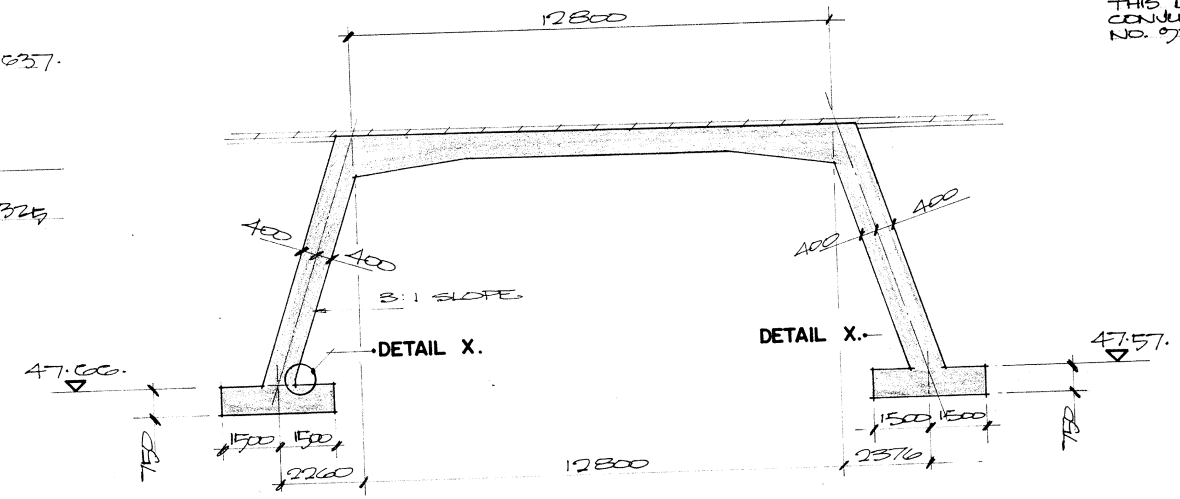
Figured dimensions only to be taken from this drawing. All dimensions to be checked on site.

**NOTES**

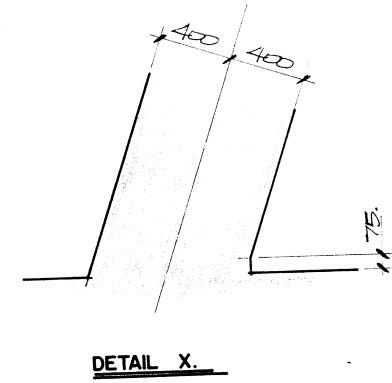
THIS DRG. TO BE READ IN CONNECTION WITH DRG. NO. 928/9.



FOUNDATION LAYOUT.



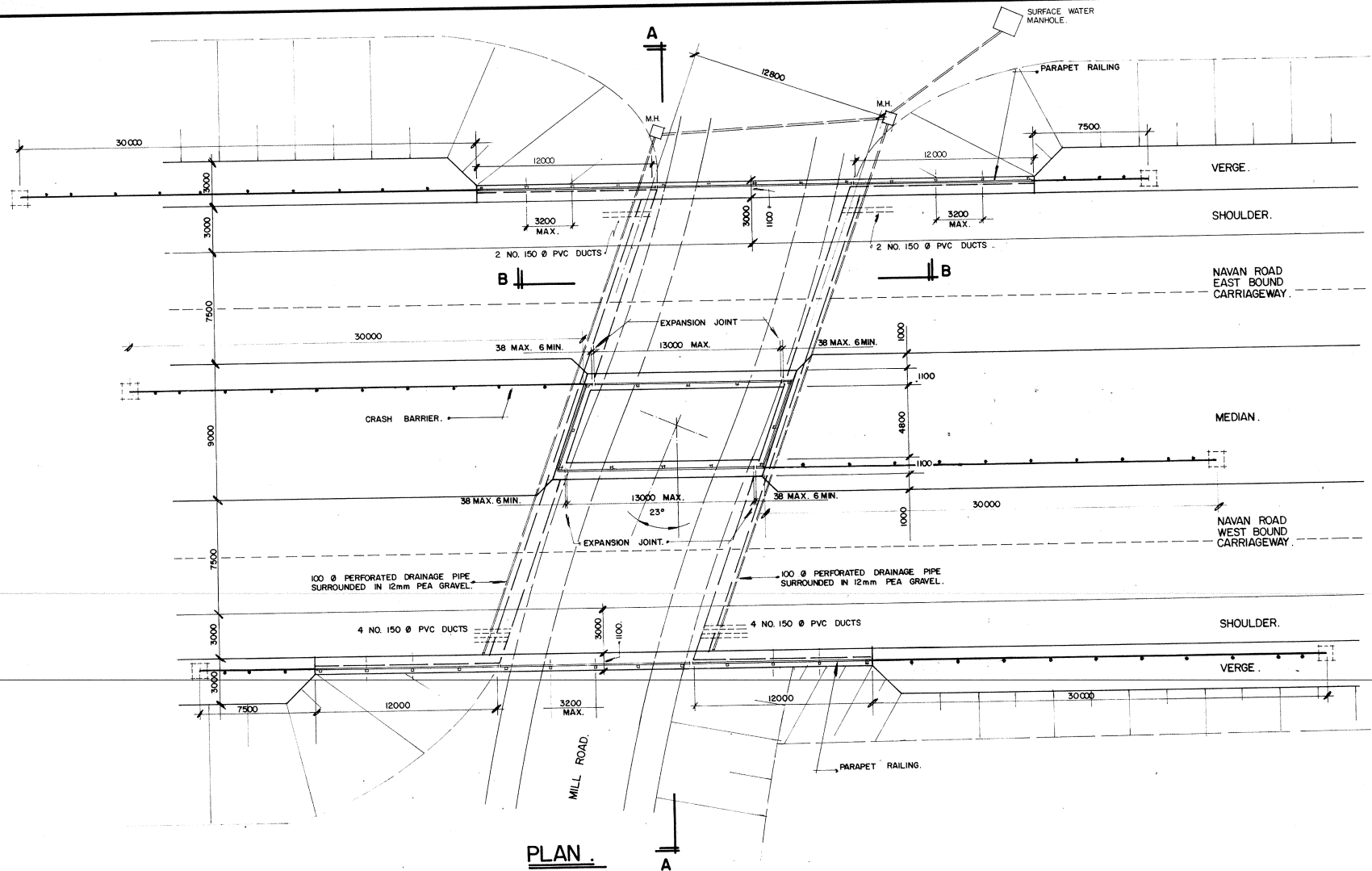
SECTION A-A.



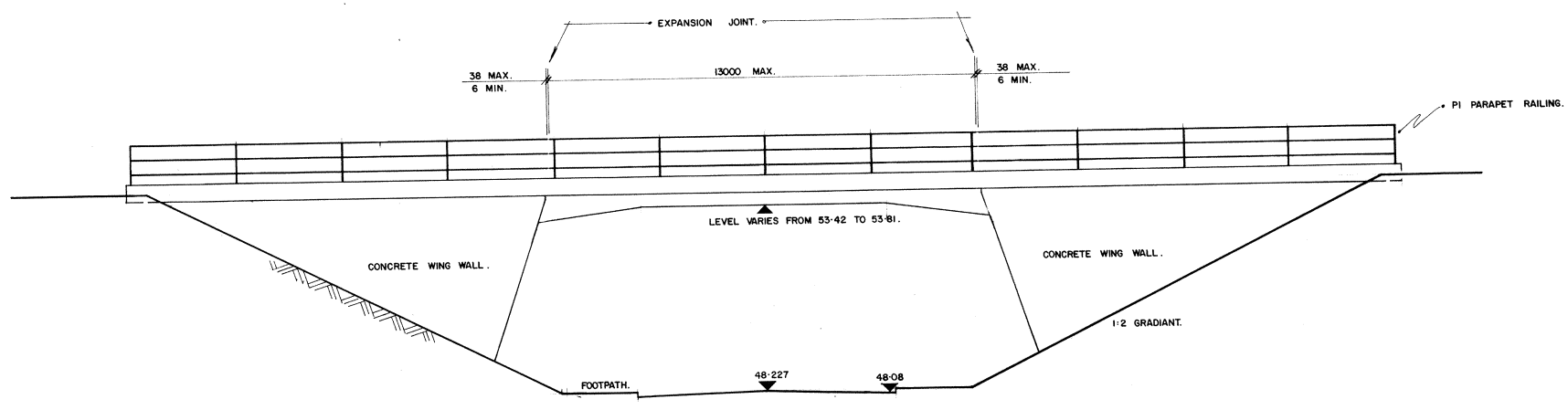
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revisions	inl.	date	rev.
<b>JOHN B. BARRY + PARTNERS</b> Consulting Engineers Tramway House, Dartry, Dublin 6. Tel. 975716			
client	DUBLIN COUNTY COUNCIL.		
project	NAVAN ROAD BRIDGE AT MILL ROAD.		
title	FOUNDATION LAYOUT.		
drawn by	S.N.	checked	PS.
scales	1:100 1:20	date	AUG. 86
stage	DESIGN.	drg. no.	928 / 10
		rev.	A

Figured dimensions only to be taken from this drawing. All dimensions to be checked on site.

**NOTES**  
FOR DETAILS OF SECTIONS A-A & B-B REFER DRG. NO. 928 / 12.



**PLAN**



**ELEVATION**

revisions	incl.	date	rev.
4 NO. 150 Ø PVC DUCTS ADDED	S.N.	28-5-87	B
150 Ø PVC DUCTS & M.H. ADDED	S.N.	FEB 87	A

**JOHN B. BARRY + PARTNERS**  
Consulting Engineers  
Tramway House,  
Dartry,  
Dublin 6. Tel. 975716

client  
**DUBLIN COUNTY COUNCIL**

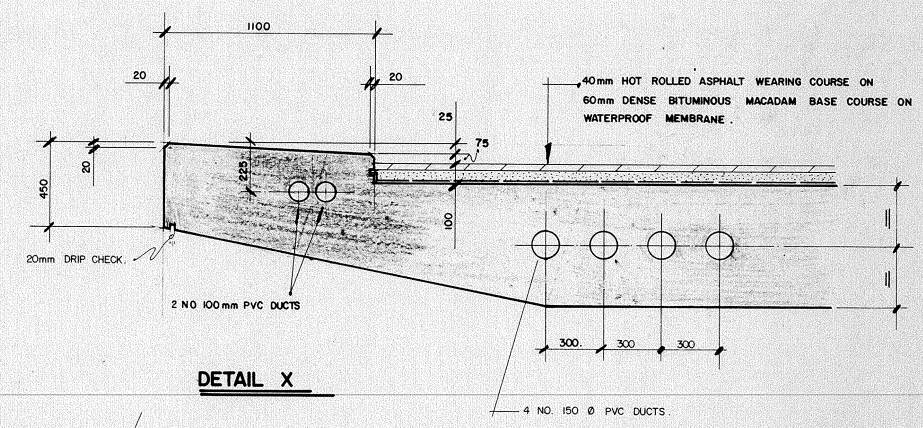
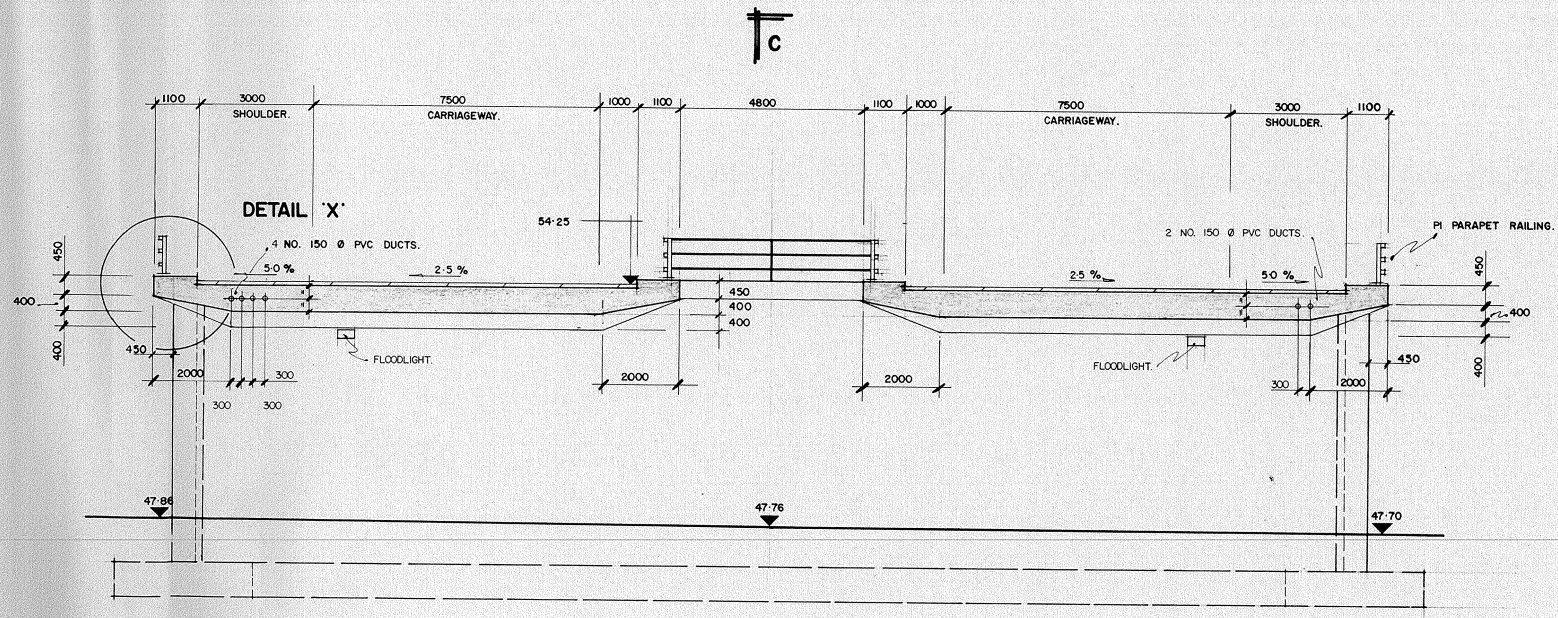
project  
**NAVAN ROAD BRIDGE AT MILL ROAD.**

title  
**BRIDGE PLAN AND ELEVATION.**

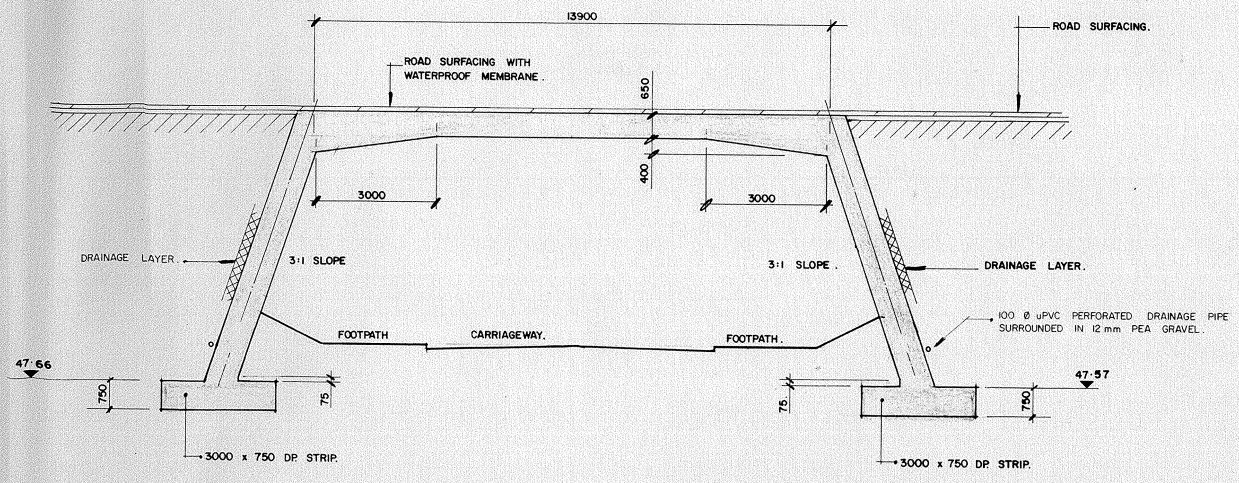
drawn by <b>S.N.</b>	checked <b>P.S.</b>
scales <b>1:100 1:200</b>	date <b>MAR. 86</b>
stage <b>DESIGN.</b>	drg. no. rev. <b>928 / 11. B</b>



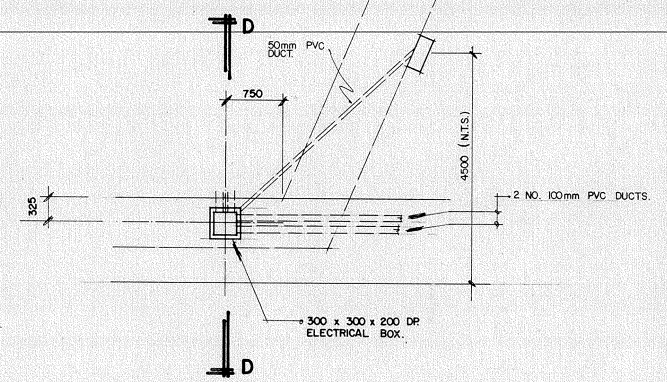
Figured dimensions only to be taken from this drawing. All dimensions to be checked on site.  
**NOTES**



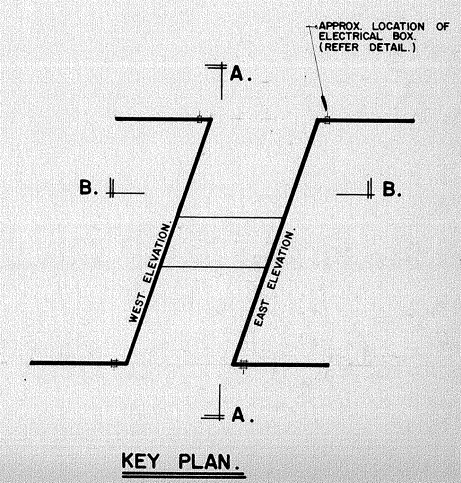
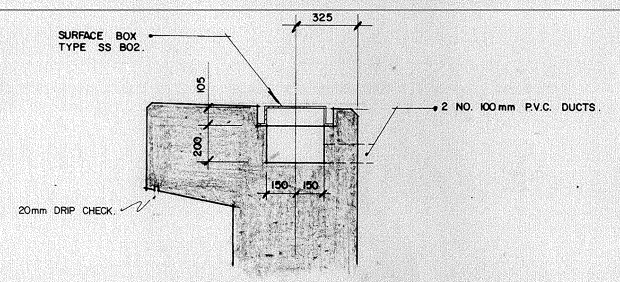
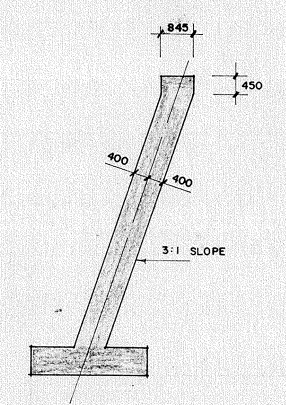
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**SECTION B-B**

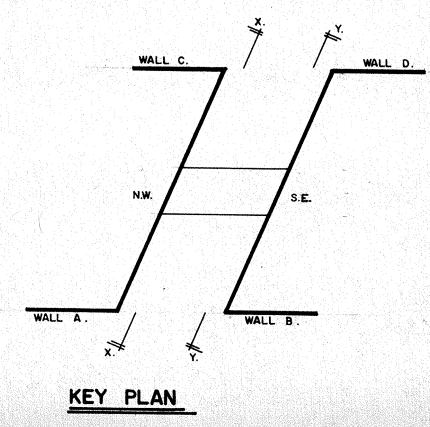
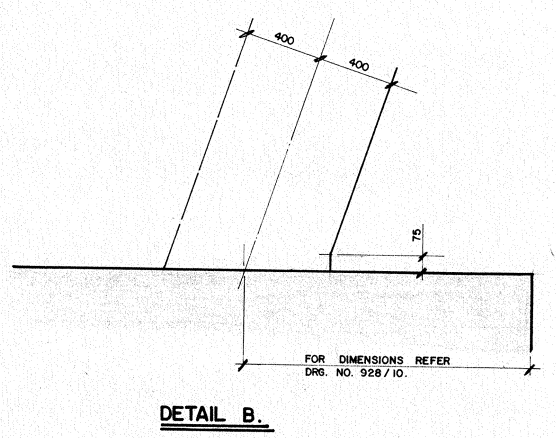
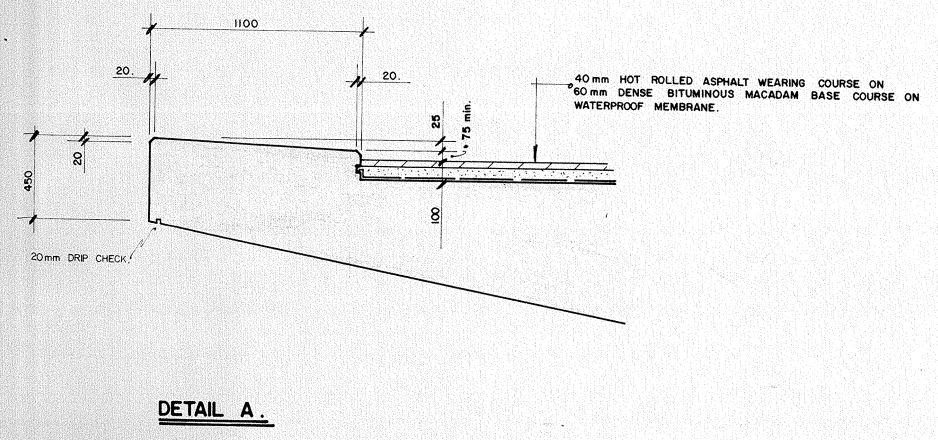
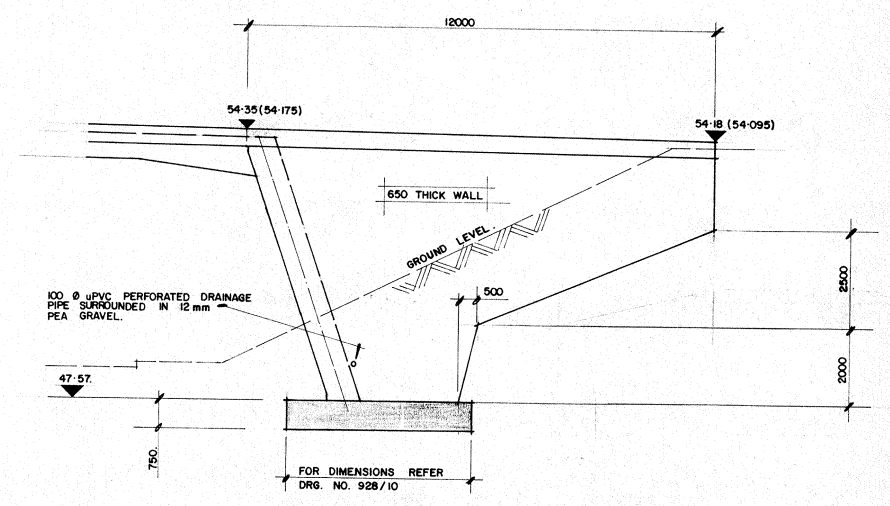
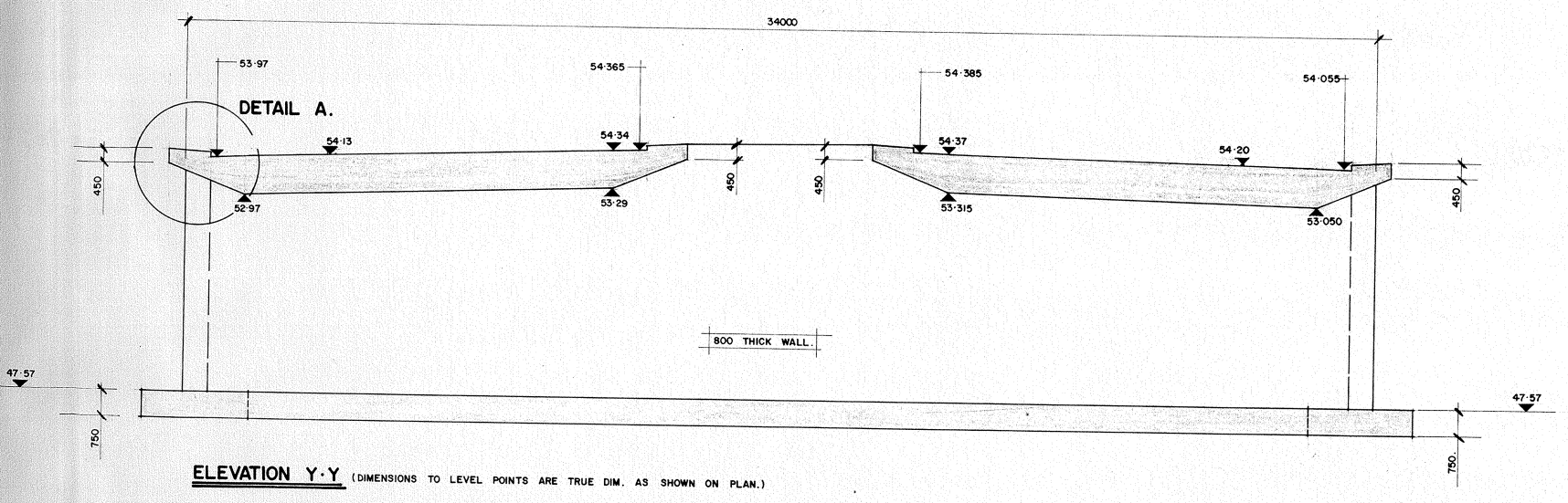
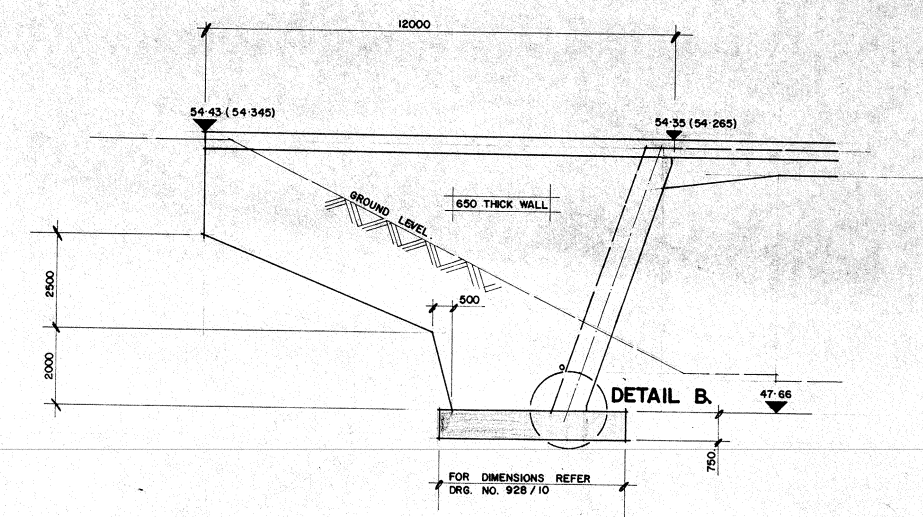
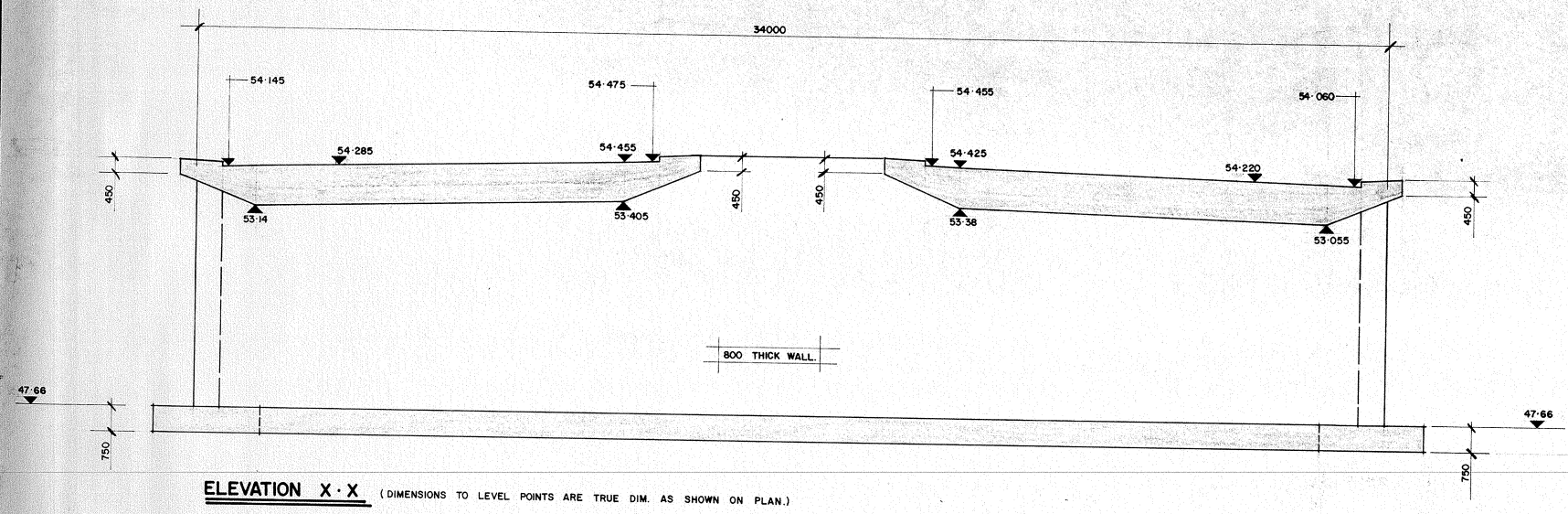


**SECTION C-C**



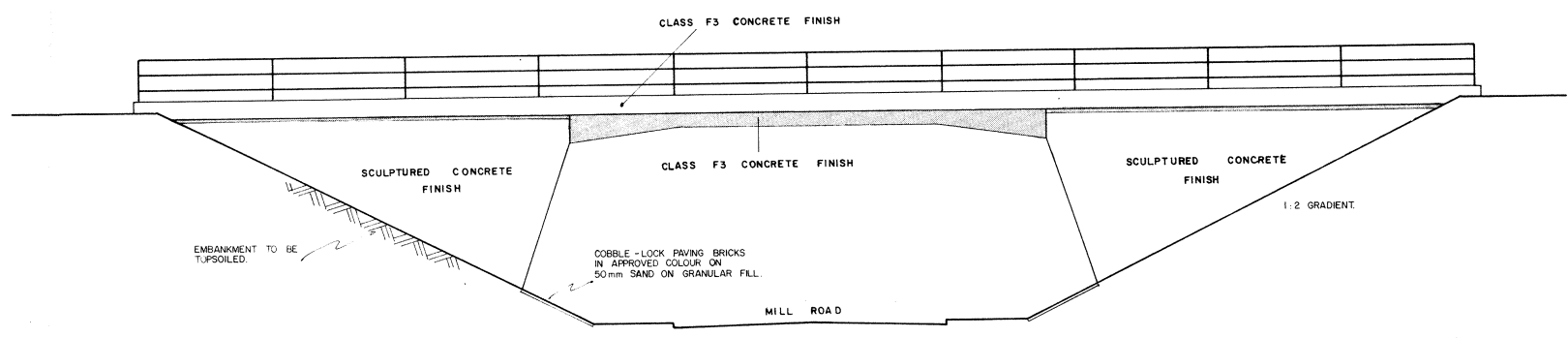
4 NO. 150 Ø PVC DUCTS ADDED.	S.N.	28.5.87	B.
2 NO. 150 Ø PVC DUCTS ADDED.	S.N.	FEB. 87	A.
revisions	inl.	date	rev.
<b>JOHN B. BARRY + PARTNERS</b> Consulting Engineers Tramway House, Dartry, Dublin 6. Tel. 975716			
client	DUBLIN COUNTY COUNCIL.		
project	NAVAN ROAD BRIDGE AT MILL ROAD.		
title	SECTIONS		
drawn by	S.N.	checked	P.S.
scales	1:100 1:20	date	MAR. 86
stage	DESIGN.	drg. no.	928 / 12.
		rev.	B.

Figured dimensions only to be taken from this drawing. All dimensions to be checked on site.  
**NOTES**

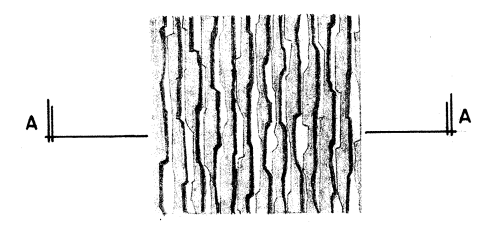


Walls A - D altered		S.N.	28-5-87	A.
revisions	incl.	date	rev.	
<b>JOHN B. BARRY + PARTNERS</b> Consulting Engineers Tramway House, Darty, Dublin 6. Tel. 975716				
client	DUBLIN COUNTY COUNCIL			
project	NAVAN ROAD BRIDGE AT MILL ROAD.			
title	WALL ELEVATIONS.			
drawn by	S.N.	checked	P.S.	
scales	1:100	1:20	date	MAY '86
stage	DESIGN	drg. no.	928 / 13	rev. A

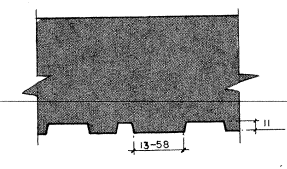
Figured dimensions only to be taken from this drawing. All dimensions to be checked on site.  
**NOTES**



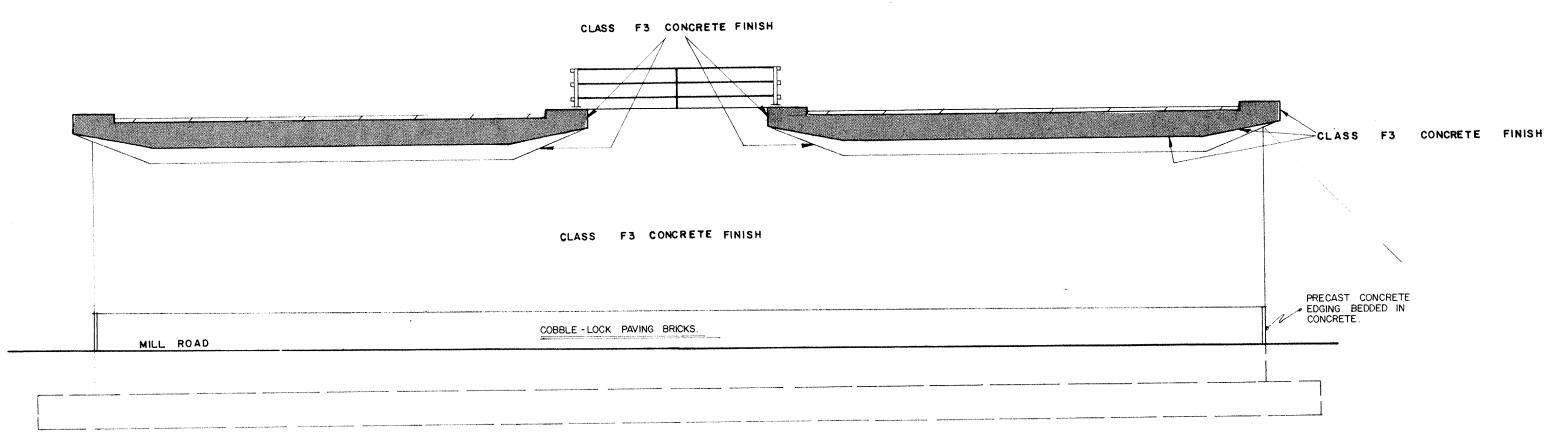
BRIDGE ELEVATION (BOTH ELEVATIONS SIMILAR)



DETAIL OF SCULPTURED CONCRETE FINISH



SECTION A-A



ABUTMENT ELEVATION (BOTH ABUTMENTS SIMILAR)

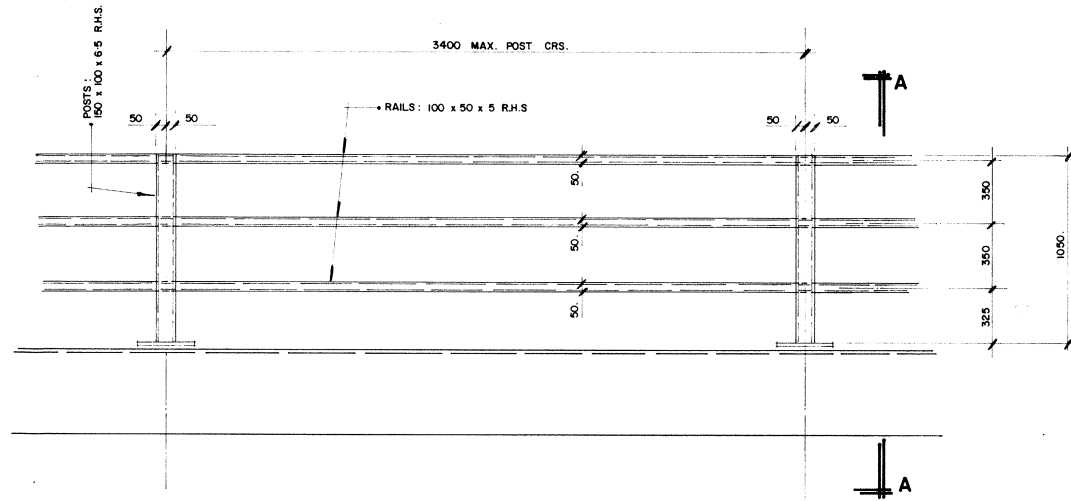
CLASS F3 CONCRETE FINISH TO BE OBTAINED BY "WYSAFORM" OR SIMILAR APPROVED FORMWORK PRODUCING A SMOOTH FINISH OF UNIFORM TEXTURE AND APPEARANCE. INTERNAL METAL TIES AND EMBEDDED METAL PARTS ARE NOT ALLOWED JOINTS ARE NOT TO BE VISIBLE

revisions	inl.	date	rev.
<b>JOHN B. BARRY + PARTNERS</b> Consulting Engineers Tramway House, Dартy, Dublin 6. Tel. 975716			
client DUBLIN COUNTY COUNCIL			
project NAVAN ROAD BRIDGE AT MILL ROAD			
title DETAILS OF SURFACE FINISH			
drawn by K.K.	checked P.S.		
scales 1:100	date JUNE 1986		
stage DESIGN	drg. no. 928/14	rev.	

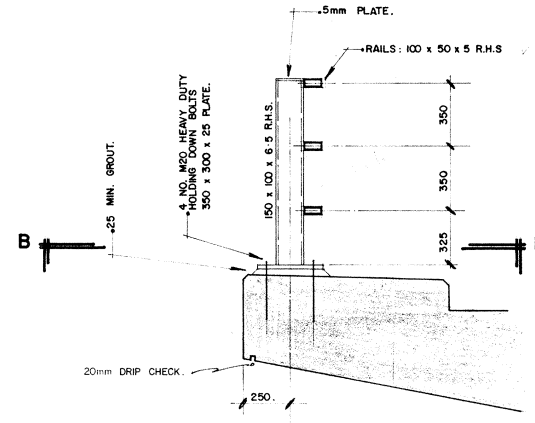
Figured dimensions only to be taken from this drawing. All dimensions to be checked on site.

**NOTES**

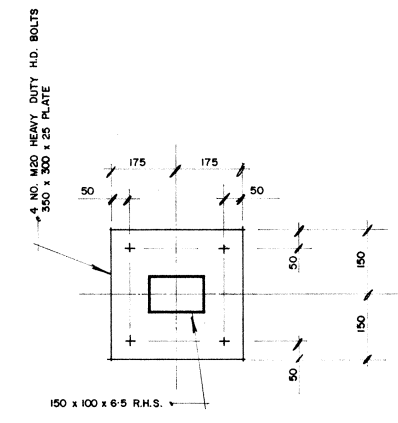
THIS DRG. TO BE READ IN CONJUNCTION WITH DRG. NO. 928 / II.



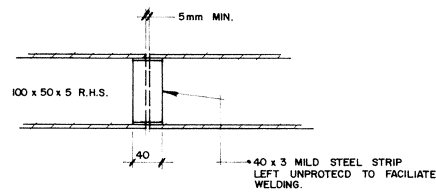
ELEVATION OF TYPICAL PANEL - PARAPET RAIL



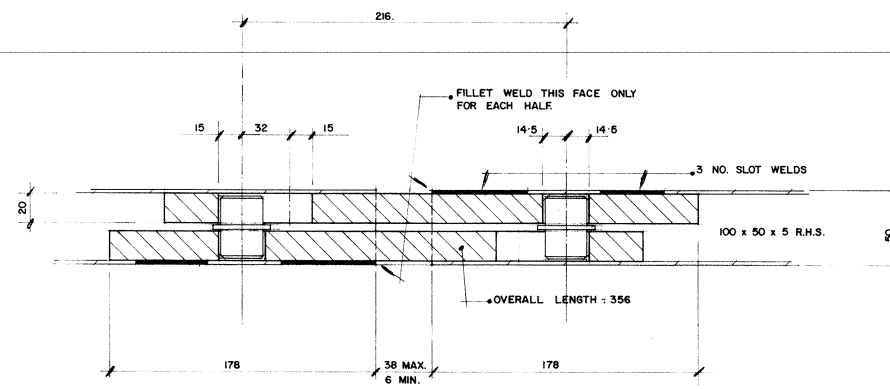
SECTION A-A



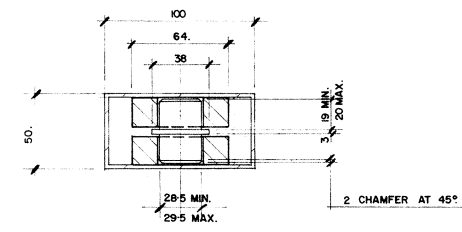
SECTION B-B



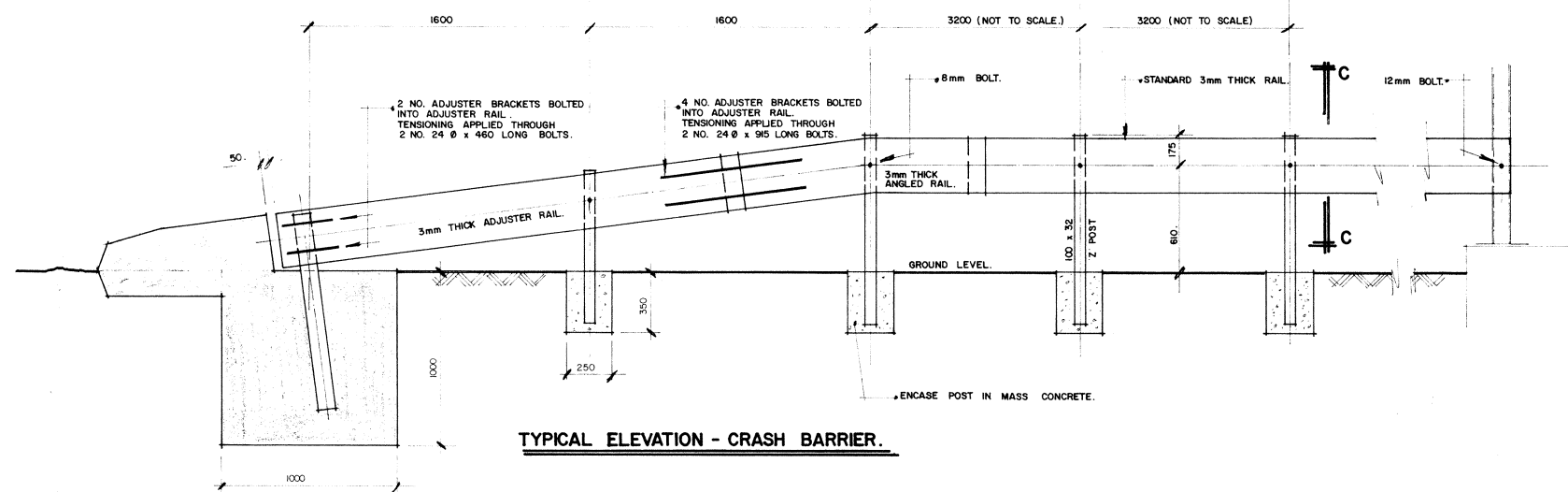
SITE JOINT IN LONGITUNAL MEMBERS.



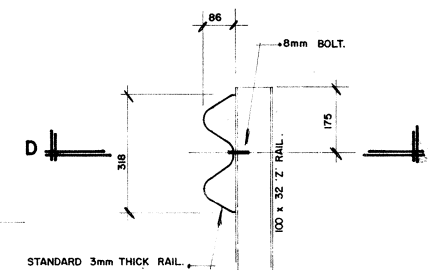
EXPANSION JOINT IN LONGITUNAL MEMBERS



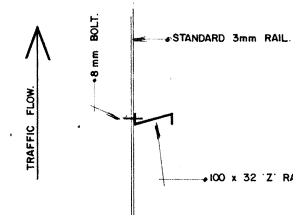
TYPICAL SECTION



TYPICAL ELEVATION - CRASH BARRIER.



SECTION C-C



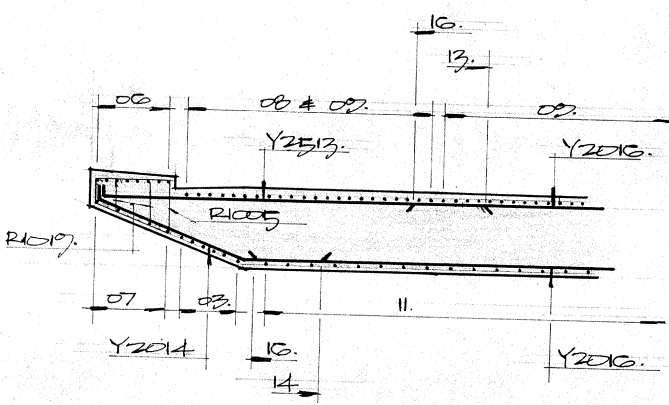
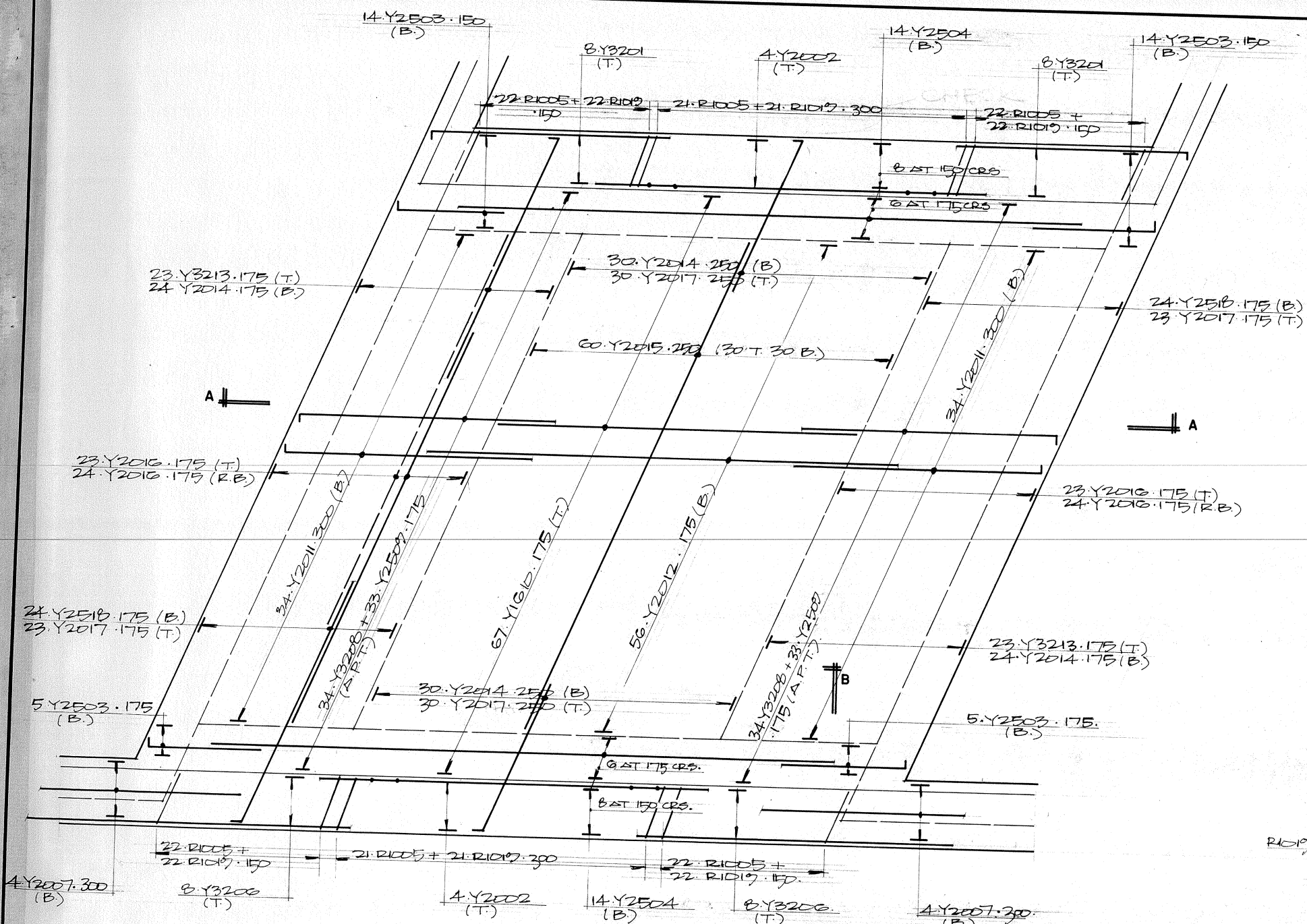
SECTION D-D

revisions	incl.	date	rev.
<b>JOHN B. BARRY + PARTNERS</b> Consulting Engineers Tramway House, Dartry, Dublin 6. Tel. 975716			
client <b>DUBLIN COUNTY COUNCIL.</b>			
project <b>NAVAN ROAD BRIDGE AT MILL ROAD.</b>			
title <b>DETAILS OF PARAPET RAIL &amp; CRASH BARRIER.</b>			
drawn by <b>S.N.</b>	checked <b>PS.</b>		
scales <b>1:20 1:10</b>	date <b>SEPT. 86</b>		
stage <b>DESIGN.</b>	drg. no. <b>928 / 15</b>	rev.	

Figured dimensions only to be taken from this drawing. All dimensions to be checked on site.

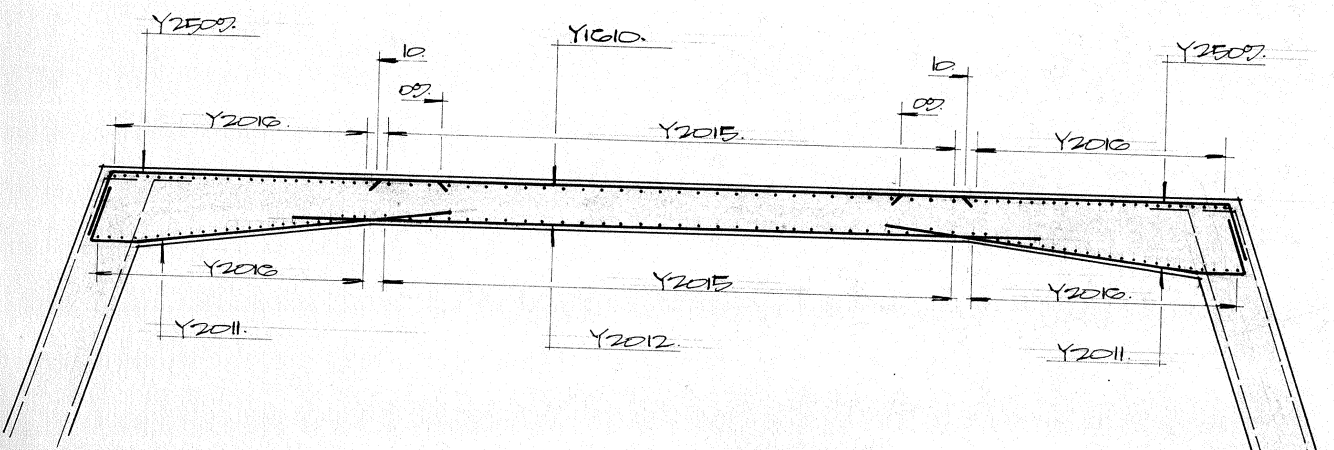
**NOTES**

CONCRETE TO BE GRADE 40  
COVER TO MAIN REINF TO BE 40 mm.  
B DENOTES BOTTOM.  
T DENOTES TOP.  
R.B. DENOTES REVERSED BOTTOM.

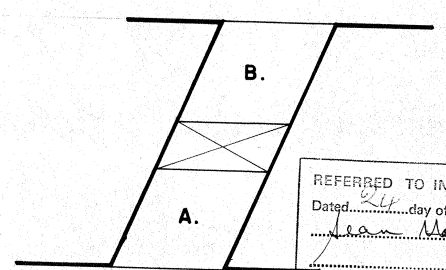


**SECTION B-B**

**R.C. DETAILS OF SLAB 'A'**  
**SLAB 'B' SIM. BUT HANDED.**



**SECTION A-A**



**KEY PLAN.**

revisions	incl.	date	rev.
<b>JOHN B. BARRY + PARTNERS</b> Consulting Engineers Tramway House, Darry Dublin 6. Tel. 975716			
client <b>DUBLIN COUNTY COUNCIL</b>			
project <b>NAVAN ROAD BRIDGE AT MILL ROAD.</b>			
title <b>R.C. DETAILS OF DECK SLAB.</b>			
drawn by	S.N.	checked	PS.
scales	1:50	date	MAY '86
stage	DESIGN	drg. no.	928/23
REFERRED TO IN CONTRACT Dated... day of... 1986 <i>Sean Morte</i> For Contractor <i>[Signature]</i> For Council			