



# A6 to Manchester Airport Relief Road

TR1-11 – Dairy House Lane Footbridge  
Preliminary Design Report  
Report No. 1007/704/155

August 2013

## PRELIMINARY DESIGN REPORT

Structure Name: Dairy House Lane Footbridge

Structure Number: TR1-11

Report No. 1007/704/155

### Report Control Sheet

Version	Date	Status	Prepared By	Checked By	Approved By
P1	03/09/2013	Draft	J Watton	M Ellis	N Sheena
P2	13/09/2013	Final	J Watton	M Ellis	N Sheena

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Appendix A: Location Plans

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3D Model

## **1. Description of Site**

The Dairy House Lane Footbridge is part of the A6 to Manchester Airport Relief Road (A6MARR) and is proposed to give pedestrian, cyclist and equestrian access across an existing water course between the A555 and Dairy House Lane. The bridge is to be located approximately 300m west of Hall Moss Lane Bridge over the A555.

There are no residential properties in the immediate vicinity of the proposed crossing and the surrounding area is woodland. An aerial location plan at 1:1250 scale is included in Appendix A.

## **2. Highway Details**

Over Structure – Dairy House Lane culvert with a 3.5m wide combined footway, cycleway and bridleway.

Under Structure – Unnamed Watercourse

## **3. Proposed Structure**

The proposed structure will be in the form of 9 precast concrete box sections (2.4m x 1.2m x 1.0m). A proposed General Arrangement is included in Appendix B.

## **4. Span Arrangements**

The culvert with a single span of 3.0m, measured to the edges of the existing channel, running approximately perpendicular to the existing A555.

## **5. Headroom and Clearances**

The unnamed watercourse is non-navigable and therefore minimum headroom limits do not apply. The top of the culvert will be constructed above the anticipated high water table.

## **6. Pedestrian Safety Fence**

It is proposed to use timber fences that shall be 1.1m above the top of the culvert with green PVC mesh infill. As the footpath does not run directly next to the edge of the culvert then 1.8m high parapets should not be required.

## **7. Preferred Structural Options**

### **7.1 Superstructure Options**

The proposed structure is precast concrete box culverts. Refer to Drawing 1007/3D/DF7/A6-MA/TR1-11/701 and the 3D Model in Appendix B for further details.

For a small span such as this one using a precast box culvert is a suitable option and would match an existing culvert used upstream of the proposed location.

The advantages for using pre-cast concrete beam construction are as follows:

- Low capital & whole-life cost

- Fast and efficient build
- Factory quality with engineered tolerances
- Low maintenance
- The culvert sections can be lifted individually
- Reduces site works which are weather dependent

Disadvantages:

- In order to use culverts then approval is needed by the Lead Local Flood Authority (LLFA)
- Delivery times are dependent on a specialist supplier

## 7.2 Substructure Options

It is proposed that the culvert will be supported on a layer of granular material overlaying ST4 blinding concrete. This can be regarded as an indicative solution only and additional geotechnical information will be required to determine the validity of this proposal. Any existing information is addressed in Section 8 of this report.

## 8. Geotechnical Information

The ground conditions in the vicinity of TR1-11 have been assessed using relevant geological maps (Stockport Sheet 98, Solid and Drift Scale 1:50,000) only as no ground investigation has been carried out at or within the vicinity of the proposed structure. Local ground investigation will be required for detailed design.

The ground conditions indicated on the geological maps are drift deposits of Boulder Clay of Recent and Pleistocene age overlying Upper Mottled Sandstone of Permian and Triassic age which is part of the Sherwood Sandstone Group.

It is considered unlikely, based on the available information, that coal working will be encountered during the works.

The potential for chemical attack on buried concrete within the ground has not been assessed due to lack of available information. However, based on the past experience in similar material e.g., pyrites in coal measures and sulphates in superficial material derived from Mercia mudstone, aggressive ground conditions towards concrete/steel cannot be ruled out. It is recommended to undertake sulphate testing in accordance with BRE Special Digest 1: 2005 (Concrete in aggressive ground condition).

There is no available information relating to the groundwater in the area available.

## 9. Appearance

The proposed superstructure will not be visible on elevation. A timber post and rail fence (post with 3 rails- open structure) will be mounted on the edge of the culvert. Exposed concrete faces of the culverts are to be plain concrete

## Appendix A: Location Plans

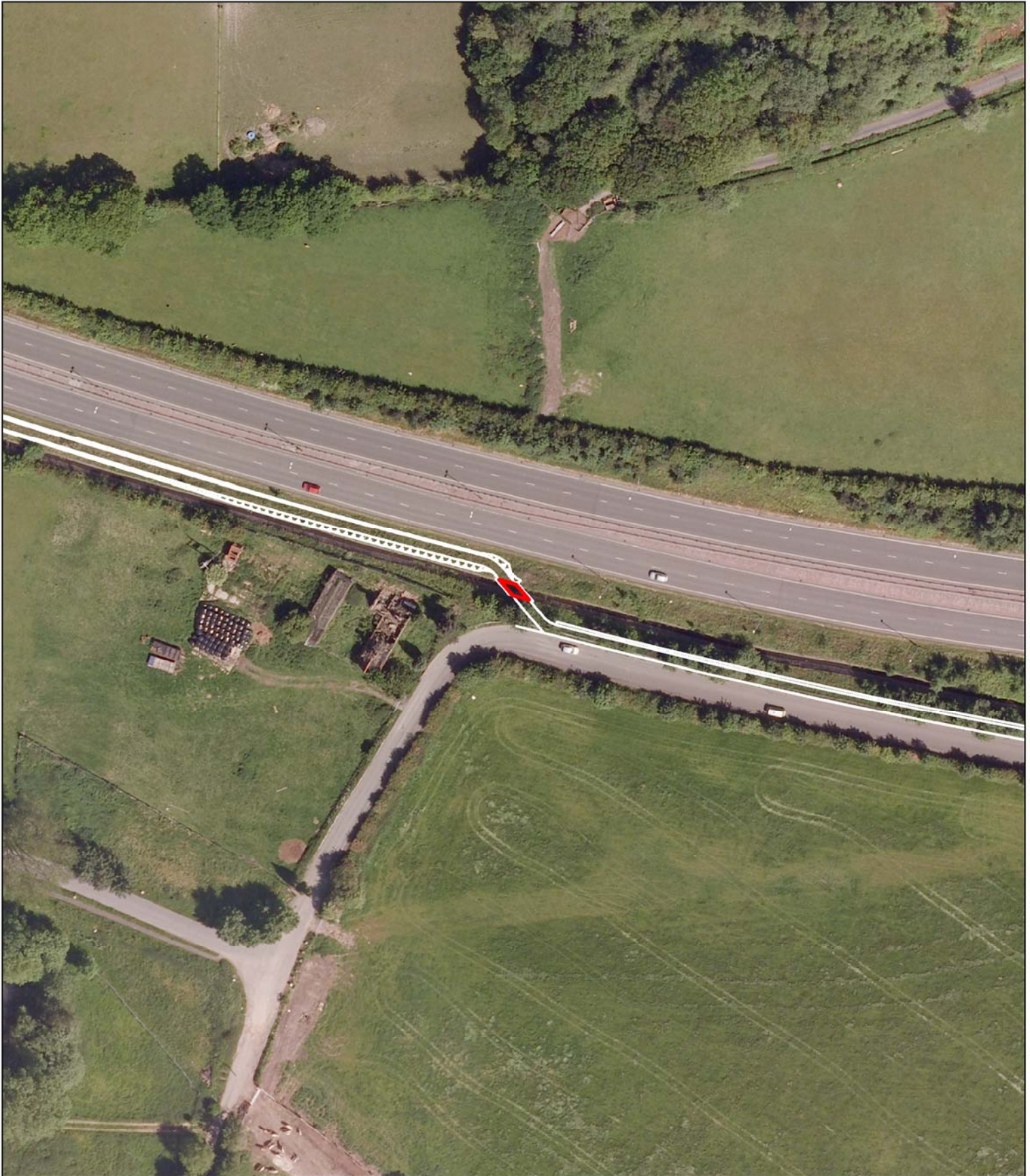




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Drawn	CL	Checked	SC	Approved	NH	
Date	12/08/2013	Date	12/08/2013	Date	12/08/2013	
Size	A4	Scale	1 : 1,250			
GIS Task	4268	Filename				
Drawing No. 1007-3D-DF7-A6-MA-TR1 11-ALP				Revision		







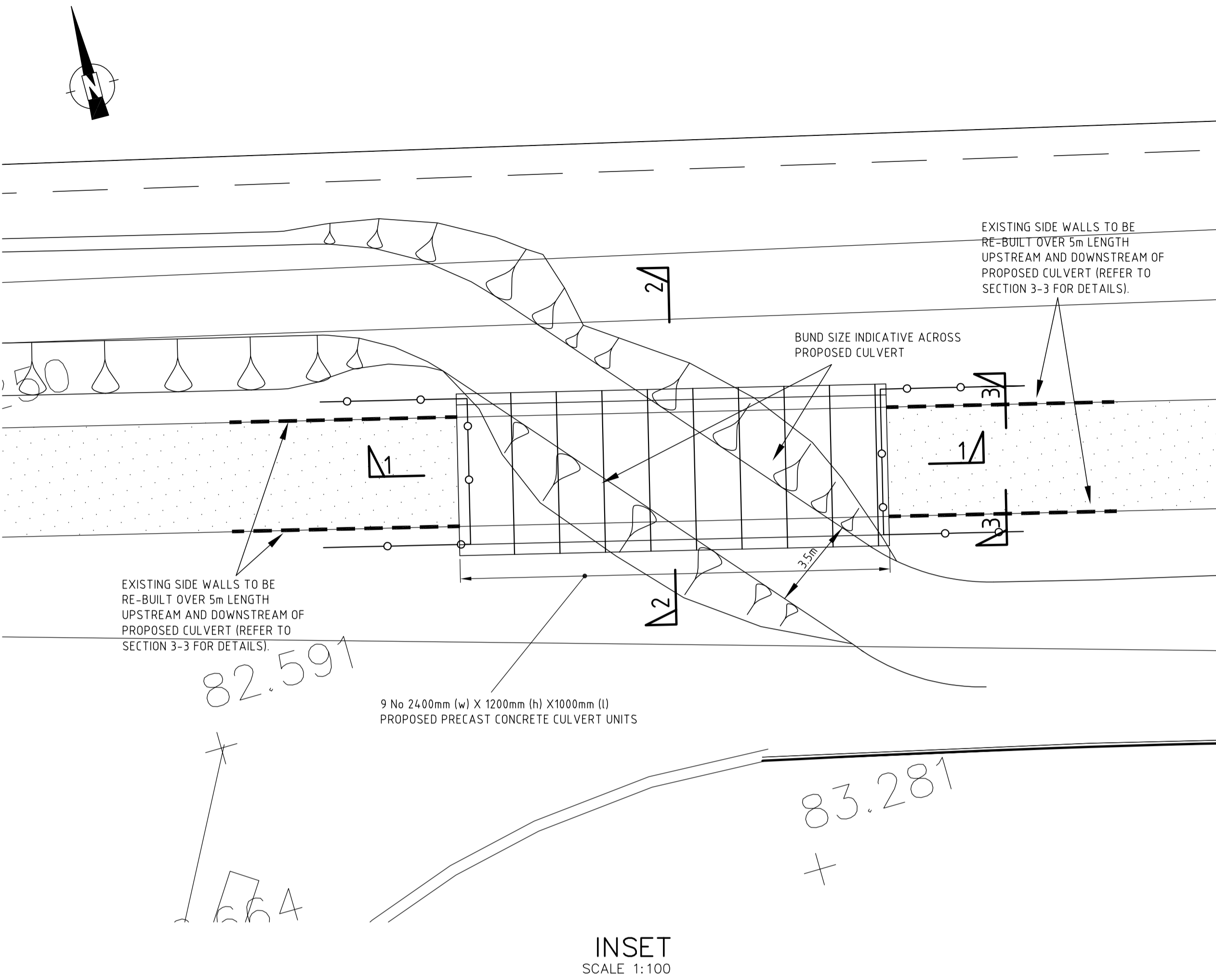
Appendix B: Proposed General Arrangement Drawing  
3D Model

**NOTES**

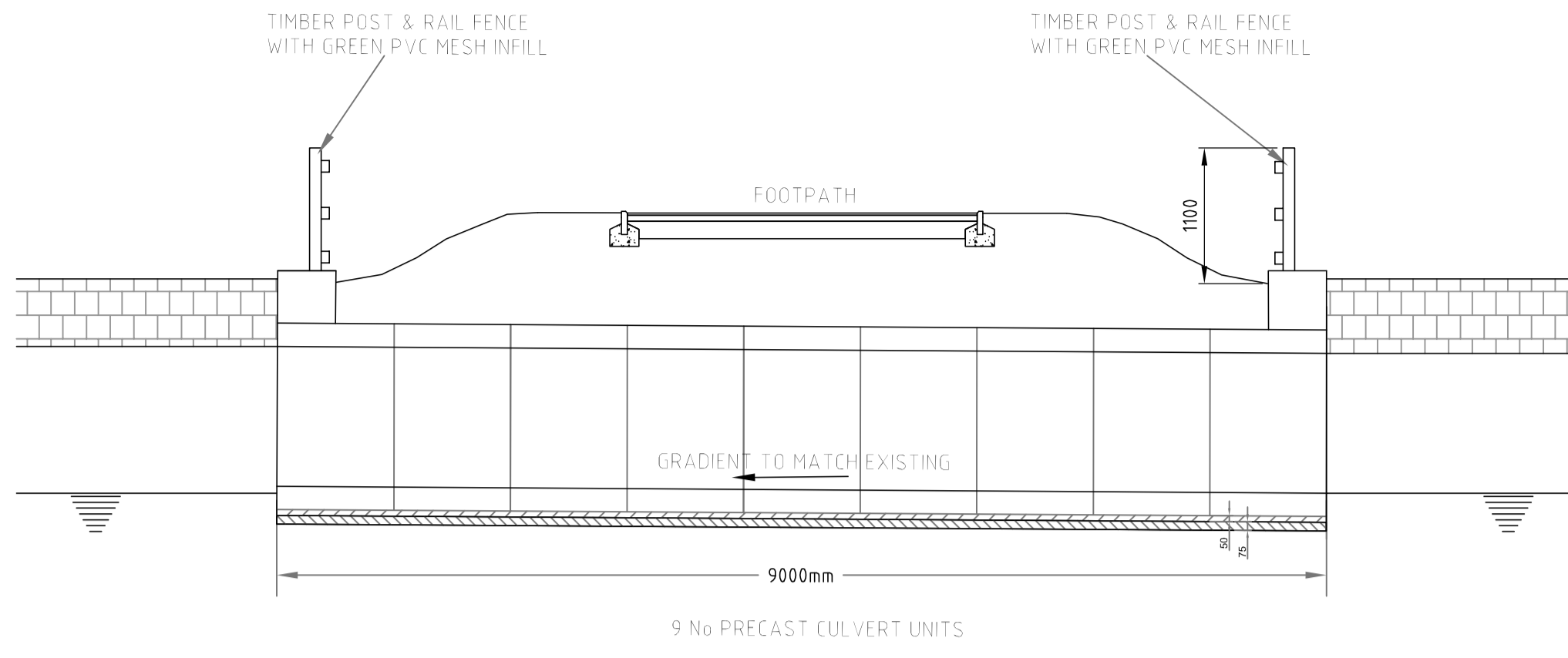
1. THIS DRAWING HAS BEEN PRODUCED MAINLY FOR THE PURPOSE OF PRELIMINARY DESIGN.
2. LEVELS ARE IN METRES AND ABOVE ORDNANCE DATUM.
3. ALL DIMENSIONS ARE IN MILLIMETRES.
4. THE OPTION SHOWN IN THIS DRAWING IS NOT FOR CONSTRUCTION
5. THE FOUNDATION TYPE SHOWN ON THE DRAWING IS BASED ON THE LATEST AVAILABLE GEOTECHNICAL INFORMATION.
6. BASIC PRELIMINARY DESIGN HAS BEEN UNDERTAKEN TO DETERMINE THE GEOMETRY OF THE SECTION SIZES AS PER CLIENT'S INSTRUCTION.
7. THE PROPOSED STRUCTURE ACCOMMODATES A COMBINED USE OF PEDESTRIAN, CYCLIST AND EQUESTRIAN WITH A WIDTH OF 3.5M
8. THIS DRAWING HAS BEEN PRODUCED BASED ON THE LATEST MX HIGHWAY MODEL - DRAFT DESIGN FREEZE 7, AS PROVIDED BY THE CLIENT.

**KEY**

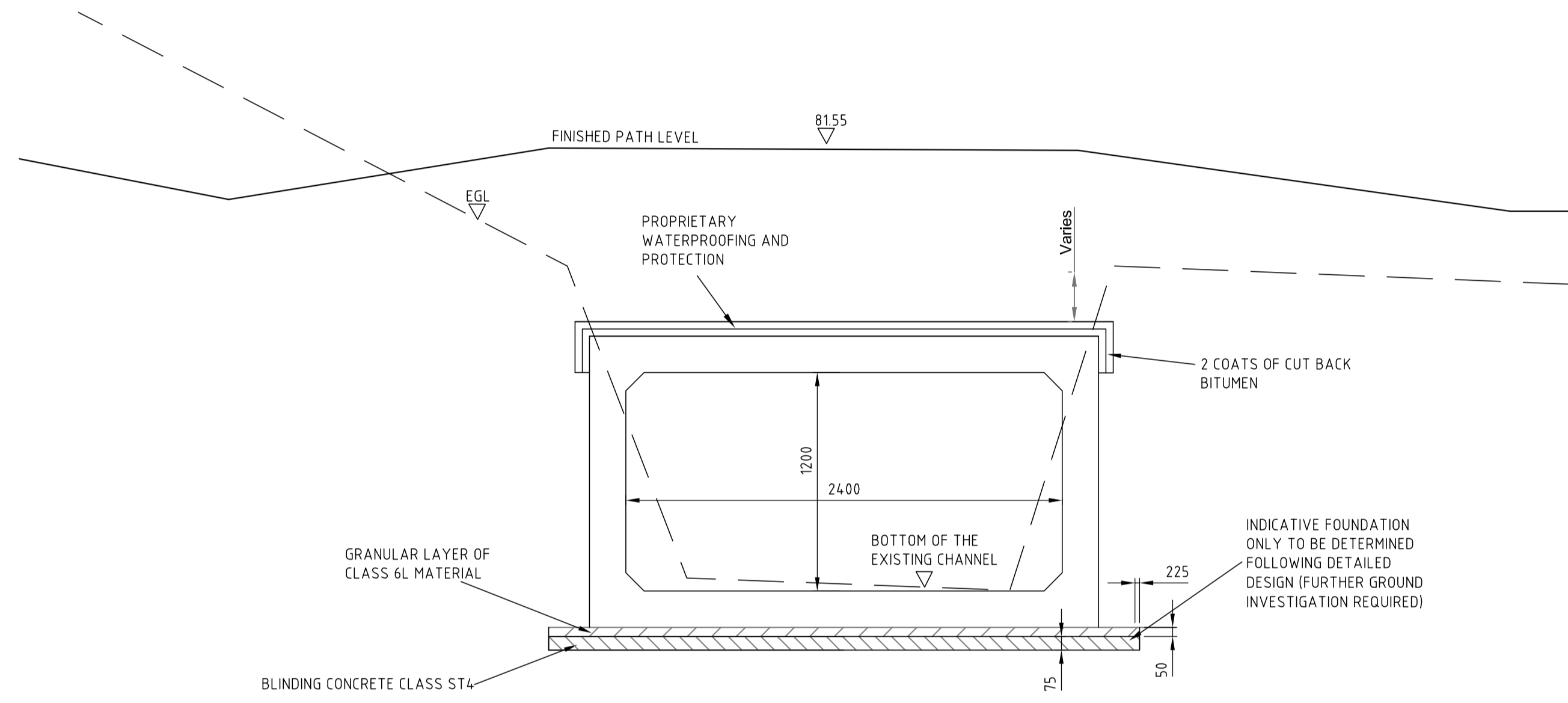
- - - EXISTING SIDEWALLS AND PITCHING TO BE REBUILT TO ALLOW TRANSITION FROM SLOPING SIDES TO VERTICAL
- - - PROPOSED RETAINING WALL
- PROPOSED TIMBER POST AND RAIL FENCE
- +82.5 PROPOSED FOOTPATH LEVELS



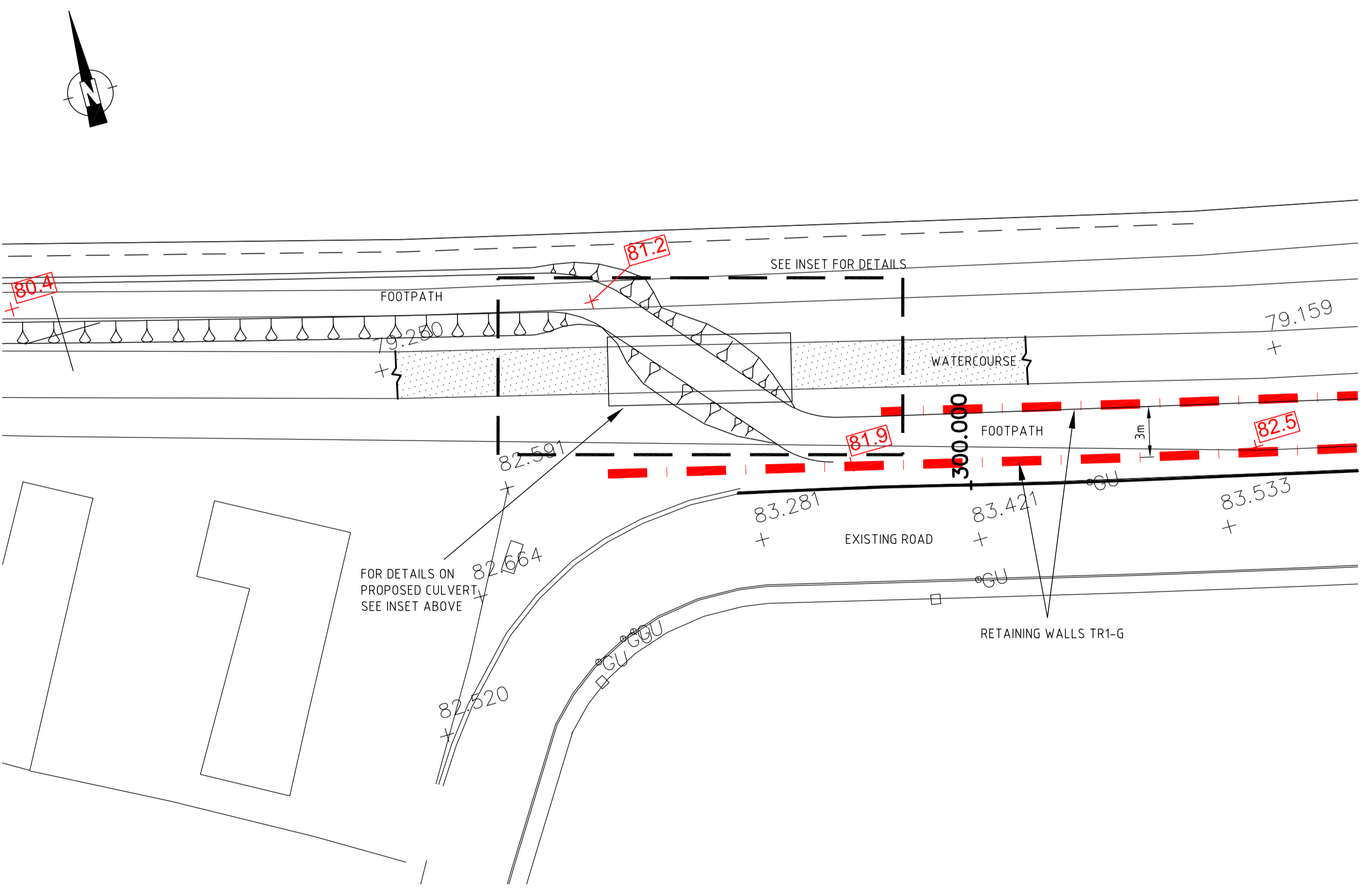
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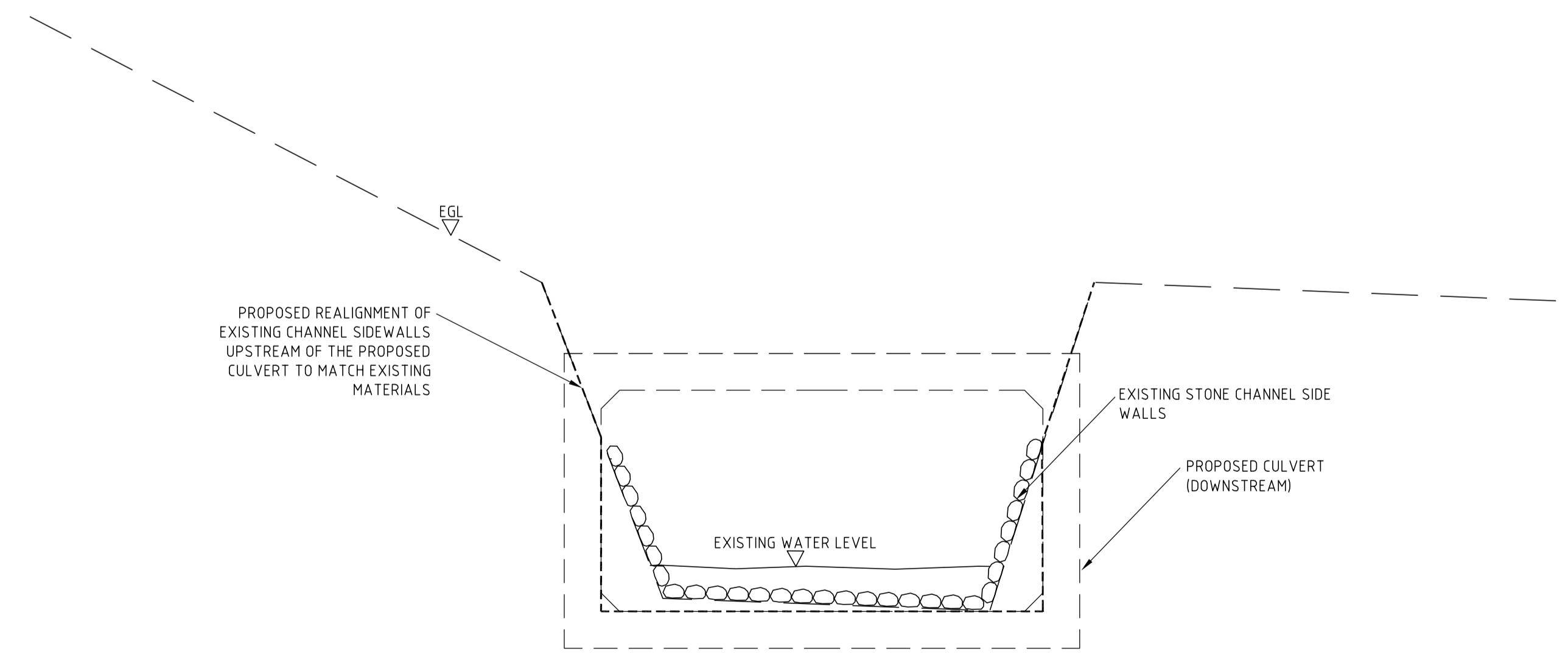
SECTION 1-1  
SCALE 1:50



SECTION 2-2  
SCALE 1:25



PLAN  
SCALE 1:500



SECTION 3-3  
SCALE 1:25

Rev.	Drawn	Checked	Date	Revision Details
-	DB	JW	28.08.13	FIRST ISSUE (FOR CLIENT COMMENTS)

South east manchester multi modal strategy  
  
  
  
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**A6 TO MANCHESTER AIRPORT RELIEF ROAD**

Drawn	Engineer	Checked	Approved
DB	JW	ME	NS
Date	Date	Date	Date
03.09.13	03.09.13		
Size	Scale		
A1	AS SHOWN		
SCG No.	Filename		
1007/3D/DF7/A6-MA/TR1-11/701			
Drawing No.	Revision No.		Revision
			A



**TR1-11 Box Culvert**

Plan View