



Bonneagar Iompair Éireann
Transport Infrastructure Ireland

TII Publications



Standard Construction Details - Series 2500

April 2017

Standard Construction Details (SCDs) – Series 2500

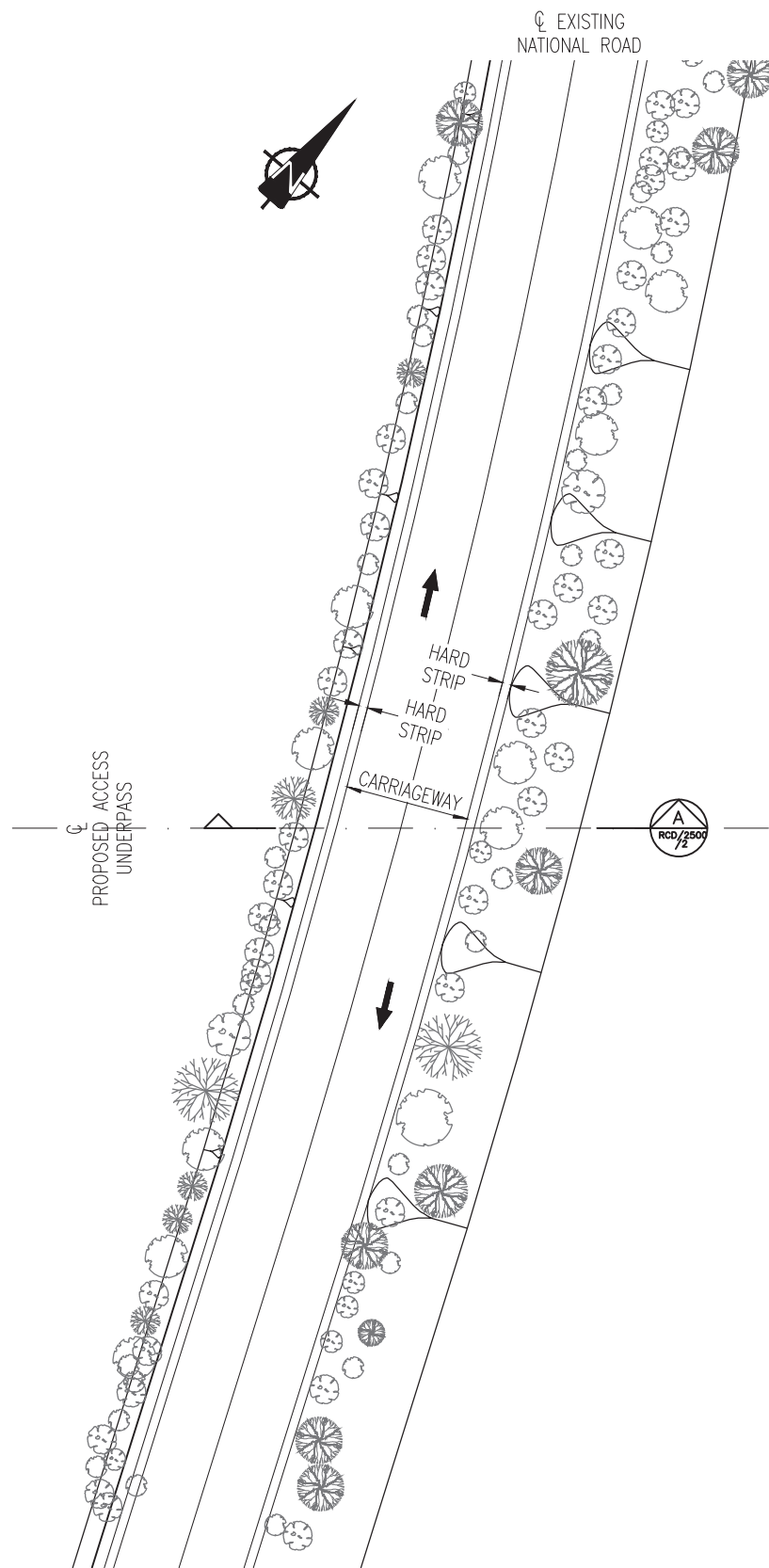
TII Publications contains Standard Construction Details (SCDs) for use on National Road schemes in Ireland. This composite document brings together all the Series 2500 SCDs from TII Publications current at the date of this document's publication, into a single location for convenience.

Every effort has been made to keep this composite document updated and available from the TII Publications website (<http://www.tiipublications.ie/>). Please note that the SCD drawings available from the TII Publications website (individually linked below) are the controlled versions for all SCDs.

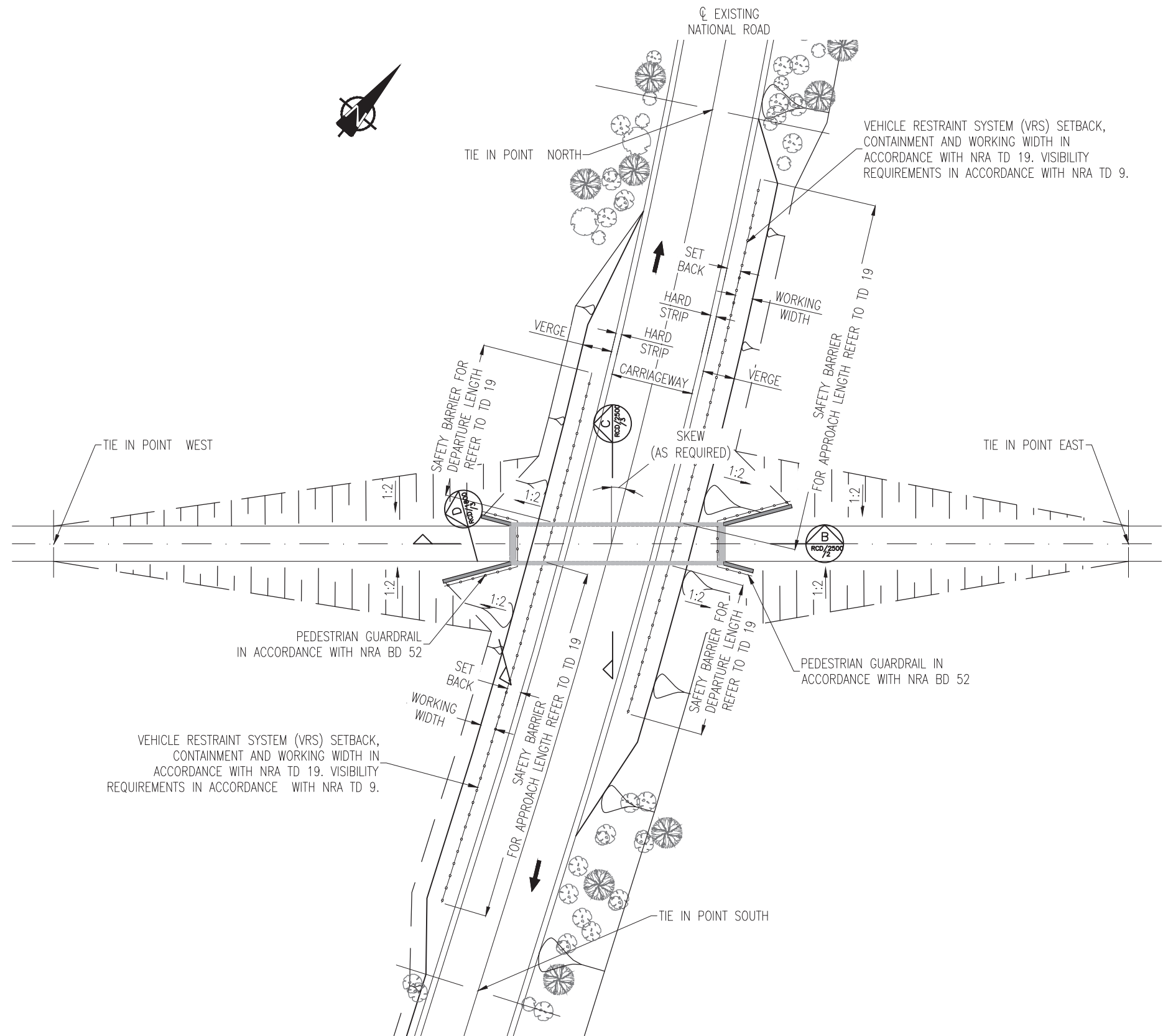
The SCDs contained in this document are as follows:

Series 2500 Special Structures

CC-SCD-02501	Special Structures - Access Underpass
CC-SCD-02502	Special Structures - Access Underpass
CC-SCD-02503	Special Structures - Access Underpass
CC-SCD-02504	Special Structures - Mammal Underpass General Layout
CC-SCD-02505	Special Structures - Mammal Underpass Longsection



PLAN
(BEFORE UNDERPASS CONSTRUCTION)

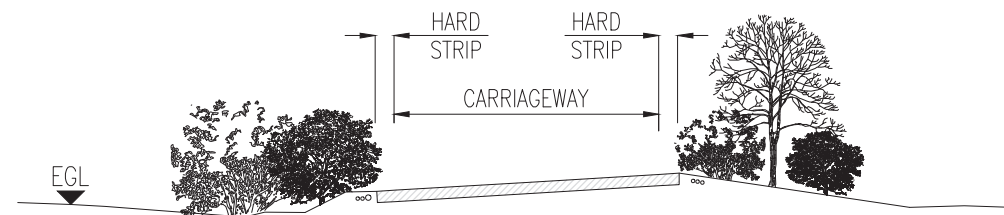


PLAN
(AFTER UNDERPASS CONSTRUCTION)

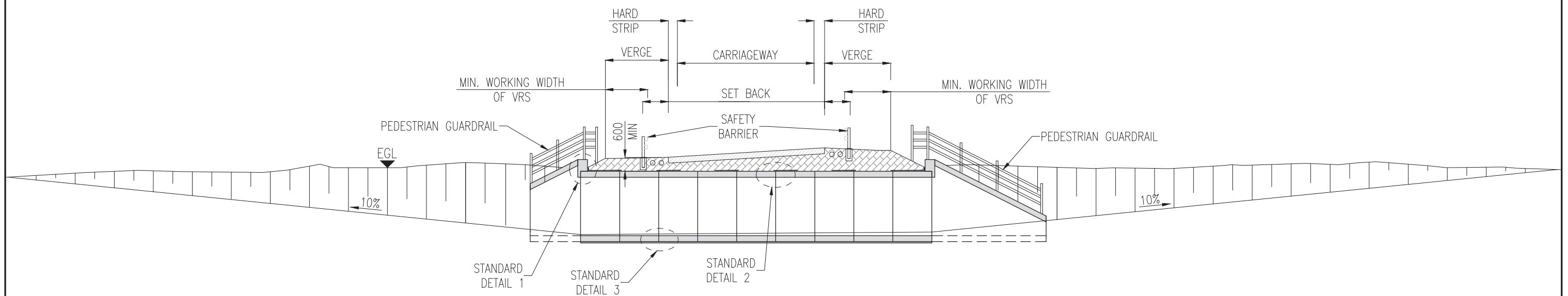
NOTES:

1. FOR NOTES REFER TO DRAWING RCD/2500/3.

NOT TO SCALE



SECTION A-A

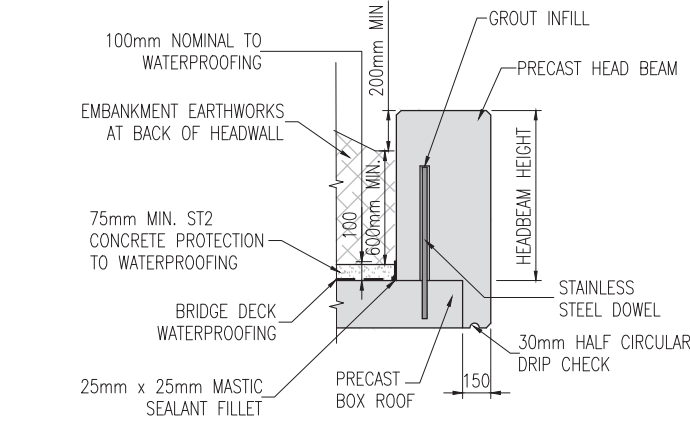


SECTION B-B

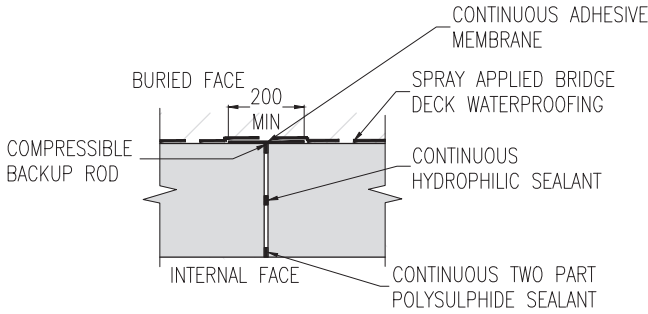
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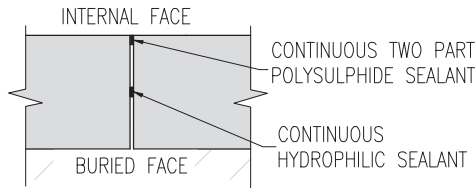
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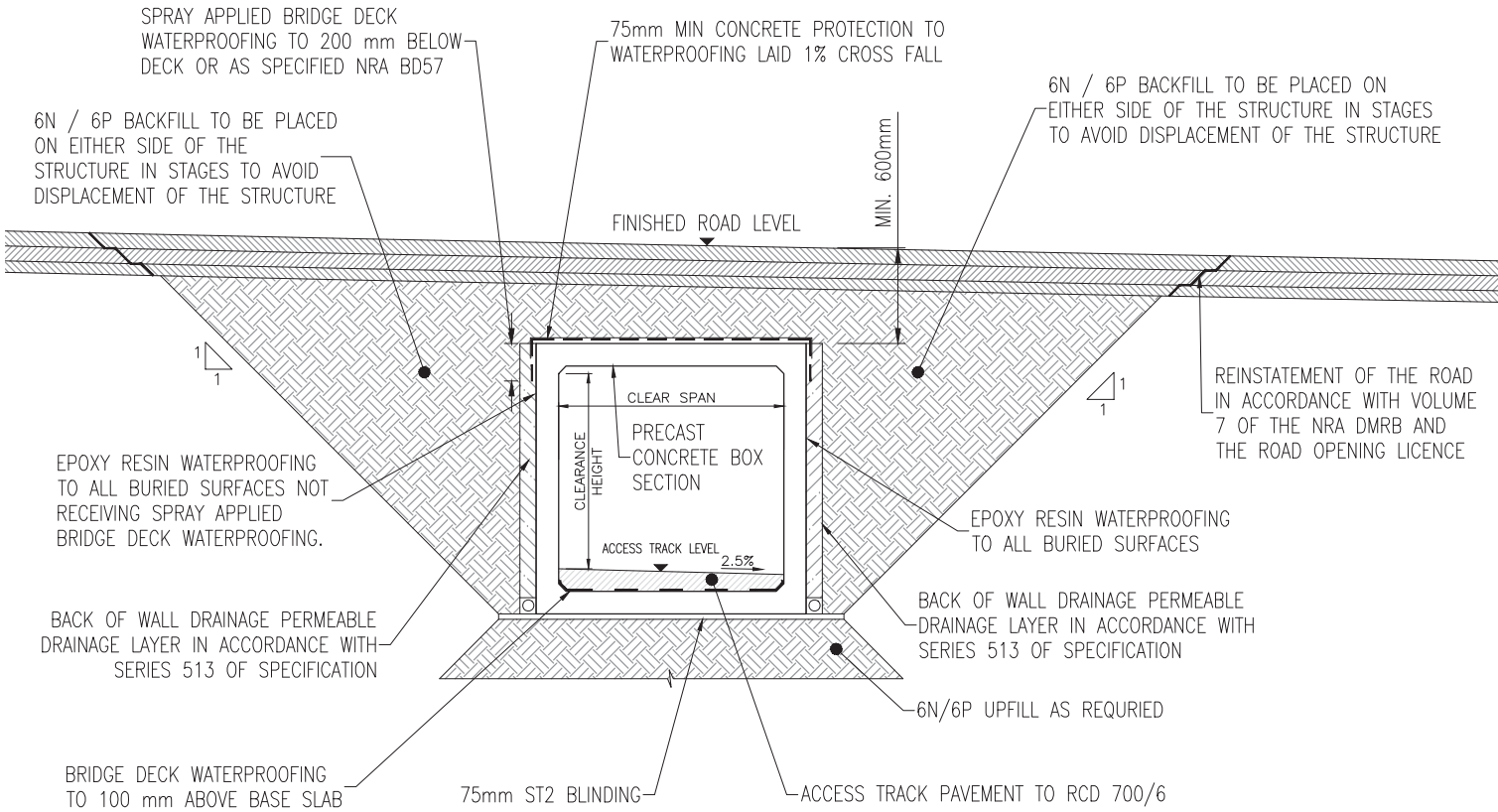
STANDARD DETAIL 1



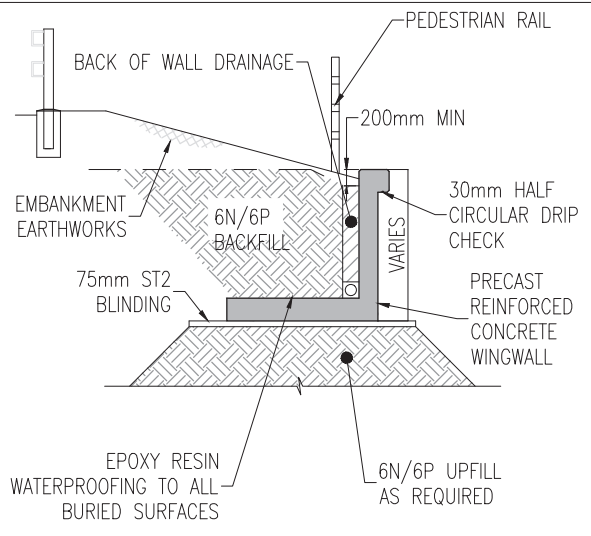
STANDARD DETAIL 2
WALLS & ROOF



STANDARD DETAIL 3
FLOOR



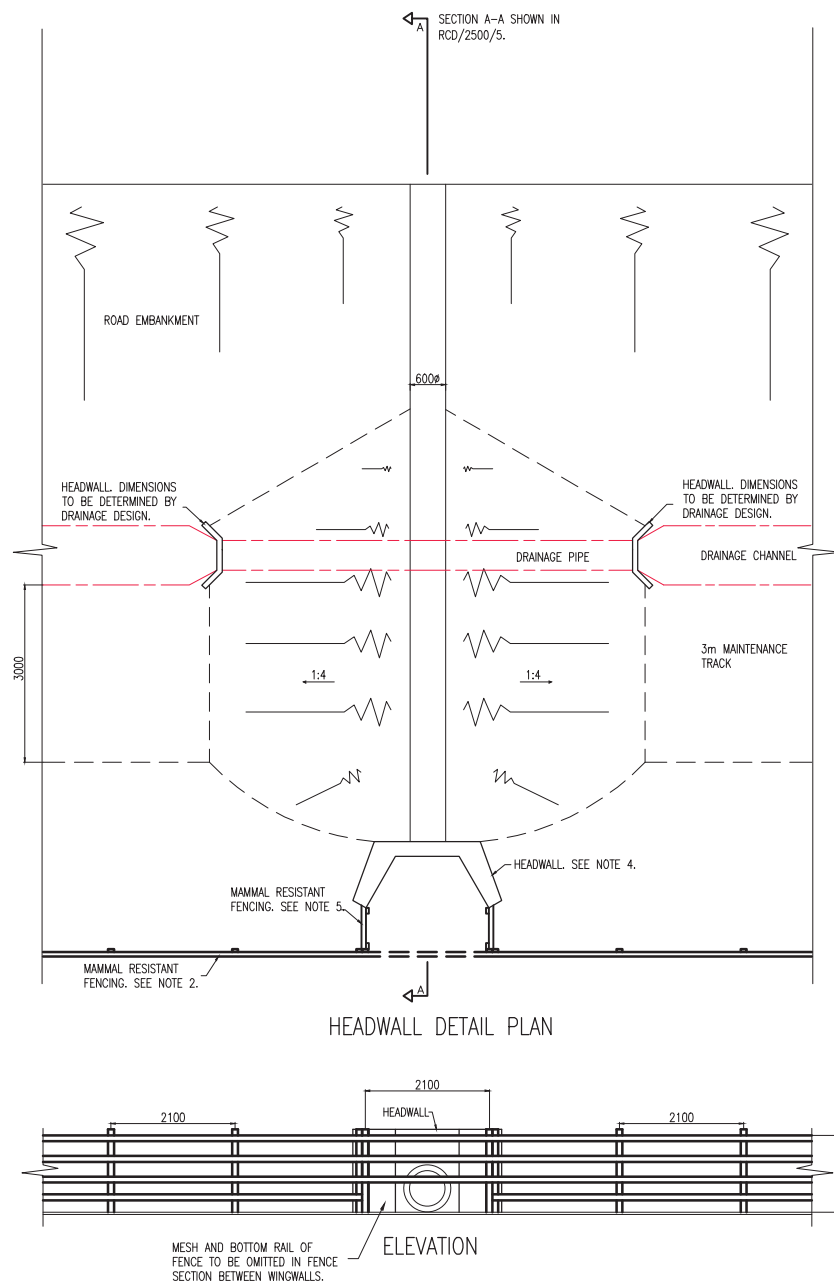
SECTION C-C



SECTION D-D

- DESIGN:**
- MINIMUM COVER TO THE TOP OF THE STRUCTURE SHALL BE 600mm.
 - PRE-CAST CONCRETE UNITS ARE THE PREFERRED METHOD OF CONSTRUCTION. THESE SHALL BE DESIGNED IN ACCORDANCE WITH THE EUROCODES BY A CHARTERED ENGINEER WITH PREVIOUS STRUCTURAL DESIGN EXPERIENCE OF NATIONAL ROAD STRUCTURES.
 - ALL STRUCTURAL ELEMENTS SHALL BE DESIGNED IN ACCORDANCE WITH THE RELEVANT NRA DMRB STANDARDS AND THE EUROCODES INCORPORATING THE IRISH NATIONAL ANNEXES. FURTHER DETAILS OF THE RELEVANT STANDARDS CAN BE FOUND IN NRA IAN 02.
 - TRAFFIC LOADING SHALL BE IN ACCORDANCE WITH IS EN 1991-2 AND PD 6694-1. THE STRUCTURE SHALL BE DESIGNED FOR THE APPROPRIATE LM3 VEHICLES IN ACCORDANCE WITH NRA IAN 02.
 - HYDROSTATIC PRESSURES SHALL BE CONSIDERED IN THE DESIGN, WHERE RELEVANT. A LONGITUDINAL SECTION WILL BE REQUIRED SHOWING THE EXISTING WATER-TABLE LEVEL, DETERMINED BY TRIAL HOLES OR BORE-HOLES, THE DEPTH TO BEDROCK AND A DESCRIPTION OF THE OVER BURDEN AT THE LOCATION OF THE PROPOSED UNDERPASS.
 - PRIOR TO ANY PLANNING APPLICATION, A TECHNICAL ACCEPTANCE REPORT IN ACCORDANCE WITH NRA BD 2 SHALL BE SUBMITTED TO THE NRA FOR APPROVAL.
 - PRE-CAST CONCRETE SHALL BE GRADE C40/50 (AS A MINIMUM) IN ACCORDANCE WITH IS EN 206 AND NRA BD 57.
 - ALL CONCRETE SHALL BE SPECIFIED IN ACCORDANCE WITH NRA MCDRW SERIES 1700.
 - DRIP CHECKS SHALL BE PROVIDED TO THE TOP OF ALL RETAINING WALL STRUCTURES.
 - ALL BLINDING CONCRETE SHALL BE ST2 IN ACCORDANCE WITH IS EN 206.
 - ALL EXPOSED ARRISSES OF STRUCTURAL CONCRETE SHALL BE FINISHED WITH A MINIMUM 25 MILLIMETRES X 25 MILLIMETRES CHAMFER.
 - NO GABIONS ARE PERMITTED AS PART OF ANY EARTH RETENTION SYSTEM.
- DURABILITY:**
- THE MINIMUM COVER FOR DURABILITY TO REINFORCEMENT IN CONCRETE SHALL BE IN ACCORDANCE WITH NRA BD 57.
 - WATERPROOFING TO THE STRUCTURE SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NRA BD 57. WHERE SPRAY APPLIED BRIDGE DECK WATERPROOFING IS REQUIRED, IT SHALL BE APPLIED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NRA ADDENDUM TO BD 47. WATERPROOFING TO BE APPLIED TO THE TOP SURFACE OF THE BOX AND THE TOP OF THE ADJOINING VERTICAL EXTERNAL SURFACE TO A LEVEL OF 200MM BELOW THE SOFFIT OF THE TOP SLAB.
 - THE UPPER SURFACE OF THE BOTTOM SLAB SHALL BE WATERPROOFED WITH A BRIDGE DECK WATERPROOFING SYSTEM.
 - ALL EXPOSED CONCRETE SHALL BE IMPREGNATED WITH A HYDROPHOBIC IMPREGNATION SYSTEM IN ACCORDANCE WITH NRA MCDRW SERIES 1700.
 - ALL BURIED CONCRETE FACES OF STRUCTURES NOT REQUIRING BRIDGE DECK WATERPROOFING SHALL BE TREATED WITH TWO COATS OF EPOXY RESIN WATERPROOFING FOR BELOW GROUND CONCRETE IN ACCORDANCE WITH THE NRA SPECIFICATION FOR ROAD WORKS.
- DRAINAGE:**
- DRAINAGE OF THE STRUCTURE SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NRA BD 57 AND NRA MCDRW SERIES 500. DETAILS OF THE MANAGEMENT OF STORM WATER, COLLECTION OF EFFLUENTS AND PREVENTION OF GROUNDWATER POLLUTION SHALL BE PROVIDED IN THE TECHNICAL ACCEPTANCE REPORT.
 - A LOW POINT WITHIN THE STRUCTURE SHALL BE AVOIDED SO THE STRUCTURE IS FREE DRAINING. WHERE POSSIBLE, DRAINAGE OF THE ACCESS TRACK SHALL INCORPORATE A POSITIVE DRAINAGE SYSTEM. ONLY WHERE NO ALTERNATIVE IS AVAILABLE, A SUMP AND PUMPING SHOULD BE CONSIDERED. THIS SHALL BE DETAILED IN THE TECHNICAL ACCEPTANCE REPORT.
 - A BACK OF WALL DRAINAGE SYSTEM SHALL BE PROVIDED TO ALL STRUCTURES REGARDLESS OF WATER TABLE LEVEL, FLOW THROUGH THE STRUCTURE OR DESIGN ASSUMPTIONS WITH REGARD TO HYDROSTATIC PRESSURES.
- VEHICLE RESTRAINT SYSTEM (VRS), NRA TD 19 REQUIREMENTS:**
- THE VEHICLE RESTRAINT SYSTEM PROVIDED SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NRA TD 19 FOR THE APPROACH / DEPARTURE LENGTHS, WORKING WIDTHS ETC. VISIBILITY REQUIREMENTS SHALL BE IN ACCORDANCE WITH NRA TD 9.
 - THE VRS SHALL BE IN ACCORDANCE WITH NRA MCDRW SERIES 400.
 - PEDESTRIAN PROTECTION TO THE TOP OF THE HEADWALL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NRA BD 52.
- JOINTS BETWEEN PRECAST UNITS:**
- JOINTS BETWEEN PRE-CAST UNITS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NRA BD 57.
- EXECUTION:**
- WHEN WORKING ON A LIVE CARRIAGEWAY, PRIOR TO ANY WORKS TAKING PLACE ON SITE, A ROAD OPENING LICENSE WILL BE REQUIRED FROM THE RELEVANT LOCAL AUTHORITY.
 - PRIOR TO ANY EXCAVATION WORKS TAKING PLACE, EXISTING SERVICES ALONG THE ROAD WILL NEED TO BE IDENTIFIED AND APPROPRIATELY PROTECTED.
 - THE CONSTRUCTION SEQUENCE SHALL BE ADDRESSED WITHIN THE TECHNICAL ACCEPTANCE REPORT ON A CASE BY CASE BASIS. DETAILS OF THE TRAFFIC MANAGEMENT PROPOSED SHALL ALSO BE ADDRESSED WITHIN THE TECHNICAL ACCEPTANCE REPORT.
 - MATERIAL TESTING SHALL COMPLY WITH THE REQUIREMENTS OF NRA MCDRW SERIES 100.
- TREATMENT OF SLAB THROUGH THE BOX:**
- THE FINISH TO THE TOP OF THE BASE SLAB SHALL BE PROTECTED WITH BRIDGE DECK WATERPROOFING AND SHALL BE DOUBLE SURFACE DRESSED IN ACCORDANCE WITH NRA MCDRW SERIES 900, CLAUSE 919.
- BACKFILL REQUIREMENTS:**
- BACKFILLING OF EXCAVATIONS SHALL BE CARRIED OUT AS QUICKLY AS POSSIBLE AFTER COMPLETION OF THE WORK FOR WHICH THE EXCAVATION IS REQUIRED, IN COMPLIANCE WITH THE APPROPRIATE CLAUSES IN NRA MCDRW SERIES 500, 600, 1200, 1300 AND 1400.
 - PRIOR TO PLACING BLINDING CONCRETE AT THE DESIGN FOUNDATION LEVEL, OR IMMEDIATELY PRIOR TO FILLING THE EXCAVATION WHERE NO BLINDING LAYER IS REQUIRED, THE FORMATION SHALL BE INVESTIGATED BY A CHARTERED ENGINEER WITH SUITABLE GEOTECHNICAL DESIGN EXPERIENCE (SHEAR VANE, DYNAMIC PROBE OR PLATE BEARING TEST, AS APPROPRIATE) TO CONFIRM THAT THE FORMATION STRENGTH MEETS THE DESIGN REQUIREMENTS.
 - FILL TO STRUCTURES SHALL COMPRISE CLASS 6N AND/OR CLASS 6P IN ACCORDANCE WITH NRA MCDRW SERIES 600. SPECIFIED FILL MATERIAL TO STRUCTURES SHALL BE DEPOSITED AND COMPACTED IN ACCORDANCE WITH NRA MCDRW SERIES 600, SUB-CLAUSE 610.
 - CONSTRUCTION OF FILL MATERIAL REQUIRING END PRODUCT COMPACTION SHALL BE DEPOSITED IN LAYERS NOT EXCEEDING 250MM UN-COMPACTED THICKNESS IN LAYERS IN ACCORDANCE WITH NRA MCDRW SERIES 600, SUB-CLAUSE 608. FILL MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH NRA MCDRW SERIES 600, SUB-CLAUSE 612.
- ROAD REINSTATEMENT:**
- REINSTATEMENT OF THE ROAD SHALL BE IN ACCORDANCE WITH THE NRA DMRB VOLUME 7, PAVEMENT DESIGN AND MAINTENANCE OR THE CONDITIONS OF THE ROAD OPENING LICENSE. PROPOSALS FOR REINSTATEMENT SHALL BE APPROVED BY THE LOCAL AUTHORITY PRIOR TO ANY WORKS TAKING PLACE.
- ROAD SAFETY AUDIT:**
- STAGE 2 AND STAGE 3 ROAD SAFETY AUDITS WILL BE REQUIRED AT THE LOCATION OF THE NEW STRUCTURE IN ACCORDANCE WITH THE REQUIREMENTS OF NRA HD 19.
- HEALTH AND SAFETY:**
- ALL DUTIES FOR DESIGN AND CONSTRUCTION INCLUDING, BUT NOT LIMITED TO PSDP, PSOS AND PRODUCTION OF RISK ASSESSMENTS SHALL BE IN ACCORDANCE WITH THE CURRENT SAFETY, HEALTH AND WELFARE AT WORK (CONSTRUCTION) REGULATIONS.

NOT TO SCALE



NOTES:

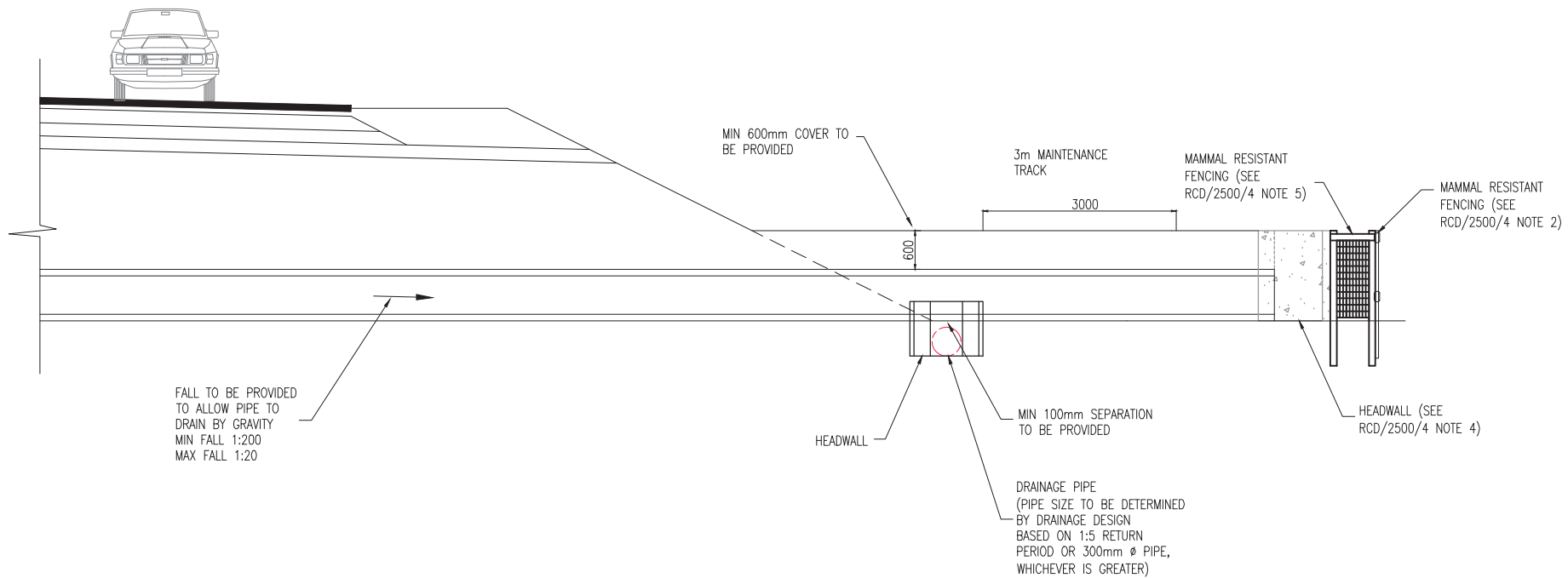
1. MAMMAL UNDERPASS SHALL BE 6000 CONCRETE PIPE CROSSING THROUGH THE ROAD EMBANKMENT.
2. SEE RCD 300/19 FOR DETAILED REQUIREMENTS OF MAMMAL RESISTANT FENCING WHICH MUST EXTEND A SUFFICIENT DISTANCE FROM UNDERPASSES TO ENSURE THAT MAMMALS WILL NOT NAVIGATE AROUND THEM. THE PROPOSED EXTENT OF FENCING IS SCHEME SPECIFIC AND SHALL BE AGREED WITH THE NRA PRIOR TO CONSTRUCTION. IT MAY OFTEN BE NECESSARY TO INCORPORATE MAMMAL RESISTANT FENCING ALONG CONTINUOUS LENGTHS OF A SCHEME.
3. THIS DRAWING IS AN INDICATIVE (TYPICAL) DETAIL. DESIGN/DETAILING OF DRAINAGE, SERVICES AND THE HEADWALL ARE TO BE UNDERTAKEN ON A SCHEME SPECIFIC BASIS.
4. ALL MAMMAL UNDERPASSES SHALL HAVE A FORMED HEADWALL AT EACH END. THE FORMED HEADWALL SHALL BE IN ACCORDANCE WITH RCD/500/53, EXCEPT THAT THE WINGWALLS SHALL HAVE THE SAME HEIGHT AS THE HEADWALL.
5. WHERE THE HEADWALL IS SEPARATED FROM THE PERMANENT BOUNDARY, MAMMAL RESISTANT FENCING TO RCD/300/19 MUST BE USED TO CONNECT THESE FEATURES SUCH THAT NO GAP EXISTS. WHERE SUCH FENCING IS REQUIRED WITHIN THE CLEAR ZONE OF THE ROAD, TIMBER POST AND TENSION MESH FENCING AS PER RCD/300/20, TOGETHER WITH MAMMAL RESISTANT CHAINLINK MESH, AND BURIED BELOW GROUND LEVEL AS PER RCD/300/19, SHALL BE USED.
6. THE MAMMAL UNDERPASS SHALL RUN IN A STRAIGHT LINE BETWEEN THE HEADWALLS.
7. ALL CONSTRUCTED UNDERPASSES AND MAMMAL RESISTANT FENCING SHALL BE CHECKED TO ENSURE THERE ARE NO GAPS OR WEAK POINTS WHICH COULD BE EXPLOITED.

NOT TO SCALE

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NOTES:

1. FOR NOTES REFER TO RCD/2500/4.



SECTION A-A

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Ionad Ghnó Gheata na Páirce,
Stráid Gheata na Páirce,
Baile Átha Cliath 8, D08 DK10, Éire



Parkgate Business Centre,
Parkgate Street,
Dublin 8, D08 DK10, Ireland



www.tii.ie



info@tii.ie



+353 (01) 646 3600



+353 (01) 646 3601