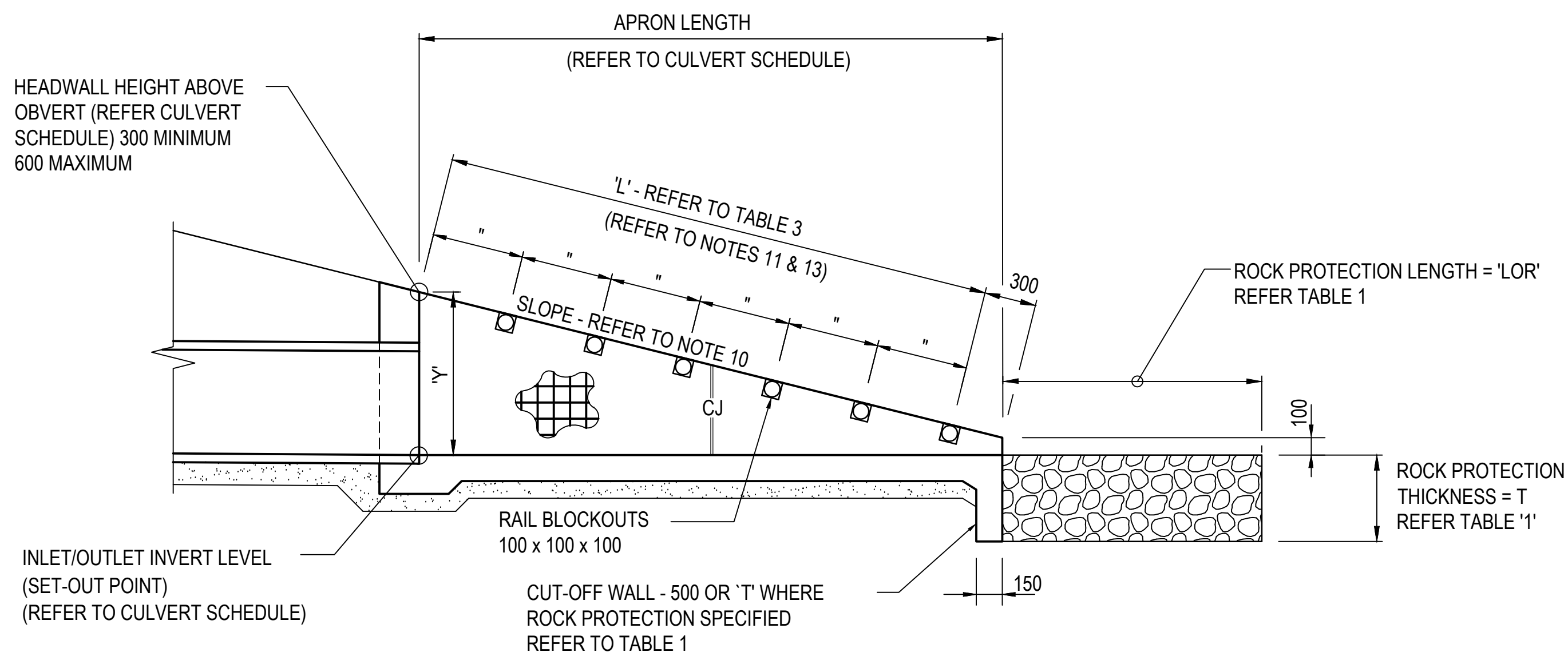
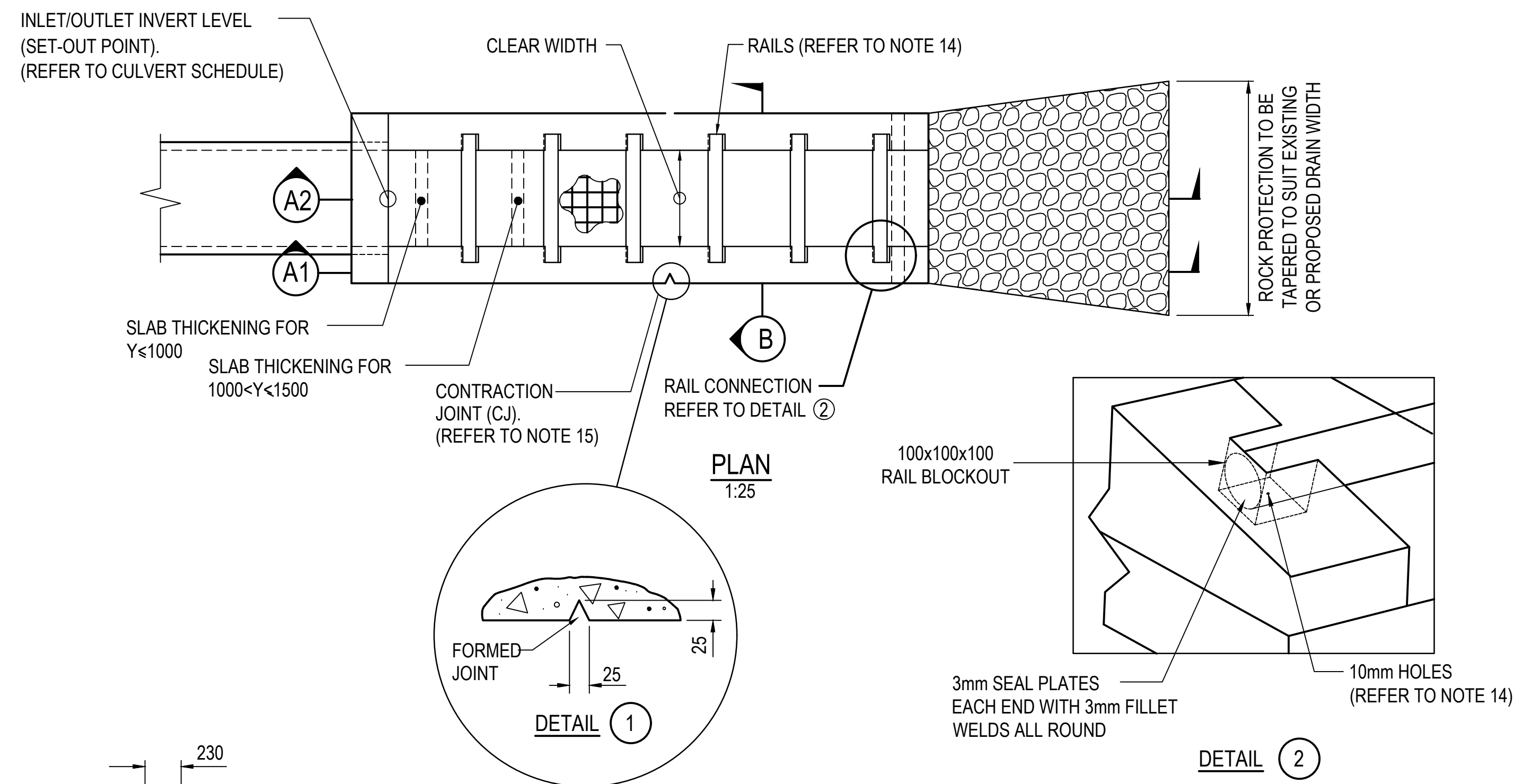
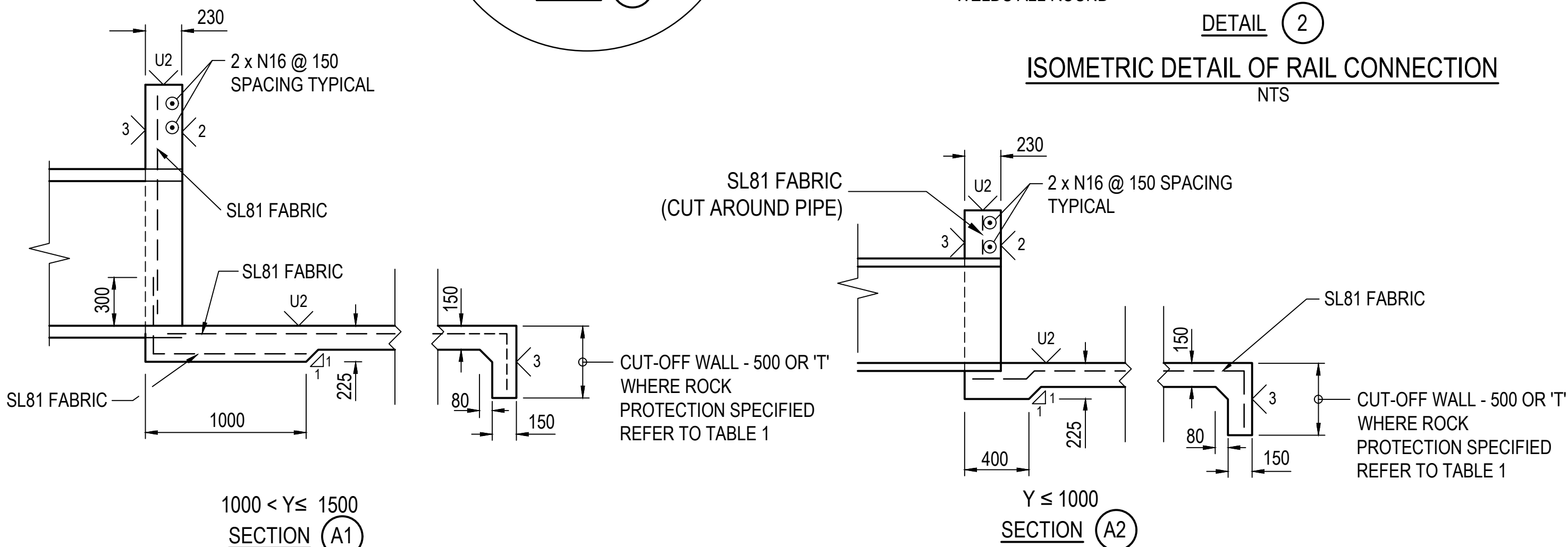




LONGITUDINAL SECTION
1:25



ISOMETRIC DETAIL OF RAIL CONNECTION
NTS



HEADWALL AND APRON DETAILS
(ROCK PROTECTION OMITTED)
1:25

TABLE 1: ROCK PROTECTION DETAILS

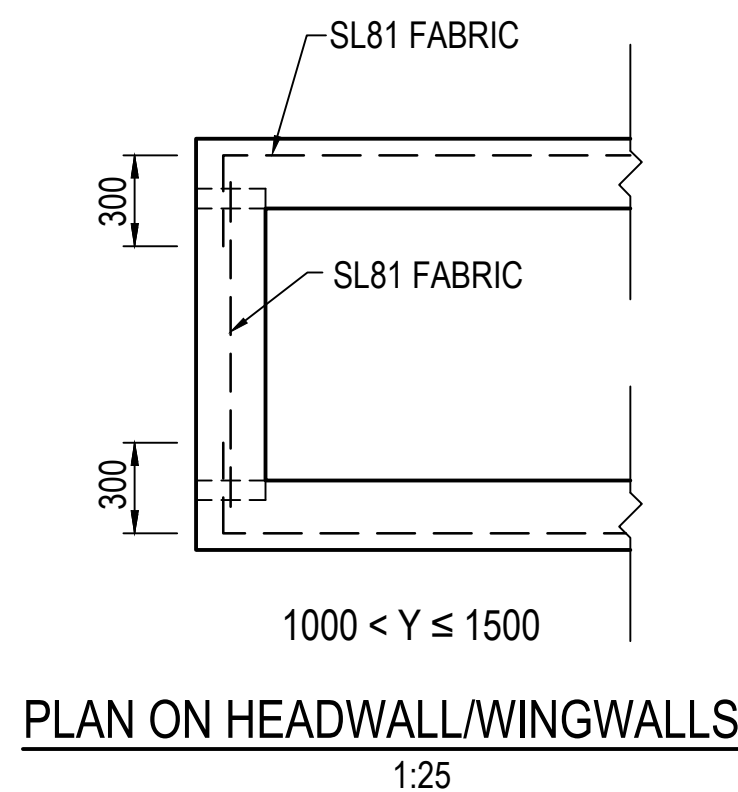
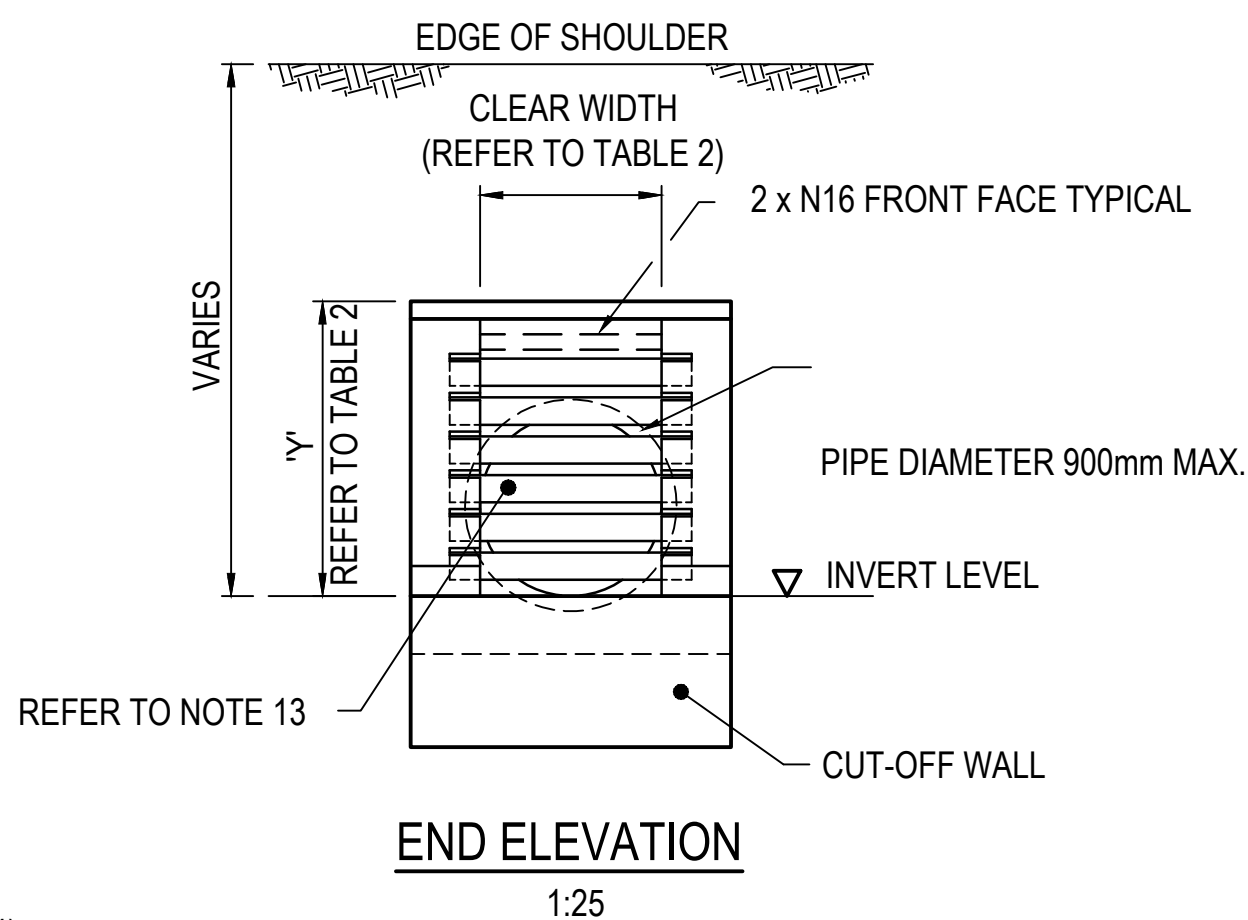
CLASS ROCK	MIN THICKNESS (T)	MIN LENGTH (LOR)	ROCK SIZE (m)	ROCK MASS (Kg)	% OF ROCK LARGER THAN
FACING	500	3000	0.40	100	0
			0.30	35	50
			0.15	2.5	90
LIGHT	750	3000	0.55	250	0
			0.40	100	50
			0.20	10	90
1/4 TONNE	1000	5000	0.75	500	0
			0.55	250	50
			0.30	35	90
1/2 TONNE	1250	5000	0.90	1000	0
			0.70	450	50
			0.40	100	90

* ASSUMING A SPECIFIC GRAVITY OF 2.65 AND SPHERICAL SHAPE FOR ALL ROCK CLASS.

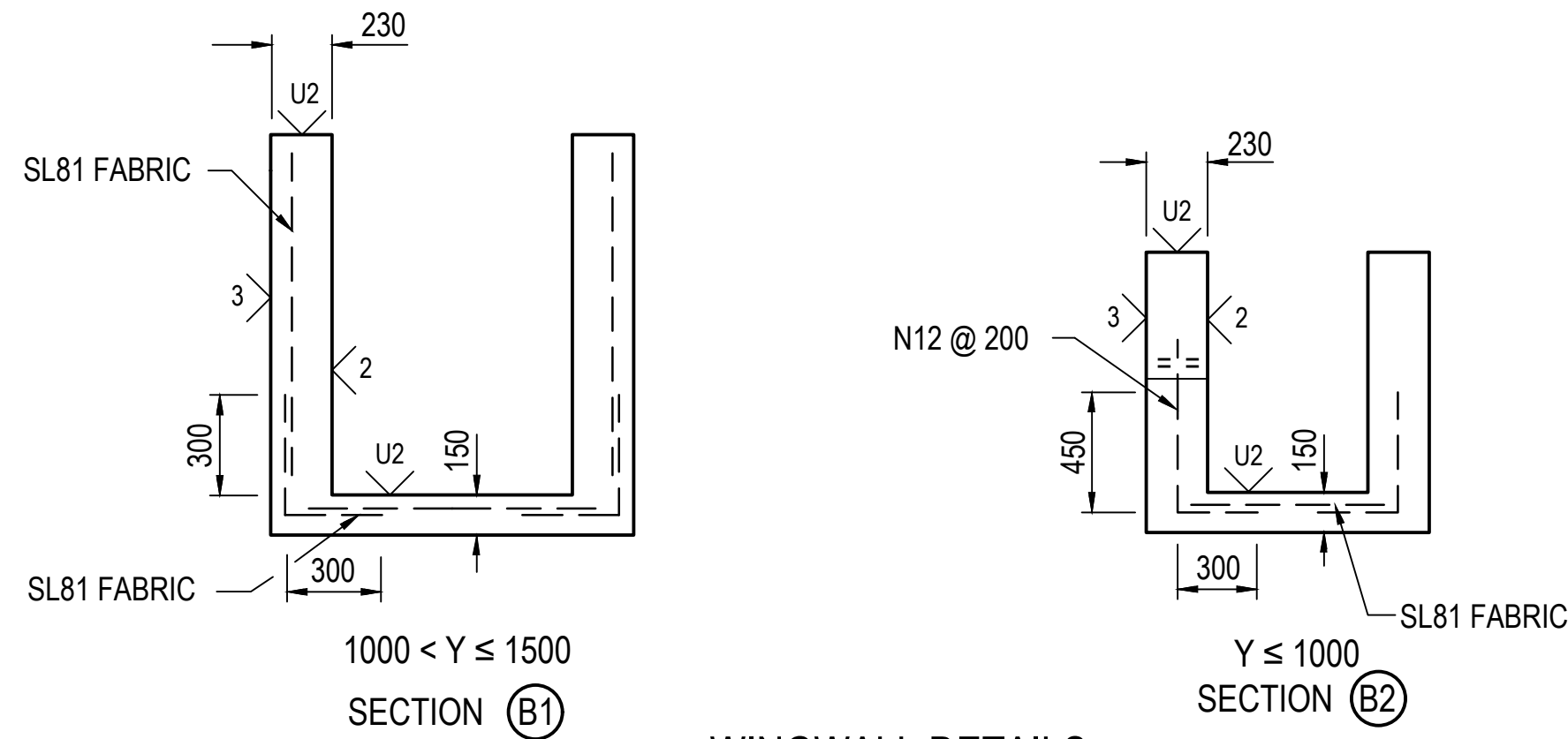
TABLE 2: CULVERT HEADWALL DIMENSIONS

CULVERT SIZE	HEADWALL HEIGHT 'Y'	* CLEAR WIDTH
375	675 - 975	375 - 475
450	750 - 1050	450 - 550
600	900 - 1200	600 - 700
750	1050 - 1350	750 - 850
900	1200 - 1500	900 - 1000

* REFER TO NOTE 16



NOTE:
ONLY R.C.P. DETAILS ARE SHOWN.
R.C.B DETAILS ARE THE SAME.



WINGWALL DETAILS
(REINFORCEMENT TO BE SYMMETRICAL)
1:25

NOTES:

- CONCRETE CLASS TO BE N40.
 - ALL EXPOSED CORNERS OF CONCRETE SHALL HAVE A 20 CHAMFER.
 - ALL BAR LAP LENGTHS SHALL BE 600 OR 36D WHICHEVER IS GREATER.
 - ALL REINFORCEMENT SHALL BE CUT & BENT TO AS/NZS 3600.
 - IDENTIFICATION SYMBOLS FOR REINFORCEMENT:
 - N : HOT ROLLED DEFORMED REINFORCING BARS STRENGTH GRADE 500 TO AS/NZS4671.
 - RL,SL : FABRICATED MESH STRENGTH GRADE 500 TO AS/NZS4671.
 - R : PLAIN ROUND BAR STRENGTH GRADE 500 TO AS/NZS4671.
 - CLEAR COVER TO REINFORCEMENT TO BE 50 UNLESS SHOWN OTHERWISE.
 - CULVERT BEDDING AND BACKFILL TO BE AS PER STANDARD MRWA DRAWING 200131-0062.
 - SURFACE FINISH OF THE CONCRETE SHALL BE IN ACCORDANCE WITH THE SPECIFICATION.
- ABBREVIATIONS USED:
- UN_o FORMED FINISH CLASS No.
- UN_o UNFORMED FINISH CLASS No.
IN ACCORDANCE WITH THE SPECIFICATION.
- ALL DIMENSIONS IN MILLIMETRES UNLESS SHOWN OTHERWISE.
 - SLOPE OF ENDWALL TO MATCH BATTER SLOPE. MAXIMUM SLOPE OF 4 TO 1.
 - RAILS WITHIN 'L' SHALL BE EVENLY SPACED. THE MAXIMUM SPACING SHALL NOT EXCEED 600mm.
 - RAILS ARE 89mm DIAMETER GALVANISED TUBES 5.9mm THICK. THESE ARE TO BE GROUTED INTO THE SLOTS.
 - RAILS ARE ONLY TO BE USED IN AREAS WHERE HEAD ON COLLISIONS ARE LIKELY TO OCCUR SUCH AS CROSSOVERS AND INTERSECTIONS. CULVERTS ON THE MAIN ALIGNMENT DO NOT REQUIRE BARS.
 - RAILS TO HAVE 3mm SEAL PLATES EACH END WITH FILLET WELDS ALL ROUND. 10mm HOLES SHALL BE DRILLED BEFORE WELDING AND SHALL BE POSITIONED ON THE UNDERSIDE OF THE RAIL WITHIN THE RAIL BLOCKOUT.
 - WINGWALL CONTRACTION JOINTS TO HAVE MAXIMUM SPACING AT 4000mm CENTRES.
 - TOLERANCE ON CLEAR WIDTH SHALL BE -0, +50mm EITHER SIDE.
 - FOR FABRIC OVERLAP LAPPING DETAILS REFER TO DWG 201631-0090.

TABLE 3: LENGTH OF RAIL TREATMENT

TOTAL NUMBER OF RAILS	BATTER SLOPE					
	1 IN 4		1 IN 6		1 IN 10	
	HEADWALL HEIGHT 'Y' (mm)	LENGTH 'L' (mm)	HEADWALL HEIGHT 'Y' (mm)	LENGTH 'L' (mm)	HEADWALL HEIGHT 'Y' (mm)	LENGTH 'L' (mm)
4 (MIN)	675 - 812	1834 - 2400	N/A	N/A	N/A	N/A
5	813 - 957	2401 - 3000	675 - 680	2965 - 3000	N/A	N/A
6	958 - 1103	3001 - 3600	681 - 779	3001 - 3600	N/A	N/A
7	1104 - 1248	3601 - 4200	780 - 878	3601 - 4200	N/A	N/A
8	1249 - 1394	4201 - 4800	879 - 976	4201 - 4800	N/A	N/A
9	1395 - 1500	4801 - 5235	977 - 1075	4801 - 5400	675 - 690	5248 - 5400
10	N/A	N/A	1076 - 1174	5401 - 6000	691 - 759	5401 - 6000
11	N/A	N/A	1175 - 1272	6001 - 6600	750 - 809	6001 - 6600
12	N/A	N/A	1273 - 1371	6601 - 7200	810 - 869	6601 - 7200
13	N/A	N/A	1372 - 1469	7201 - 7800	870 - 928	7201 - 7800
14	N/A	N/A	1470 - 1500	7801 - 7982	929 - 988	7801 - 8400
15	N/A	N/A	N/A	N/A	989 - 1048	8401 - 9000
16	N/A	N/A	N/A	N/A	1049 - 1108	9001 - 9600
17	N/A	N/A	N/A	N/A	1109 - 1167	9601 - 10200
18	N/A	N/A	N/A	N/A	1168 - 1227	10201 - 10800
19	N/A	N/A	N/A	N/A	1228 - 1287	10801 - 11400
20	N/A	N/A	N/A	N/A	1288 - 1346	11401 - 12000
21	N/A	N/A	N/A	N/A	1347 - 1406	12001 - 12600
22	N/A	N/A	N/A	N/A	1407 - 1466	12601 - 13200
23	N/A	N/A	N/A	N/A	1467 - 1500	13201 - 13538

4	TITLE BLOCK AND FILE No. UPDATED.	C.M. 19/09/2025
3	ROCK PROTECTION TABLE ADDED LONGITUDINAL SECTION AND PLAN AND SECTION 'A' AMENDED	Z. BATEN 11.3.19
2	TITLE AMENDED	D. LANDMARK 11.4.11
1	INCORRECT NOTE REFERENCE AMENDED	W. CANNELL 13.6.05
No.	DESCRIPTION	APPROVED & DATE
	AMENDMENTS	

--	--

PLANNING AND TECHNICAL SERVICES DIRECTORATE
 ROAD AND TRAFFIC ENGINEERING BRANCH
 WATERLOO CRESCENT
 Telephone 138 138

DRAWN	RTE BRANCH
DESIGNED	RTE BRANCH
VERIFIED	J. KARPINSKI 13/05/05
APPROVED	R. GROVE 13/05/05
FILE NO.	13/4330

STANDARD DRAWING
 R.C.P. AND R.C.B. CULVERTS
 TRAVERSABLE END TREATMENT
 (FOR RCPs ≤ Ø900mm & RCBs WITH SPAN ≤ Ø900mm)
 MRWA DRAWING NUMBER
200531-0010-4