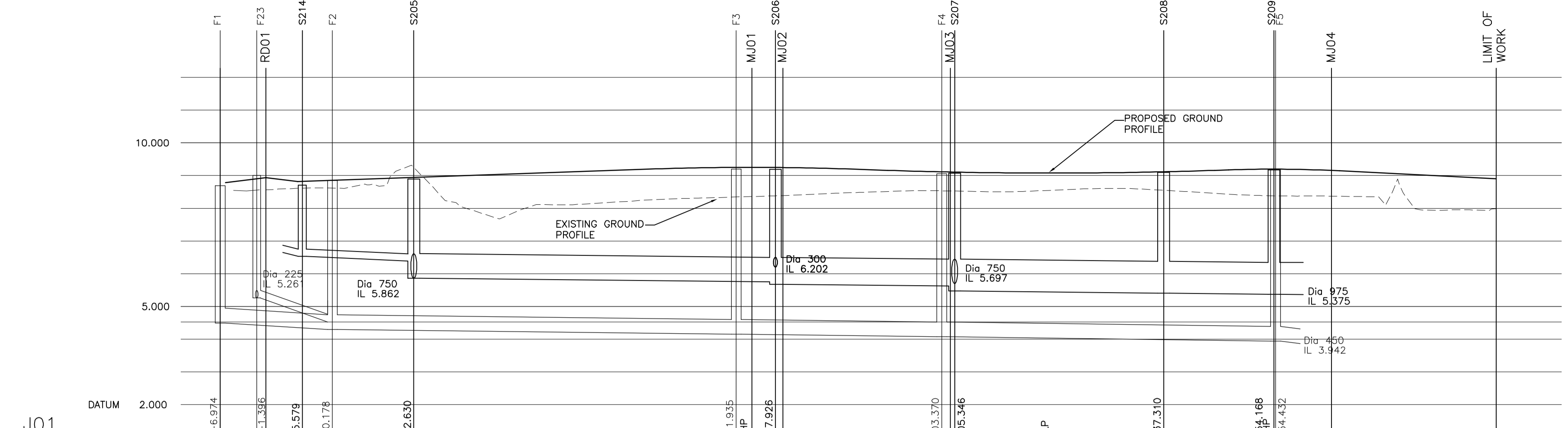
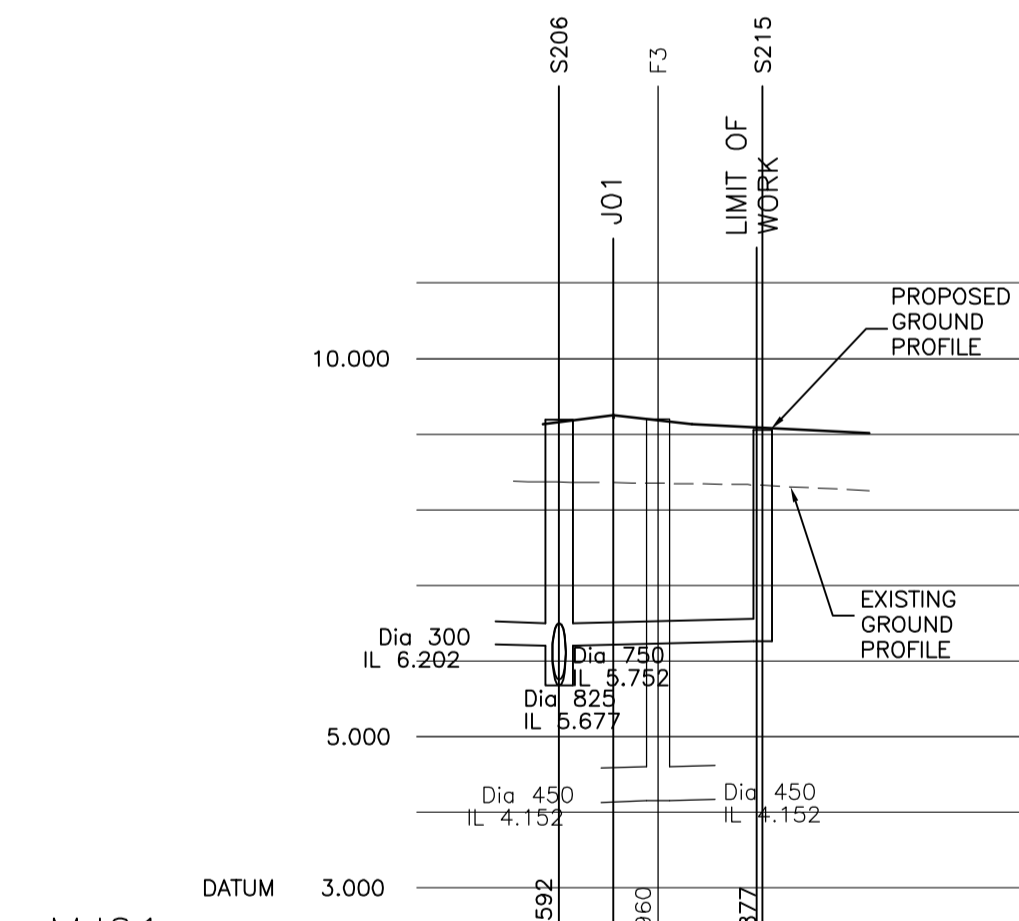


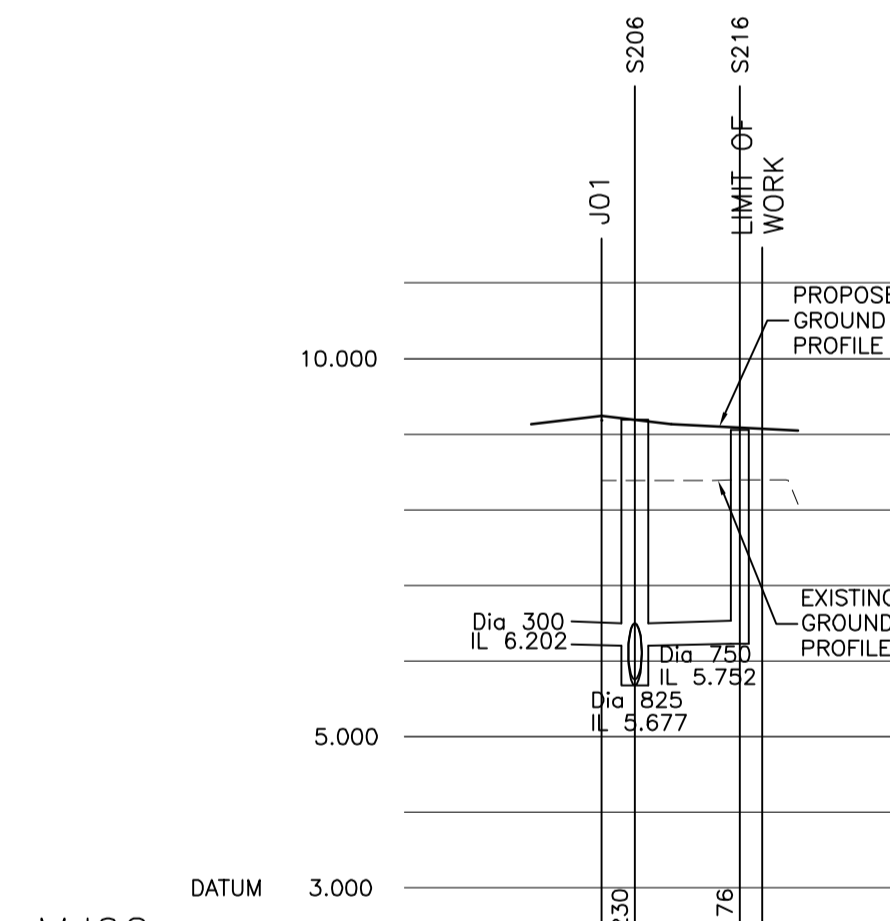
CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL	VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT	LEFT HAND CHANNEL	RIGHT HAND CHANNEL
0.000	9.063		G = -0.426% 1: -234.5	R = 30.000		
5.757	8.679					
9.338	8.661					
10.000	8.640					
15.000	8.619					
20.000	8.599					
22.860	8.597					
25.000	8.576					
30.000	8.555					
35.000	8.533					
38.392	8.520					
40.000	8.442					
43.260	8.427					
	8.421					
	8.407					



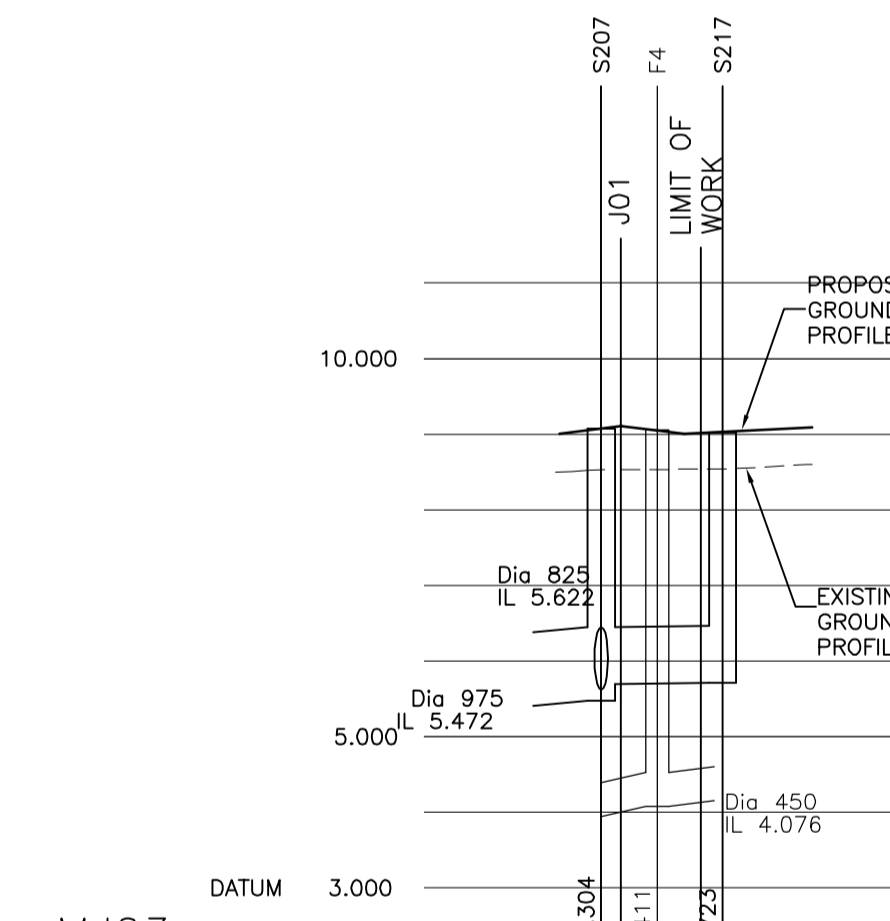
CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL	VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT	LEFT HAND CHANNEL	RIGHT HAND CHANNEL	STORMWATER DETAILS	FOULWATER DETAILS
0.000	8.560		G = 0.708% 1: 141.2	R = 30.000				
4.882	8.816							
5.700	8.817		L = 30.000 R = -2182.689	R = 80.000				
10.000	8.622							
14.216	8.688		G = -0.666% 1: -150.2	R = 30.000				
15.000	8.923							
20.000	8.923		R = 3753.754 L = 50.000	R = 30.000				
21.066	8.959							
25.000	8.994		L = 17.000 R = -1020.408	R = 30.000				
30.000	8.949							
30.830	8.984		G = -1.000% 1: -100.0	R = 30.000				
35.000	9.029							
40.000	9.065							
45.000	9.100							
50.000	9.136							
55.000	9.171							
58.622	9.197							
60.000	9.206							
65.000	9.233							
70.000	9.248							
74.321	9.252							
75.000	9.251							
79.059	9.244							
80.000	8.997							
83.000	8.924							
85.000	8.924							
88.672	9.033							
90.000	9.194							
91.939	9.161							
94.000	9.160							
95.132	9.160							
100.000	9.131							
103.370	9.107							
104.695	9.090							
105.000	9.090							
110.000	9.090							
113.000	9.080							
115.000	9.080							
117.000	9.077							
120.000	9.077							
120.000	8.550							
125.000	9.080							
130.000	9.090							
130.000	9.106							
137.085	9.129							
140.000	9.129							
145.000	9.160							
147.215	9.174							
150.000	9.168							
154.011	9.196							
154.432	9.196							
160.000	9.179							
163.000	9.145							
164.215	9.137							
165.000	9.087							
170.000	8.354							
175.000	9.037							
180.000	8.987							
181.862	8.987							
185.000	8.937							
185.000	8.906							
188.172	8.906							



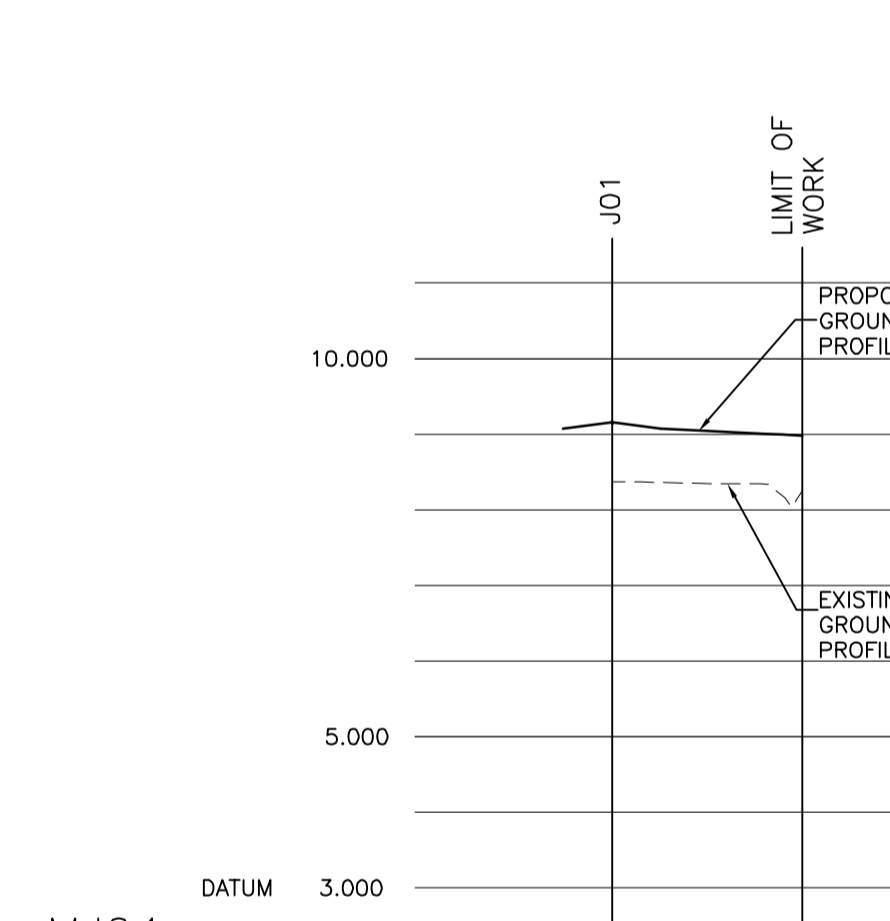
CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL	VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT	LEFT HAND CHANNEL	RIGHT HAND CHANNEL	STORMWATER DETAILS	FOULWATER DETAILS
0.000	8.360		G = -1.000% 1: -100.0	R = 30.000				
5.181	9.134							
7.406	9.086							
9.867	9.036							
10.000	9.017							
15.000	9.017							
16.940	8.942							
19.192	9.037							
6.202	9.011							
6.258	9.011							
13.513	8.961							
	8.942							
	9.021							
	8.946							
	8.931							
	9.009							
	8.986							



CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL	VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT	LEFT HAND CHANNEL	RIGHT HAND CHANNEL	STORMWATER DETAILS	FOULWATER DETAILS
0.000	8.389		G = -1.000% 1: -100.0	R = 30.000				
4.650	9.130							
5.000	9.126							
10.000	9.076							
10.800	9.046							
10.667	9.046							
13.011	9.010							
	9.009							
	8.986							
	9.192							
	8.913							
	8.393							
	8.946							
	8.931							
	9.009							
	8.986							



CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL	VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT	LEFT HAND CHANNEL	RIGHT HAND CHANNEL	STORMWATER DETAILS	FOULWATER DETAILS
0.000	8.532		G = 1.000% 1: 100.0	R = 30.000				
4.166	9.006							
5.000	9.014							
10.000	9.064							
11.868	9.091							
12.667	9.016							
	9.074							
	8.979							
	8.027							
	9.021							
	8.972							
	8.973							
	9.016							
	9.016							



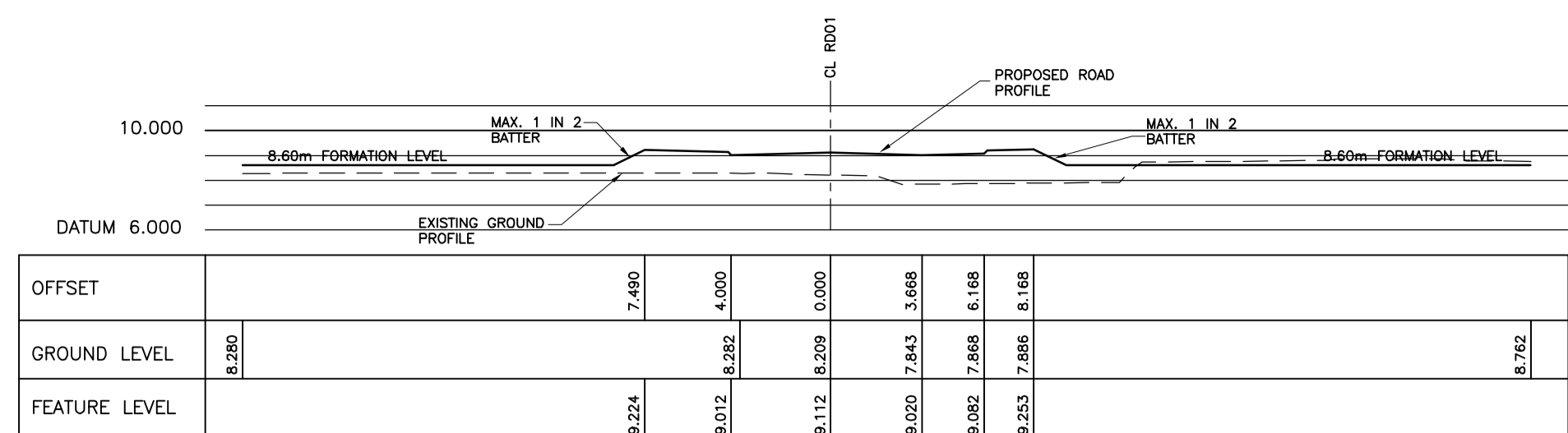
CHAINAGE	EXISTING GROUND LEVEL	ALIGNMENT LEVEL	VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT	LEFT HAND CHANNEL	RIGHT HAND CHANNEL	STORMWATER DETAILS	FOULWATER DETAILS
0.000	8.372		G = -1.000% 1: -100.0	R = 30.000				
3.250	9.076							
5.000	9.058							
10.000	9.008							
10.000	8.982							
12.667	8.982							
	8.908							
	8.975							
	8.975							

REV	BY	CHK	DESCRIPTION	DATE
E	TL	TL	DRAWING UPDATED	Dec'11
D	TP	TP	DRAWING UPDATED	May'11
C	TP	TP	DRAWING UPDATED	May'10
B	TP	TP	LINK ROAD VERTICAL ALIGNMENT REVISED, DRAWING UPDATED	May'10
A	TP	TP	MOLE ACCESS ROAD ALIGNMENT REVISED, JUNCTION AMENDED TO SUIT	May'10

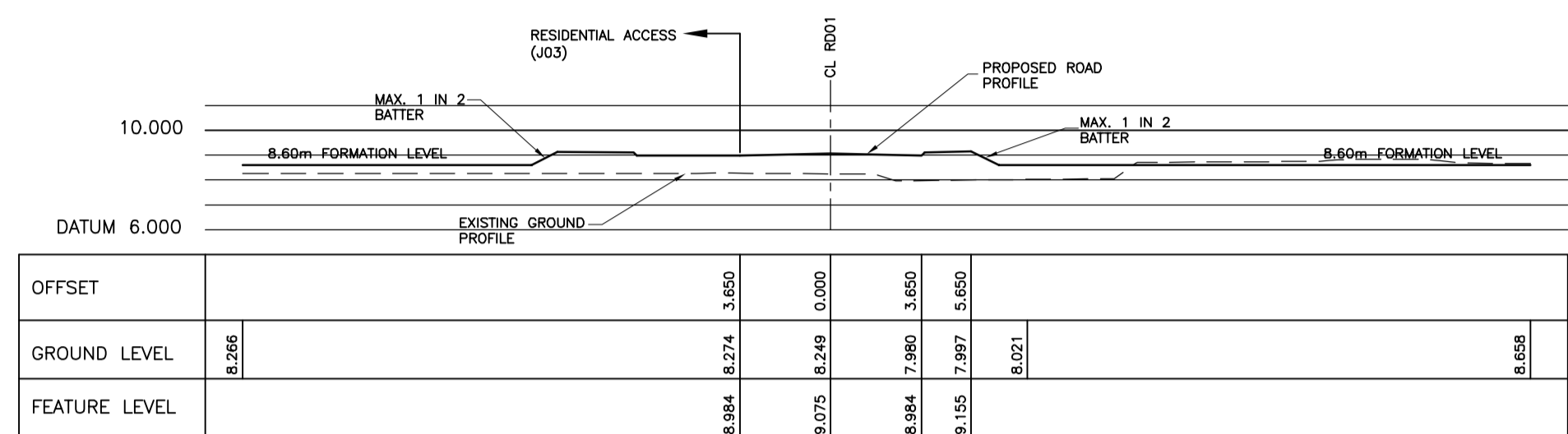
8 Oldfield Road, Broom Park, Perpend. CF35 5LJ Tel: 01656 865166 Fax: 01656 865277 E-mail: mail@healerassociates.co.uk Web site: www.healerassociates.co.uk	
Unit 12, The Croft, Barnford Drive, Stoke Heath, Birmingham, B66 4LE E-mail: mail@healerassociates.co.uk	
CLIENT: BARRY WATERFRONT CONSORTIUM	
DEVELOPMENT: BARRY WATERFRONT DEVELOPMENT	
TITLE: LINK ROAD - JUNCTION AND THE MOLE ACCESS ROAD - LONGITUDINAL SECTION	
SCALE (S): 1:500 HOR., 1:100 VERT.	
DATE: APR'10	DRAWN: TP
DRAWING NUMBER: 3572_P106-2	REVISION: E

Planning

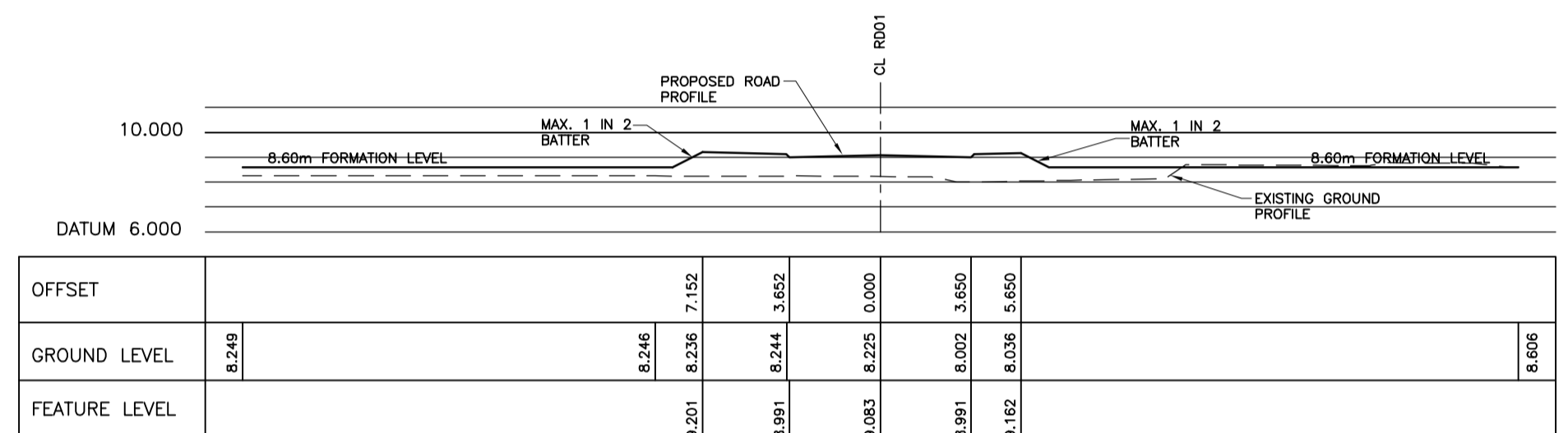
1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERING DRAWINGS
2. DO NOT SCALE FROM THIS DRAWING
3. ALL DIMENSIONS IN METRES UNLESS STATED OTHERWISE



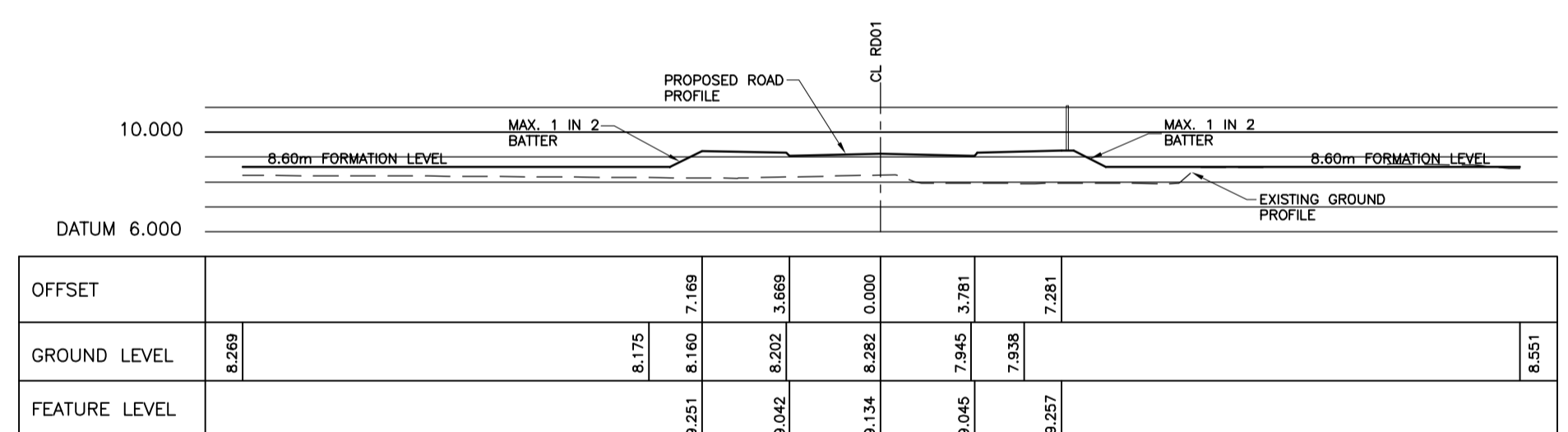
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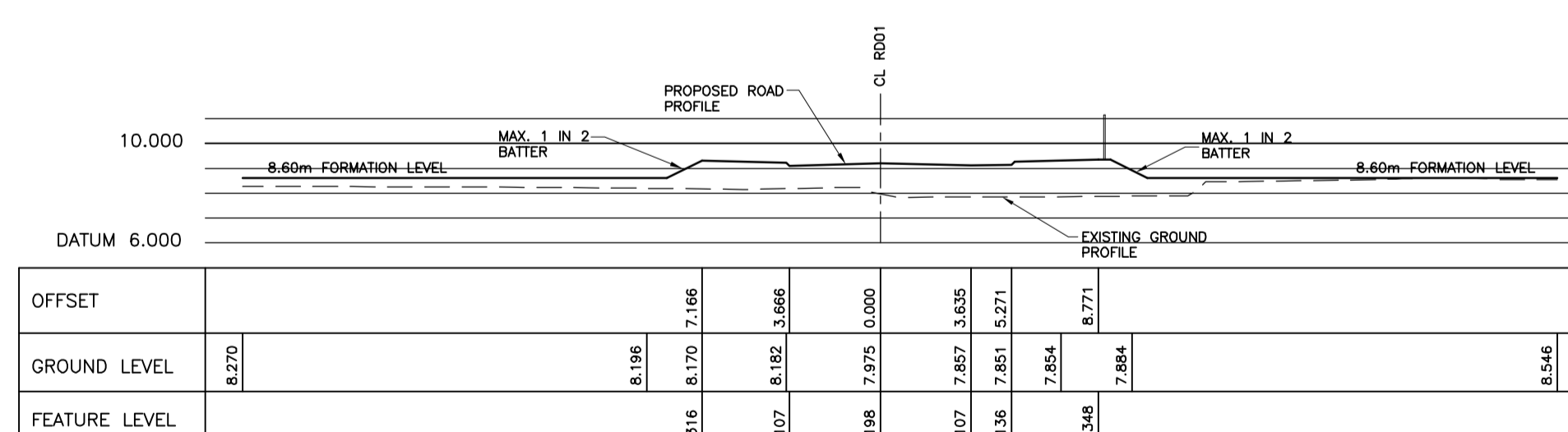
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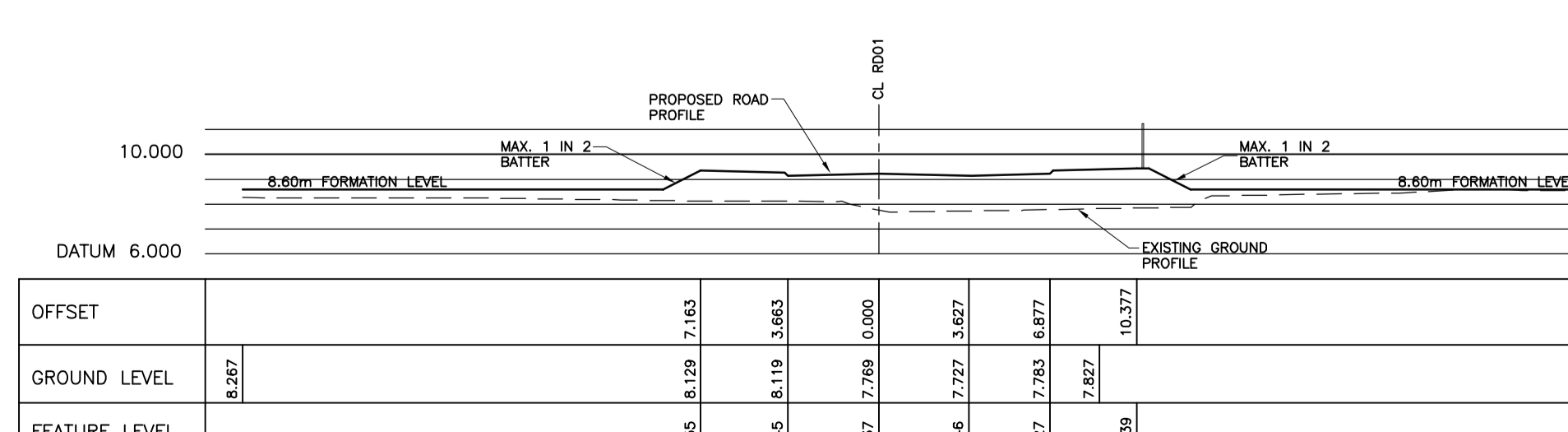
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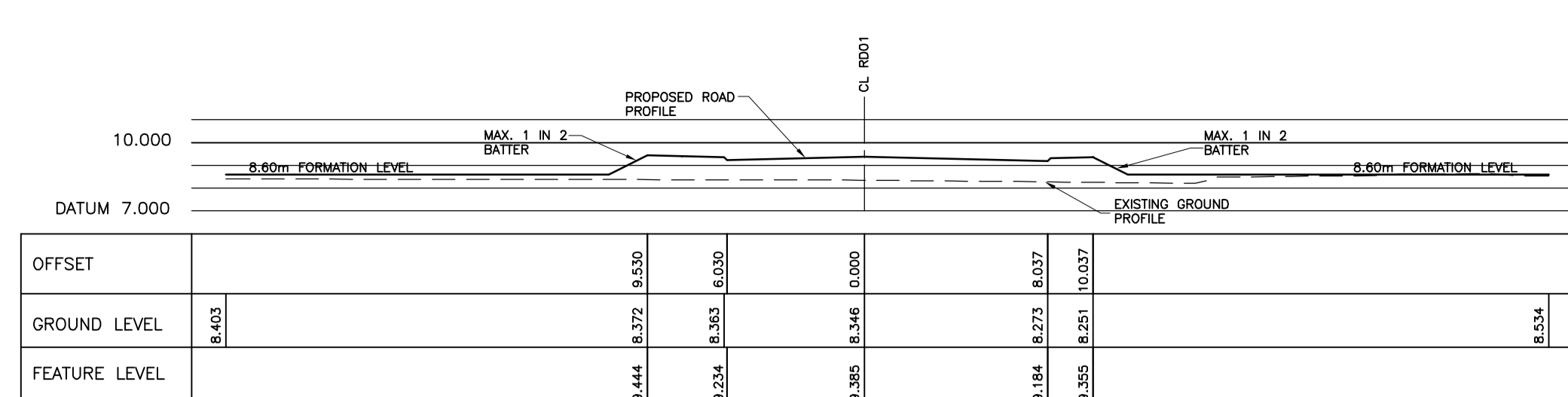
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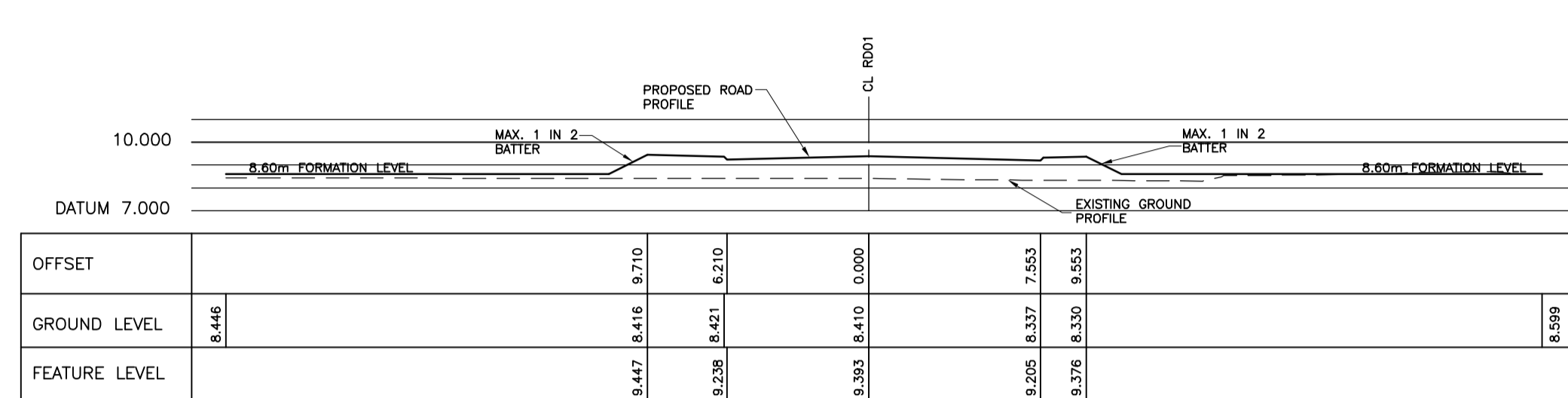
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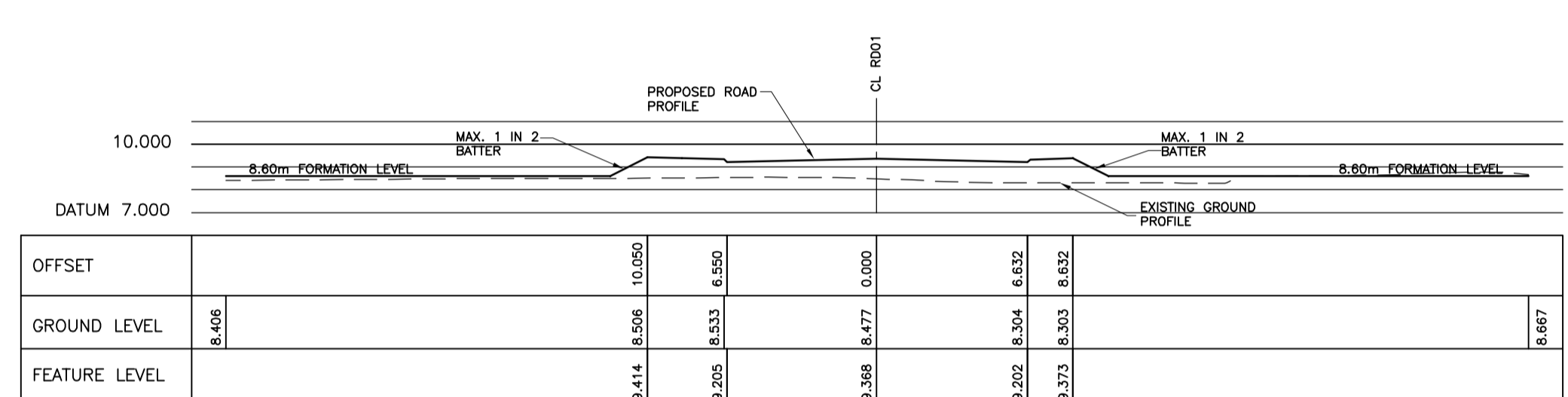
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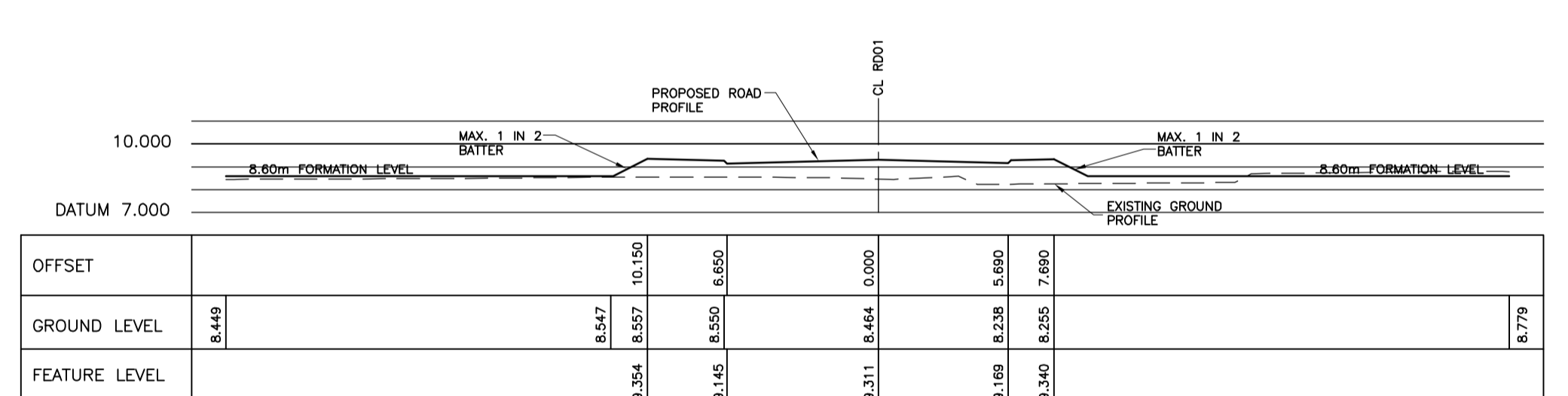
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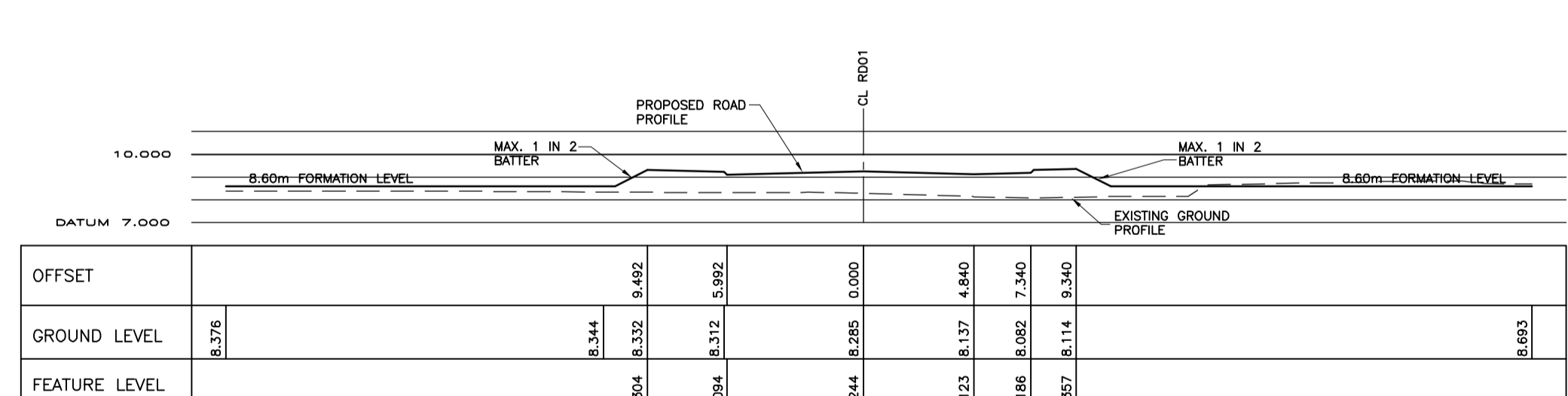
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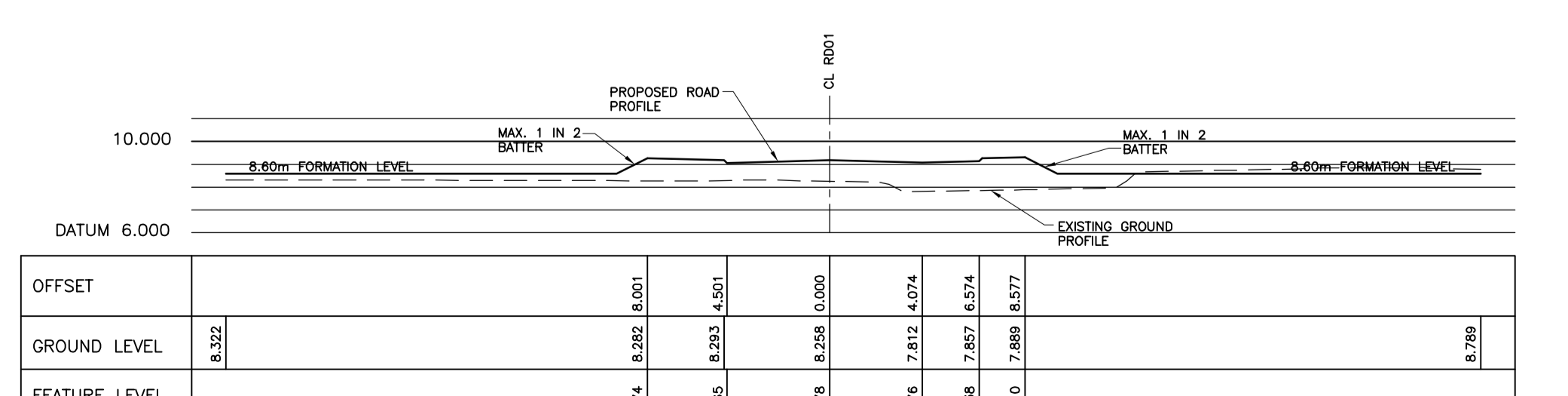
CHAINAGE 390.000



CHAINAGE 380.000



CHAINAGE 370.000




CHAINAGE 360.000

PLANNING

A TL TL JUNCTION 2 REVISED, TEMP ACCESS TO STEAM RAILWAY AND 3.5m FOOTWAY/CYCLWAY ADDED BETWEEN JUNCTION 1 AND 1ST TOUCAN CROSSING. MAR'12

REV	BY	CHK	DESCRIPTION	DATE



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 Fax: 01462 865337
 E-mail: mail@healerassociates.co.uk
 Web Site: www.healerassociates.co.uk

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 E-mail: mail@healerassociates.co.uk
 Web Site: www.healerassociates.co.uk

CLIENT: BARRY WATERFRONT CONSORTIUM

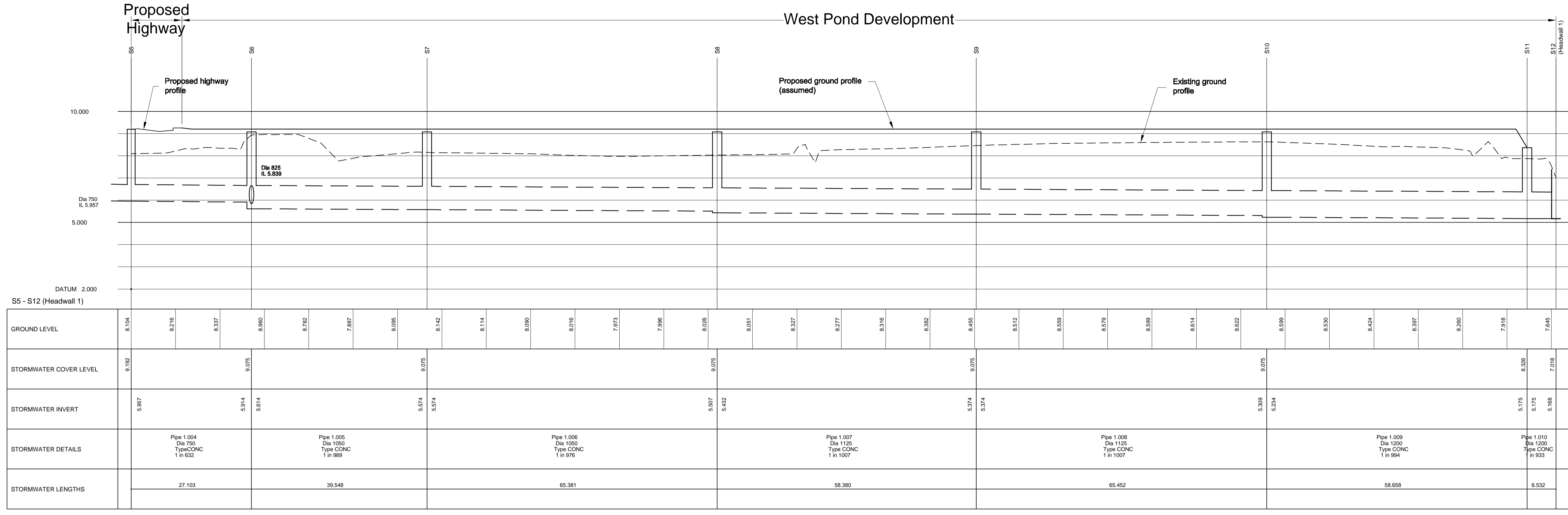
DEVELOPMENT: BARRY WATERFRONT DEVELOPMENT MAIN INFRASTRUCTURE PHASE 1

TITLE: ROAD CROSS SECTION (RD01) CH300.00 - 410.00, SHEET 3 OF 5

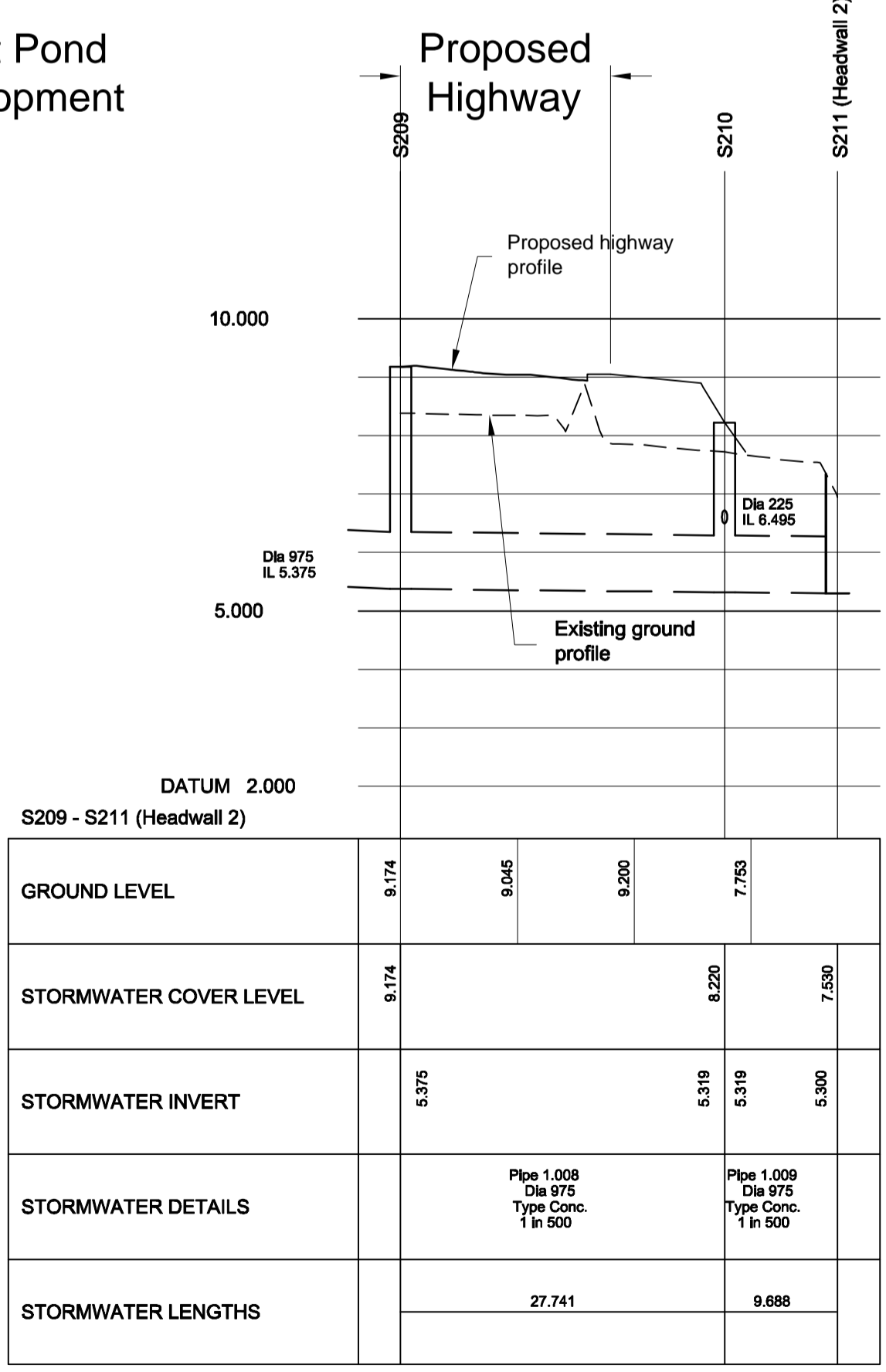
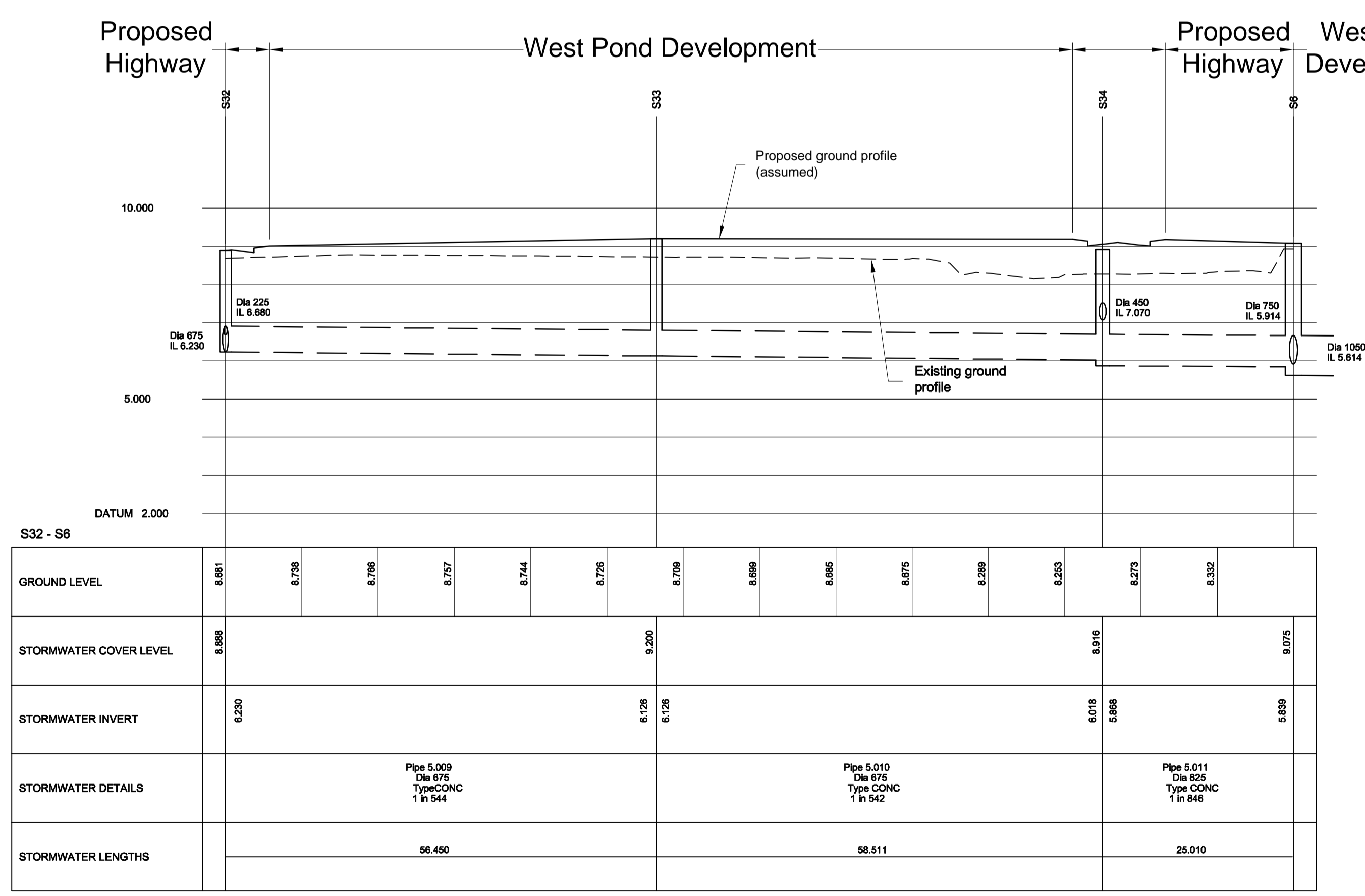
SCALE (S): 1:250 NAT

DATE	DRAWN	CHECKED	SCALE
DEC'10	TP		A1

DRAWING NUMBER	REVISION
3572_P1102	A



Longitudinal Sections
Scale 1:500(H); 1:100(V)

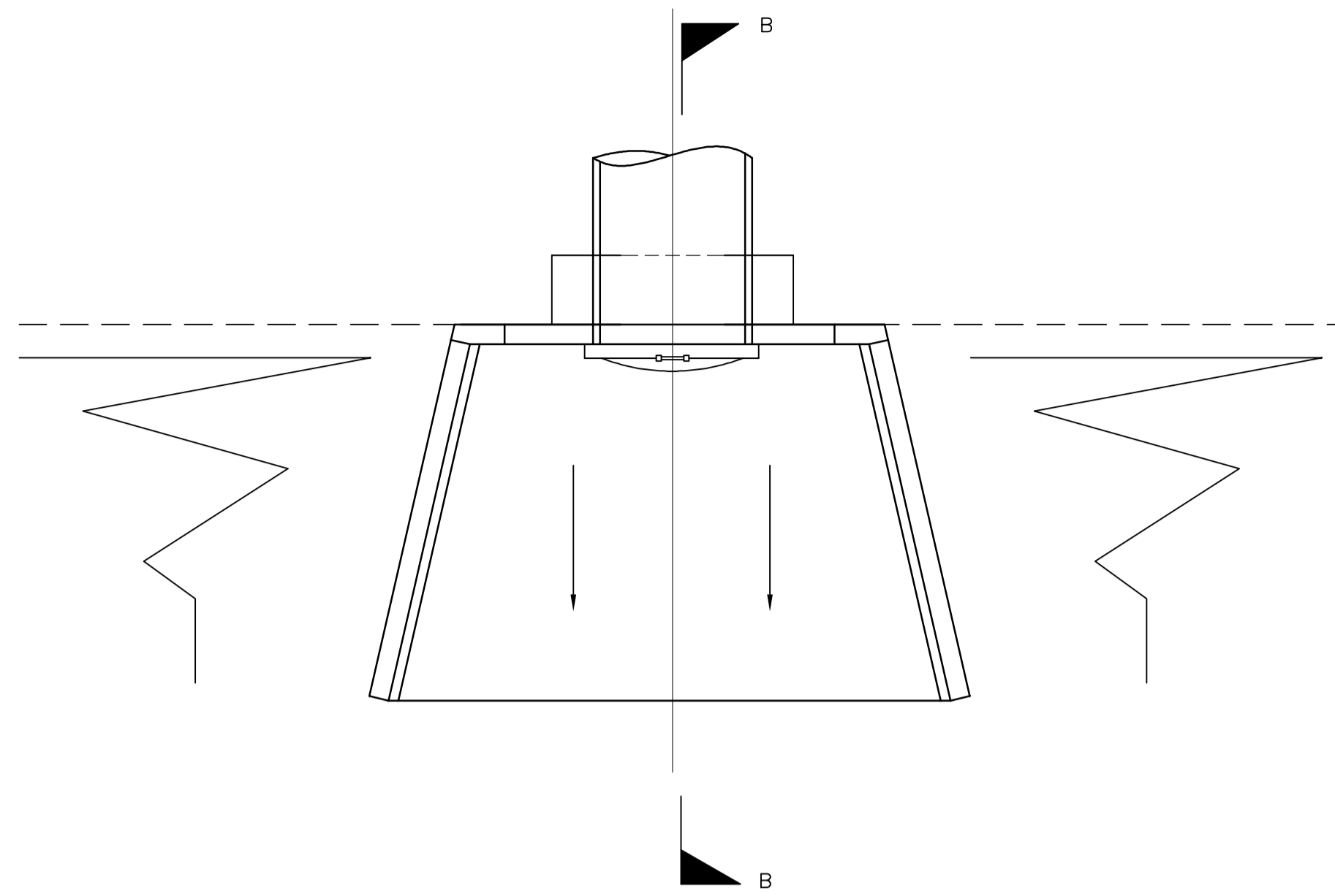


ALL PROPOSED SEWERAGE WORKS ARE SUBJECT TO APPROVAL BY DWR CYMRU.

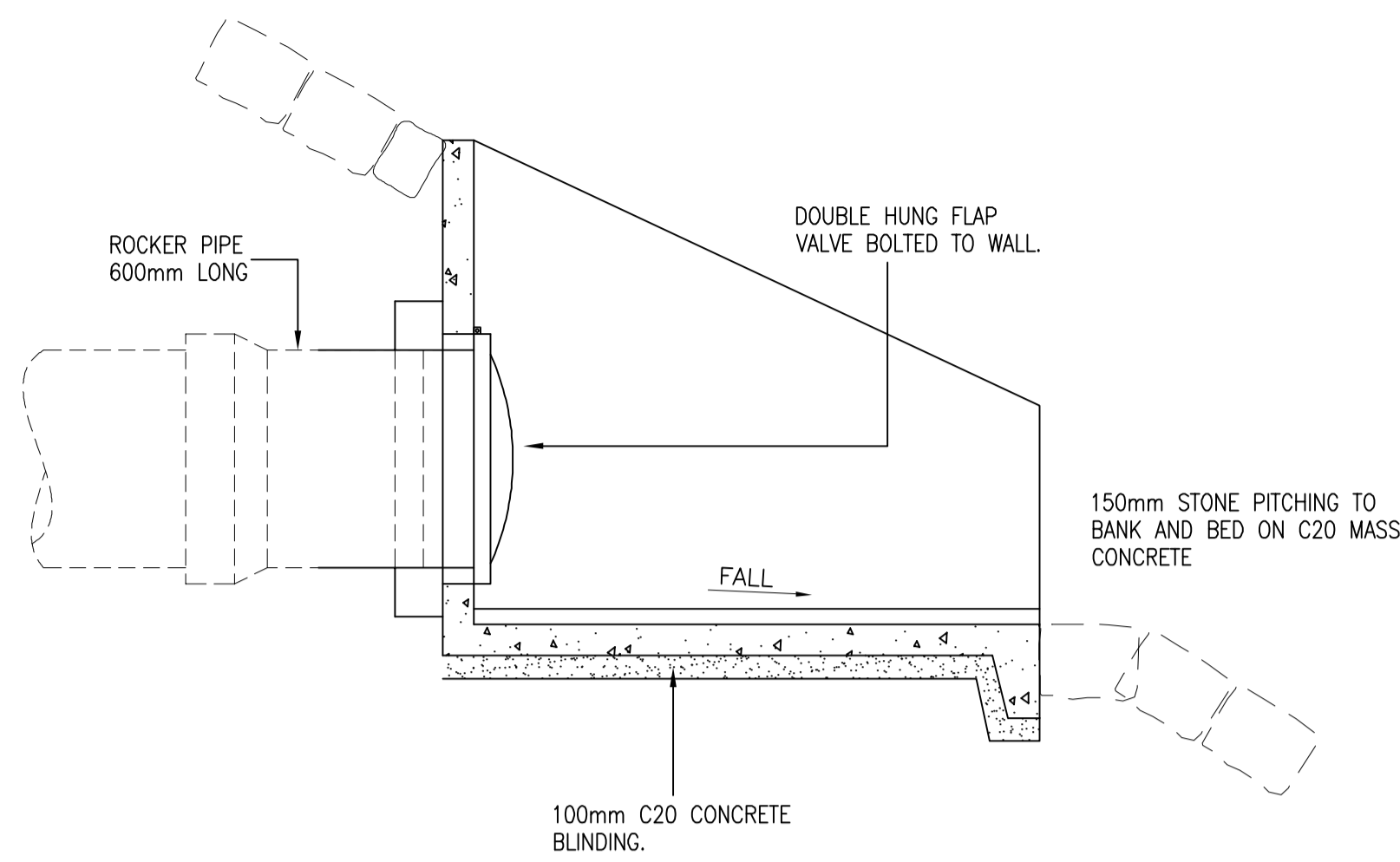
A RMJ RMJ Section S5 to S12 amended; Section S2 to S6 added. Mar11

9 Daffodil Road Bocam Park, Penwood, CF35 5LJ Tel: 01456 861000 Fax: 01456 865577 E-mail: mail@healerassociates.co.uk Web site: www.healerassociates.co.uk	Unit 12, The Craft Burnford Drive Stoke Heath Bromsgrove B60 4JE E-mail: mail@healerassociates.co.uk Web site: www.healerassociates.co.uk
CLIENT: Barry Waterfront Consortium	
DEVELOPMENT: Barry Waterfront Development - Main Infrastructure Phase 1	
TITLE: Storm Water Outfalls - Longitudinal Sections	
SCALE (S): 1:500(H); 1:100(V)	
DATE: Dec'10	DRAWN: RMJ
DRAWING NUMBER: 3572_P1156	CHECKED BY: RMJ
	REVISION: A

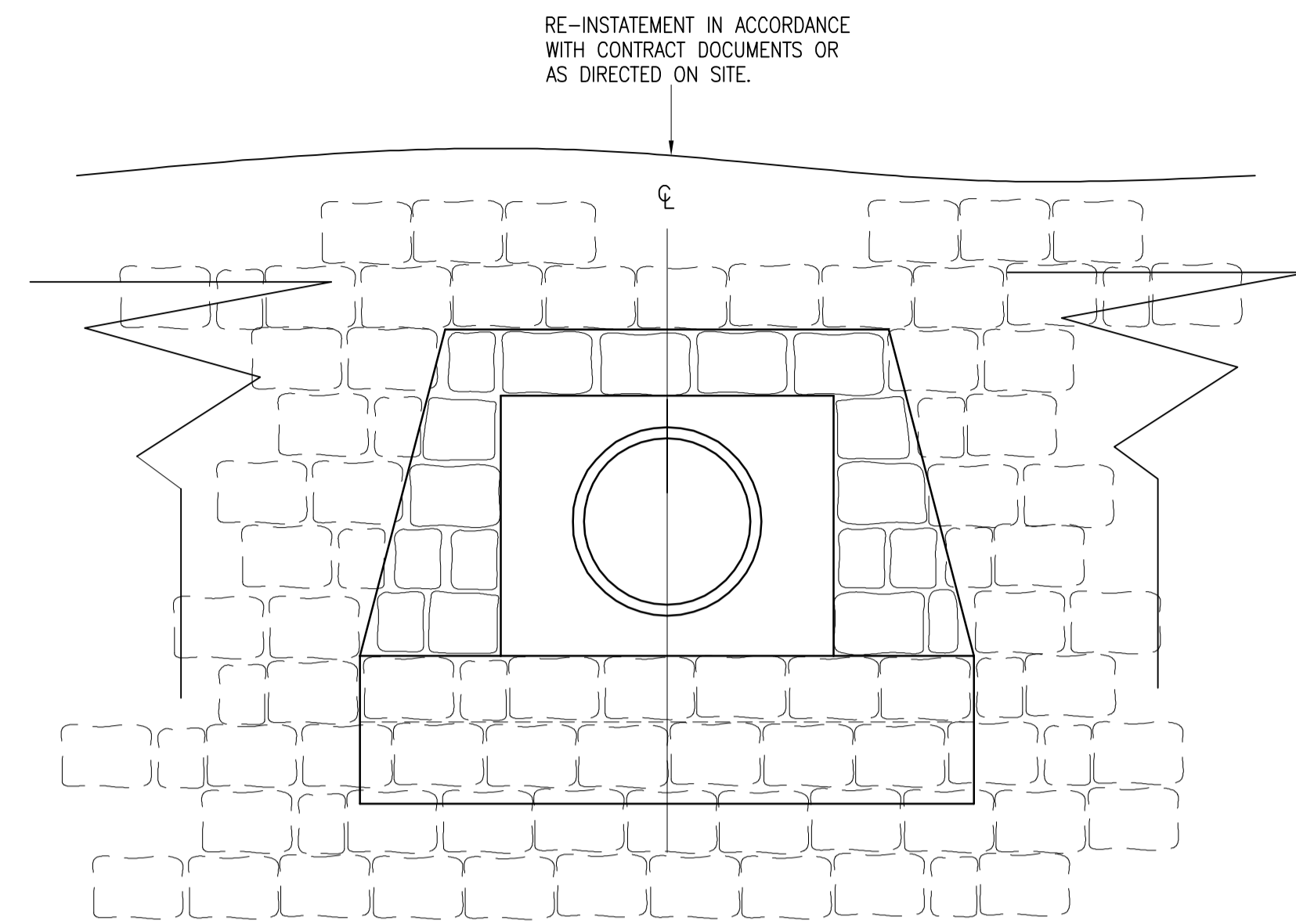
PLANNING



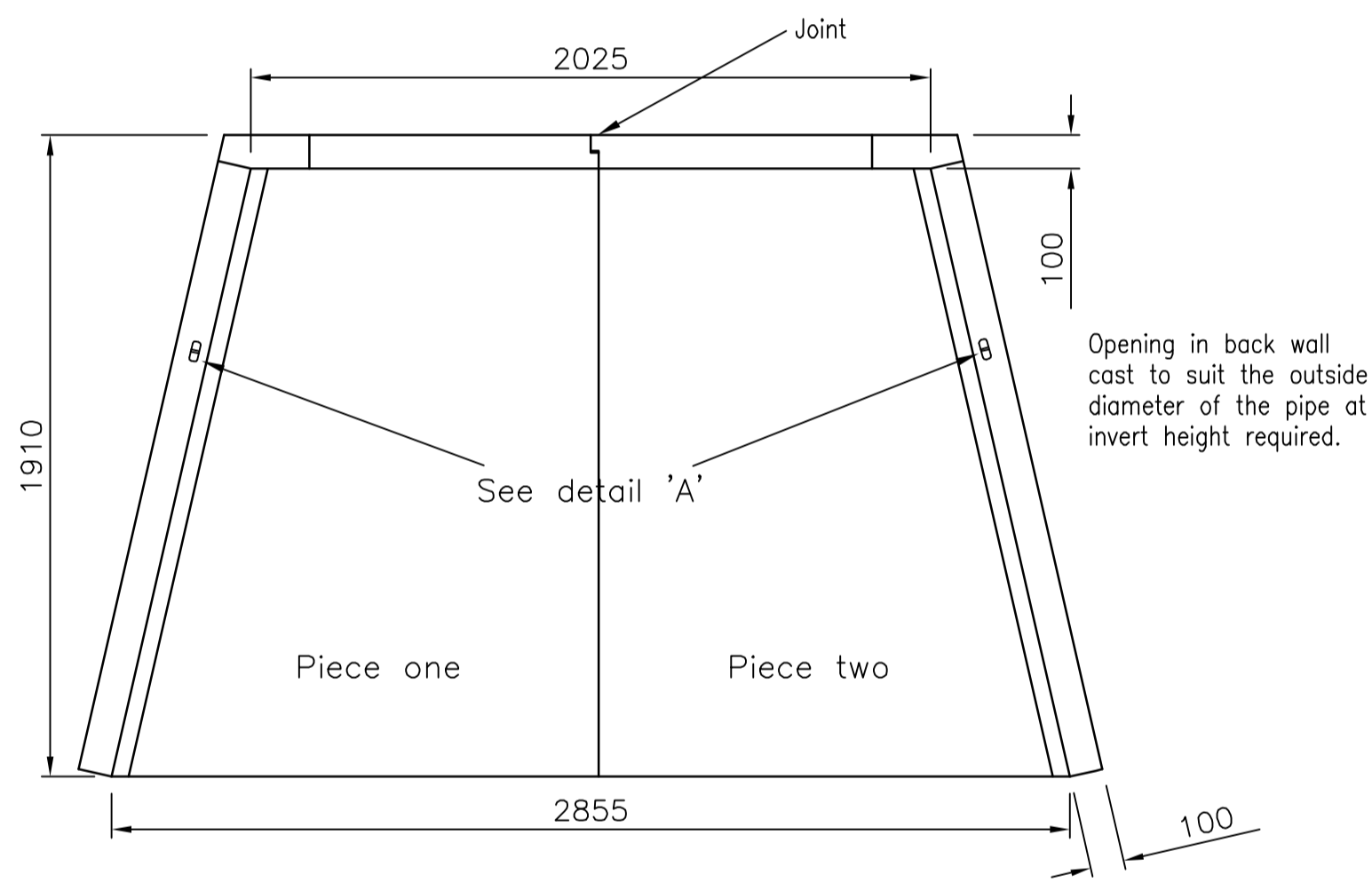
TYPICAL HEADWALL - PLAN



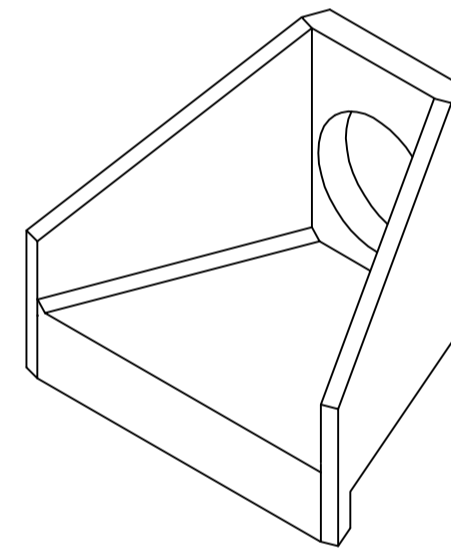
SECTION B-B HEADWALL



TYPICAL HEADWALL DETAIL - FRONT ELEVATION
(Flap-valve omitted for clarity)



PLAN



ISOMETRIC VIEW

Opening in back wall cast to suit the outside diameter of the pipe at invert height required.

See detail 'A'

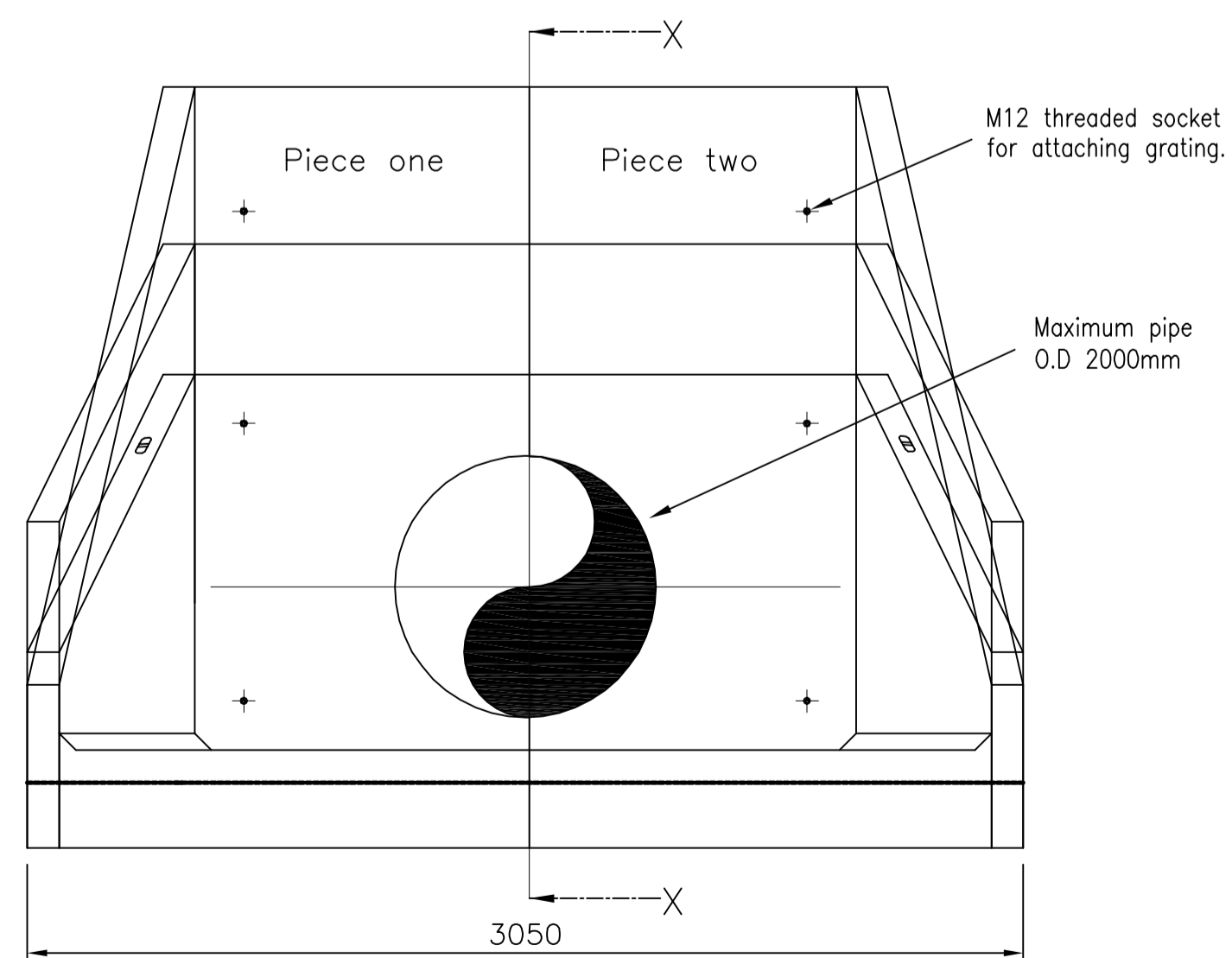


Universal Lifting Eye

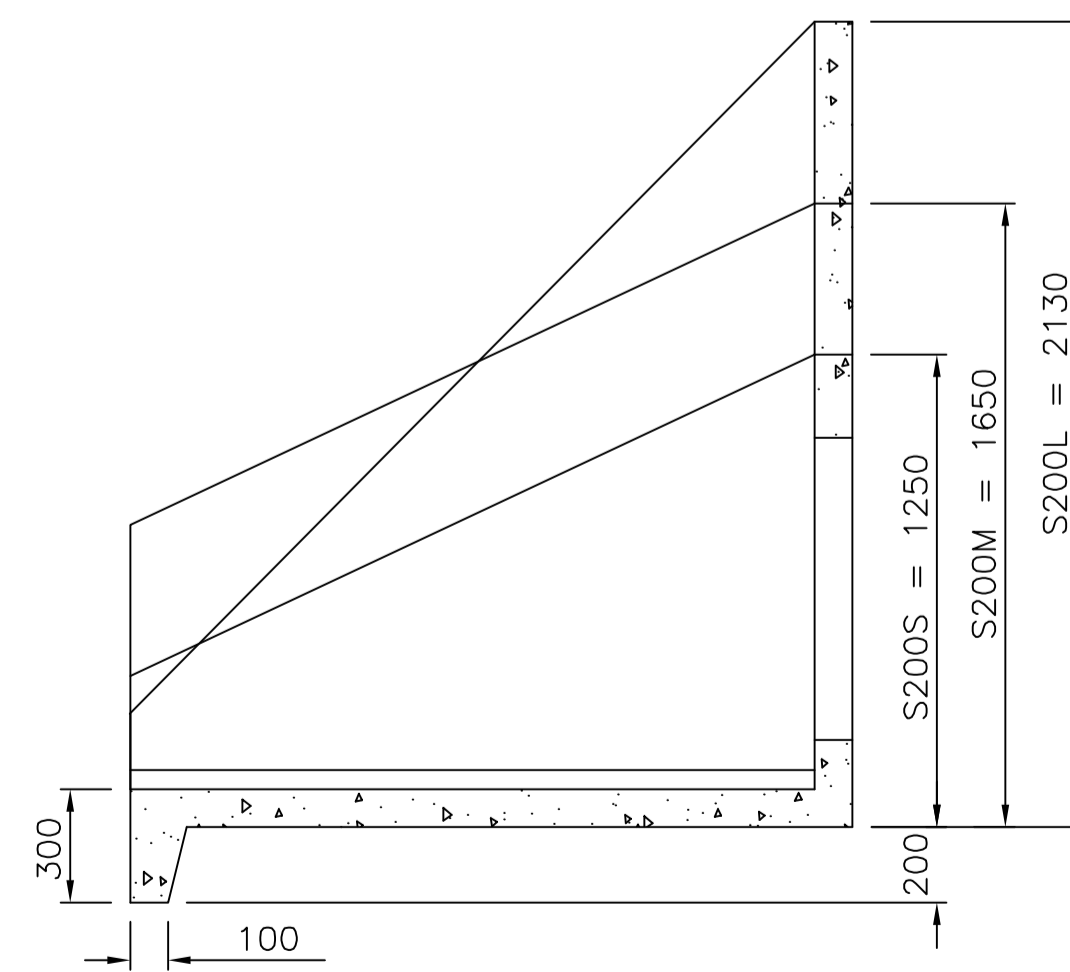


Anchor pin Cast-in

DETAIL A



ELEVATION



SECTION X-X

INSTALLATION

UNITS SHOULD BE BEDDED ON MINIMUM 100mm OF SEMI-DRY CONCRETE. SIT THE HEADWALL LEVEL OR WITH A SLIGHT FALL 1:50 FROM PIPE TO SPILL MOUTH. FOR FULL DETAILED INSTALLATION INSTRUCTIONS CONTACT CPM GROUP LTD ON 01179 812791

SPILLWAY HEADWALL
S200 SERIES
(DRAINAGE OUTFALL)

Planning

C	TP	TP	HEADWALL DETAIL REVISED	May 11
B	TP	TP	RETAINING WALL OMITTED DRAWING UPDATED & AMENDED TO SUIT COMMENTS FROM VoG	May 11
A	TP	TP	DRAWING UPDATED	May 10

REV.	BY:	CHK	DESCRIPTION	DATE
------	-----	-----	-------------	------



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CB23 5BE
E-mail: info@healerassociates.co.uk
Web site: www.healerassociates.co.uk

CLIENT:
BARRY WATERFRONT CONSORTIUM

DEVELOPMENT:
BARRY WATERFRONT DEVELOPMENT

TITLE:
TYPICAL HEADWALL DETAILS

SCALE (S): 1:10	DRAWN: TP	CHKD BY: -	SIZE: A1
DATE: APR'10	DRAWING NUMBER: 3572_P105-2	REVISION: C	

NOTE: OPENING TO BE LOCATED CENTRALLY OVER 900mm SHAFT AND OFFSET APPROXIMATELY 200mm FOR 1200mm DIAMETER SHAFT WITH RUNGS/LADDER.

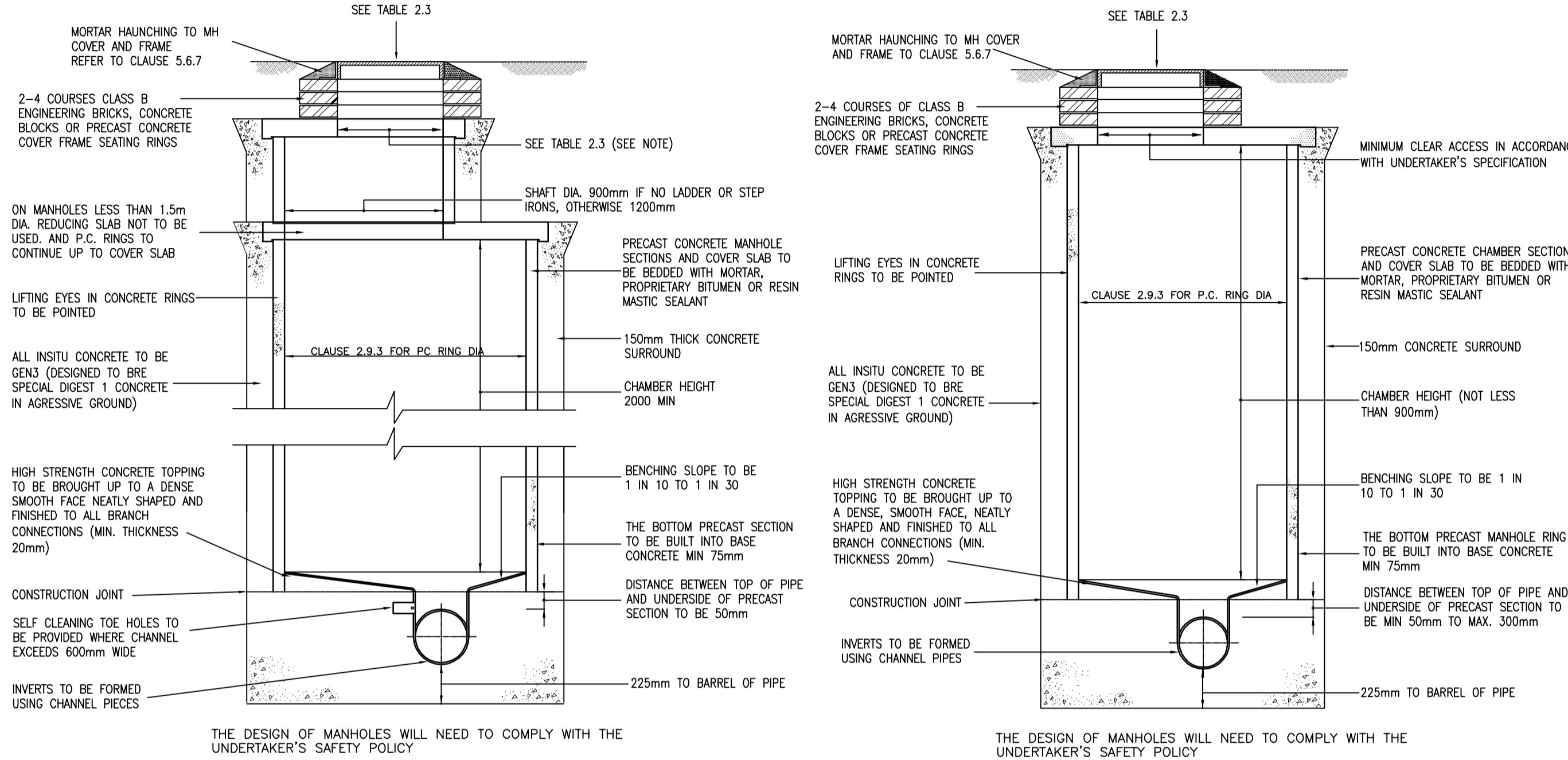
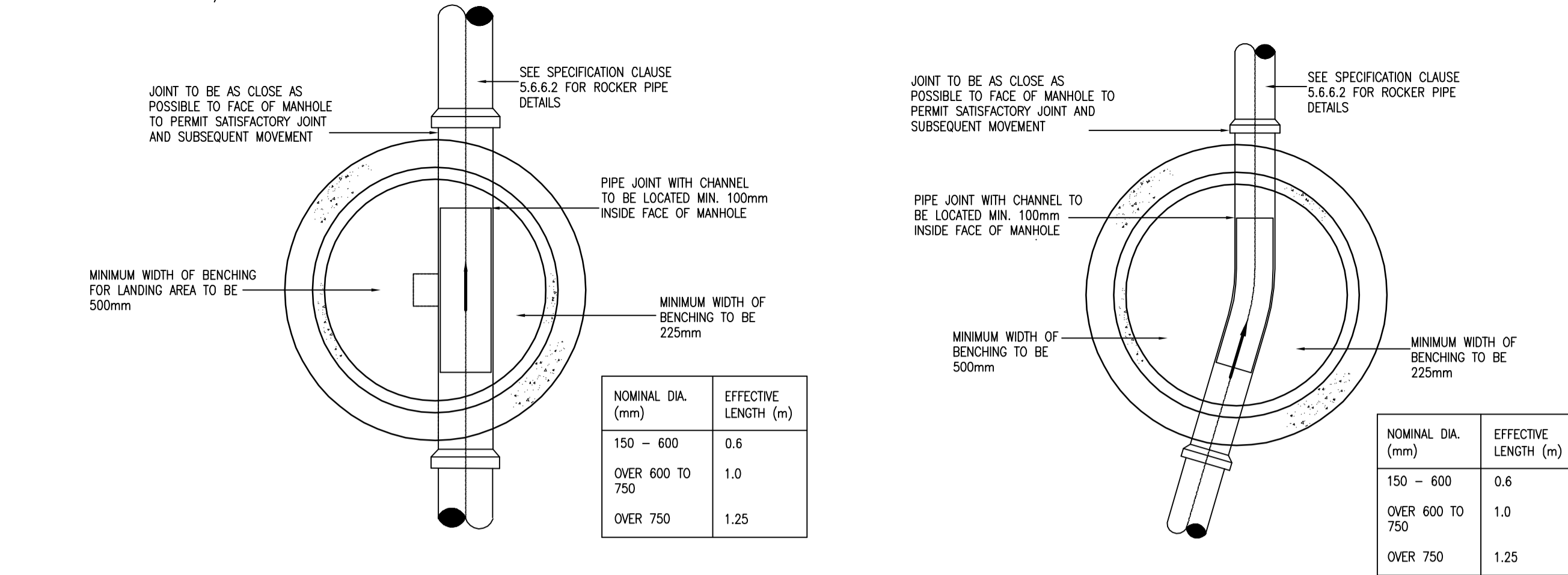


FIGURE 2.4 TYPICAL MANHOLE DETAIL - TYPE A
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 3m TO 6m
FOR STEPS AND ACCESS ARRANGEMENTS SEE TABLE 2.3 REFER TO 'SEWERS FOR ADOPTION 6TH EDITION'

TABLE 2.2 MANHOLE DIAMETERS

DIAMETER OF LARGEST PIPE IN MANHOLE (mm)	INTERNAL DIAMETER OF MANHOLE (mm)
LESS THAN 375	1200
375 - 700	1500
750 - 900	1800
GREATER THAN 900	CONSULT UNDERTAKER

FIGURE 2.5 TYPICAL MANHOLE DETAIL - TYPE B
MAX DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 3.0m
FOR STEPS AND ACCESS ARRANGEMENTS SEE TABLE 2.3 REFER TO 'SEWERS FOR ADOPTION 6TH EDITION'

NOTES:
1. MANHOLE COVERS AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124 AND THEY SHALL BE OF NON-ROCKING DESIGN WHICH DOES NOT RELY ON THE USE OF CUSHION INSERTS.
2. CLASS D400 COVERS SHALL BE USED IN CARRIAGEWAYS OF ROADS (INCLUDING PEDESTRIAN STREETS), HARD SHOULDERS AND PARKING AREAS USED BY ALL TYPES OF ROAD VEHICLES. CLASS B125 SHALL BE USED IN FOOTWAYS, PEDESTRIAN AREAS AND COMPARABLE LOCATIONS.
3. ALL MANHOLE COVERS SHALL BE THE NON VENTILATING TYPE AND SHALL HAVE CLOSED KEYWAYS.
4. STEPS IN MANHOLES AND OTHER CHAMBERS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS 1247-PARTS 1, 2 AND 3 AND POLYPROPYLENE ENCAPSULATED STEPS SHALL COMPLY WITH WLS 4-33-01.
5. ALL DETAILS CONTAINED WITHIN THIS DRAWING COMPLY WITH 'SEWERS FOR ADOPTION' 6TH EDITION.

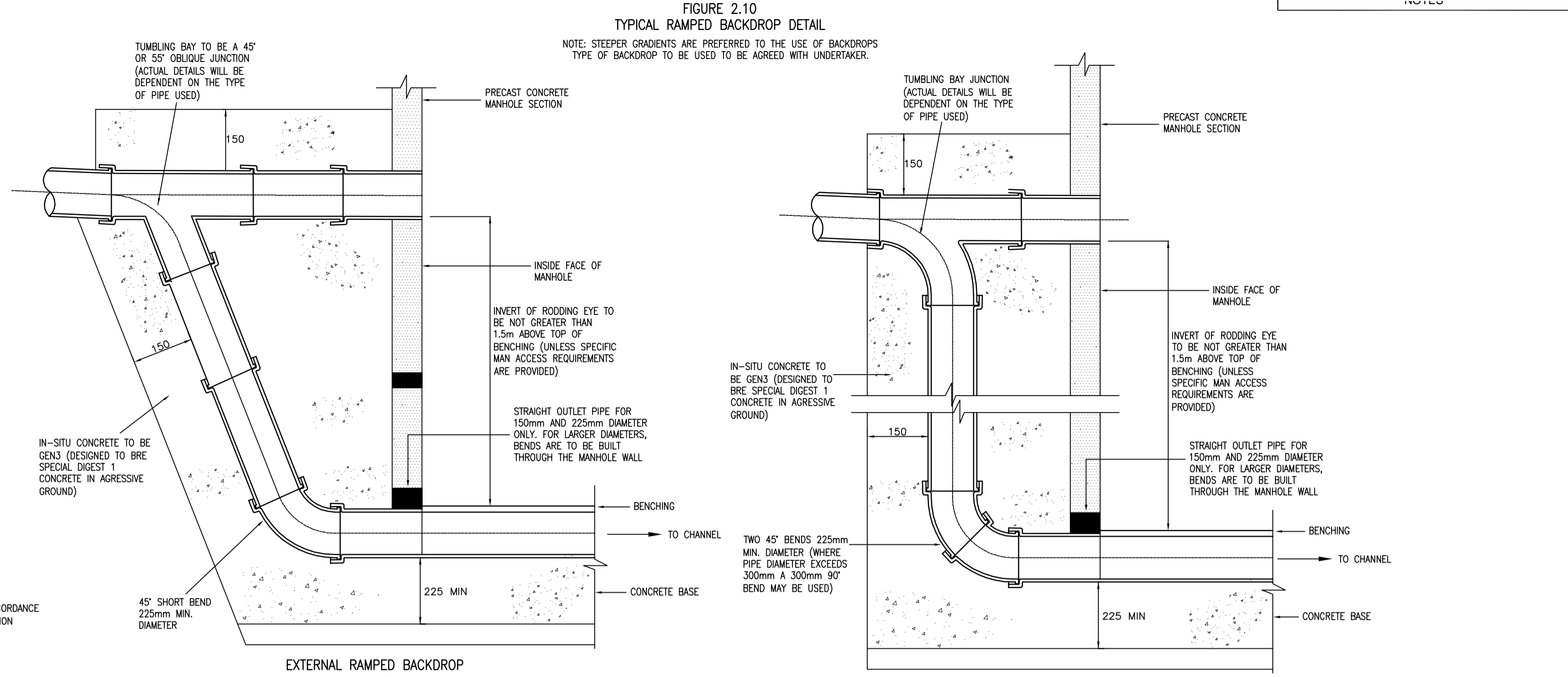


FIGURE 2.10 TYPICAL RAMPED BACKDROP DETAIL
NOTE: STEEPER GRADIENTS ARE PREFERRED TO THE USE OF BACKDROPS
TYPE OF BACKDROP TO BE USED TO BE AGREED WITH UNDERTAKER.

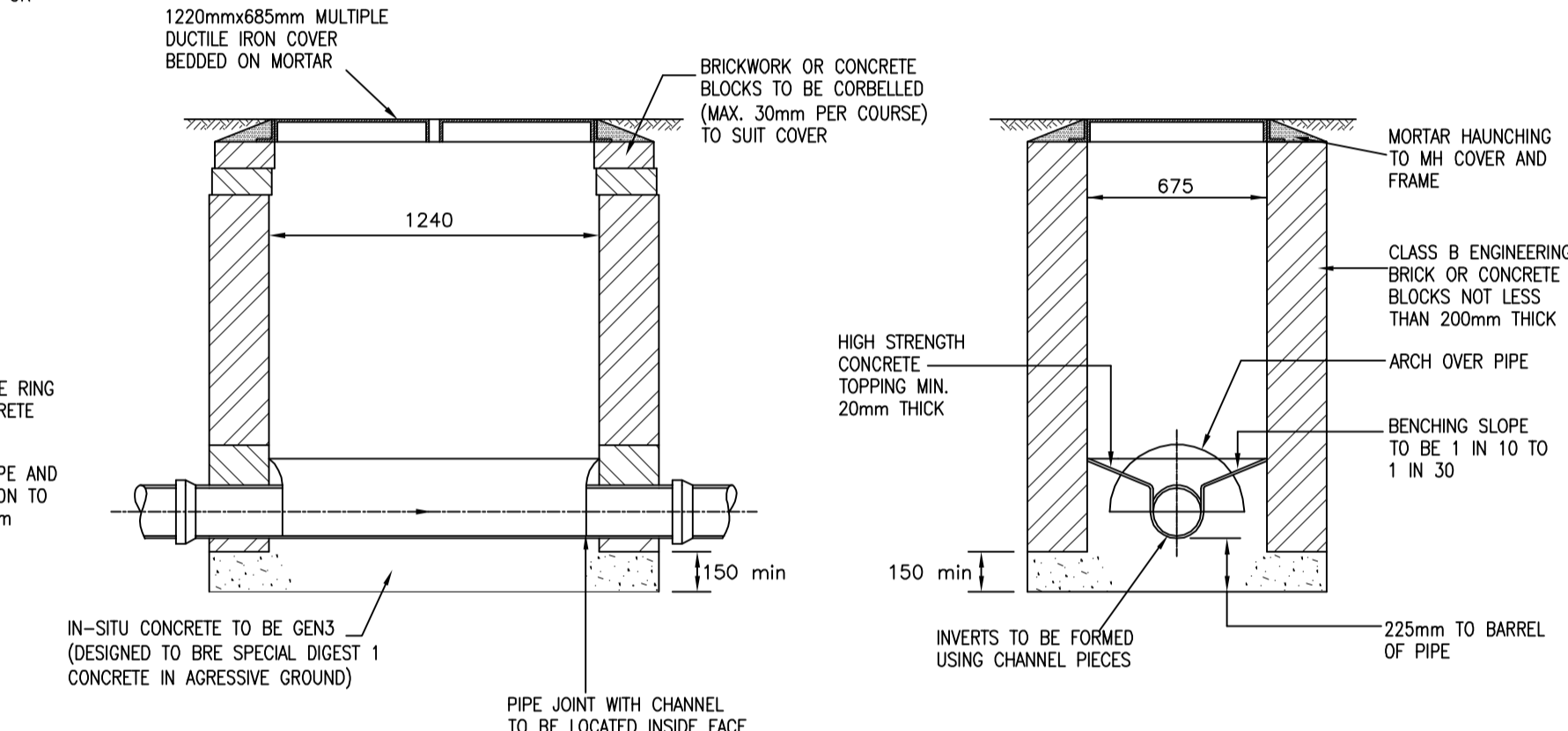
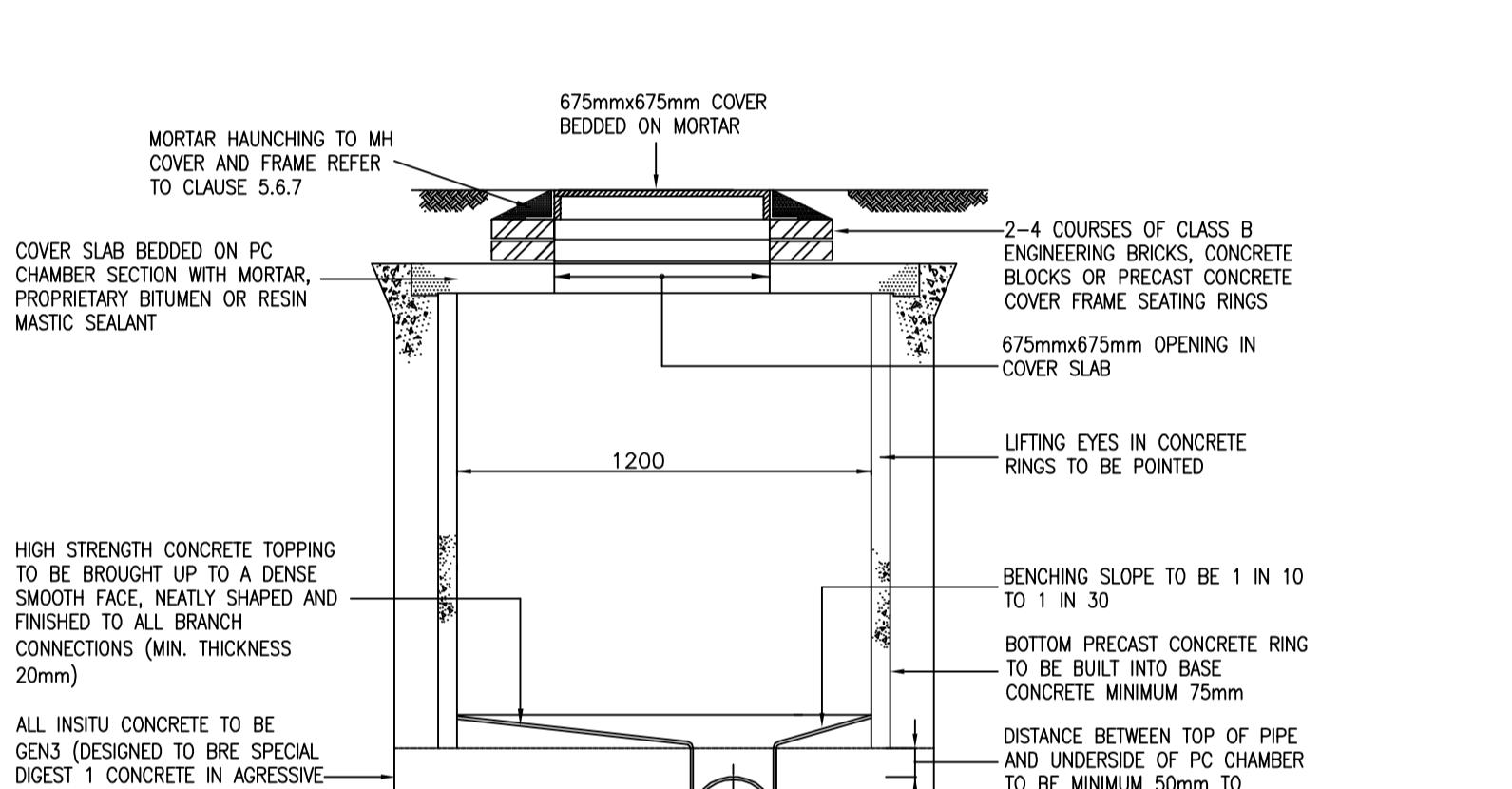


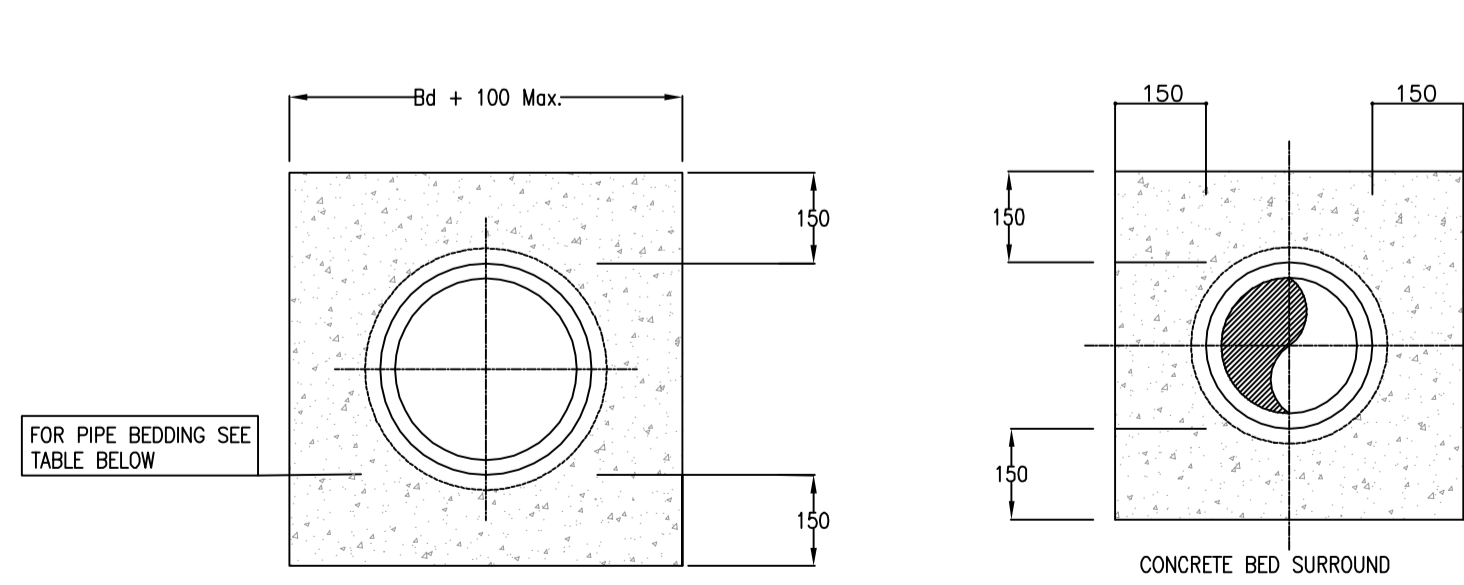
FIGURE 2.6 TYPICAL MANHOLE DETAIL - TYPE C
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 1.0m TO 1.5m

NOTES:
1. MANHOLE COVERS AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124 AND THEY SHALL BE OF NON-ROCKING DESIGN WHICH DOES NOT RELY ON THE USE OF CUSHION INSERTS.
2. CLASS D400 COVERS SHALL BE USED IN CARRIAGEWAYS OF ROADS (INCLUDING PEDESTRIAN STREETS), HARD SHOULDERS AND PARKING AREAS USED BY ALL TYPES OF ROAD VEHICLES. CLASS B125 SHALL BE USED IN FOOTWAYS, PEDESTRIAN AREAS AND COMPARABLE LOCATIONS.
3. ALL MANHOLE COVERS SHALL BE THE NON VENTILATING TYPE AND SHALL HAVE CLOSED KEYWAYS.
4. STEPS IN MANHOLES AND OTHER CHAMBERS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS 1247-PARTS 1, 2 AND 3 AND POLYPROPYLENE ENCAPSULATED STEPS SHALL COMPLY WITH WLS 4-33-01.
5. ALL DETAILS CONTAINED WITHIN THIS DRAWING COMPLY WITH 'SEWERS FOR ADOPTION' 6TH EDITION.

FIGURE 2.8 TYPICAL MANHOLE DETAIL - TYPE E
DEPTH FROM GROUND LEVEL TO SOFFIT OF PIPE 1.0m TO 1.5m
MAXIMUM SEWER DIAMETER 375mm



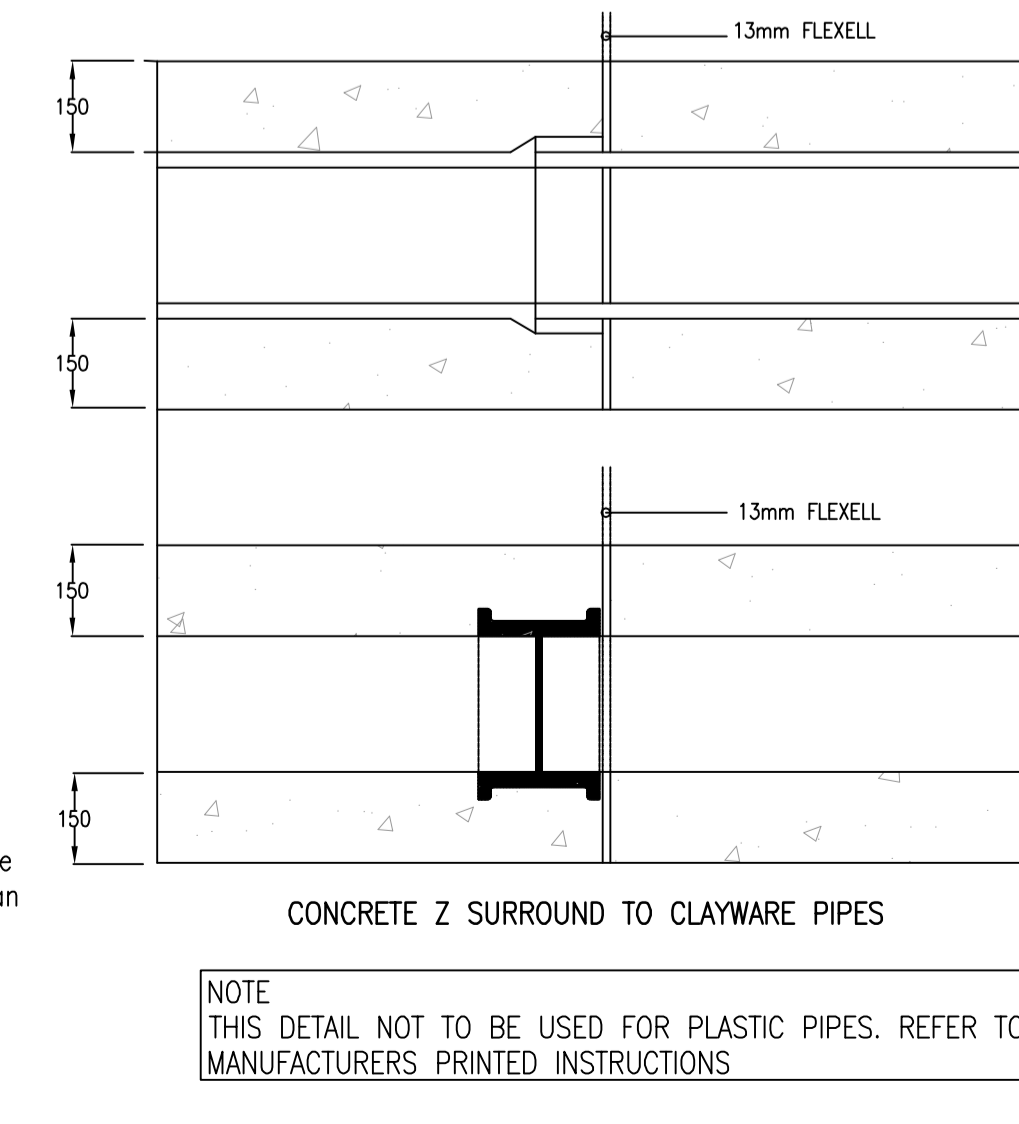
NOTE: ALL PRECAST CONCRETE SECTIONS/SLAB AND IN-SITU CONCRETE TO BE GEN3 (DESIGNED TO BRE SPECIAL DIGEST 1 CONCRETE IN AGGRESSIVE GROUND)



CLASS S BEDDING FACTOR 2.2

BS 410 TEST SIEVE	PERCENTAGE BY MASS PASSING			
	40	20	14	10
63mm	100	100	100	100
37.5mm	85 - 100	85 - 100	85 - 100	85 - 100
20mm	0 - 25	0 - 50	0 - 25	0 - 25
14mm	0 - 5	0 - 25	0 - 10	0 - 5
10mm	0 - 5	0 - 25	0 - 10	0 - 5
5mm	0 - 5	0 - 25	0 - 10	0 - 5
2.35mm	0 - 5	0 - 25	0 - 10	0 - 5
NOMINAL BORE OF PIPE (mm)	EXCEEDING 1350	600 to 1350	300 to 525	LESS THAN 300

NOTE
Class Z concrete surround shall be provided to all sewers where cover to pipes, measured from the top of the pipe barrel to the finished surface, is less than 1.2m in areas subject to vehicular loadings, and less than 0.9m elsewhere.



NOTE
THIS DETAIL NOT TO BE USED FOR PLASTIC PIPES. REFER TO MANUFACTURERS PRINTED INSTRUCTIONS

A TL TL BACKDROP AND MANHOLE TYPE E DETAILS ADDED Dec11

REV	BY	CHK	DESCRIPTION	DATE



healer associates

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Tel: 06 682 8000 Fax: 06 682 8000
E-mail: info@healerassociates.com.au Web site: www.healerassociates.com.au

CLIENT: BARRY WATERFRONT CONSORTIUM

DEVELOPMENT: BARRY WATERFRONT DEVELOPMENT

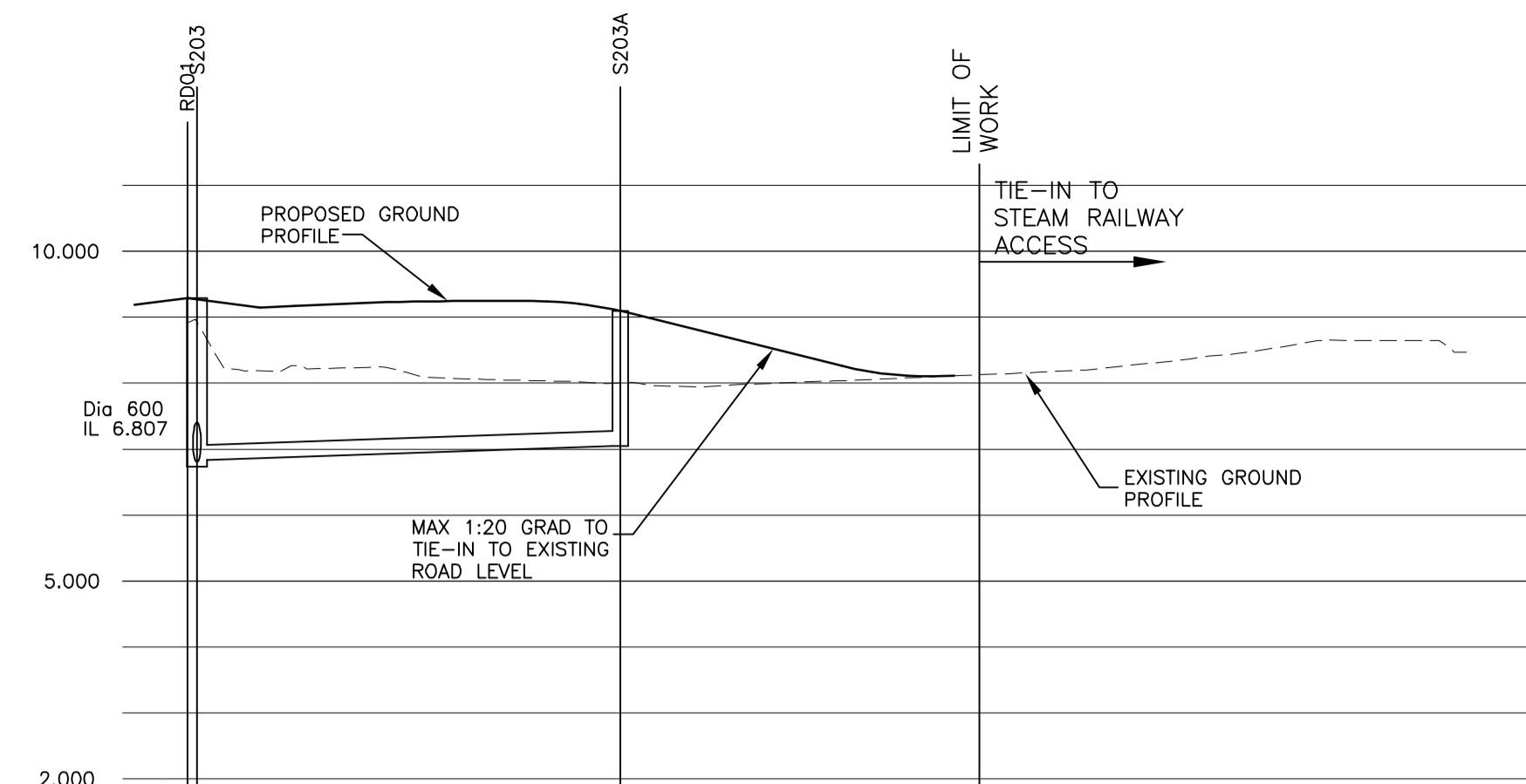
TITLE: TYPICAL DRAINAGE DETAILS

SCALE (S): NTS

DATE: APR'10 DRAWING: TP CHECKED BY: REVISION: A

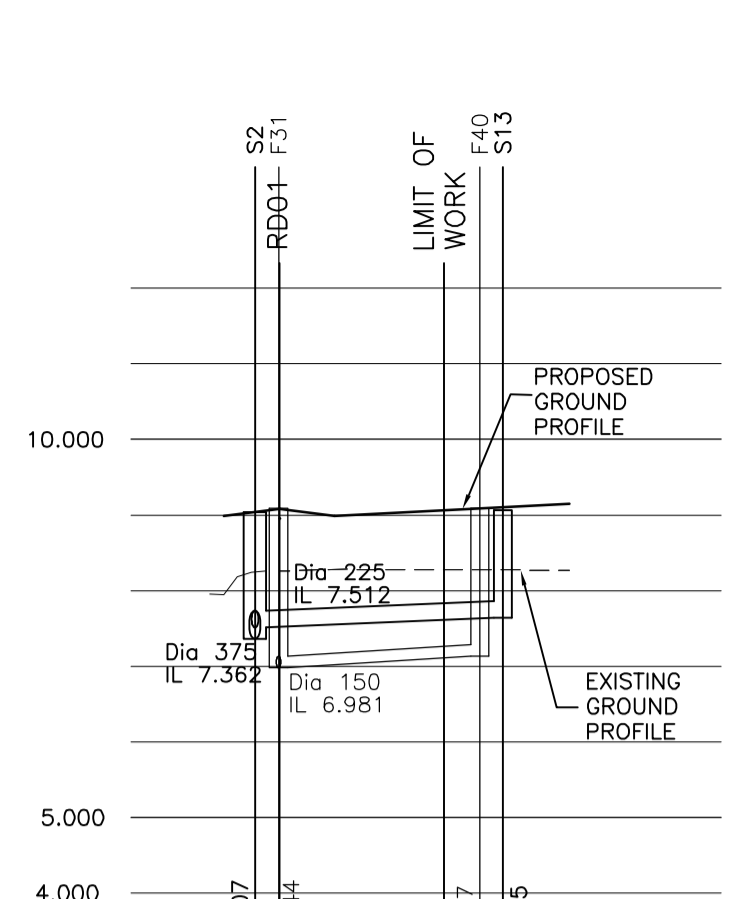
DRAWING NUMBER: 3572_P105-3

Planning



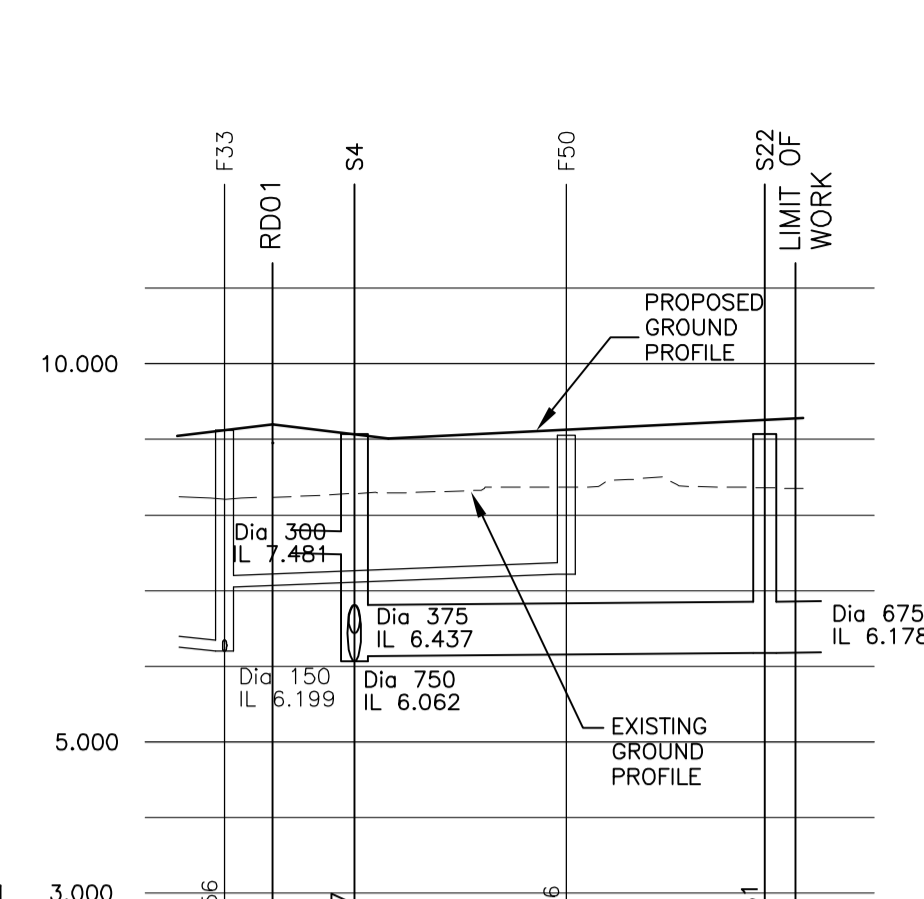
J02

CHAINAGE	0.000	5.537	8.147	10.000	14.263	17.000	20.000	21.000	25.000	30.000	33.000	35.000	37.243	40.000	45.000	49.241	50.000	55.000	60.000	65.000	70.000	75.000	80.000	85.000	87.281	89.000	91.000	95.000	98.343
EXISTING GROUND LEVEL	8.917			8.221		8.077		8.249	8.246	8.019			7.960			8.041			8.126		8.239		8.460			8.644			8.466
ALIGNMENT LEVEL		9.148	9.174	9.191		9.227		9.246		9.233																			
VERTICAL ALIGNMENT	G = 1.000% L = 30.000 R = -1500.0 1: 100.0																												
HORIZONTAL ALIGNMENT	R = 55.000																												
LEFT HAND CHANNEL						9.101	9.115	9.129	9.134	9.135	9.149	9.136																	
RIGHT HAND CHANNEL								9.160	9.162	9.154	9.149	9.136																	
STORMWATER DETAILS	9.289 6.626 6.626							Dia 225 1 in 167 35.408																					
FOULWATER DETAILS										9.097 7.048																			



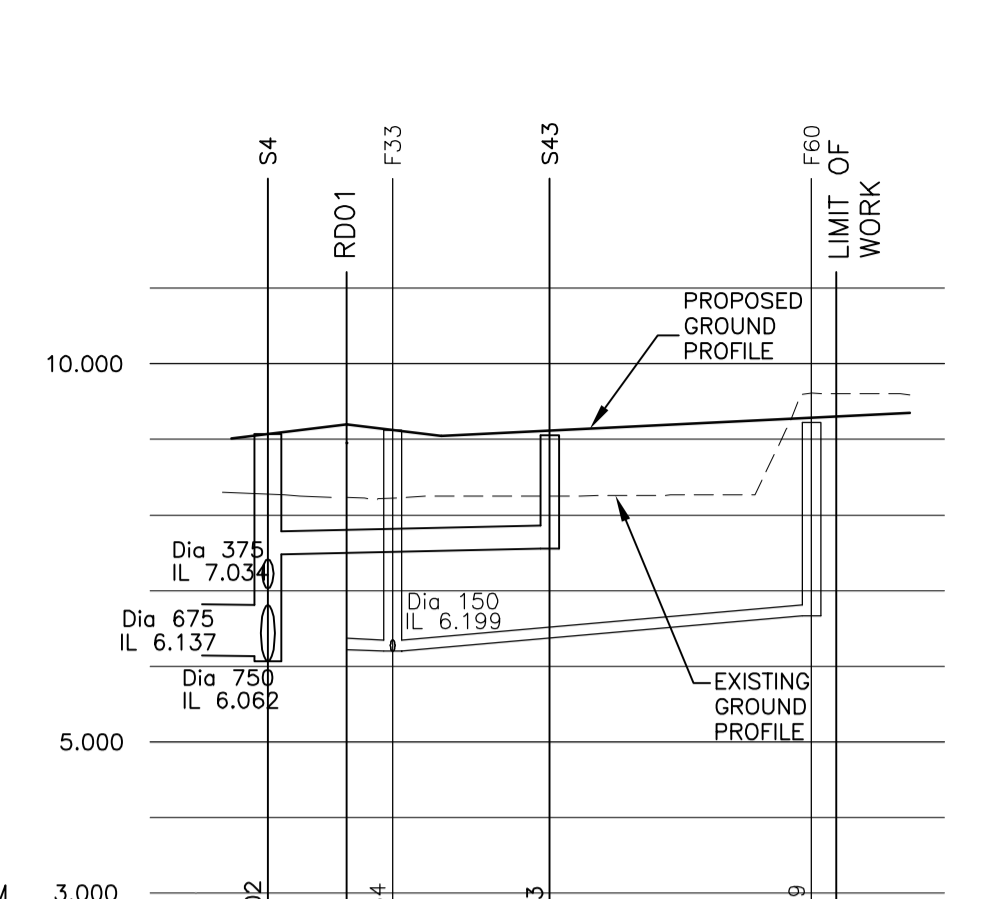
J03

CHAINAGE	0.000	3.650	5.000	7.400	10.000	13.267	14.785	19.207
EXISTING GROUND LEVEL	8.266			8.277				8.271
ALIGNMENT LEVEL		8.990	9.004	9.054	9.104	9.146	9.146	9.271
VERTICAL ALIGNMENT	G = 1.000% 1: 100.0							
HORIZONTAL ALIGNMENT								
LEFT HAND CHANNEL				8.983	8.985	9.035	9.077	9.077
RIGHT HAND CHANNEL								
STORMWATER DETAILS	9.040 7.047			Dia 225 1 in 129 16.414				
FOULWATER DETAILS	9.088 6.981			Dia 150 1 in 134 22.695				



J04

CHAINAGE	0.000	7.682	10.000	15.000	17.790	20.000	22.413	25.000	30.000	32.561	35.000	35.116
EXISTING GROUND LEVEL	8.233		8.301		8.369				8.370	8.350		
ALIGNMENT LEVEL		9.009	9.032	9.082	9.132	9.182	9.232	9.282	9.283	9.283		
VERTICAL ALIGNMENT	G = 1.000% 1: 100.0											
HORIZONTAL ALIGNMENT												
LEFT HAND CHANNEL				8.971	8.995	9.021	9.048	9.082	9.101	9.132	9.155	9.156
RIGHT HAND CHANNEL						9.006	9.032	9.056	9.082	9.101	9.132	9.133
STORMWATER DETAILS		9.071 6.137		Dia 675 1 in 654 27.170					9.232 6.178			
FOULWATER DETAILS	9.124 7.047			Dia 150 1 in 134 22.695								



J05

CHAINAGE	0.000	9.266	10.000	13.117	15.000	20.000	21.160	25.000	28.241	30.000	30.759	35.000	37.276
EXISTING GROUND LEVEL	8.233					8.261			9.556			9.589	
ALIGNMENT LEVEL		9.043	9.080	9.130	9.180	9.230	9.280	9.330	9.353	9.353			
VERTICAL ALIGNMENT	G = 1.000% 1: 100.0												
HORIZONTAL ALIGNMENT	R = 50.000												
LEFT HAND CHANNEL						9.017	9.040	9.080	9.127	9.180	9.189	9.218	
RIGHT HAND CHANNEL													
STORMWATER DETAILS	9.071 7.481			Dia 300 1 in 242 18.275				9.056 7.556					
FOULWATER DETAILS	9.124 6.199			Dia 150 1 in 60 27.875									

- F TL TL JUNCTION 2 REVISED, TEMP ACCESS TO STEAM RAILWAY AND 3.5m FOOTWAY/CYCLWAY ADDED BETWEEN JUNCTION 1 AND 1ST TOUCAN CROSSING. MAR'12
- E TL TL SECTION J02 REVISED, J02-1 ADDED, DRAWING UPDATED. Dec'11
- D TP TP DRAWING UPDATED. May'11
- C TP TP DRAWING UPDATED. May'10
- B TP TP LINK ROAD VERTICAL ALIGNMENT REVISED, DRAWING UPDATED. May'10
- A TP TP J08 ALIGNMENT REVISED, J08A & J09 ADDED. May'10

REV:	BY:	CHK:	DESCRIPTION:	DATE:
8 Oldfield Road, Broom Park, Perceps, CF35 5LJ Tel: 01656 865800 Fax: 01656 865277 E-mail: mail@healerassociates.co.uk Web site: www.healerassociates.co.uk				
Unit 12, The Croft, Bursford Drive, Stoke Heath, Bromsgrove, B60 4LE E-mail: mail@healerassociates.co.uk Web site: www.healerassociates.co.uk				
CLIENT: BARRY WATERFRONT CONSORTIUM				
DEVELOPMENT: BARRY WATERFRONT DEVELOPMENT				
TITLE: LINK ROAD - JUNCTION LONGITUDINAL SECTIONS				
SCALE (S): 1:500 HOR., 1:100 VERT.				
DATE: APR'10	DRAWN: TP	CHKD BY:	SIZE: A1	REVISION:
DRAWING NUMBER: 3572_P106-3				F

Planning