

AIRPORTS COMPANY SOUTH AFRICA



ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND BULK SERVICES

PROJECT No: AA207300

JUNE 2024

VOLUME 1 – BOOK OF DRAWINGS

CLIENT:

AIRPORTS COMPANY SOUTH AFRICA SOC LIMITED
CAPE TOWN INTERNATIONAL AIRPORT
PRIVATE BAG X9002
CAPE TOWN
7525

CONSULTING ENGINEERS:



Suit 209, Tyger Lake, 2 Niagara Rd, Bellville, Cape Town, 7530

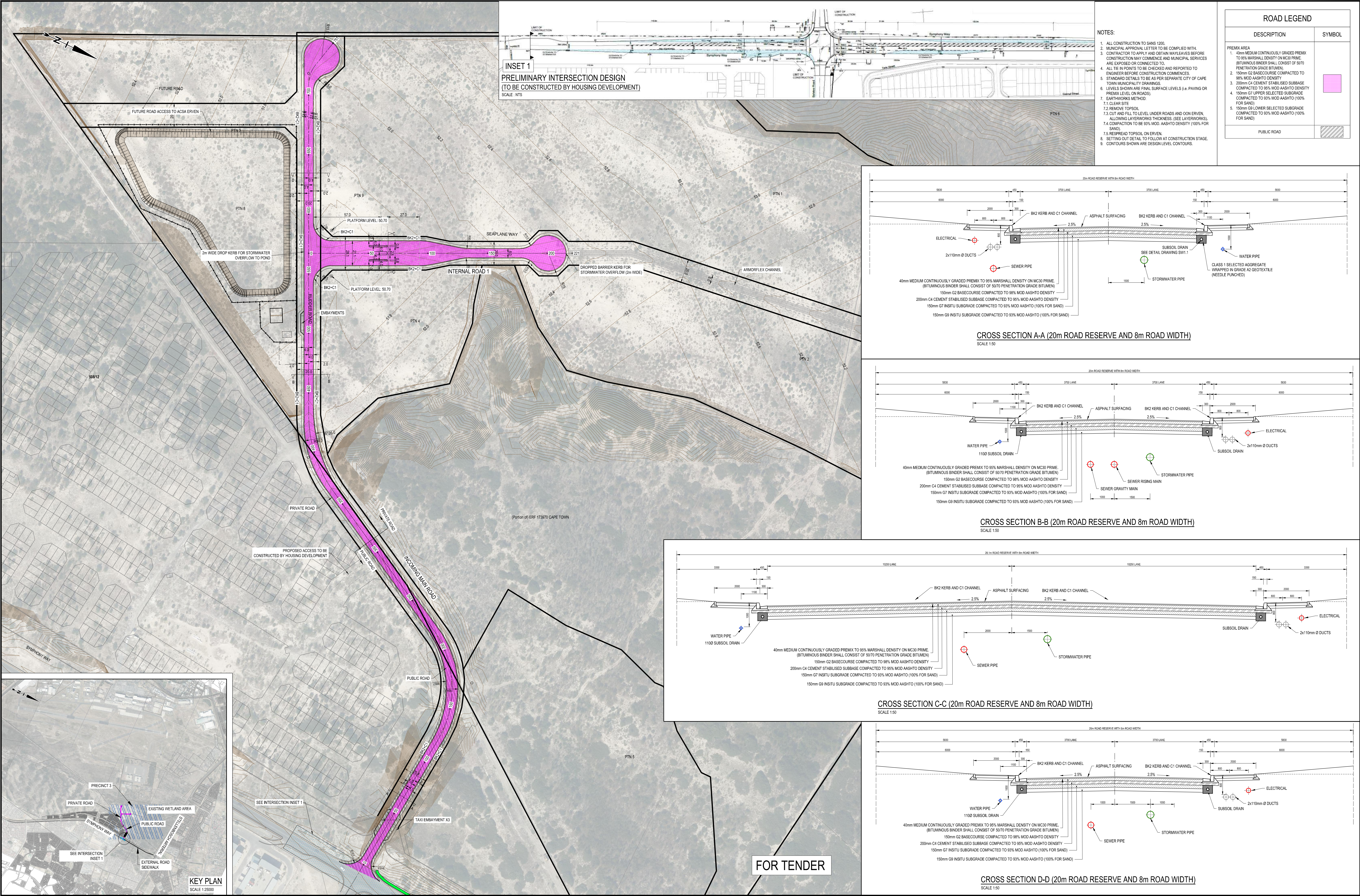
AIRPORTS COMPANY SOUTH AFRICA

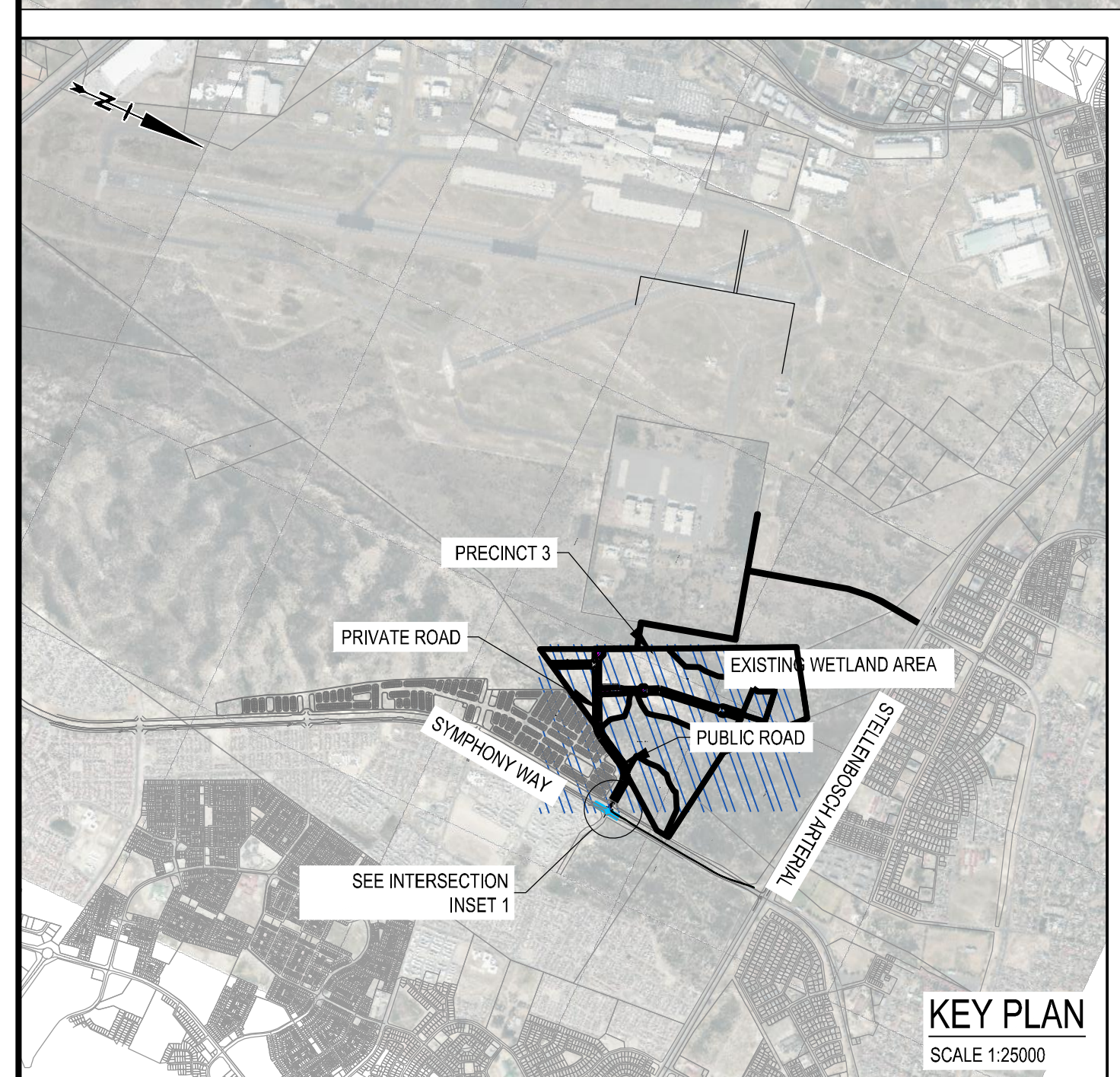


ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND BULK SERVICES

LIST OF DRAWINGS

<u>DRAWING No.</u>	<u>DESCRIPTION</u>	<u>DRAWING No.</u>	<u>DESCRIPTION</u>
AA207300-100	Road Layout REV E	STANDARD DETAILS	
AA207300-100-01	External Road Sidewalk REV D	SW1.1	Sub-Surface Drain Main Line
AA207300-101	Road Longsection REV D	SW2.2A	Stormwater Manhole without access shaft
AA207300-102	Sewer and Water Layout REV E	SW2.2B	Stormwater Manhole without access shaft
AA207300-103	Sewer Long Sections 1 REV D	SW2.4	Ductile Iron Manhole Cover and Frame, with concrete infill
AA207300-103-01	Sewer Long Sections 2 REV D	SW3.1	Stormwater Catchpit, Type A, Double Kerb & Grid Inlet Combination
AA207300-104	Sewer Pump Station REV C	SW9	Typical Stormwater Headwall
AA207300-105	Stormwater Layout REV G	SW-05-01	Box culvert inlet and outlet details
AA207300-105-01	External Stormwater Layout REV D	SW-05-02	Box Culvert inlet and outlet reinforcement
AA207300-106	Stormwater Long Sections REV F	W1	Valve Chamber
AA207300-107	Stormwater Long Sections REV F	W2	Hydrant Chamber
AA207300-107-01	Stormwater Long Sections REV C	W3	Typical Water Connection
AA207300-108	Stormwater Pond Detail REV E	W-10-01	Typical Detail of thrust block for bends
AA207300-109	Combined Services Layout REV F	W-10-02	Typical Detail of thrust block for 90-degree bends
AA207300-110	Earthworks Layout REV C	W4A	Typical water meter chamber
AA207300-D1	Typical Contract Nameboard	W4B	Typical water meter chamber
		W-02-02	Typical detail of air valve chamber
		S2	Sewer manhole
		G01-01	Typical detail of double junction box
		RD1.1	Barrier Kerbs and Channels

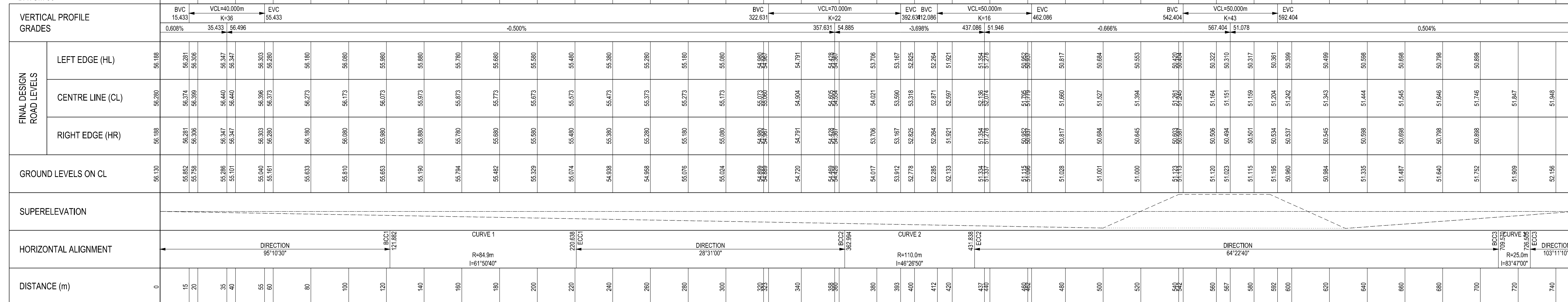




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C	2023/10/12	FOR TENDER	M.06	JP	
B	2023/06/22	FOR APPROVAL	M.06	JP	
A	2023/09/06	FOR APPROVAL	M.06	JP	
No.	DATE	REVISION DESCRIPTION	DRW	CHK	

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VER SCALE 1:200

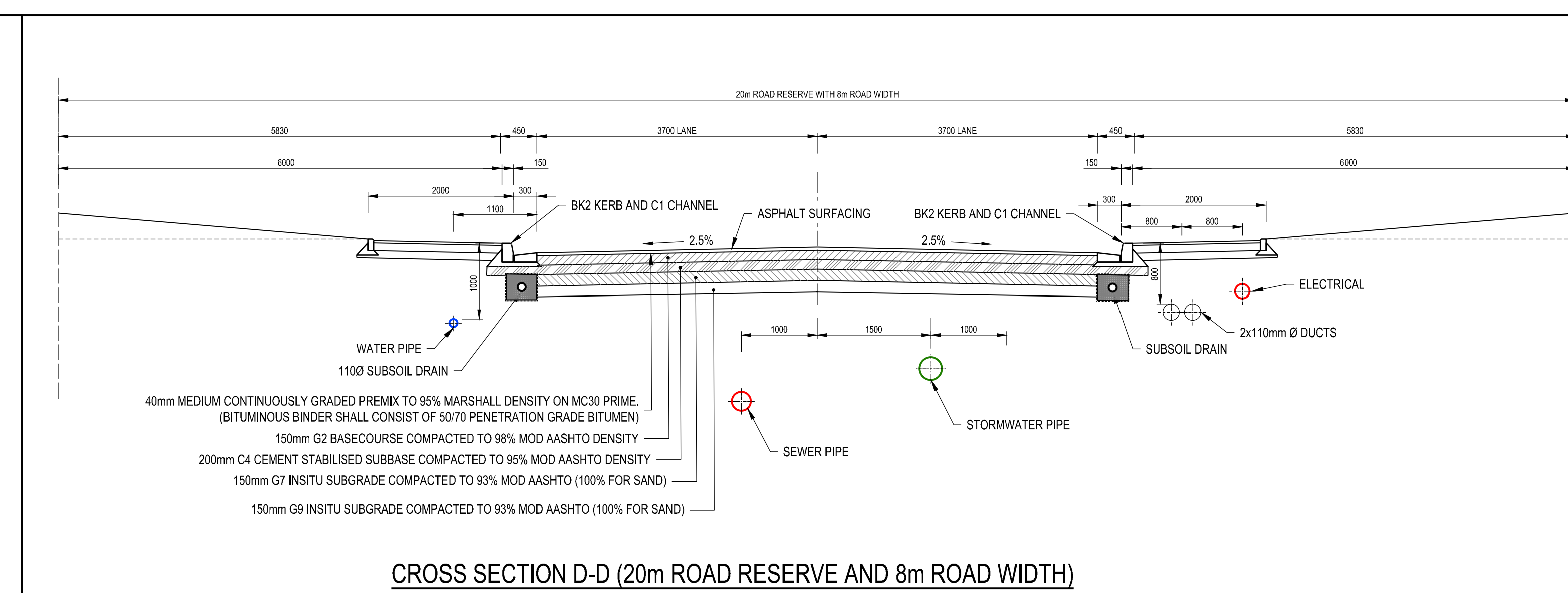
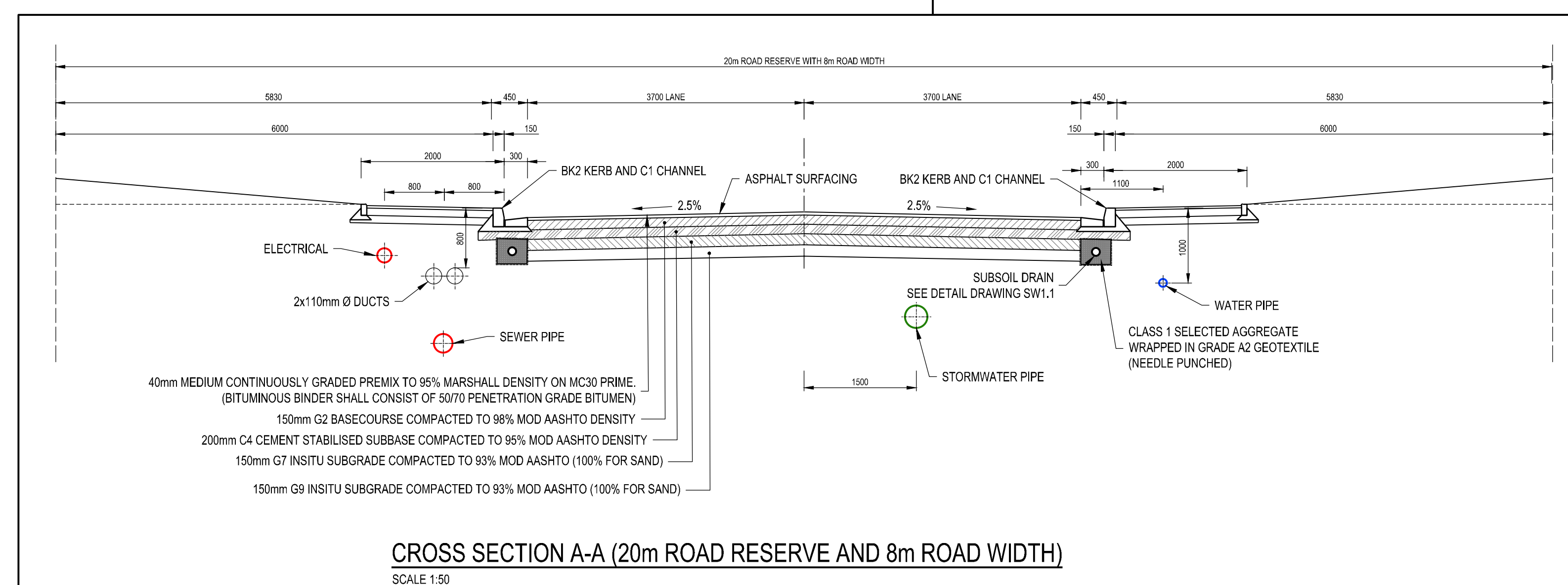
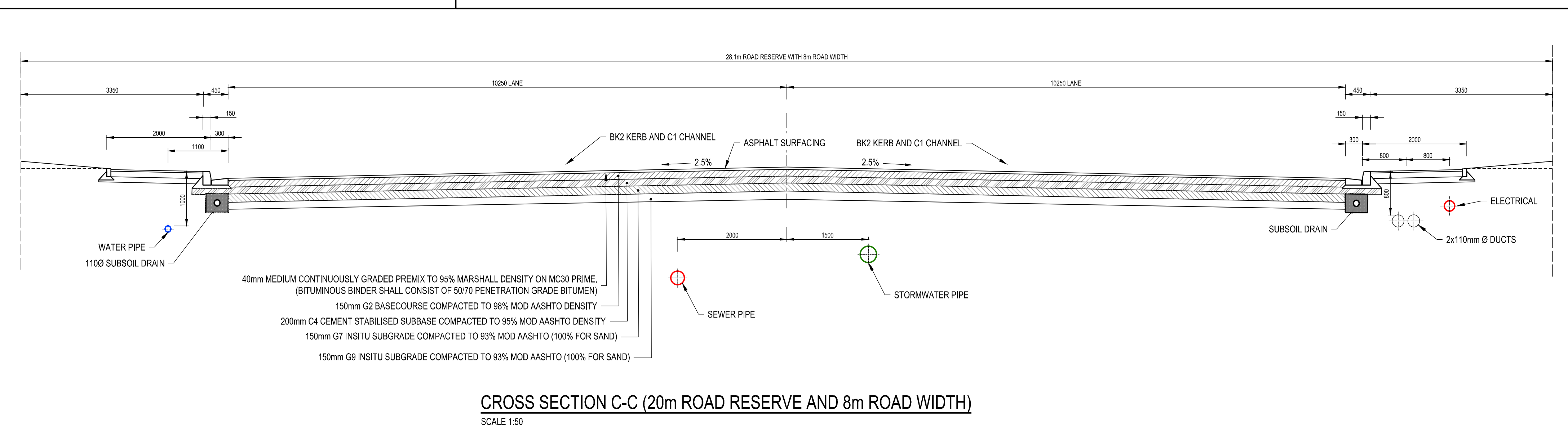
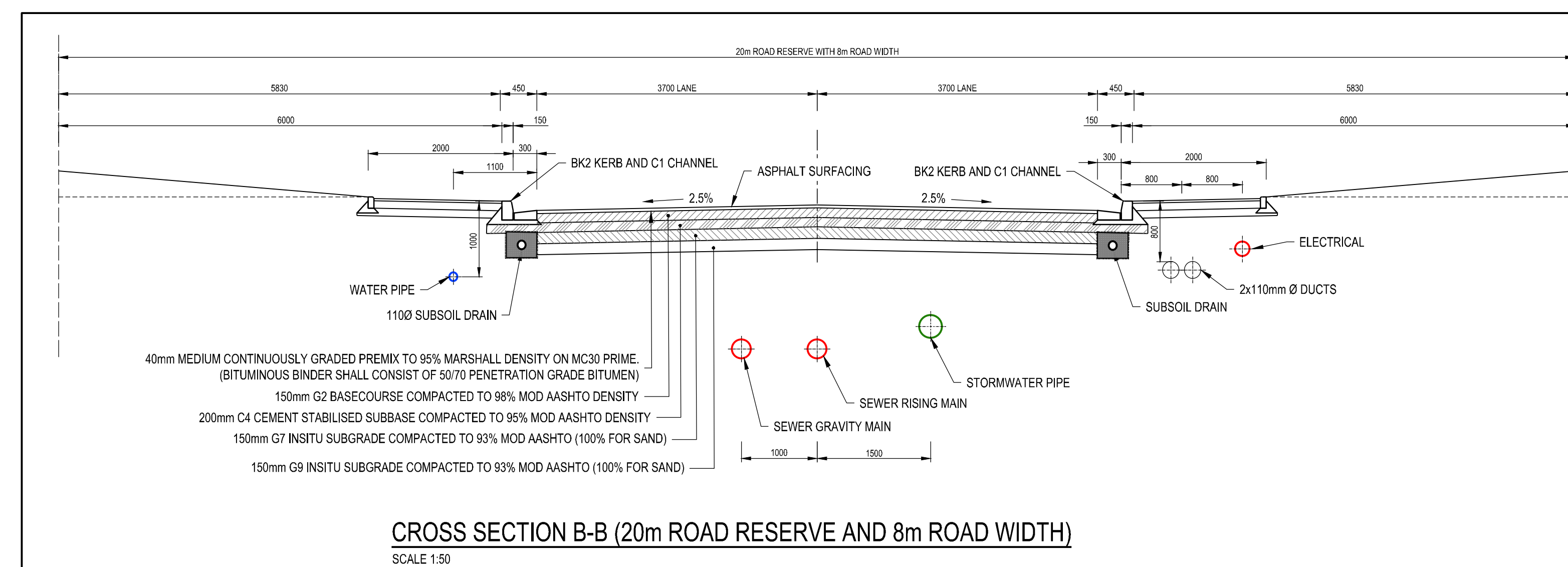
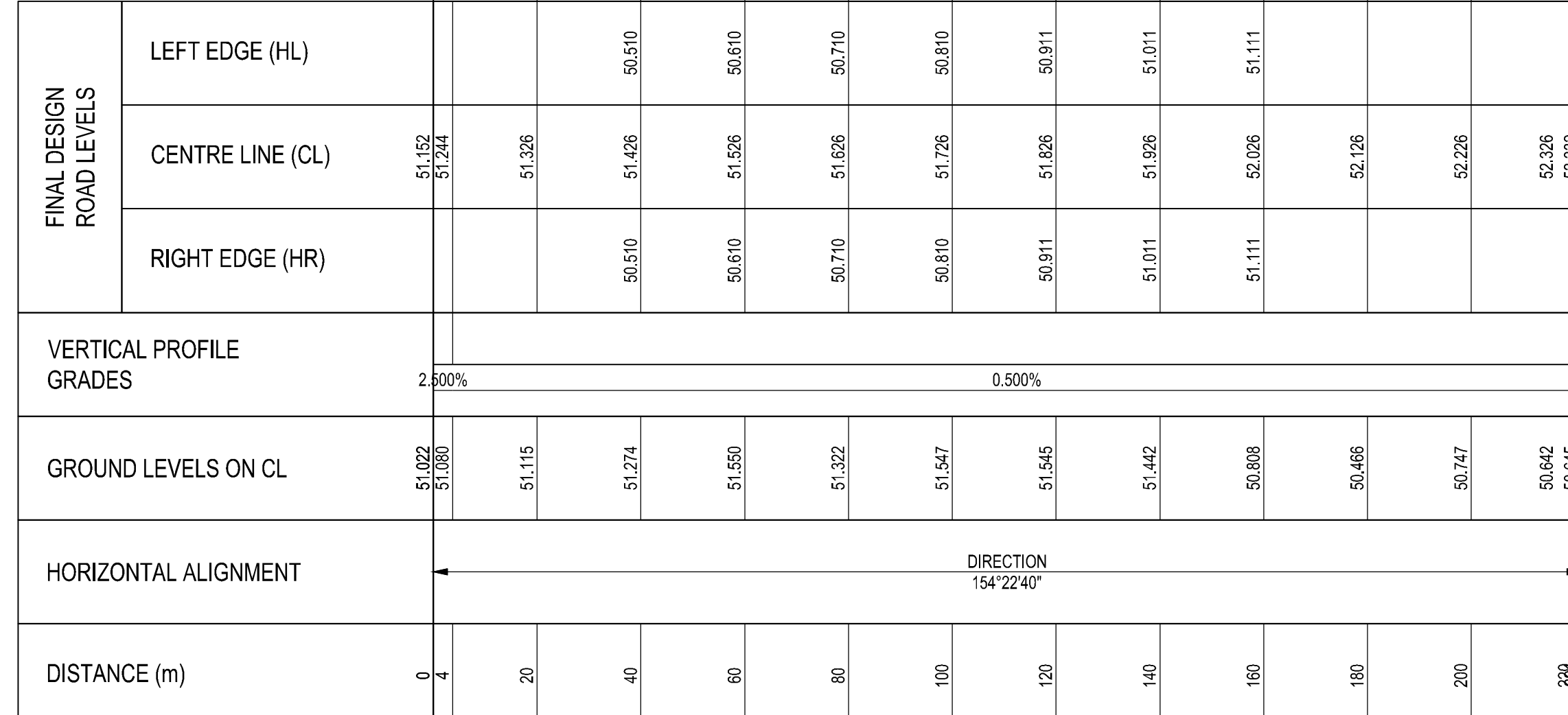
DATUM 50



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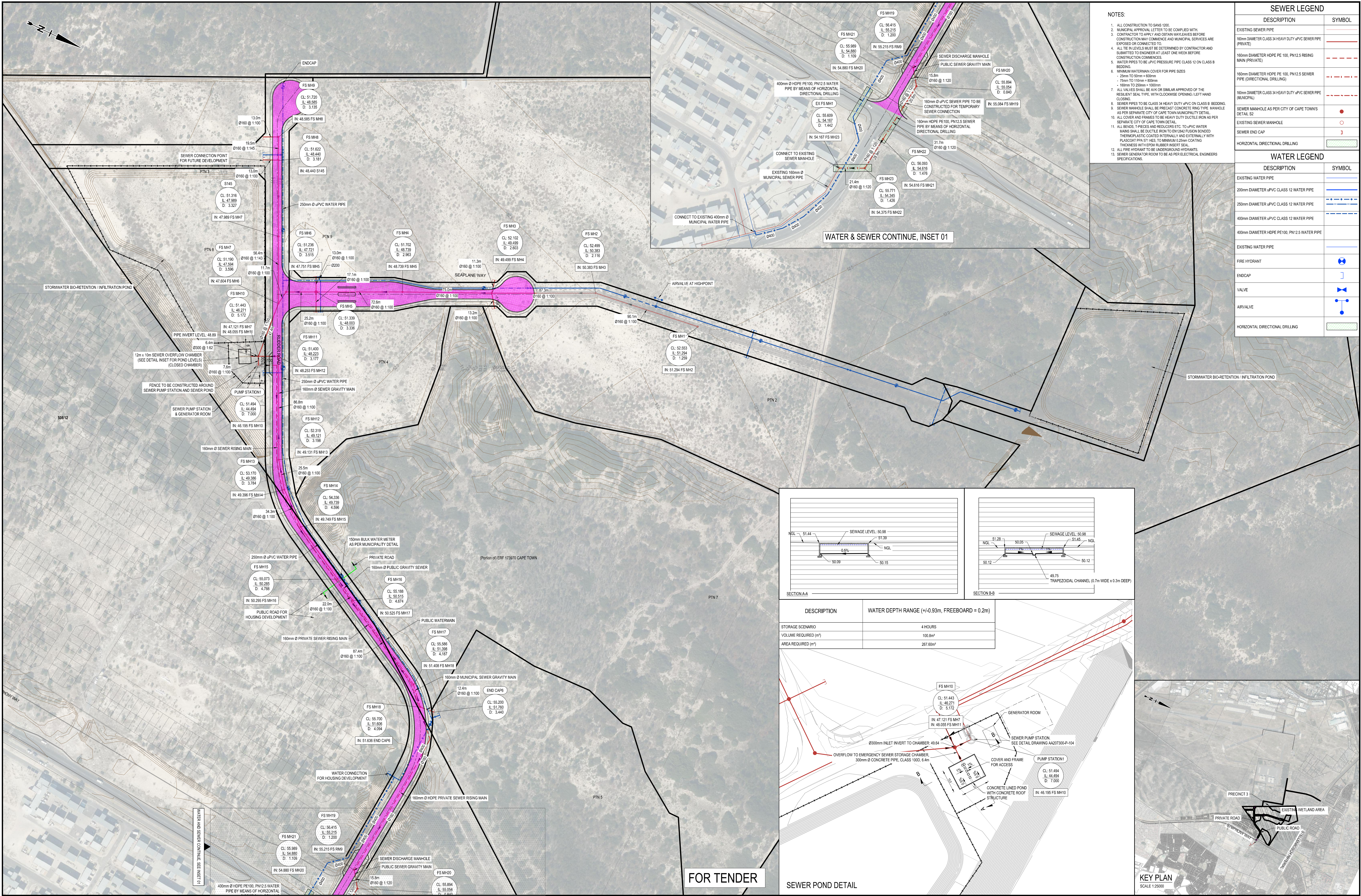
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DATUM 50



FOR TENDER

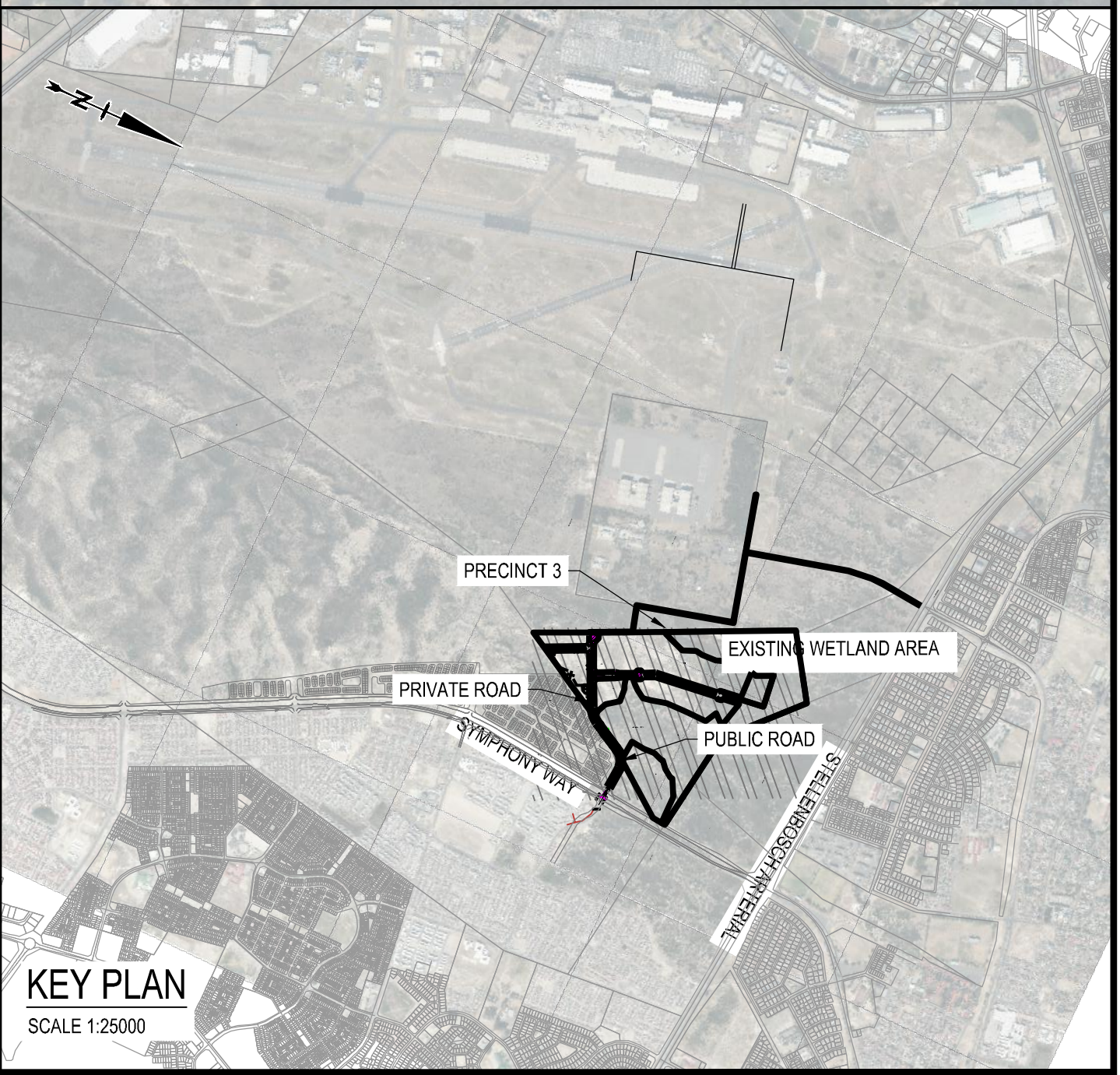
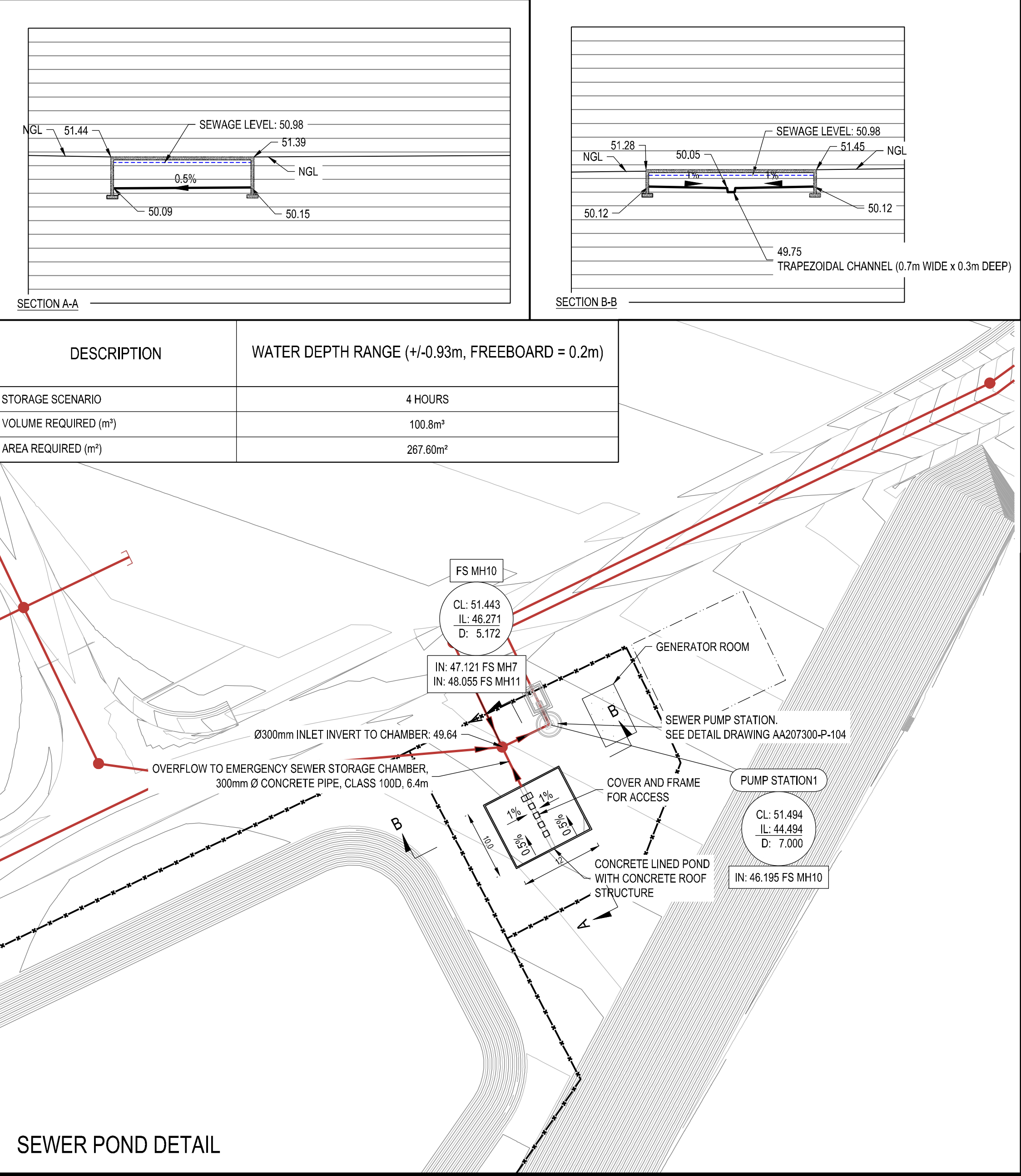
						SCALE FOR REDUCED PLAN:		CLIENT:		PROJECT TITLE:		DRAWING TITLE:		APPROVED BY CONSULTING ENGINEER:			
												ROAD LONG SECTION		2019/300/418 PR REG. No. DATE: 2024/06/06			
						100mm ON ORIGINAL PLAN		CAPE TOWN INTERNATIONAL AIRPORT AIRPORTS COMPANY SOUTH AFRICA		CONSULTING ENGINEERS AND PROJECT MANAGERS Office Suite 201, Tiger Lake Building 2 Ingardenia St., Tlokweng Benoni, 7030 Tel: (021) 954-8233 Fax: (021) 954-8216 e-mail: cape@ingerop.co.za		ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND BULK SERVICES		DESIGNED BY: M DU BUSSON		CHECKED BY: J PATHAN	
						GENERAL NOTES:								DATE: 2024/06/06			
						ALL DIMENSIONS AND LEVELS TO BE VERIFIED ON SITE PRIOR TO MANUFACTURING AND CONSTRUCTION.											
						ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER.								REVISION No.: D			
D 2026/06/06 FOR TENDER M.dB J.P																	
C 2023/10/12 FOR TENDER M.dB J.P																	
B 2023/06/22 FOR APPROVAL M.dB J.P																	
A 2023/06/06 FOR APPROVAL M.dB J.P																	
No. DATE REVISION DESCRIPTION DRW CHK												SCALE: AS SHOWN		ORIGINAL DWG SIZE A0			
														SHEET 1 OF 1			
														AA207300-P-101			



- NOTES:
1. ALL CONSTRUCTION TO SANS 1000.
 2. MUNICIPAL APPROVAL LETTER TO BE COMPLIED WITH.
 3. CONTRACTOR TO APPLY AND OBTAIN WAYLEAVES BEFORE CONSTRUCTION MAY COMMENCE AND MUNICIPAL SERVICES ARE EXPOSED OR CONNECTED TO.
 4. ALL TIE IN LEVELS MUST BE DETERMINED BY CONTRACTOR AND SUBMITTED TO ENGINEER AT LEAST ONE WEEK BEFORE CONSTRUCTION COMMENCES.
 5. WATER PIPES TO BE UPVC PRESSURE PIPE CLASS 12 ON CLASS B BEDDING.
 6. MINIMUM WATERMAIN COVER FOR PIPE SIZES:
 - 25mm TO 50mm = 600mm
 - 75mm TO 100mm = 800mm
 - 150mm TO 200mm = 1000mm
 - 250mm TO 300mm = 1200mm
 7. ALL VALVES SHALL BE A/W OR SIMILAR APPROVED OF THE RESIDENT SEAL TYPE, WITH COUNTERSINK OPENING (LEFT HAND CLOSING).
 8. SEWER PIPES TO BE CLASS 34 HEAVY DUTY UPVC ON CLASS B BEDDING.
 9. SEWER MANHOLE SHALL BE PRECAST CONCRETE RING TYPE MANHOLE AS PER SEPARATE CITY OF CAPE TOWN MUNICIPALITY DETAIL.
 10. ALL COVER AND FRAMES TO BE HEAVY DUTY DUCTILE IRON AS PER SEPARATE CITY OF CAPE TOWN DETAIL.
 11. ALL BRICKS, TILES AND REDUCERS ETC. TO UPVC WATER MAINS SHALL BE DUCTILE IRON TO EN2842 FUSION BONDED THERMALASTIC COATED INTERNALLY AND EXTERNALLY WITH PLASCOAT PPA 571 RES. TO MINIMUM 0.25mm COATING THICKNESS WITH EPDM RUBBER INSERT SEAL.
 12. ALL FIRE HYDRANT TO BE UNDERGROUND HYDRANTS.
 13. SEWER GENERATOR ROOM TO BE AS PER ELECTRICAL ENGINEERS SPECIFICATIONS.

SEWER LEGEND	
DESCRIPTION	SYMBOL
EXISTING SEWER PIPE	
160mm DIAMETER CLASS 34 HEAVY DUTY UPVC SEWER PIPE (PRIVATE)	
160mm DIAMETER HDPE PE 100, PN12.5 RISING MAIN (PRIVATE)	
160mm DIAMETER HDPE PE 100, PN12.5 SEWER PIPE (DIRECTIONAL DRILLING)	
160mm DIAMETER CLASS 34 HEAVY DUTY UPVC SEWER PIPE (MUNICIPAL)	
SEWER MANHOLE AS PER CITY OF CAPE TOWN'S DETAIL S2	
EXISTING SEWER MANHOLE	
SEWER END CAP	
HORIZONTAL DIRECTIONAL DRILLING	

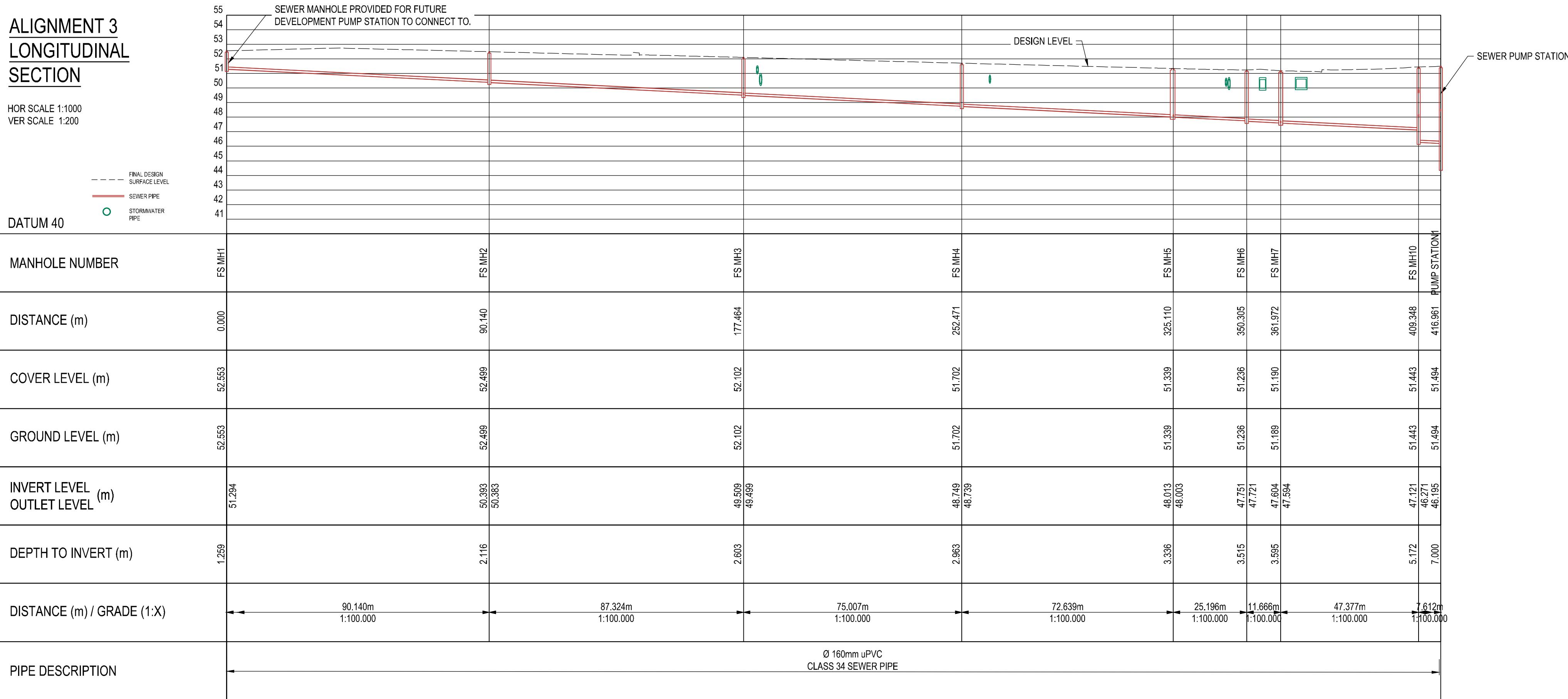
WATER LEGEND	
DESCRIPTION	SYMBOL
EXISTING WATER PIPE	
200mm DIAMETER UPVC CLASS 12 WATER PIPE	
250mm DIAMETER UPVC CLASS 12 WATER PIPE	
400mm DIAMETER UPVC CLASS 12 WATER PIPE	
400mm DIAMETER HDPE PE100, PN12.5 WATER PIPE	
EXISTING WATER PIPE	
FIRE HYDRANT	
ENDCAP	
VALVE	
AIRVALVE	
HORIZONTAL DIRECTIONAL DRILLING	



					SCALE FOR REDUCED PLAN: 0102030405060708090100 100mm ON ORIGINAL PLAN		CLIENT: CAPE TOWN INTERNATIONAL AIRPORT AIRPORTS COMPANY SOUTH AFRICA		INGEROP Consulting Engineers and Project Managers Office: Suite 200, Tiger Valley Building 2 Nuga Valley, Tiger Valley, Ficksburg, 7500 Tel: (021) 914-2833 Fax: (021) 914-5939 e-mail: capetown@ingerop.co.za		PROJECT TITLE: ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND BULK SERVICES		DRAWING TITLE: SEWER AND WATER LAYOUT		APPROVED BY CONSULTING ENGINEER: 2019/04/18 2024/06/03 REVIS: 04 DATE			
E	2024/06/03	FOR TENDER	MJB	JP					DESIGNED BY: M DU BUISSON		DRAWN BY: M DU BUISSON		DATE: 2024/06/03		REVISION No.: E			
D	2024/03/25	FOR TENDER	MJB	JP														
C	2023/10/12	FOR TENDER	MJB	JP														
B	2023/09/18	FOR APPROVAL	MJB	JP														
A	2023/05/06	FOR APPROVAL	CW	JP														
No.	DATE	REVISION DESCRIPTION	DRW	CHK	GENERAL NOTES: ALL DIMENSIONS AND LEVELS TO BE VERIFIED ON SITE PRIOR TO MANUFACTURING AND CONSTRUCTION. ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER.		SCALE: 1:1000		ORIGINAL DWG SIZE A0		SHEET 1 OF 1		AA207300-P-102					

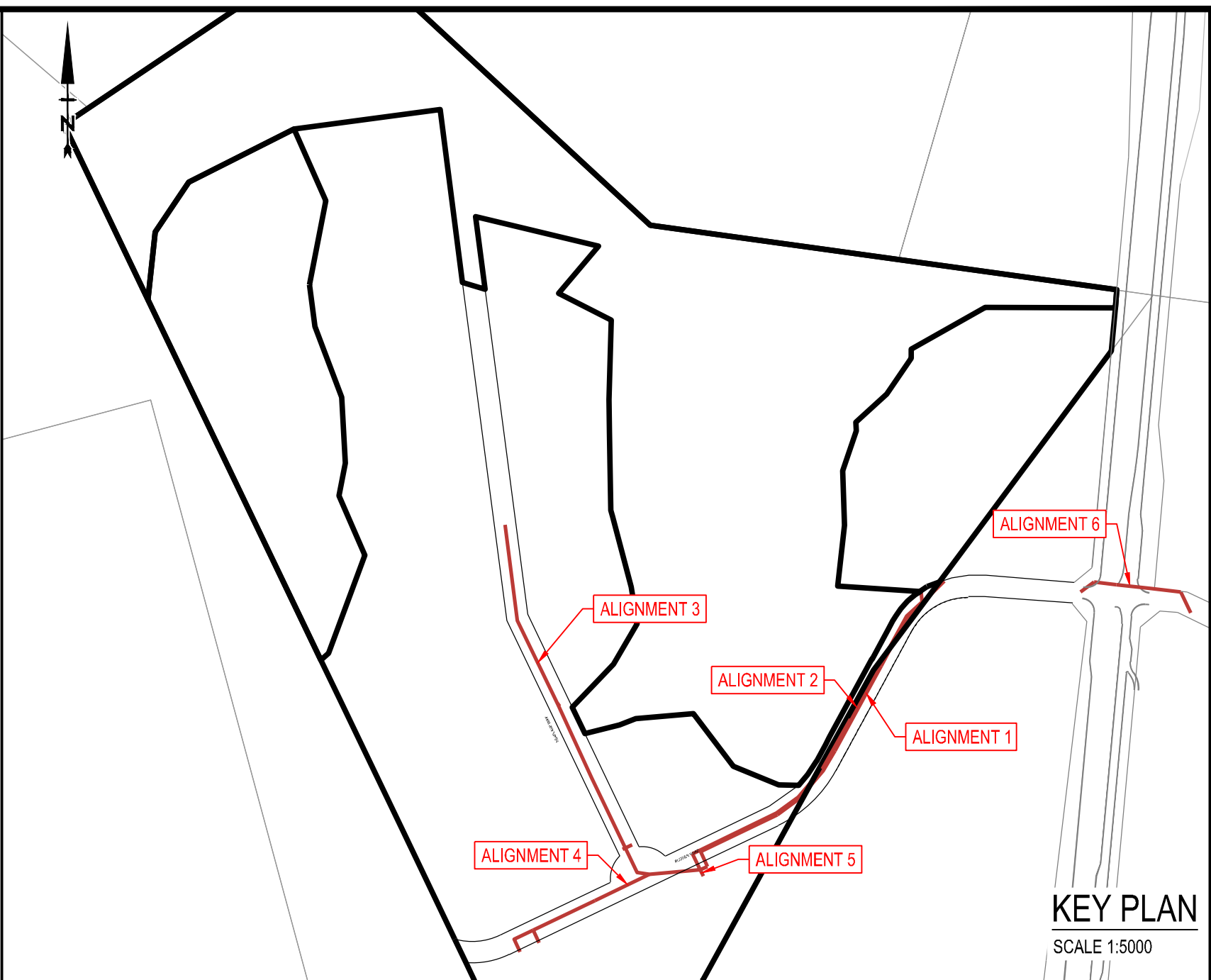
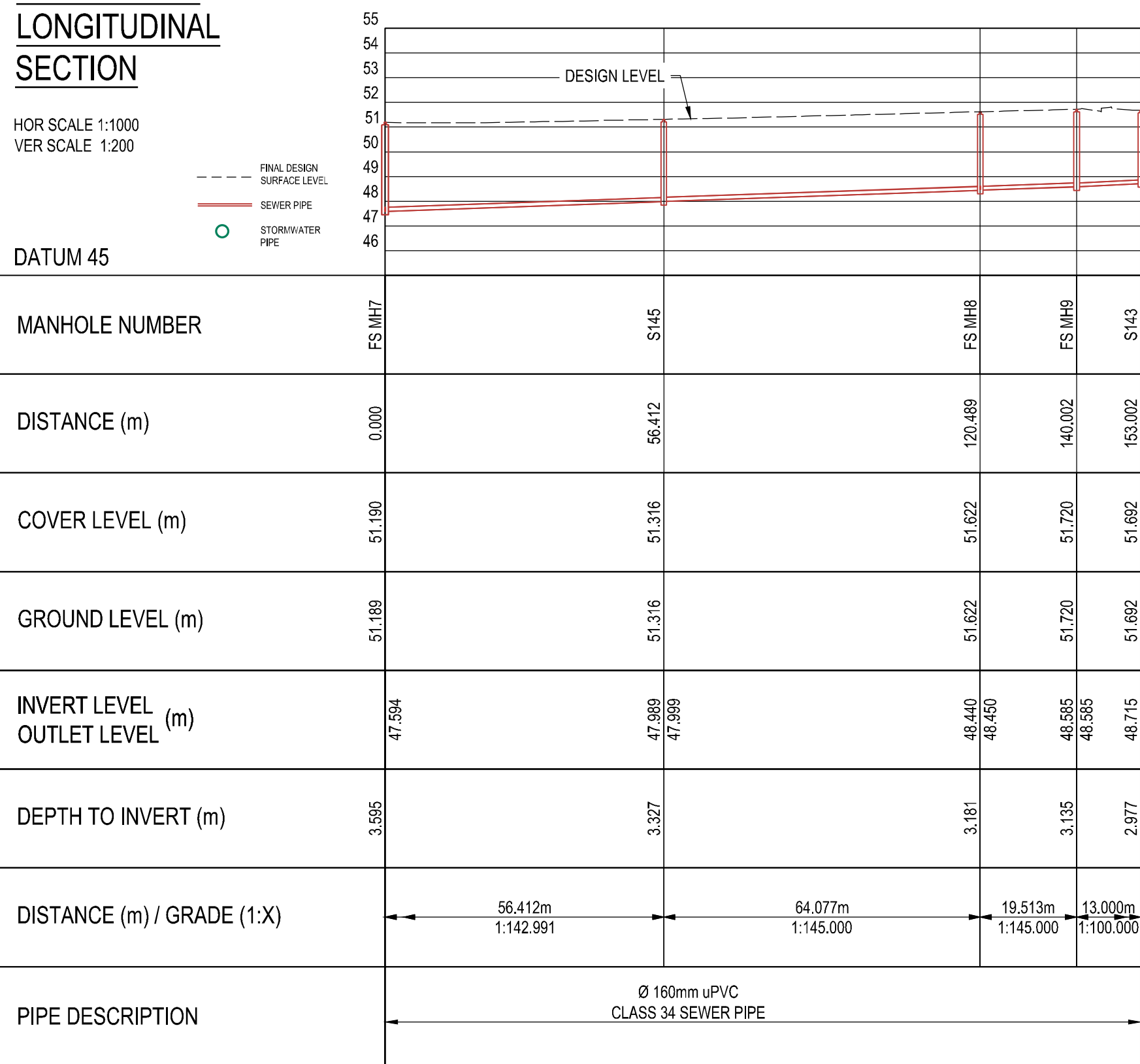
ALIGNMENT 3
LONGITUDINAL
SECTION

HOR SCALE 1:1000
VER SCALE 1:200



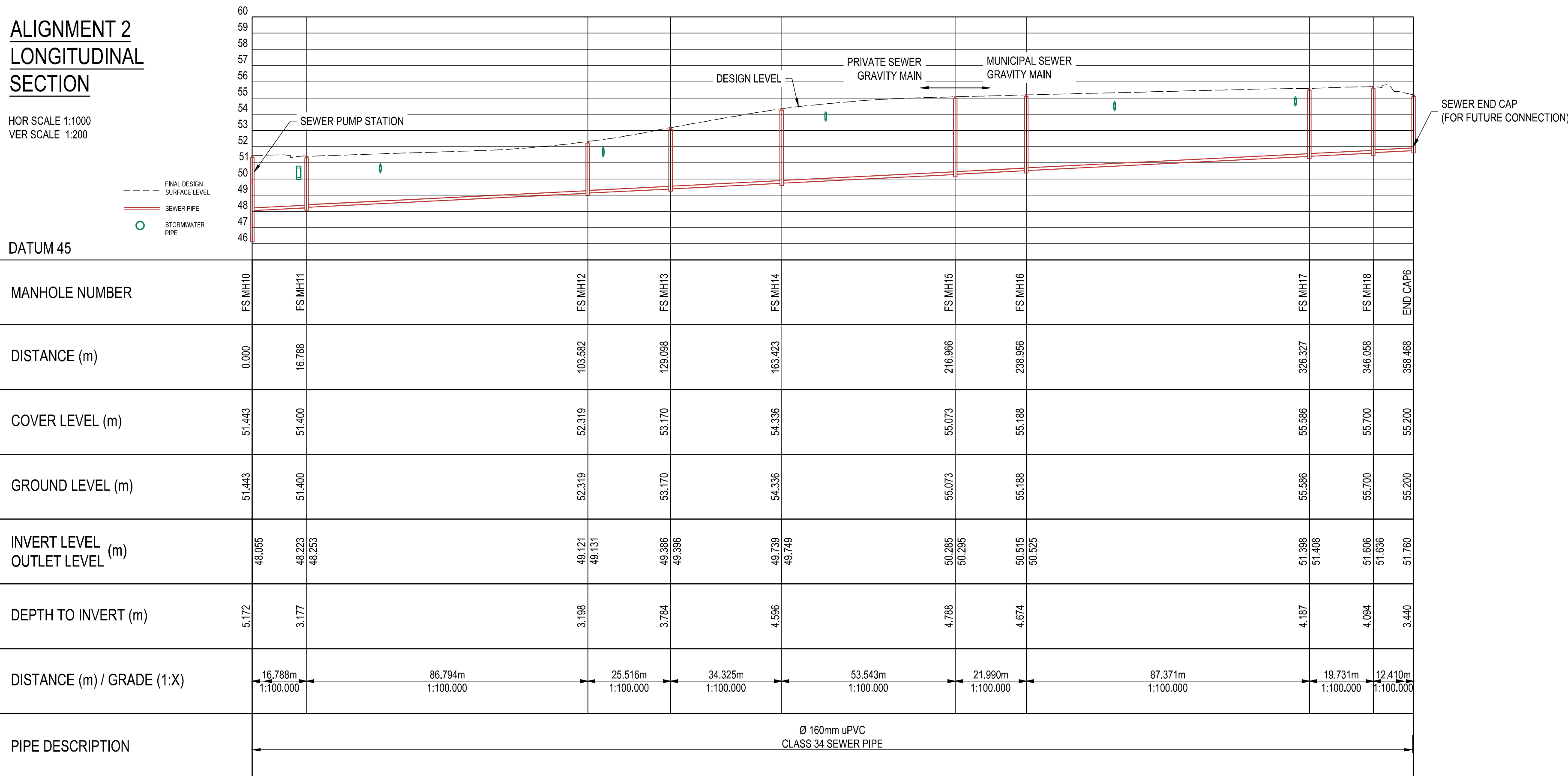
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SECTION

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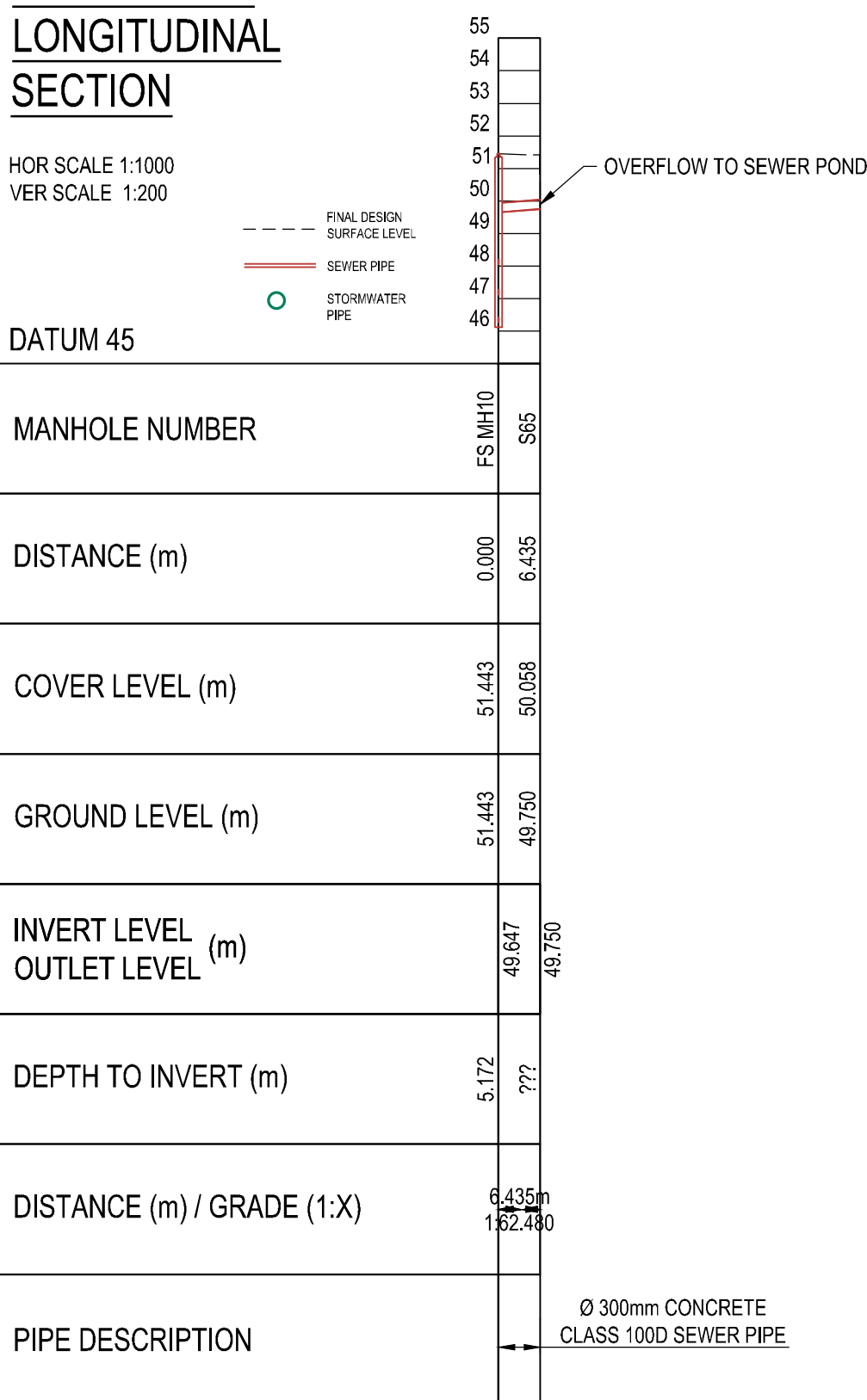
ALIGNMENT 2
LONGITUDINAL
SECTION

HOR SCALE 1:1000
VER SCALE 1:200



ALIGNMENT 5
LONGITUDINAL
SECTION

HOR SCALE 1:1000
VER SCALE 1:200



ALIGNMENT 1
LONGITUDINAL
SECTION

HOR SCALE 1:1000
VER SCALE 1:200

--- FINAL DESIGN
SURFACE LEVEL
--- EXISTING PIPE
--- EXISTING WATER
PIPE

DATUM 40

MANHOLE NUMBER	FS RM1	FS RM2	FS RM3	FS RM4	FS RM5	FS RM6	FS RM7	FS RM8	FS RM9	FS RM10
COVER LEVEL (m)	51.624	48.716	50.873	51.652	54.349	53.283	54.343	54.530	54.783	56.415
GROUND LEVEL (m)	51.624	51.652	52.338	53.212	54.349	53.283	54.343	54.530	54.783	56.415
INVERT LEVEL (m)	48.800	48.800	48.800	48.800	48.800	48.800	48.800	48.800	48.800	48.800
OUTLET LEVEL (m)	48.800	48.800	48.800	48.800	48.800	48.800	48.800	48.800	48.800	48.800
DISTANCE (m) / GRADE (1:X)	15.234m 1:160,000	78.529m 1:36,870	25.711m 1:44,408	34.945m 1:23,942	21.545m 1:52,721	89.919m 1:102,142	50.182m 1:270,879	49.738m 1:265,968	35.919m 1:154,154	81.246m 1:148,368
PIPE DESCRIPTION	160mm DIAMETER HDPE PE100, PN12.5 RISING MAIN									

ALIGNMENT 6
LONGITUDINAL
SECTION

HOR SCALE 1:1000
VER SCALE 1:200

--- FINAL DESIGN
SURFACE LEVEL
--- EXISTING PIPE
--- EXISTING WATER
PIPE

DATUM 50

MANHOLE NUMBER	FS RM8	FS RM10	FS RM10	FS RM10	FS RM10	FS RM10	FS RM10	FS RM10	FS RM10	FS RM10
COVER LEVEL (m)	54.783	56.415	56.415	56.415	56.415	56.415	56.415	56.415	56.415	56.415
GROUND LEVEL (m)	56.014	56.415	56.415	56.415	56.415	56.415	56.415	56.415	56.415	56.415
INVERT LEVEL (m)	54.600	56.215	56.215	56.215	56.215	56.215	56.215	56.215	56.215	56.215
OUTLET LEVEL (m)	54.600	56.215	56.215	56.215	56.215	56.215	56.215	56.215	56.215	56.215
DEPTH TO INVERT (m)	777	1.200	0.940	1.109	1.475	1.475	1.475	1.475	1.475	1.475
DISTANCE (m) / GRADE (1:X)	91.246m 1:148,368	15.754m 1:120,000	20.801m 1:120,000	31.886m 1:120,000	28.913m 1:120,000	21.409m 1:120,000	21.409m 1:120,000	21.409m 1:120,000	21.409m 1:120,000	21.409m 1:120,000
PIPE DESCRIPTION	160mm DIAMETER HDPE PE100, PN12.5 RISING MAIN	160mm DIAMETER HDPE PE100, PN12.5 RISING MAIN	160mm DIAMETER HDPE PE100, PN12.5 RISING MAIN	160mm DIAMETER HDPE PE100, PN12.5 RISING MAIN	160mm DIAMETER HDPE PE100, PN12.5 RISING MAIN	160mm DIAMETER HDPE PE100, PN12.5 RISING MAIN	160mm DIAMETER HDPE PE100, PN12.5 RISING MAIN	160mm DIAMETER HDPE PE100, PN12.5 RISING MAIN	160mm DIAMETER HDPE PE100, PN12.5 RISING MAIN	160mm DIAMETER HDPE PE100, PN12.5 RISING MAIN

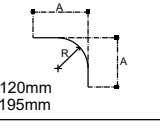
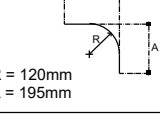
FOR TENDER

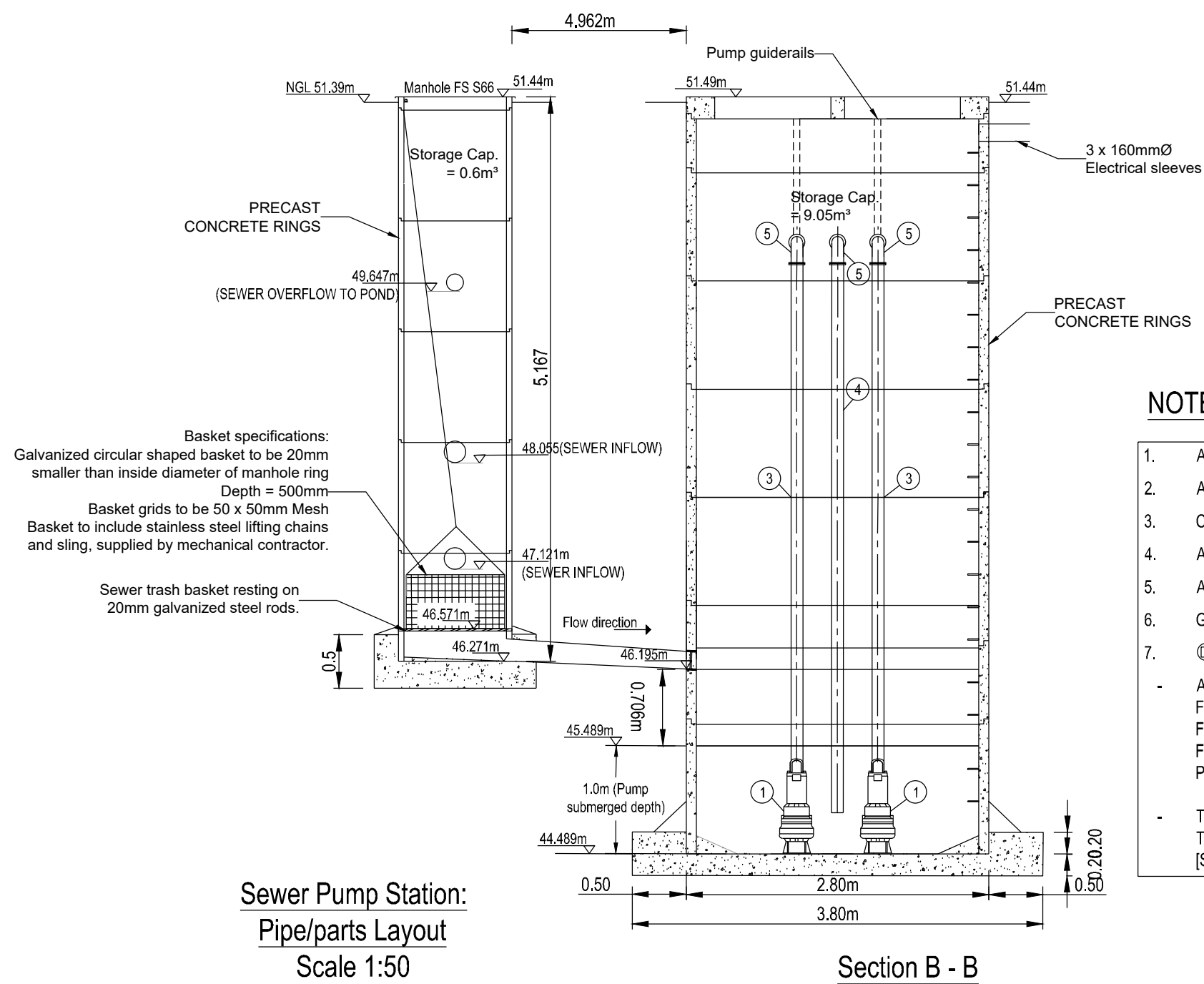
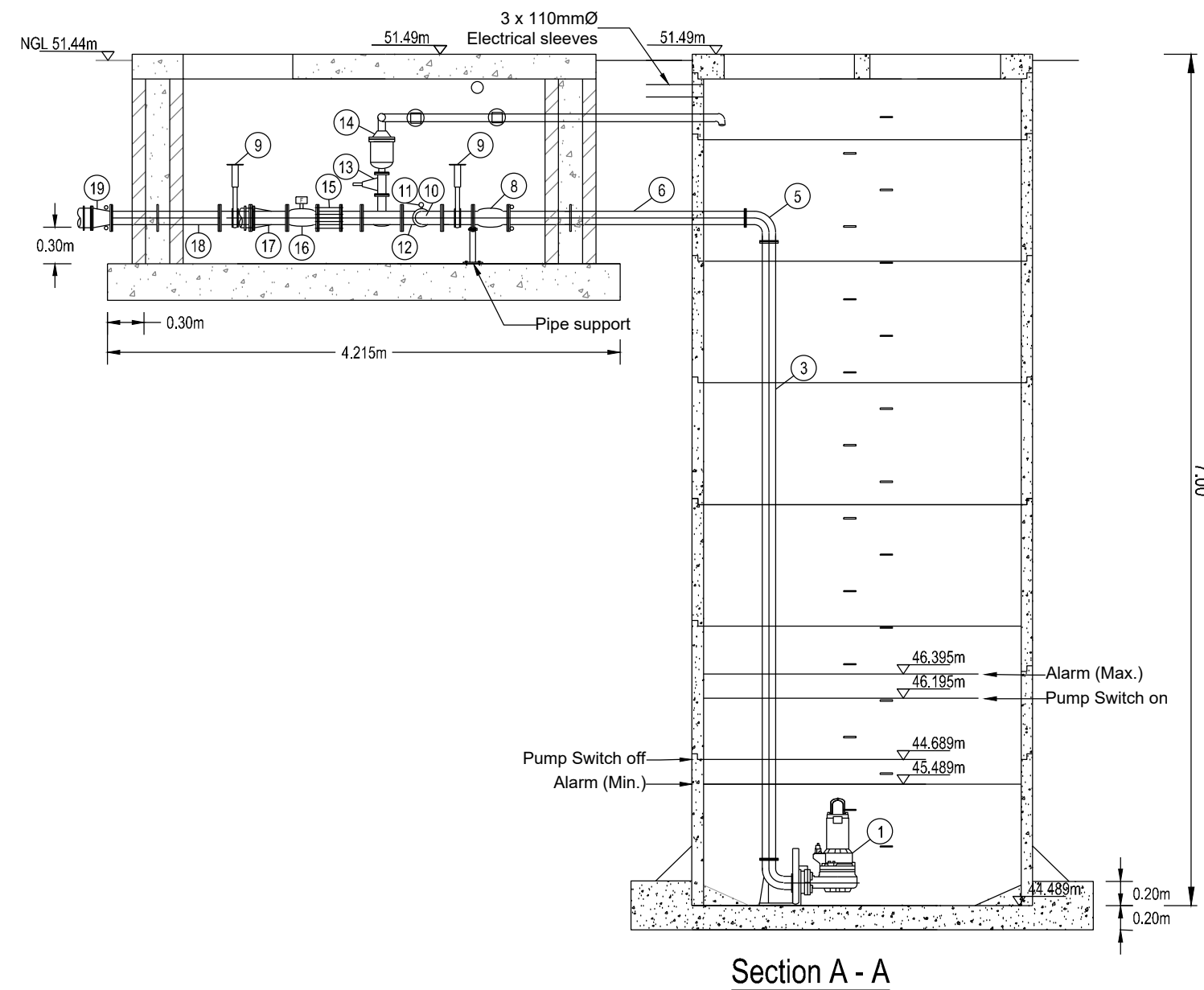
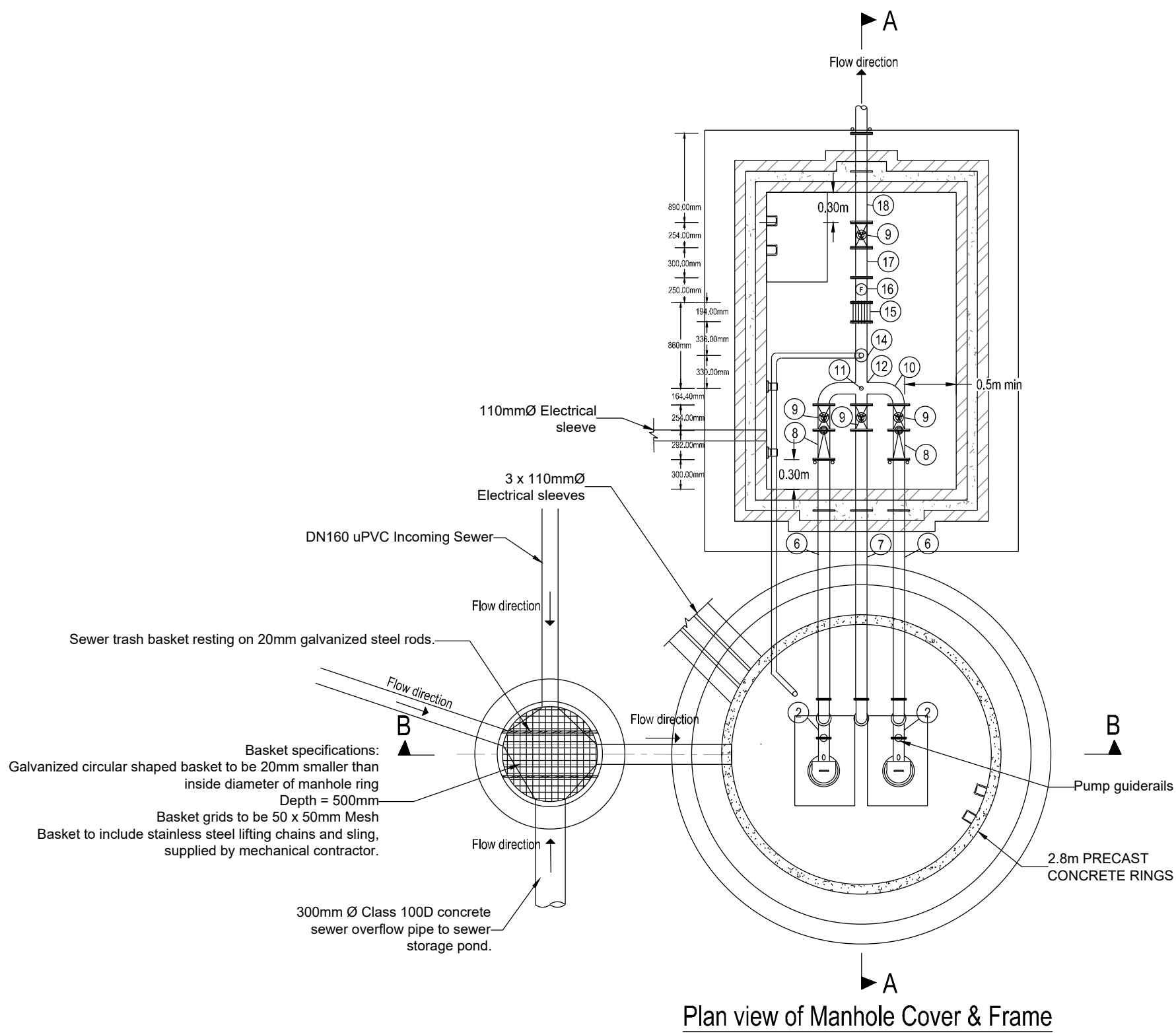
No.	DATE	REVISION DESCRIPTION	DRW	CHK	ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER
D	2024/06/03	FOR TENDER	MJB	JP	
C	2023/10/12	FOR TENDER	MJB	JP	
B	2023/09/18	FOR APPROVAL	MJB	JP	
A	2023/06/07	FOR APPROVAL	MJB	JP	

SCALE FOR REDUCED PLAN: 0 10 20 40 60 80 100 100mm ON ORIGINAL PLAN	CLIENT: CAPE TOWN INTERNATIONAL AIRPORT AIRPORTS COMPANY SOUTH AFRICA	CONSULTING ENGINEERS AND PROJECT MANAGERS: INGEROP INGENIUM CONSULTING ENGINEERS AND PROJECT MANAGERS Office: Suite 200, Tiger Valley Building, 2 Naga's Way, Tiger Valley, Bedfordview, 2010 Tel: (021) 914-2833 Fax: (021) 914-2833 e-mail: cape@ingerop.co.za	PROJECT TITLE: ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND BULK SERVICES	DRAWING TITLE: SEWER LONG SECTION 2	APPROVED BY CONSULTING ENGINEER: DESIGNED BY: M DU BUSSON DRAWN BY: M DU BUSSON DRAFTING No.: AA207300-P-103-01	CHECKED BY: J PATHAN DATE: 2024/06/03 REVISION No.: D
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SCALE: AS SHOWN	ORIGINAL DWG SIZE A0	SHEET 2 OF 2
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© AA207300 - CITA Precinct 3 (P)KID - Drawings/Drawings Under Development/AA207300-Sewer Long sections.dwg

SEWER PUMP STATION PIPE FITTINGS AND ITEM LIST (PN10 UNLESS OTHERWISE SHOWN)							
Item Nr.	Description	No. Off	Dimensions	Item Nr.	Description	No. Off	Dimensions
①	Submersible sewer pump set	2	N/A	⑪	Ø32mm Socket for pressure gauge	1	N/A
②	DN100 Mild Steel flanged 90° bend	2		⑫	Manifold special fae, including restraining flange and socket for pressure gauge	1	N/A
③	DN100 Mild Steel straight with both ends flanged	2	5068mm	⑬	DN50 Flanged AVK gate valve	1	178mm face to face
④	DN100 Mild steel straight with one end flanged and one plain ended.	1	5068mm	⑭	DN50 Bernad C50 Sewer air valve with surge protection (or similar approved)	1	458mm high
⑤	DN100 Mild Steel flanged 90° bend	3		⑮	DN100 Klamflex dismantling joint (or similar approved)	1	194mm face to face
⑥	DN100 Mild steel straight with puddle flange, F+PE	2	510 1470	⑯	DN100 Electromagnetic flow meter	1	250mm face to face
⑦	DN100 Mild steel straight with puddle flange, FBE	1	800 1470	⑰	DN100 Mild steel straight, FBE	1	300mm
⑧	DN100 Single door, swing type non-return valve, including lever and counter weight (with flange adaptor)	2	292mm face to face	⑱	DN100 Mild steel straight with puddle flange, FBE (with flange adaptor)	1	380 510
⑨	DN100 Gate valve	4	254mm	⑲	DN100 x DN160 Mild steel Flanged reducer	1	1100 160mm 1600
⑩	Manifold special : all bend to be rolled bends, not segmented bends. Centreline radius = 1.5x diameter	1	N/A				



- NOTE:
- ALL PIPING FLANGED TO SABS 1123, TABLE 1000/3
 - ALL CASTING OF MECHANICAL PIPE WORK TO BE DONE BY MECHANICAL CONTRACTOR
 - CONTRACTOR TO SUBMIT WORKSHOP DRAWINGS FOR APPROVAL
 - ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE INDICATED
 - ALL DIMENSIONS TO BE CONFIRMED ON SITE
 - GENERATOR ROOM TO BE AS PER ELECTRICAL ENGINEERS SPECIFICATIONS.
 - ⊙ INDICATES PIPE SUPPORT POSITIONS
- Acronyms:
FAE - flanged all ends
FBE - flanged both ends
F+PE - flanged + plain ended
PE - plain ended
- TOTAL STORAGE CAPACITY REQUIRED (in 6hour time frame) = 3.75m³
TOTAL STORAGE CAPACITY AVAILABLE = 9.05m³
[Storage calculated in chambers only - therefor excluding capacity available in pipes.]

FOR TENDER

No.	DATE	REVISION DESCRIPTION	DRW	CHK
C	2024/06/03	FOR TENDER	M.dB	JP
B	2023/10/12	FOR TENDER	M.dB	JP
A	2023/06/07	FOR APPROVAL	M.dB	JP

SCALE FOR REDUCED PLAN :
0 10 20 40 60 80 100
100mm ON ORIGINAL PLAN

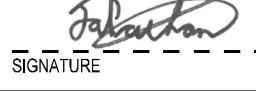
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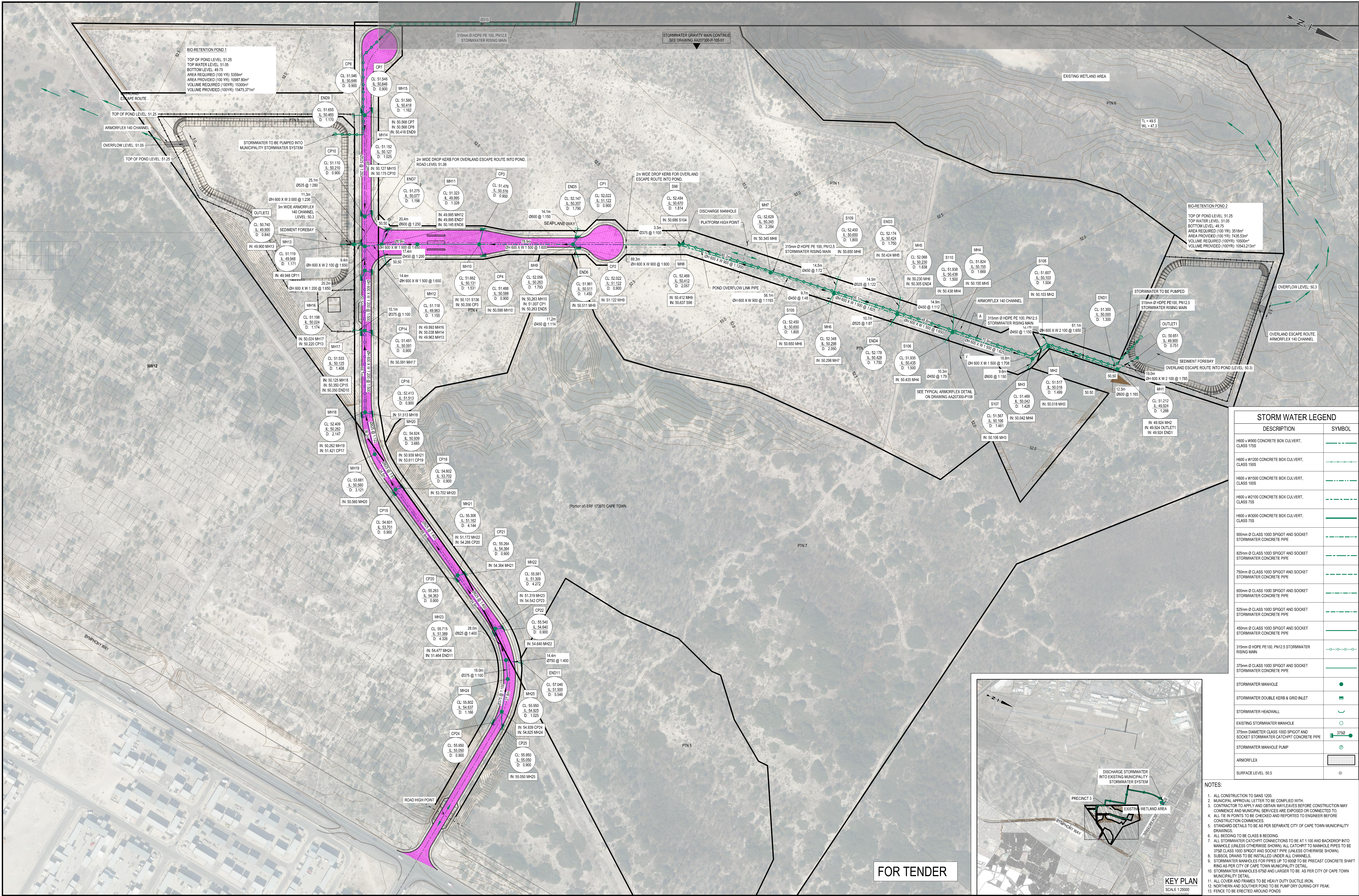
CLIENT :

**CAPE TOWN INTERNATIONAL AIRPORT**
AIRPORTS COMPANY SOUTH AFRICA

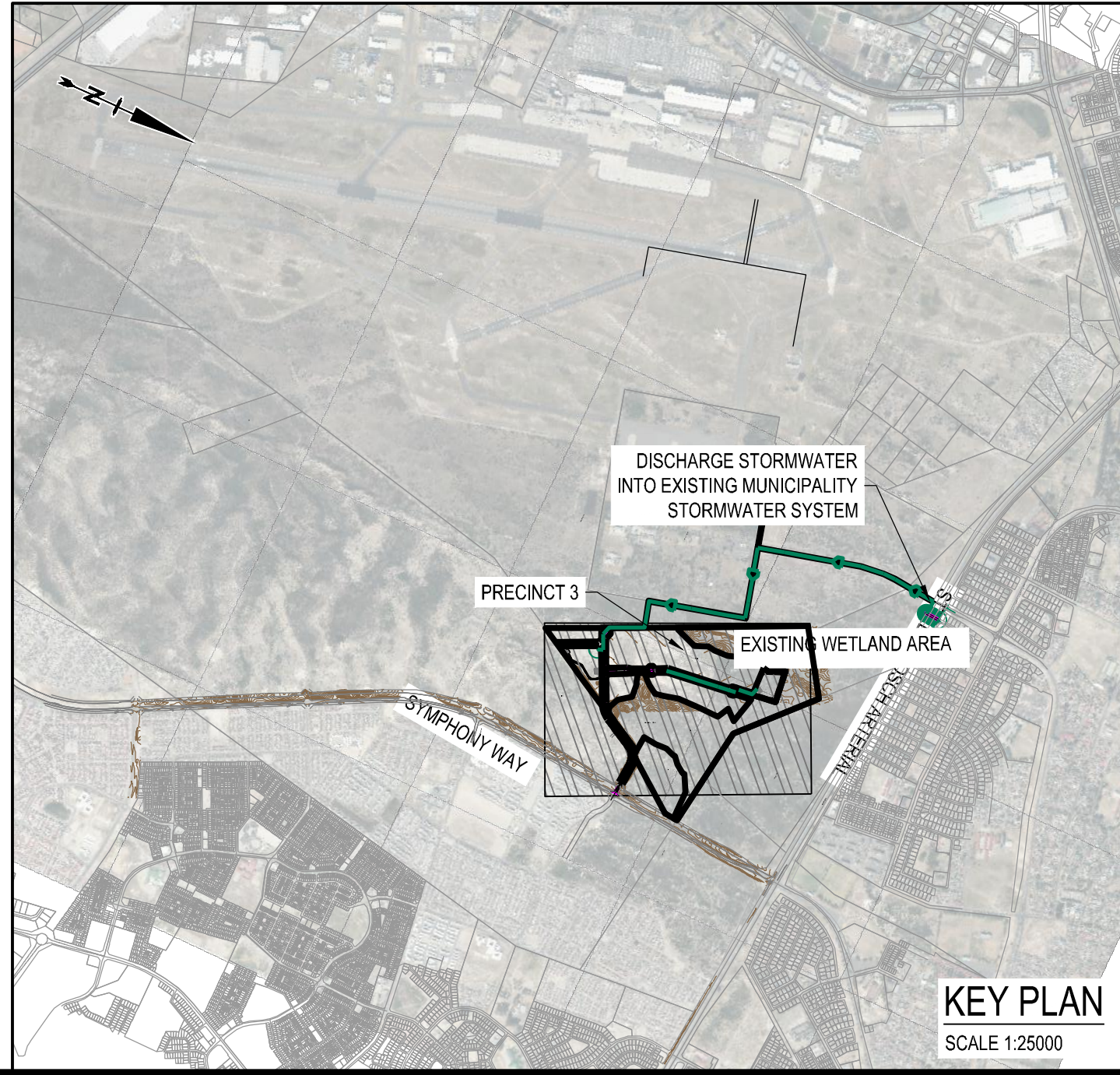
**INGEROP**
Inventing for tomorrow

CONSULTING ENGINEERS AND PROJECT MANAGERS
Office Suite 209, Tiger Lake Building,
2 Niagara Way, Tiger Falls,
Boksburg, 7530
Tel: (021) 914-2833
Fax: (021) 914-0918
e-mail : capetown@ingerop.co.za

PROJECT TITLE :	DRAWING TITLE :	APPROVED BY CONSULTING ENGINEER :  SIGNATURE	2019300418 PK REG. No.	2024/06/03 DATE
ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND BULK SERVICES	SEWER PUMP STATION	DESIGNED BY : M DU BUSSON	CHECKED BY : J PATHAN	
		DRAWN BY : M DU BUSSON	DATE : 2024/06/03	
		DRAWING No. : AA207300-P-104	REVISION No. : C	
SCALE : AS SHOWN	ORIGINAL DWG SIZE A1	SHEET 1 OF 1		

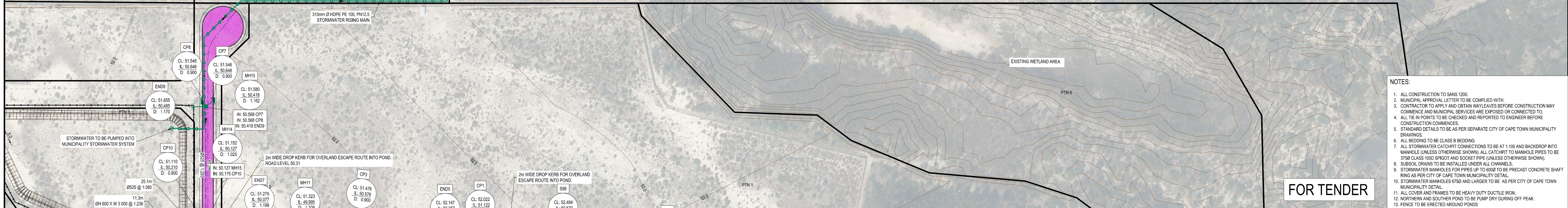


STORM WATER LEGEND	
DESCRIPTION	SYMBOL
600 x W900 CONCRETE BOX CULVERT, CLASS 1755	---
600 x W1200 CONCRETE BOX CULVERT, CLASS 1505	---
600 x W1500 CONCRETE BOX CULVERT, CLASS 1005	---
600 x W2100 CONCRETE BOX CULVERT, CLASS 755	---
600 x W3000 CONCRETE BOX CULVERT, CLASS 755	---
900mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	---
625mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	---
750mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	---
600mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	---
525mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	---
450mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	---
315mm Ø HDPE PE100, PN12.5 STORMWATER RISING MAIN	---
375mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	---
STORMWATER MANHOLE	●
STORMWATER DOUBLE KERB & GRID INLET	---
STORMWATER HEADWALL	---
EXISTING STORMWATER MANHOLE	○
375mm DIAMETER CLASS 1000 SPIGOT AND SOCKET STORMWATER CATCHPIT CONCRETE PIPE	---
STORMWATER MANHOLE PUMP	⊕
ARMORFLEX	---
SURFACE LEVEL: 50.5	⊗



- NOTES:
- ALL CONSTRUCTION TO SANS 1200.
 - MUNICIPAL APPROVAL LETTER TO BE COMPLIED WITH.
 - CONTRACTOR TO APPLY AND OBTAIN WAYLEAVES BEFORE CONSTRUCTION MAY COMMENCE AND MUNICIPAL SERVICES ARE EXPOSED OR CONNECTED TO.
 - ALL TIE IN POINTS TO BE CHECKED AND REPORTED TO ENGINEER BEFORE CONSTRUCTION COMMENCES.
 - STANDARD DETAILS TO BE AS PER SEPARATE CITY OF CAPE TOWN MUNICIPALITY DRAWINGS.
 - ALL BEDDING TO BE CLASS B BEDDING.
 - ALL STORMWATER CATCHPIT CONNECTIONS TO BE AT 1:100 AND BACKDROP INTO MANHOLE (UNLESS OTHERWISE SHOWN). ALL CATCHPIT TO MANHOLE PIPES TO BE 3750mm CLASS 1000 SPIGOT AND SOCKET PIPE (UNLESS OTHERWISE SHOWN).
 - SUBSOIL DRAINING TO BE INSTALLED UNDER ALL CHANNELS.
 - STORMWATER MANHOLES FOR PIPES UP TO 600mm TO BE PRECAST CONCRETE SHAFT RING AS PER CITY OF CAPE TOWN MUNICIPALITY DETAIL.
 - STORMWATER MANHOLES 675mm AND LARGER TO BE AS PER CITY OF CAPE TOWN MUNICIPALITY DETAIL.
 - ALL COVER AND FRAMES TO BE HEAVY DUTY DUCTILE IRON.
 - NORTHERN AND SOUTHERN POND TO BE PUMP DRY DURING OFF PEAK.
 - FENCE TO BE ERRECTED AROUND PONDS.

G 2024/06/03 FOR TENDER MJB JP		F 2024/03/25 FOR TENDER MJB JP		E 2023/10/12 FOR TENDER MJB JP		D 2023/09/18 FOR APPROVAL MJB JP		C 2023/09/22 REVISED POND LEVELS MJB JP		B 2023/09/20 REVISED STORMWATER PIPE SIZE MJB JP		A 2023/06/07 FOR APPROVAL MJB JP																
No.	DATE	REVISION DESCRIPTION				DRW	CHK	GENERAL NOTES: ALL DIMENSIONS AND LEVELS TO BE VERIFIED ON SITE PRIOR TO MANUFACTURING AND CONSTRUCTION. ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER.					CLIENT: CAPE TOWN INTERNATIONAL AIRPORT AIRPORTS COMPANY SOUTH AFRICA		CONSULTING ENGINEERS AND PROJECT MANAGERS: INGEROP 2 Naga Valley, Tyger Valley, Johannesburg 2013 Tel: (011) 442-8333 Fax: (011) 442-8334 Email: cape@ingerop.co.za		PROJECT TITLE: ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND BULK SERVICES		DRAWING TITLE: STORMWATER LAYOUT		SCALE: 1:1000		ORIGINAL DWG SIZE A0		SHEET 1 OF 2		DESIGNED BY: M DU BUSSON CHECKED BY: J PATHAN DATE: 2024/06/03 DRAWING No.: AA207300-P-105 REVISION No.: G	



				SCALE FOR REDUCED PLAN:  100mm ON ORIGINAL PLAN		CLIENT:  CAPE TOWN INTERNATIONAL AIRPORTS COMPANY SOUTH AFRICA		 INGEROP CONSULTING ENGINEERS AND PROJECT MANAGERS Office Suite 200, Tiger Lake Building, 2 Nagaena Ridge, Tiger Falls, Boksburg, 7000 Tel: (021) 914-2813 Fax: (021) 914-0919 e-mail: coper@ingerop.co.za		PROJECT TITLE: ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND BULK SERVICES		DRAWING TITLE: EXTERNAL STORMWATER LAYOUT (RISING MAIN)				APPROVED BY CONSULTING ENGINEER:  2019300418 REGISTERED NO. 2024/06/03 DATE			
D	2024/06/03	FOR TENDER			M.dB	J.P.							DESIGNED BY: M DU BUSSON		CHECKED BY: J PATHAN				
C	2024/03/25	FOR TENDER			M.dB	J.P.							DRAWN BY: M DU BUSSON		DATE: 2024/06/03				
B	2023/10/12	FOR TENDER			M.dB	J.P.													
A	2023/09/18	FOR APPROVAL			M.dB	J.P.													
No.	DATE	REVISION DESCRIPTION	DRW	CHK	ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER														

ALIGNMENT 1
LONGITUDINAL
SECTION

HOR SCALE 1:1000
VER SCALE 1:200

FINAL DESIGN
SURFACE LEVEL
STORMWATER
PIPE
SEWER PIPE

DATUM 45

MANHOLE NUMBER	OUTLET	MH1	MH2	MH3	MH4	MH5	MH6	MH7	MH8
DISTANCE (m)	0.00	19.07	80.152	86.957	157.820	216.875	272.741	293.807	408.905
COVER LEVEL (m)	50.651	51.212	51.517	51.699	51.624	52.088	52.348	52.629	52.469
GROUND LEVEL (m)	48.750	51.212	51.517	51.699	51.624	52.088	52.348	52.629	52.469
INVERT LEVEL (m)	49.800	49.924	50.018	50.010	50.155	50.230	50.288	50.345	50.412
OUTLET LEVEL (m)	49.800	49.924		50.012	50.042			50.345	
DEPTH TO INVERT (m)	-1.150	1.288	1.499	1.689	1.469	1.858	2.060	2.284	2.057
DISTANCE (m) / GRADE (1:X)	10.017m 1:785.000	61.135m 1:650.000	16.806m 1:708.000	70.872m 1:625.000	48.846m 1:650.000	56.066m 1:825.000	56.066m 1:1193.000	80.158m 1:200.000	
PIPE DESCRIPTION	H 800 x W 2100 CONCRETE BOX CULVERT CLASS 17SS		H 600 x W 1500 CONCRETE BOX CULVERT CLASS 10SS				H 600 x W 900 CONCRETE BOX CULVERT CLASS 7SS		

ALIGNMENT 2
LONGITUDINAL
SECTION

HOR SCALE 1:1000
VER SCALE 1:200

FINAL DESIGN
SURFACE LEVEL
STORMWATER
PIPE
SEWER PIPE

DATUM 45

MANHOLE NUMBER	MH7	MH8	MH9	MH10	ST 36	MH11	MH12	MH13	OUTLET
DISTANCE (m)	0.00	80.151	169.455	245.395		330.294	344.669	354.953	365.390
COVER LEVEL (m)	52.629	52.469	52.056	51.662	51.430	51.323	51.118	51.119	50.740
GROUND LEVEL (m)	52.629	52.469	52.056	51.662	51.430	51.323	51.118	51.119	50.750
INVERT LEVEL (m)	50.345	50.412	50.412	50.253	50.131	50.051	49.973	49.948	49.920
OUTLET LEVEL (m)									
DEPTH TO INVERT (m)	2.284	2.057	1.793	1.531	1.319	1.272	1.145	1.171	-1.150
DISTANCE (m) / GRADE (1:X)	80.158m 1:1200.000	89.338m 1:600.000	78.900m 1:600.000	52.017m 1:650.000	29.882m 1:650.000	14.404m 1:650.000	10.385m 1:650.000	11.307m 1:650.000	
PIPE DESCRIPTION	H 800 x W 900 CONCRETE BOX CULVERT CLASS 17SS		H 600 x W 1500 CONCRETE BOX CULVERT CLASS 10SS			H 600 x W 3000 CONCRETE BOX CULVERT CLASS 7SS		H 600 x W 2100 CONCRETE BOX CULVERT CLASS 17SS	

ALIGNMENT 3
LONGITUDINAL
SECTION

HOR SCALE 1:1000
VER SCALE 1:200

FINAL DESIGN
SURFACE LEVEL
STORMWATER
PIPE
SEWER PIPE

DATUM 45

MANHOLE NUMBER	END9	MH15	MH14	MH12
DISTANCE (m)	0.00	10.084	95.324	202.390
COVER LEVEL (m)	51.655	51.580	51.152	51.118
GROUND LEVEL (m)	51.655	51.580	51.152	51.118
INVERT LEVEL (m)	50.418	50.418	50.127	50.039
OUTLET LEVEL (m)				
DEPTH TO INVERT (m)	1.173	1.162	1.025	1.079
DISTANCE (m) / GRADE (1:X)	10.084m 1:150.000	85.231m 1:292.889	25.066m 1:280.000	
PIPE DESCRIPTION	Ø325mm CONCRETE PIPE, CLASS 1000			

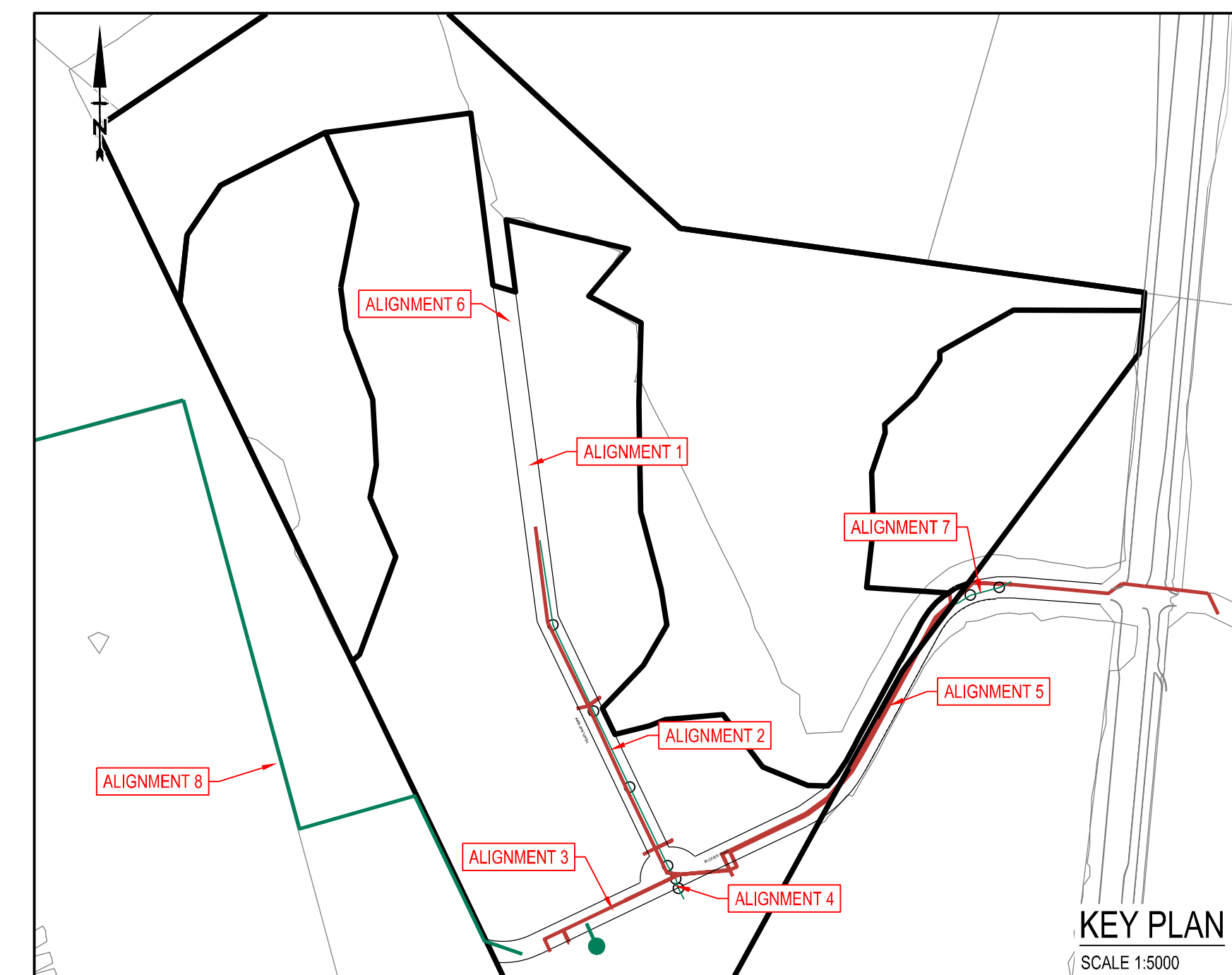
ALIGNMENT 4
LONGITUDINAL
SECTION

HOR SCALE 1:1000
VER SCALE 1:200

FINAL DESIGN
SURFACE LEVEL
STORMWATER
PIPE
SEWER PIPE

DATUM 45

MANHOLE NUMBER	OPT11	MH13
DISTANCE (m)	0.00	7.183
COVER LEVEL (m)	51.081	51.119
GROUND LEVEL (m)	51.081	51.119
INVERT LEVEL (m)	50.101	49.948
OUTLET LEVEL (m)		
DEPTH TO INVERT (m)	0.980	1.171
DISTANCE (m) / GRADE (1:X)	1.183m 1:33.742	
PIPE DESCRIPTION	Ø375mm CONCRETE PIPE, CLASS 1000	



FOR TENDER

No.	DATE	REVISION DESCRIPTION	DRW	CHK	SCALE FOR REDUCED PLAN: 0 10 20 30 40 50 60 70 80 90 100 100mm ON ORIGINAL PLAN	CLIENT: 	PROJECT TITLE: CONSULTING ENGINEERS AND PROJECT MANAGERS Office: Suite 200, Tiger Valley Building 2 Naga's Valley, Tiger Valley Bathurst 750 Tel: (021) 914-2833 Fax: (021) 104-5999 e-mail: cape@ingerop.co.za	DRAWING TITLE: ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND BULK SERVICES	DRAWING TITLE: STORMWATER LONG SECTION (SHEET 1 OF 3)	SCALE: AS SHOWN	ORIGINAL DWG SIZE A0	SHEET 1 OF 3	APPROVED BY CONSULTING ENGINEER: DESIGNED BY: M DU BUSSON DRAWN BY: C WHITEHEAD DRAWING No.: AA207300-P-106	CHECKED BY: J PATHAN DATE: 2024/06/05 REVISION No.: F
F	2024/06/05	FOR TENDER	MJB	JP										
E	2023/10/12	FOR TENDER	MJB	JP										
D	2023/09/18	REVISED STORMWATER ROUTE	MJB	JP										
C	2023/09/21	REVISED STORMWATER PIPE SIZE AND POND LEVELS	MJB	JP										
B	2023/09/20	REVISED STORMWATER PIPE SIZE AND GRADIENTS	MJB	JP										
A	2023/06/07	FOR APPROVAL	MJB	JP										

GENERAL NOTES:
ALL DIMENSIONS AND LEVELS TO BE VERIFIED ON SITE PRIOR TO MANUFACTURING AND CONSTRUCTION.
ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER.

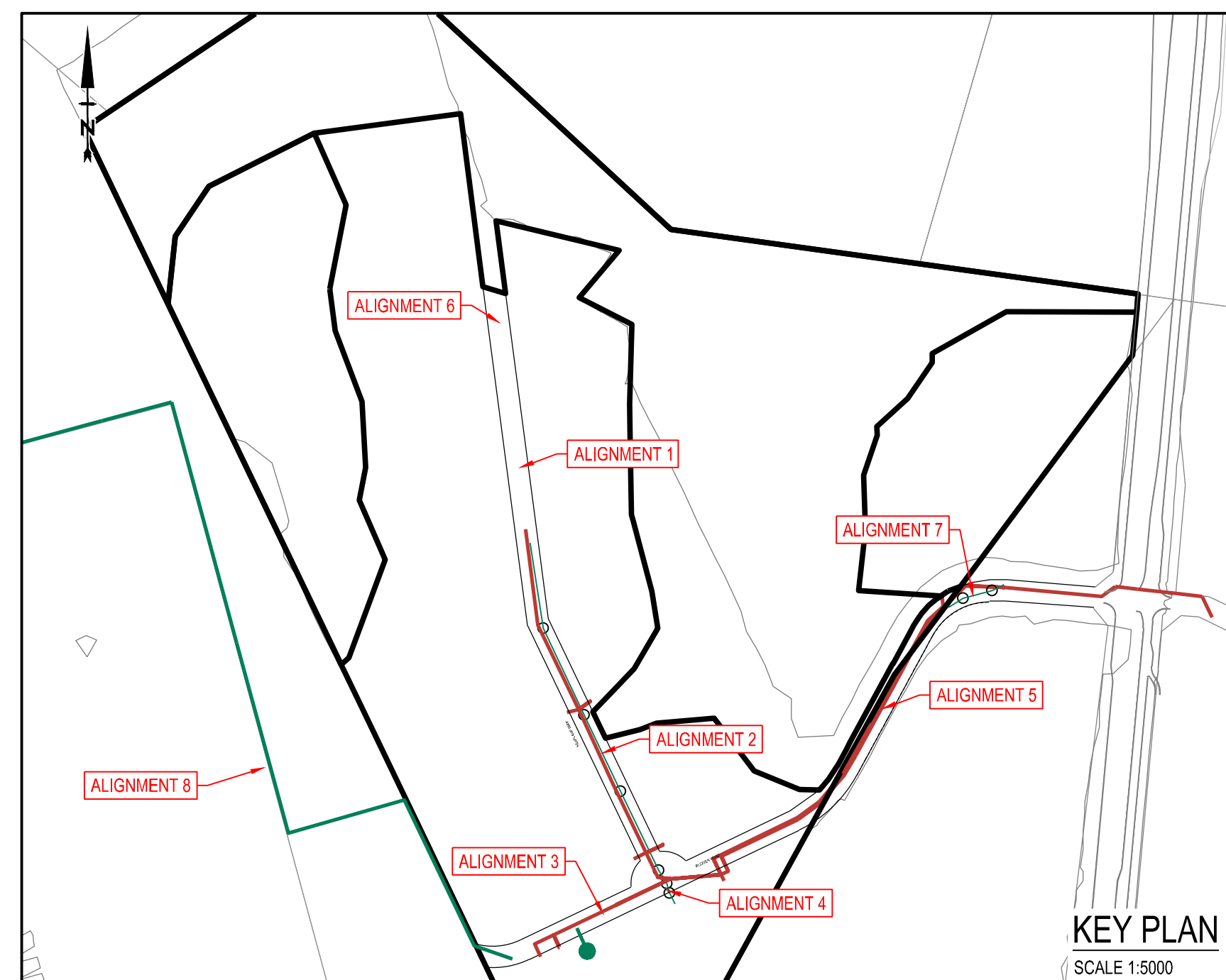
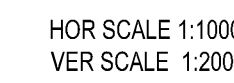
HOR SCALE 1:1000
VER SCALE 1:200

HOR SCALE 1:1000
VER SCALE 1:200



HOR SCALE 1:1000
VER SCALE 1:200

HOR SCALE 1:1000
VER SCALE 1:200

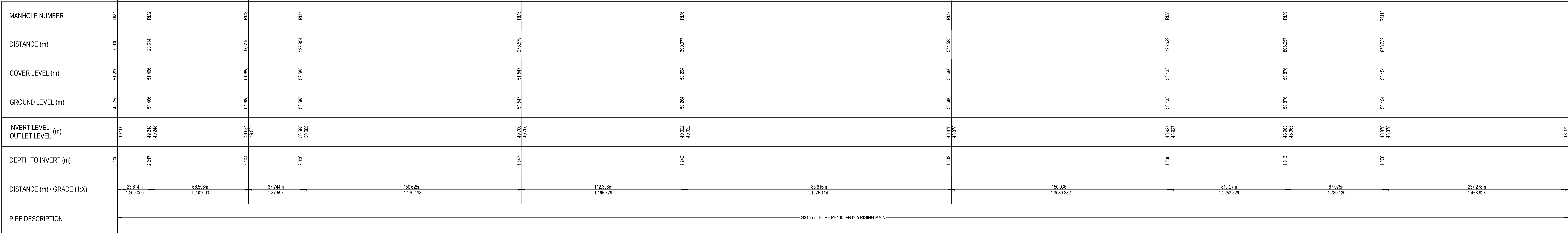


0:AA207300 - CTIA Precinct 3 (PDK/D - Drawings)04 Drawings Under DevelopmentAA207300-Stormwater Long sections.dwg

ALIGNMENT 8
LONGITUDINAL
SECTION

HOR SCALE 1:1000
VER SCALE 1:200

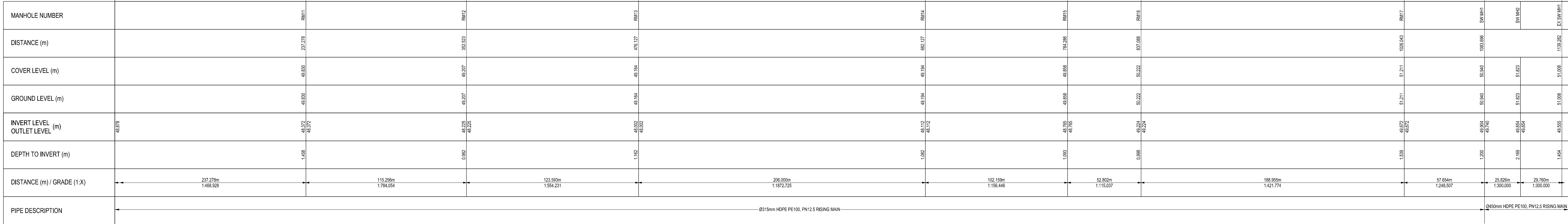
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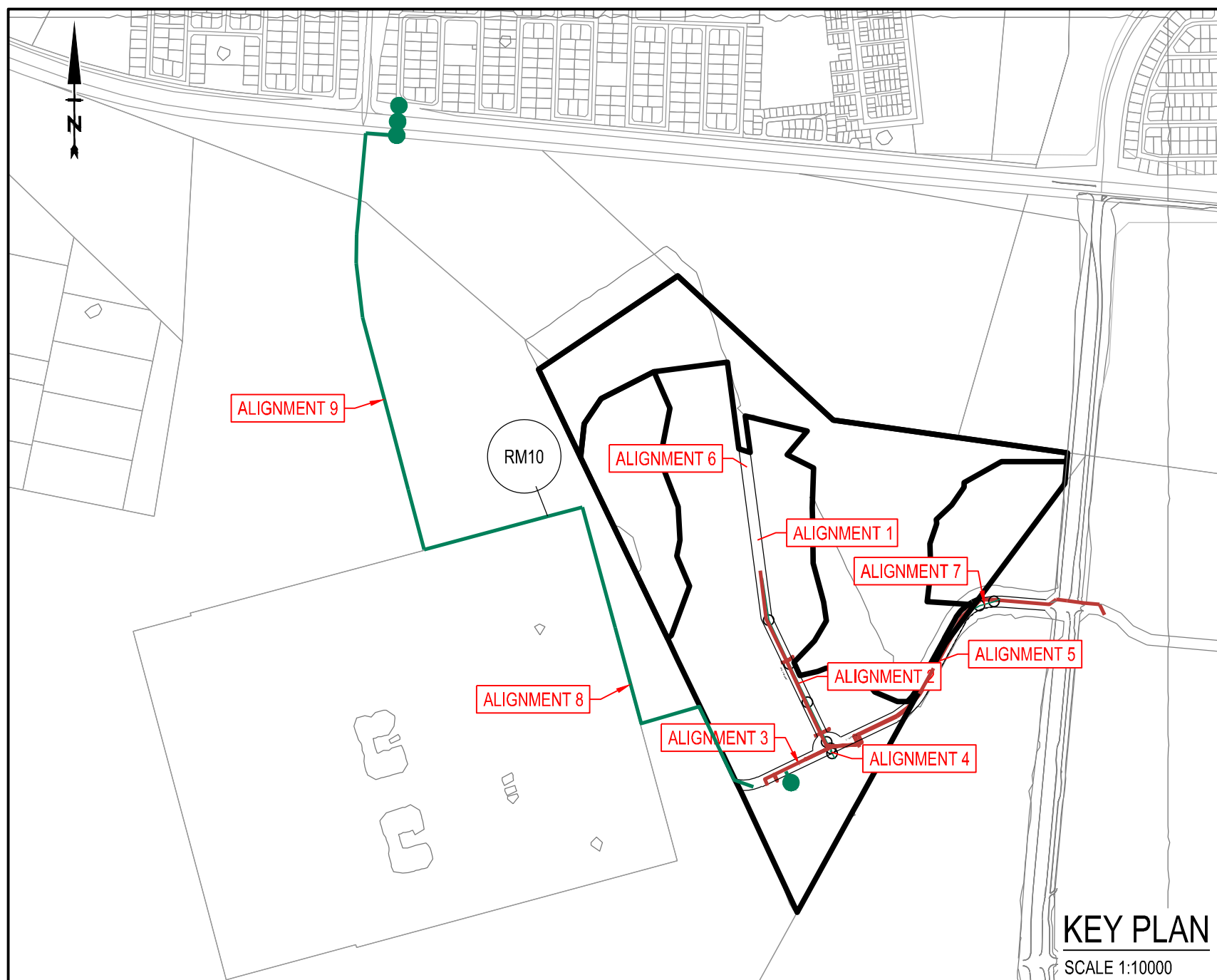
ALIGNMENT 9
LONGITUDINAL
SECTION

HOR SCALE 1:1000
VER SCALE 1:200

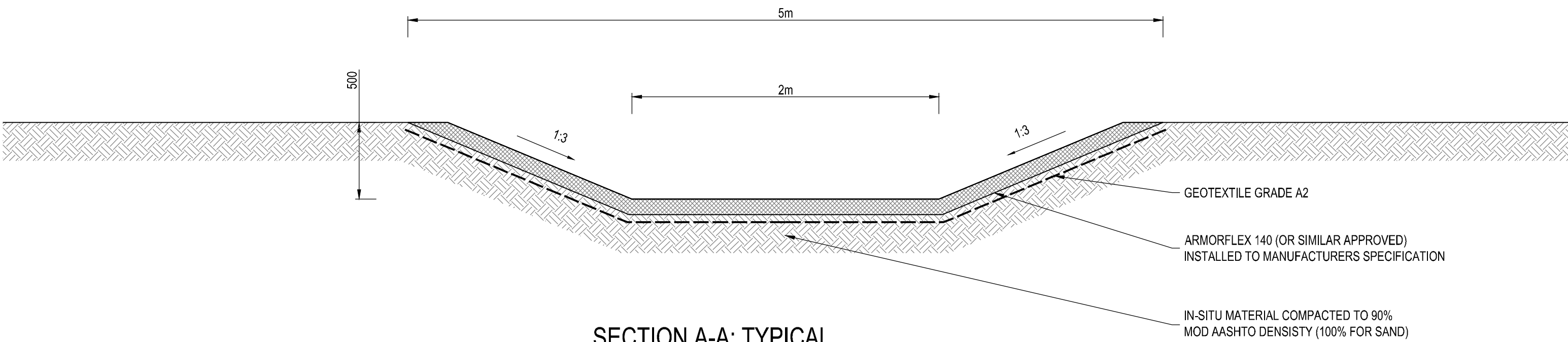
DATUM 45



FOR TENDER



					SCALE FOR REDUCED PLAN: 01020406080100 100mm ON ORIGINAL PLAN		CLIENT: CAPE TOWN INTERNATIONAL AIRPORT AIRPORTS COMPANY SOUTH AFRICA		INGEROP Investing for tomorrow CONSULTING ENGINEERS AND PROJECT MANAGERS Office: Suite 205, Transnet Building, 2 Magway Valley, Tyger Park, Sandton, 7701, Tyger Valley, 7701 44 (011) 791-0111 Tyger Valley, 7701 44 (011) 791-0111 Fax: (011) 791-0111 Website: www.ingerop.co.za		PROJECT TITLE: ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND BULK SERVICES		DRAWING TITLE: STORMWATER LONG SECTION (SHEET 3 OF 3)		APPROVED BY CONSULTING ENGINEER: 201900418 2024/06/05 DATE			
					GENERAL NOTES: All DIMENSIONS AND LEVELS to be VERIFIED ON SITE PRIOR TO MANUFACTURING AND CONSTRUCTION. ANY DISCREPANCIES to be BROUGHT to the ATTENTION of the DESIGNER.						DESIGNED BY: M DU BUSSON		CHECKED BY: J PATHAN					
											DRAWN BY: M DU BUSSON		DATE: 2024/06/05					
											DRAWING No.: AA207300-P-107-01		REVISION No.: C					
											SCALE: AS SHOWN		ORIGINAL DWG SIZE A0		SHEET 3 OF 3			



SECTION A-A: TYPICAL
ARMORFLEX CHANNEL
SECTION
SCALE 1:25

Bottom Pond Vegetation Specifications:

- 1) CCT SUDS Landscape and Indigenous Plant Species Guideline dated 28/02/2011
To be in accordance with [The Sustainable Urban Drainage System](#)
- 2) Extract from table 1 of SUDS Guideline: (Specifically applicable to this project):
*The main function/s of each SUDS type has been listed first with the secondary or minor function/s listed in brackets:
C=conveyance ; I=infiltration ; T=treatment ; D=detention

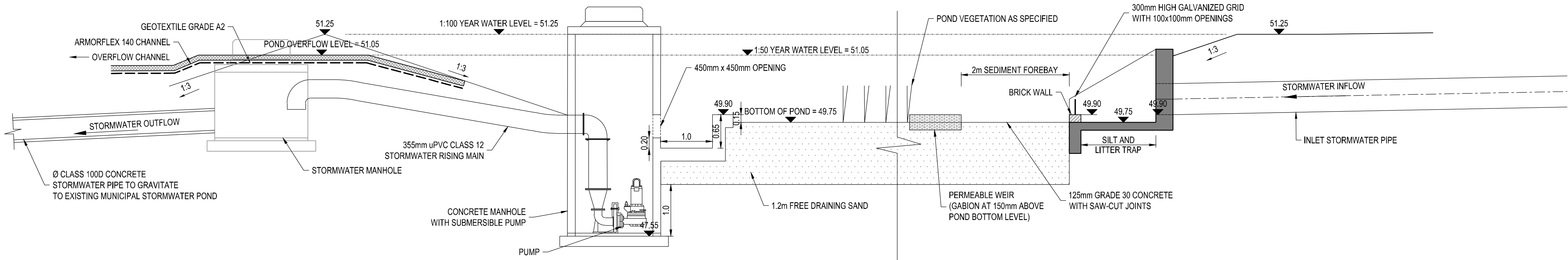
Table 1: General Information regarding SUDS Types

SUDS Type and function/s	Typical conditions	Exposure to wet conditions/ stormwater pulses	Comments	Maintenance requirements (not all have been listed)
Bioretention system (T/D)	Mostly Dry	48 to 72 hours	many indigenous terrestrial shrub, flower and groundwater species could also be appropriate	removal of litter & weeds, vegetation maintenance, maintenance of under drain structures if present
Infiltration system (I/T)	Mostly Dry	48 to 72 hours	avoid plants with aggressive root systems that could disrupt the underlying infiltration media	removal of litter & weeds, vegetation maintenance, maintenance of infiltration media layers (coarse aggregate, geo fabric etc), annual light rilling

- 3) Extract from table 2 of SUDS Guideline: (Specifically applicable to this project):

Table 2: SUDS Species List

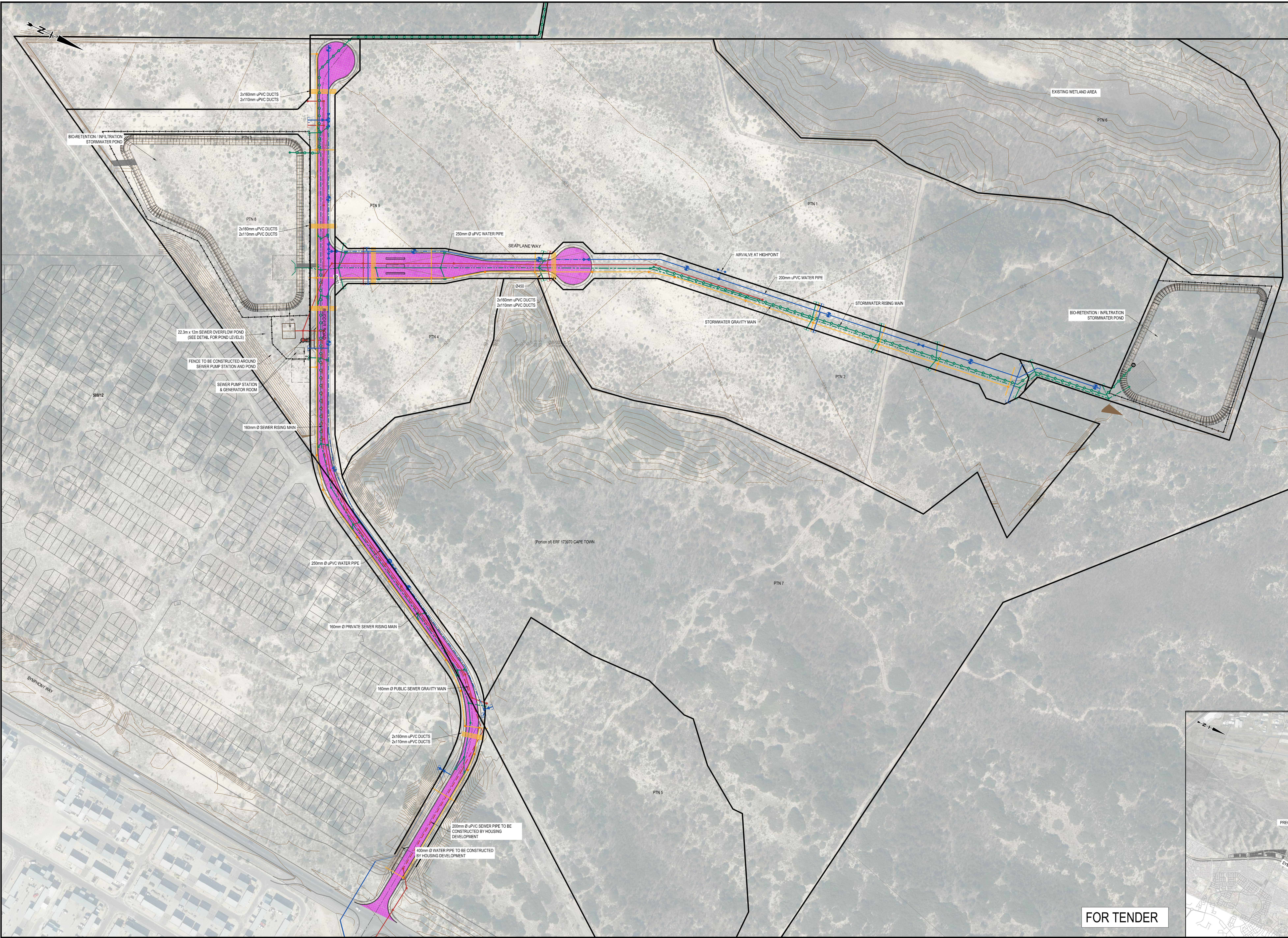
Scientific Name	Common Name	Preferred wetting regime	Growth Form	Max height (m)	Soil type	Comments (known propagation)	Impedes flow?	Commercial availability?
Ficinia bulbosa	Sedge	Mostly dry	Graminoid: tufted, fine leaves	0.5m		Inflorescences with long wispy bracts (Seed)	N	Y
Ficinia capillata	Sedge	Mostly dry	Graminoid: tufted, fine leaves	0.2m		(Seed)	N	Y
Ficinia dunsensis	Sedge	Mostly dry	Graminoid: tufted	0.2m	Sand	Dunes - alkaline sands (seed)	N	Y
Ficinia lateralis	Sedge	Mostly dry	Graminoid	0.3m		(Seed)	N	Y
Ficinia nigrescens	Sedge	Mostly dry	Graminoid: tufted	0.4m		(Seed)	N	Y
Ficinia pygmaea	Sedge	Mostly dry	Graminoid	0.4m	Sand	Coastal alkaline sand (Division and seed)	N	
Muraltia minor		Mostly dry	Shrub	1.0m	Sand	(Cuttings)	N	



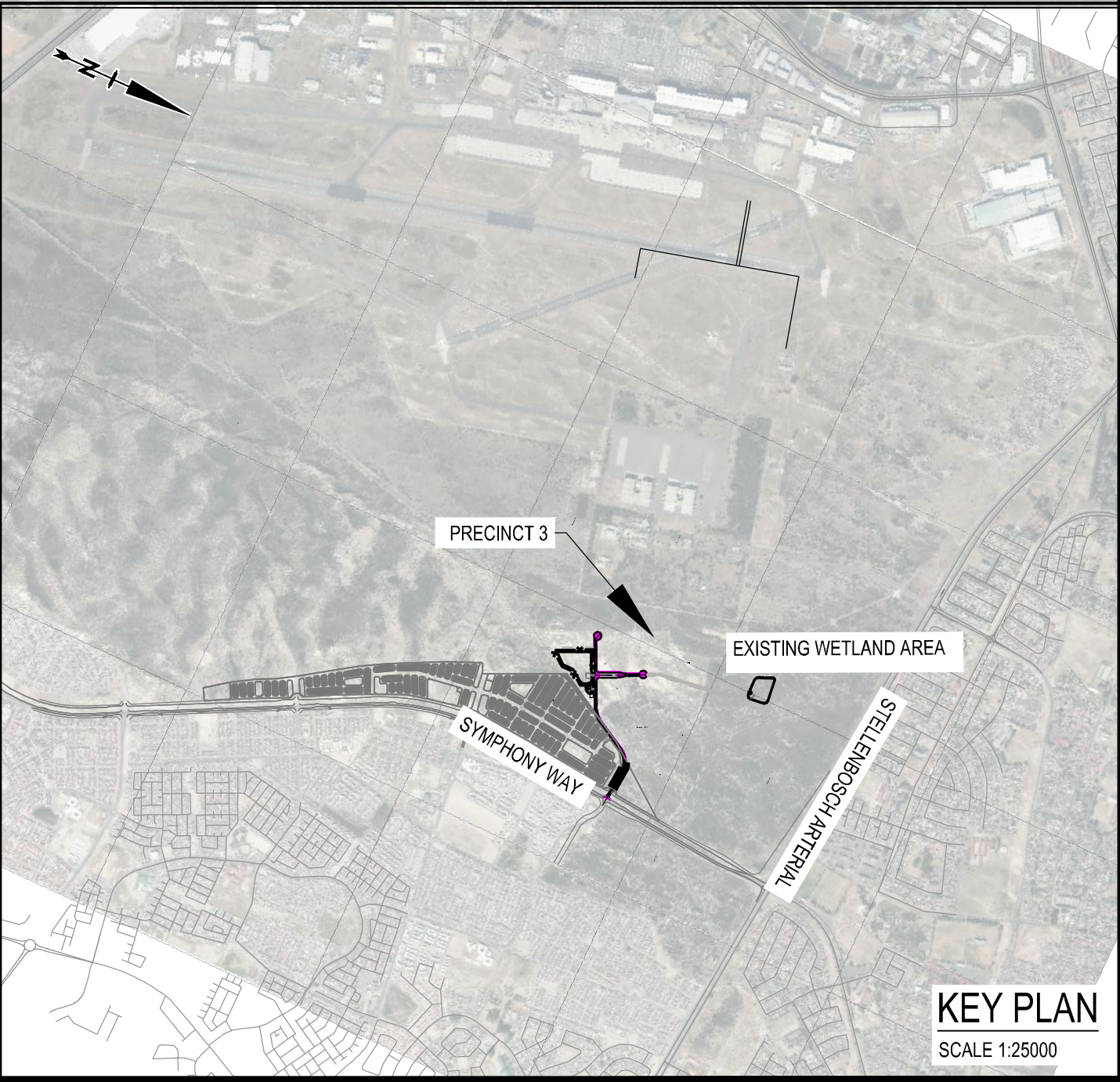
TYPICAL SECTION THROUGH
SOUTHERN STORMWATER POND
SCALE 1:50

FOR TENDER

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SEWER LEGEND	
DESCRIPTION	SYMBOL
EXISTING SEWER PIPE	
160mm DIAMETER CLASS 34 HEAVY DUTY uPVC SEWER PIPE	
160mm DIAMETER CLASS 12 HEAVY DUTY uPVC RAISING MAIN	
SEWER MANHOLE	
EXISTING SEWER MANHOLE	
SEWER END CAP	
WATER LEGEND	
DESCRIPTION	SYMBOL
EXISTING WATER PIPE	
200mm DIAMETER uPVC CLASS 12 WATER PIPE	
250mm DIAMETER uPVC CLASS 12 WATER PIPE	
EXISTING 400mm DIAMETER uPVC CLASS 12 WATER PIPE	
FIRE HYDRANT	
ENDCAP	
VALVE	
AIRVALVE	
DUCT LEGEND	
DESCRIPTION	SYMBOL
2x 110mm DIAMETER uPVC HEAVY DUTY CLASS 6 TO BE LAID 800mm TO TOP OF DUCTS	
SET OF 2x 110mm DIAMETER & 2x 160mm DIAMETER uPVC HEAVY DUTY CLASS 6 TO BE LAID 800mm TO TOP OF DUCTS	
DUCT MANHOLE (SEE DETAIL DRAWING A4207300-111)	
STORM WATER LEGEND	
DESCRIPTION	SYMBOL
H800 x W900 CONCRETE BOX CULVERT, CLASS 175S	
H800 x W1200 CONCRETE BOX CULVERT, CLASS 150S	
H800 x W1500 CONCRETE BOX CULVERT, CLASS 100S	
H800 x W2100 CONCRETE BOX CULVERT, CLASS 75S	
H800 x W3000 CONCRETE BOX CULVERT, CLASS 75S	
900mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	
825mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	
750mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	
600mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	
525mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	
450mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	
315mm Ø HDPE PE100, PN12.5 STORMWATER RISING MAIN	
375mm Ø CLASS 1000 SPIGOT AND SOCKET STORMWATER CONCRETE PIPE	
STORMWATER MANHOLE	
STORMWATER DOUBLE KERB & GRID INLET	
STORMWATER HEADWALL	
EXISTING STORMWATER MANHOLE	
375mm DIAMETER CLASS 1000 SPIGOT AND SOCKET STORMWATER CATCHPIE CONCRETE PIPE	
STORMWATER MANHOLE PUMP	
ARMORFLEX	



No.	DATE	REVISION DESCRIPTION	DRW	CHK	GENERAL NOTES	CLIENT	PROJECT TITLE	DRAWING TITLE	APPROVED BY CONSULTING ENGINEER	DESIGNED BY	CHECKED BY	DRAWN BY	DATE	REVISION No.
F	2024/06/03	FOR TENDER	MJB	JP	ALL DIMENSIONS AND LEVELS TO BE VERIFIED ON SITE PRIOR TO MANUFACTURING AND CONSTRUCTION.	CAPE TOWN INTERNATIONAL AIRPORT AIRPORTS COMPANY SOUTH AFRICA	ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND BULK SERVICES	COMBINED SERVICES LAYOUT	M DU BUSSON	M DU BUSSON	J PATHAN	M DU BUSSON	2024/06/03	F

SCALE FOR REDUCED PLAN:
0 10 20 30 40 50 60 70 80 90 100
100mm ON ORIGINAL PLAN

GENERAL NOTES:
ALL DIMENSIONS AND LEVELS TO BE VERIFIED ON SITE PRIOR TO MANUFACTURING AND CONSTRUCTION.

CLIENT:
CAPE TOWN INTERNATIONAL AIRPORT
AIRPORTS COMPANY SOUTH AFRICA

PROJECT TITLE:
ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND BULK SERVICES

DRAWING TITLE:
COMBINED SERVICES LAYOUT

APPROVED BY CONSULTING ENGINEER:
M DU BUSSON

DESIGNED BY:
M DU BUSSON

CHECKED BY:
J PATHAN

DRAWN BY:
M DU BUSSON

DATE:
2024/06/03

DRAWING No.:
AA207300-P-109

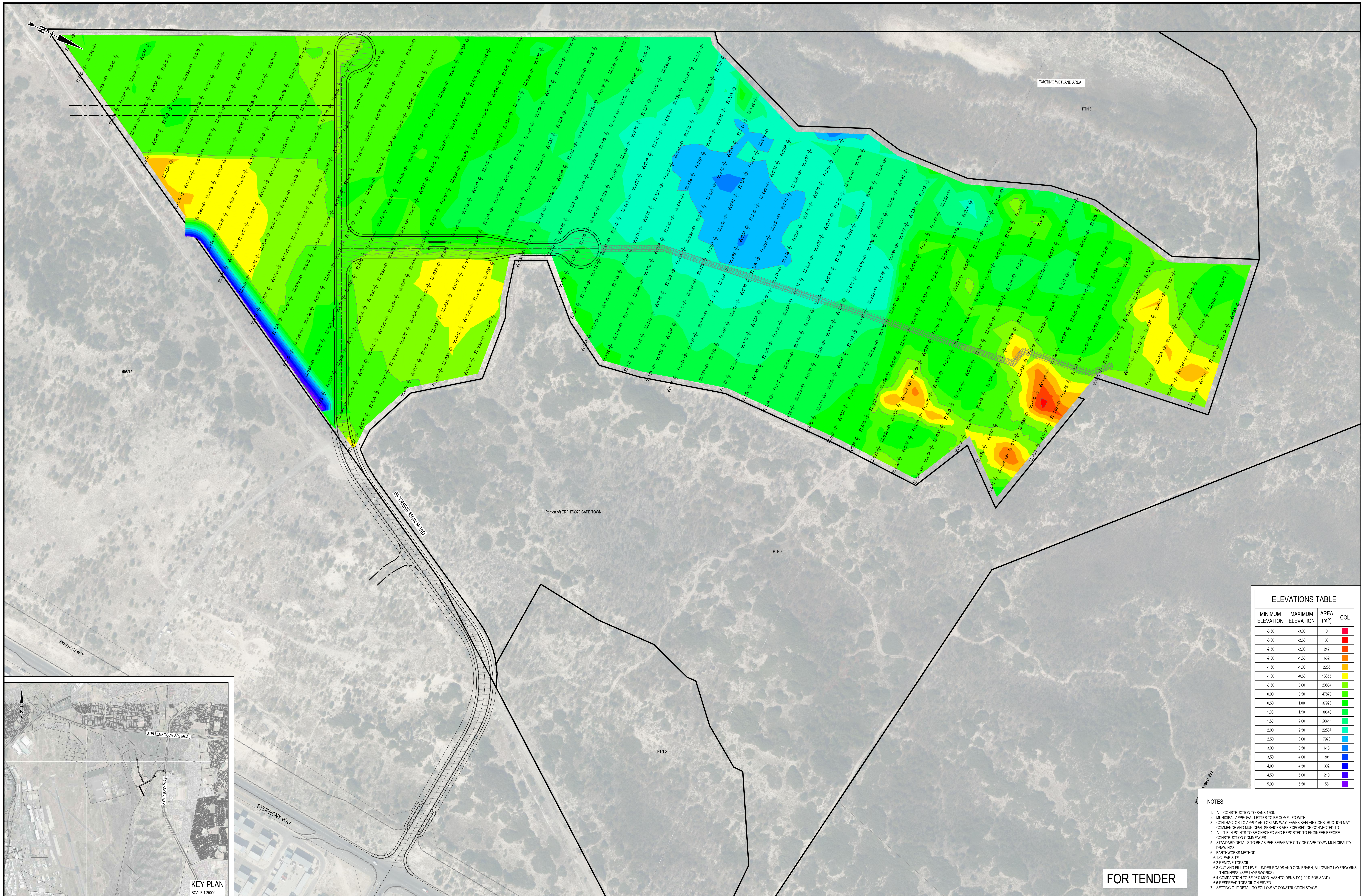
REVISION No.:
F

SCALE: 1:1000

ORIGINAL DWG SIZE A0

SHEET 1 OF 3

0144207300 - CTTA Precinct 3 (P01)G0 - DrawingsG0 Drawings Under DevelopmentAA207300-Combined Services Layout.dwg



MINIMUM ELEVATION	MAXIMUM ELEVATION	AREA (m2)	COLOR
-3.50	-3.00	0	Red
-3.00	-2.50	30	Red
-2.50	-2.00	247	Red
-2.00	-1.50	662	Orange
-1.50	-1.00	2285	Orange
-1.00	-0.50	13355	Yellow
-0.50	0.00	23834	Light Green
0.00	0.50	47870	Light Green
0.50	1.00	37926	Green
1.00	1.50	30643	Green
1.50	2.00	26611	Green
2.00	2.50	22537	Cyan
2.50	3.00	7970	Cyan
3.00	3.50	618	Blue
3.50	4.00	301	Blue
4.00	4.50	302	Dark Blue
4.50	5.00	210	Dark Blue
5.00	5.50	56	Purple

NOTES:

1. ALL CONSTRUCTION TO STAND 1200.
2. MUNICIPAL APPROVAL LETTER TO BE COMPLIED WITH.
3. CONTRACTOR TO APPLY AND OBTAIN WAYLEAVES BEFORE CONSTRUCTION MAY COMMENCE AND MUNICIPAL SERVICES ARE EXPOSED OR CONNECTED TO.
4. ALL THE ITEMS TO BE CHECKED AND REPORTED TO ENGINEER BEFORE CONSTRUCTION COMMENCES.
5. STANDARD DETAILS TO BE AS PER SEPARATE CITY OF CAPE TOWN MUNICIPALITY DRAWINGS.
6. EARTHWORKS METHOD:
- 6.1 CLEAR SITE
- 6.2 REMOVE TOPSOIL
- 6.3 CUT AND FILL TO LEVEL UNDER ROADS AND ON ERYEN, ALLOWING LAYERWORK THICKNESS. (SEE LAYERWORKS).
- 6.4 CONNECTION TO BE 50% AND ASHTO DENSITY (100% FOR SAND).
- 6.5 RESPAVED TOPSOIL ON ERYEN.
7. SETTING OUT DETAIL, TO FOLLOW AT CONSTRUCTION STAGE.

FOR TENDER

C	2024/06/03	FOR TENDER	M-8	JP
B	2023/10/12	FOR TENDER	M-6	JP
A	2023/06/13	FOR APPROVAL	CW	JP
No.	DATE	REVISION DESCRIPTION	DRW	CHK



GENERAL NOTES :

ALL DIMENSIONS AND LEVELS TO BE VERIFIED ON SITE PRIOR TO MANUFACTURING AND CONSTRUCTION.

ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER.



 **INGEROP**
Inventing for tomorrow

CONSULTING ENGINEERS AND PROJECT MANAGERS

Office Suite 202, Tyger Lake Building,
2 Niagara Way, Tyger Falls,
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Tel.: (212) 914-2833
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 P.O. Box 3676,
Tyger Valley,
NS

e-mail: capetown@ingerop.co.za

PROJECT TITLE:

**ACSA - CAPE TOWN INTERNATIONAL AIRPORT: DEVELOPMENT OF PRECINCT 3 AND
BULK SERVICES**

DRAWING TITLE :

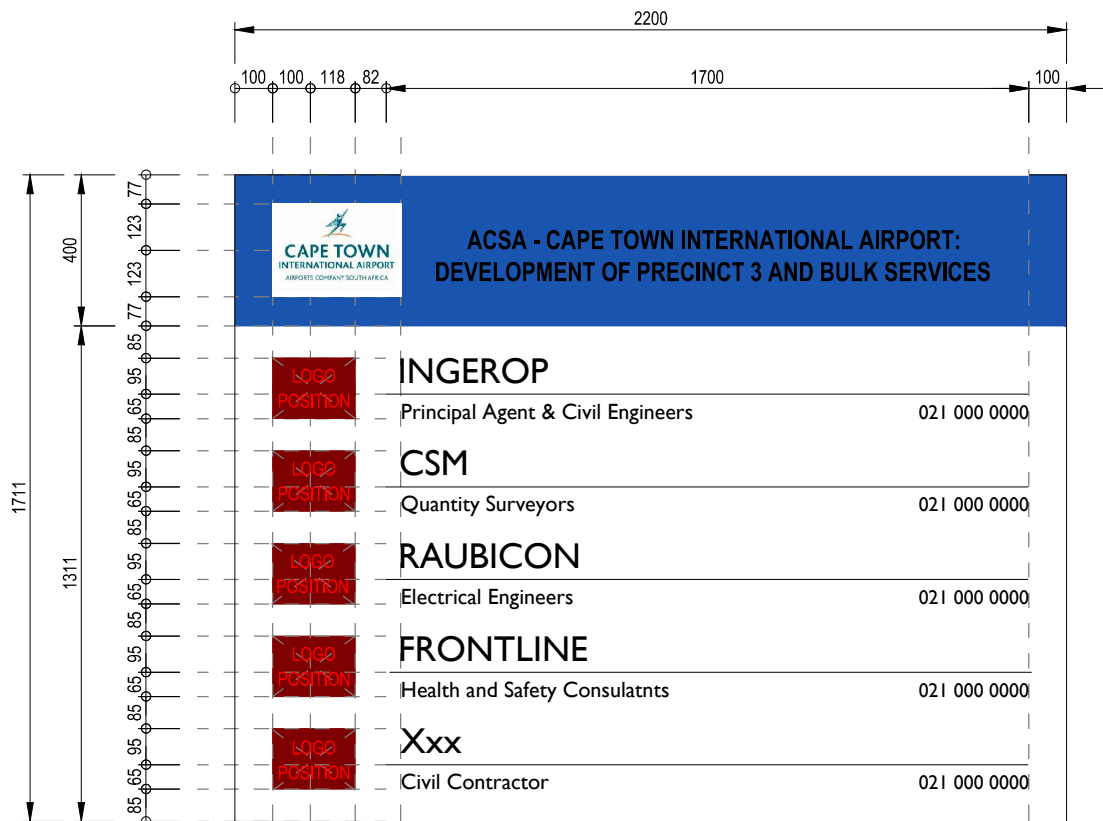
EARTHWORKS LAYOUT

SCALE : 1:1000

ORIGINAL DWG SIZE

SHEET 1 OF 1

APPROVED BY CONSULTING ENGINEER:		20190300418	2024/06/03
SIGNATURE: 		PR REG. NO.	DATE
DESIGNED BY: M DU BUISSON		CHECKED BY: J PATHAN	
DRAWN BY: C WHITEHEAD		DATE: 2024/06/03	
DRAWING No.: AA207300-P-110		REVISION No.: C	

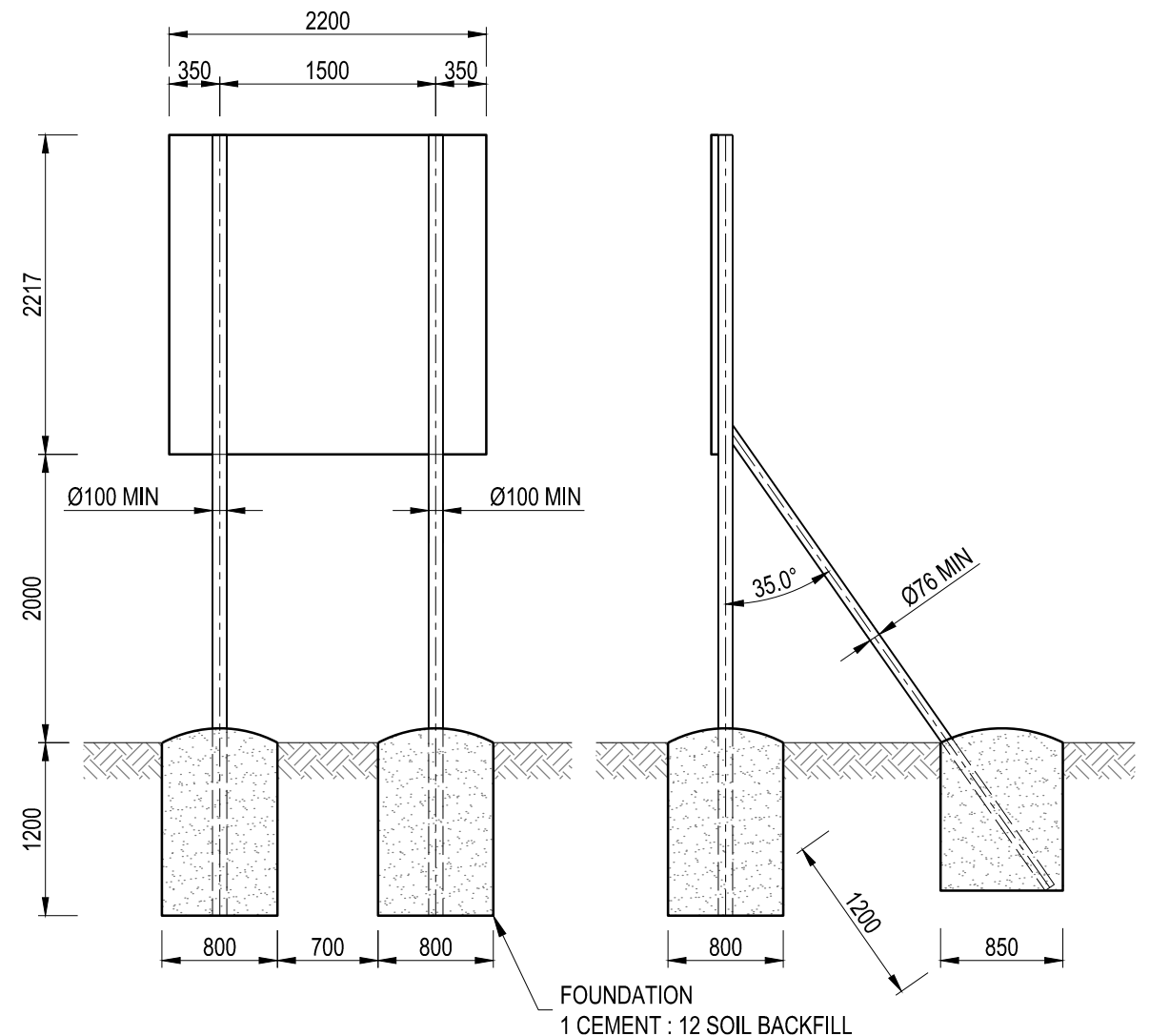


GENERAL NOTES:

- THE BOARD SHALL BE CONSTRUCTED FROM 1mm THICK RUST RESISTANT CHROMADEK BRACED ON THE REVERSE SIDE TO PREVENT WARPING.
- THE HEIGHT MAY BE VARIED TO PROVIDE FOR THE NAMES OF MORE THAN ONE CONSULTING ENGINEER OR CONTRACTOR.
- THE QUALITY OF THE PAINT MUST COMPLY WITH THE REQUIREMENTS OF SANS 1519.
- THE COLOUR OF THE PAINT MUST COMPLY WITH THE REQUIREMENTS OF THE COORDINATING SPECIFICATION D37 OF THE SABS.
- THE NOTICE BOARD MUST BE MOUNTED ON A STRONG SUPPORTING GALVANISED STEEL STRUCTURE AND MUST BE APPROVED BY THE ENGINEER.
- DURING THE CONSTRUCTION PERIOD THE NOTICE BOARD MUST BE PROPERLY MAINTAINED.
- PROJECT NOTICE BOARD (PNB) TEMPLATE TO BE USED FOR ALL STELLENBOSCH UNIVERSITY CONSTRUCTION AND INFRASTRUCTURE PROJECTS.
- PROFESSIONAL MEMBERSHIP BODIES LOGOS MAY ONLY BE USED BY REGISTERED MEMBERS, PROOF TO BE PROVIDED TO SU FM PMO.
- FONT, COLOURS AND SPACING INDICATED MUST BE STRICTLY ADHERED TO. IF DEVIATION FROM THE APPROVED PROJECT BOARD TEMPLATE IS REQUIRED, SPECIAL AUTHORIZATION MUST BE OBTAINED FROM FM PLANNING & DESIGN AND CORPORATE BRAND SPECIALIST PRIOR TO FINAL SIGN-OFF.
- BRAND IDENTITY AND APPLICATION GUIDELINES IS AVAILABLE FROM SU CORPORATE COMMUNICATION DIVISION, BRAND SPECIALIST: MARGUERITE CLOETE

TYPOGRAPHY

- SIGN BOARD HEADING: SU NAME TO BE IN APPROVED AFRIKAANS, ISIXHOSA & ENGLISH TO BE 50mm GILL SANS IN WHITE VINYL LETTERS
- PROJECT NAME TO BE 99mm GILL SANS IN WHITE VINYL LETTERS. BACKGROUND TO BE SU MAROON. PROFESSIONAL TEAM INFORMATION: FONT TO BE GILL SANS EXCEPT COMPANY NAMES TO BE GILL SANS.
- SIGN BOARD BODY: 5mm THICK LINE BETWEEN COMPANY NAME AND DISCIPLINE NAME AND CONTACT NUMBER. ABOVE LINE TEXT COMPANY NAME TO BE 70mm HIGH GILL SANS IN BLACK VINYL LETTERS AND DISCIPLINE NAME BELOW LINE TO BE 40mm HIGH GILL SANS IN BLACK VINYL LETTERS.
- SIGN BOARD FOOTER: 5mm THICK LINE ABOVE AND BELOW SIGNAGE. HEADING NAMES TO BE 15mm HIGH GILL SANS IN BLACK VINYL LETTERS AND CONTACT AND PERMIT NUMBERS BELOW TO BE 35mm HIGH GILL SANS IN BLACK VINYL LETTERS.



BACK VIEW

SCALE 1:50

SIDE VIEW

SCALE 1:50



DRAWING TITLE :

TYPICAL CONTRACT NAMEBOARD

SCALE : **AS SHOWN** ORIGINAL DWG SIZE A3

DRAWING No. :

AA207300-D1

TABLE 1
MANHOLE CHAMBER DIAMETER

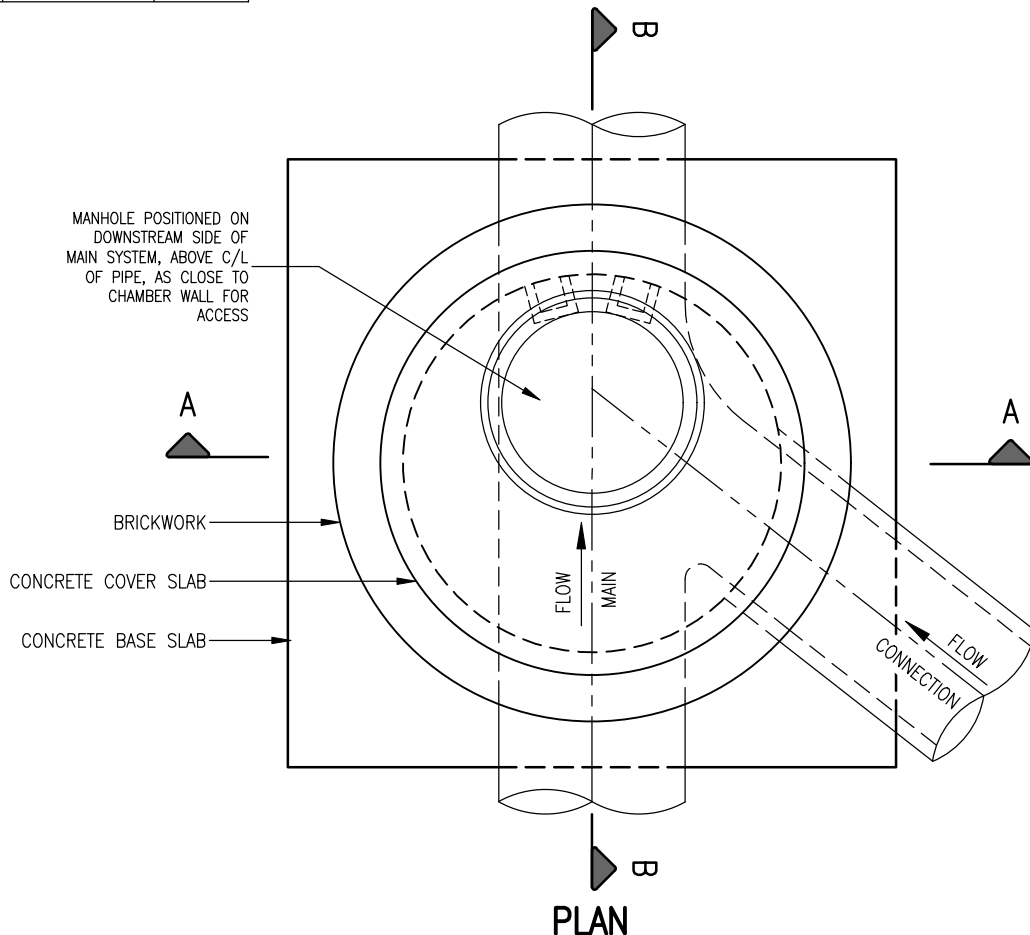
NOM. PIPE DIA. (mm)	DEPTH 'y' (m)		
	$y \leq 2.5$	$2.6 < y \leq 4.0$	$y > 4.0$
	CHAMBER DIAMETER ϕ (mm)		
375	1000	1250	1500
450			
525			
600	1250	1500	1500
675			
750			
825	1500	1500	1500
900			
1050			
1200	1800	1800	1800
1350	1950	1950	1950

TABLE 2
BRICKWORK & FLOOR/BASE SLAB

DEPTH "y" (m)	BRICKWORK (mm)	BASE/FLOOR SLAB		
		THICKNESS (mm)	CONCRETE GRADE	REINFORCING
$y \leq 2.5$	230	150	20/19	NONE
$2.5 < y \leq 4.0$	350	200	20/19	MESH 311
$y > 4.0$	350	250	25/19	MESH 395

TABLE 3
PRECAST CONCRETE RING:
MINIMUM WALL THICKNESS

RING DIAMETER	WALL THICKNESS
1000	65
1250	75
1500	85
1800	95
1950	115



NOTES:

- REFER TO SECTION 10.4.3 FOR MANHOLE COVER AND FRAME REQUIREMENTS.
- HINGED MANHOLE COVERS SITUATED IN THE ROAD SHALL OPEN TOWARDS ONCOMING TRAFFIC.
- MANHOLE COVER LEVEL:
 - ROADWAY OR FOOTWAY: LEVEL WITH FRL/FSL.
 - OPEN SPACES: 500mm ABOVE NGL (UNLESS DIRECTED OTHERWISE). MINIMUM CENTER LINE RADIUS OF BENCHING: 2.5 X PIPE DIAMETER.
- CHIMNEY OPENING TO BE PLACED AS CLOSE TO CENTER LINE OF THE MAIN INCOMING AND OUTGOING PIPE AS POSSIBLE.
- BRICKWORK: SEE "SPECIFICATION FOR MASONRY UNITS", SECTION 10.4.10.
- ALL INTERNAL BRICKWORK TO HAVE SMOOTH FINISH (12mm PLASTERED WITH 1:3 MORTAR).
- MANHOLES MUST CATER FOR ANY SITE SPECIFIC GROUND CONDITIONS. SHOULD THE MANHOLE DESIGN REQUIRE ALTERATIONS/AMENDMENTS FOR SUCH CONDITIONS, THE DESIGN MUST BE DISCUSSED WITH THE APPROVAL AUTHORITY.
- REFER TO DRAWING SW2.3 FOR MANHOLE WITH AN ACCESS SHAFT (DEEP TYPE).
- MANHOLES FOR PIPE DIAMETERS GREATER THAN 1350mm SHALL REQUIRE A SPECIAL DESIGN.

NGL: NATURAL GROUND LEVEL
FRL: FINISHED ROAD LEVEL
FSL: FINISHED SURFACE LEVEL

SHEETS INFO:

SHEET 1: GENERAL NOTES
TABLES 1, 2 & 3
SHEET 2: SECTION A-A & B-B



CITY OF CAPE TOWN
URBAN MOBILITY

TITLE

**STORMWATER MANHOLE
WITHOUT ACCESS SHAFT (SHALLOW TYPE)**

STANDARDS AND GUIDELINES DETAILS

SHEET 1

SCALE

1:25

PAPER

A4

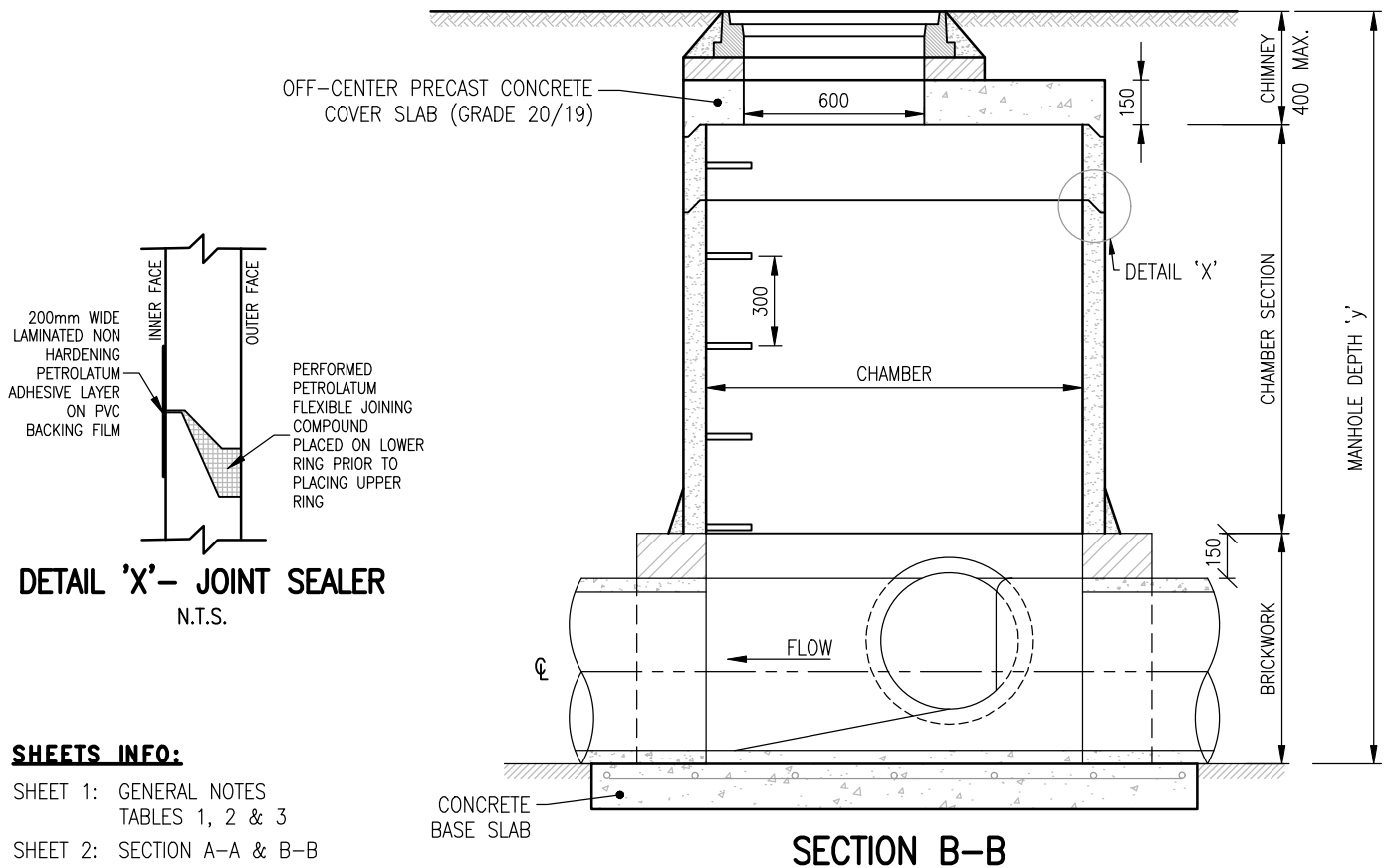
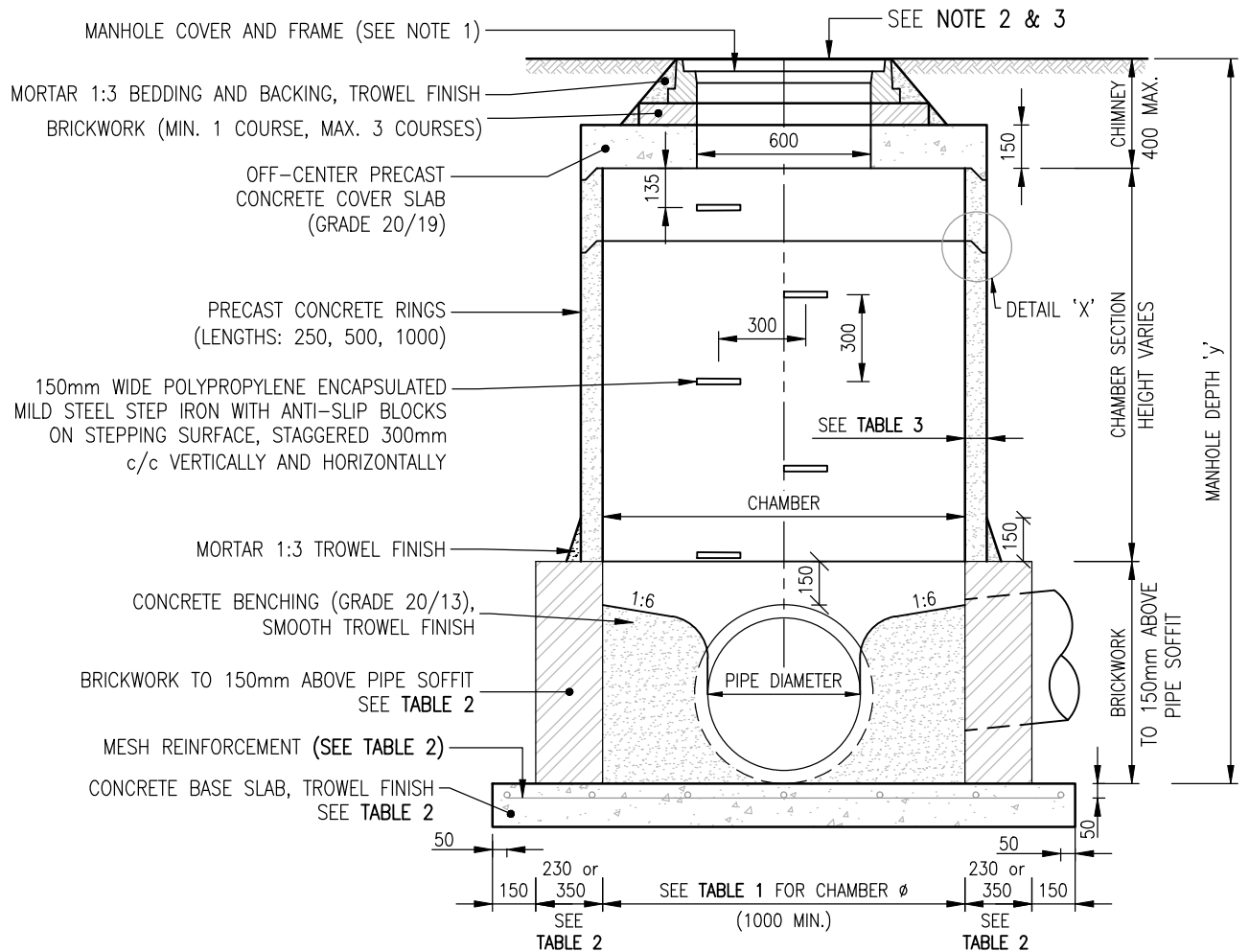
DRAWING No.

SW2.2A

REV

B

\\CBD-CIVIC-FS01\apps\CAD\R&SD\ITI_01 Design\T_1000B Standards\T_1000RS DESIGN_Roads and Stormwater\0002 Drawings\Version3.0\03 SW\SW2.2B - Manhole for SW Pipes (Shallow Type)_RevC.dwg



SHEETS INFO:

SHEET 1: GENERAL NOTES
TABLES 1, 2 & 3

SHEET 2: SECTION A-A & B-B



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CITY OF CAPE TOWN
URBAN MOBILITY

TITLE

STORMWATER MANHOLE WITHOUT ACCESS SHAFT (SHALLOW TYPE)

STANDARDS AND GUIDELINES DETAILS

SHEET 2

SCALE

1:25

PAPER

A4

DRAWING No.

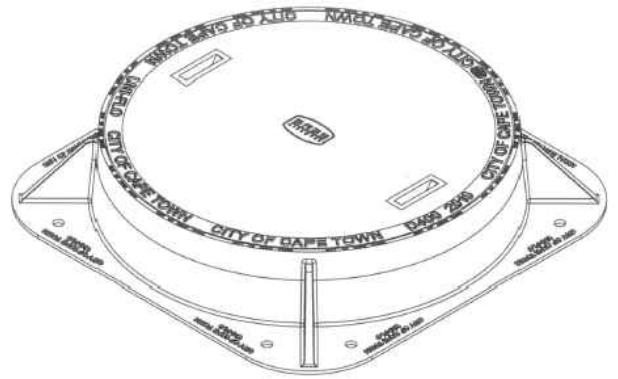
SW2.2B

REV

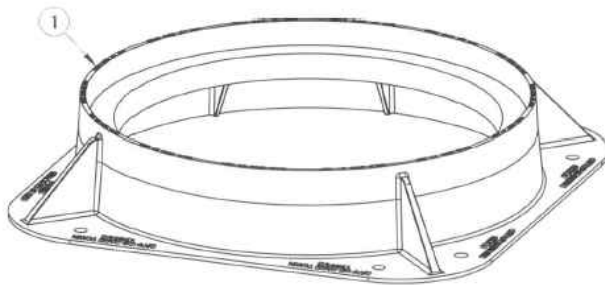
C



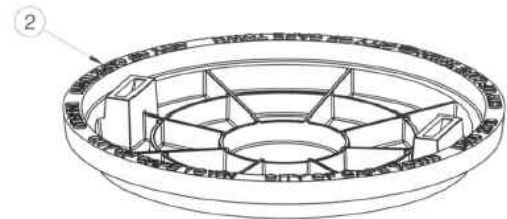
RENDERED COVER AND FRAME



ASSEMBLED COVER AND FRAME



COMPONENT 1: FRAME



COMPONENT 2: COVER



COMPONENT 3: CONCRETE INFILL

COMPONENT DETAILS & SPECIFICATIONS

#	Component	APPROXIMATE MASS	SIZE	MATERIAL	CLASSIFICATION
1	Frame	48kg	800x800x150mm (L x W x H)	Ductile Iron	Class D400 (400kN)
2	Cover	48kg	694mm ϕ ; 100mm (H)	Ductile Iron	Class D400 (400kN)
3	Concrete Infill	53kg	Volume = 0.022m ³	Concrete	(45MPa 28-day Compressive Strength)

NOTES:

1. THE COVER AND FRAME SHALL CONFORM TO THE LATEST SANS 50124.
2. DUCTILE IRON SHALL CONFORM TO THE LATEST SANS 936.



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CITY OF CAPE TOWN
URBAN MOBILITY

TITLE

**DUCTILE IRON MANHOLE COVER AND
FRAME, WITH CONCRETE INFILL**

STANDARDS AND GUIDELINES DETAILS

SCALE

NTS

DRAWING No.

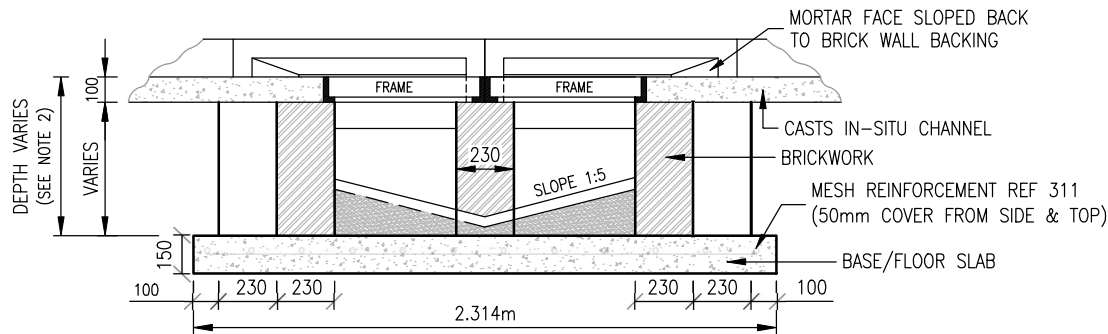
SW2.4

PAPER

A4

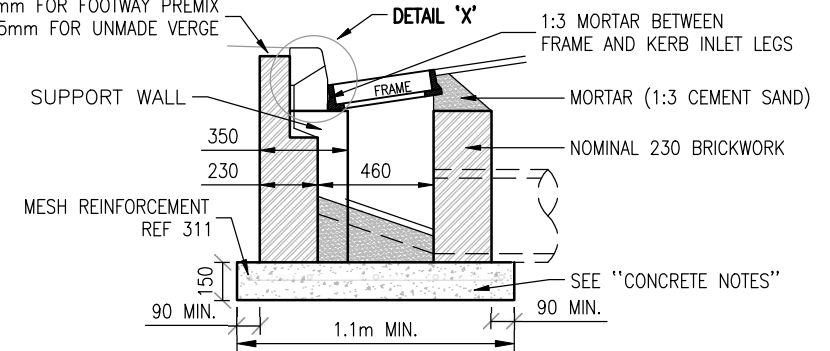
REV

A

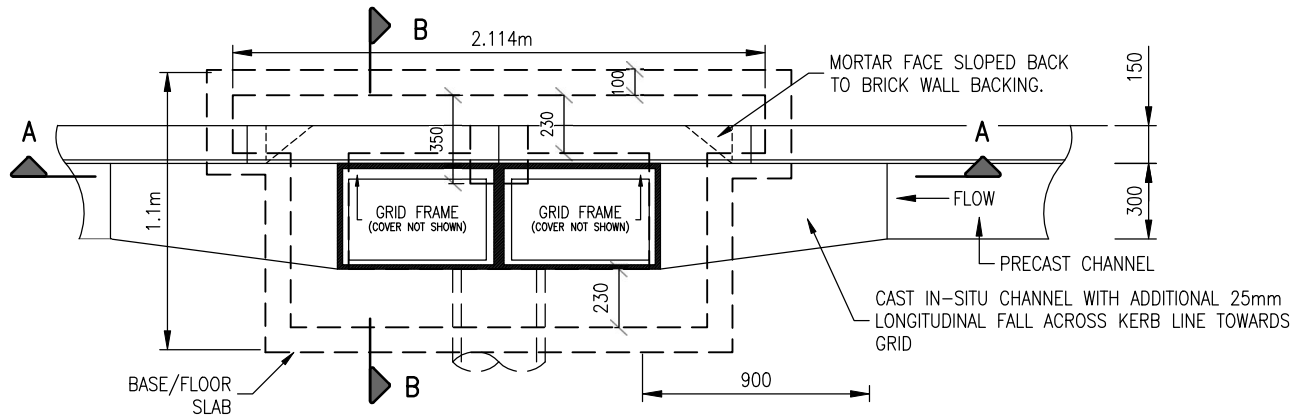


SECTION A-A

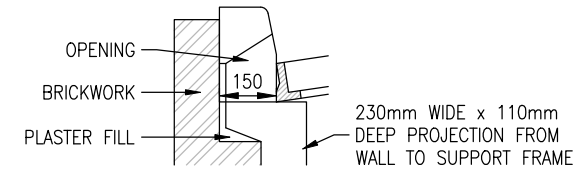
ALLOWANCE: 30mm FOR FOOTWAY PREMIX
75mm FOR UNMADE VERGE



SECTION B-B



PLAN



DETAIL 'X'

GENERAL NOTES:

- HINGED COVERS ARE TO OPEN TOWARDS SIDEWALK AND NOT THE ROAD.
- CATCHPIT DEPTH:
 - MINIMUM = 0.75m
 - MAXIMUM = 1.20m
- BRICKWORK: SEE SECTION 10.4.10 "SPECIFICATION FOR MASONRY UNITS".
- ALL INTERNAL BRICKWORK TO HAVE SMOOTH FINISH.
- REFER TO DRAWING SW4 FOR INLET KERB DETAILS.

NOTES: CONCRETE GRADES

BASE/FLOOR	25/19
BENCHING	20/13
IN-SITU CAST CHANNEL	30/19



CITY OF CAPE TOWN
URBAN MOBILITY

TITLE

**STORMWATER CATCHPIT
TYPE A: DOUBLE KERB & GRID INLET COMBINATION**

STANDARDS AND GUIDELINES DETAILS

SCALE

N.T.S.

PAPER

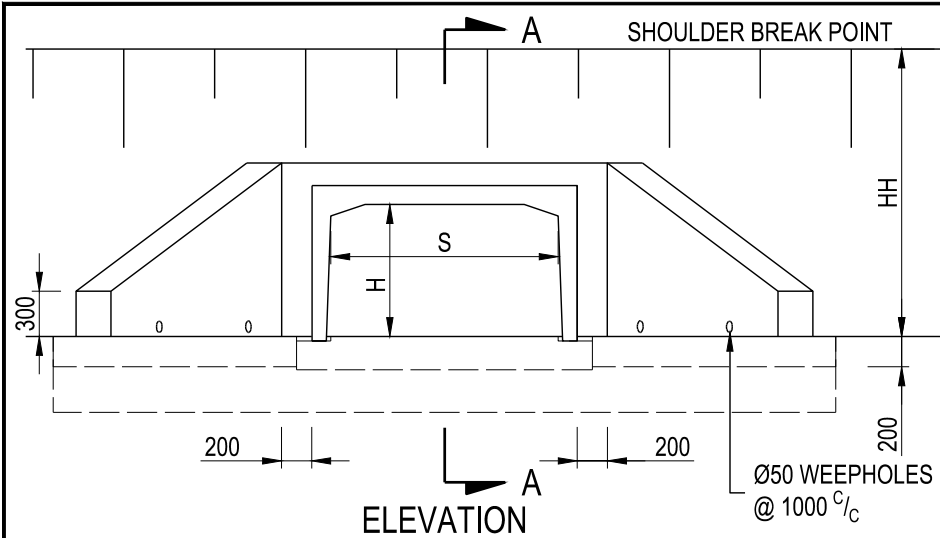
A4

DRAWING No.

SW3.1

REV

C

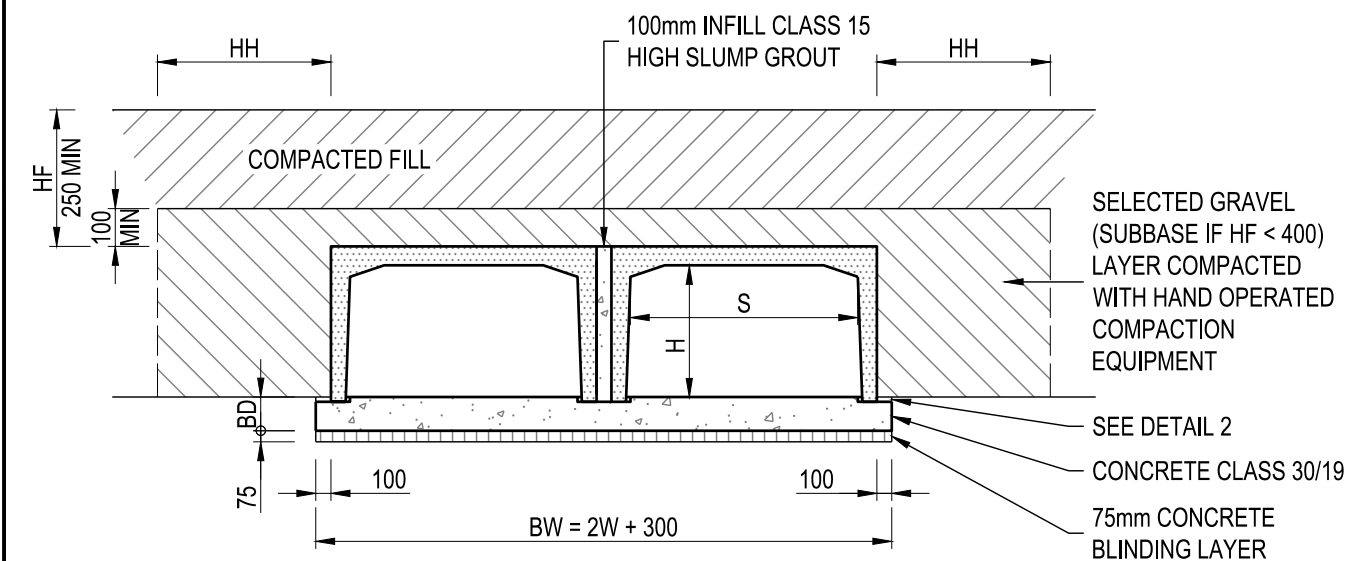
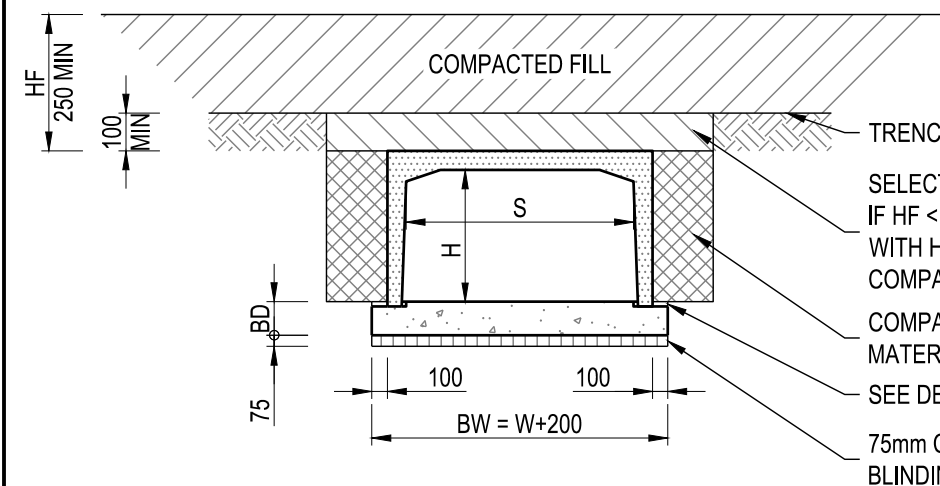


MAX TRENCH WIDTH = BW+600

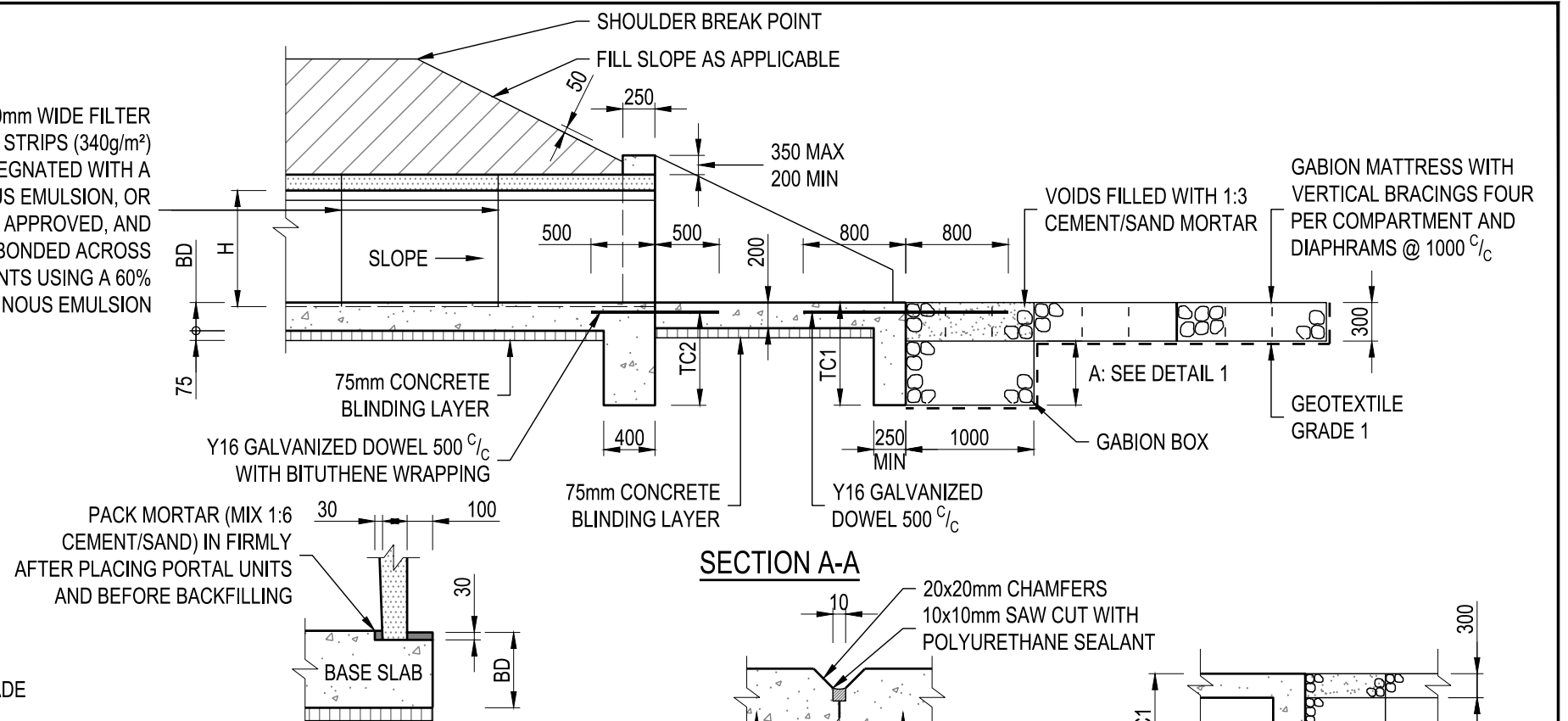
400 MAX

W

400 MAX



SECTION B-B: 2x CULVERTS



DETAIL 2: FOR H GREATER THAN 900mm PROVIDE RECESS IN BASE ALB AT ALL PORTAL LEG LOCATIONS AS SHOWN

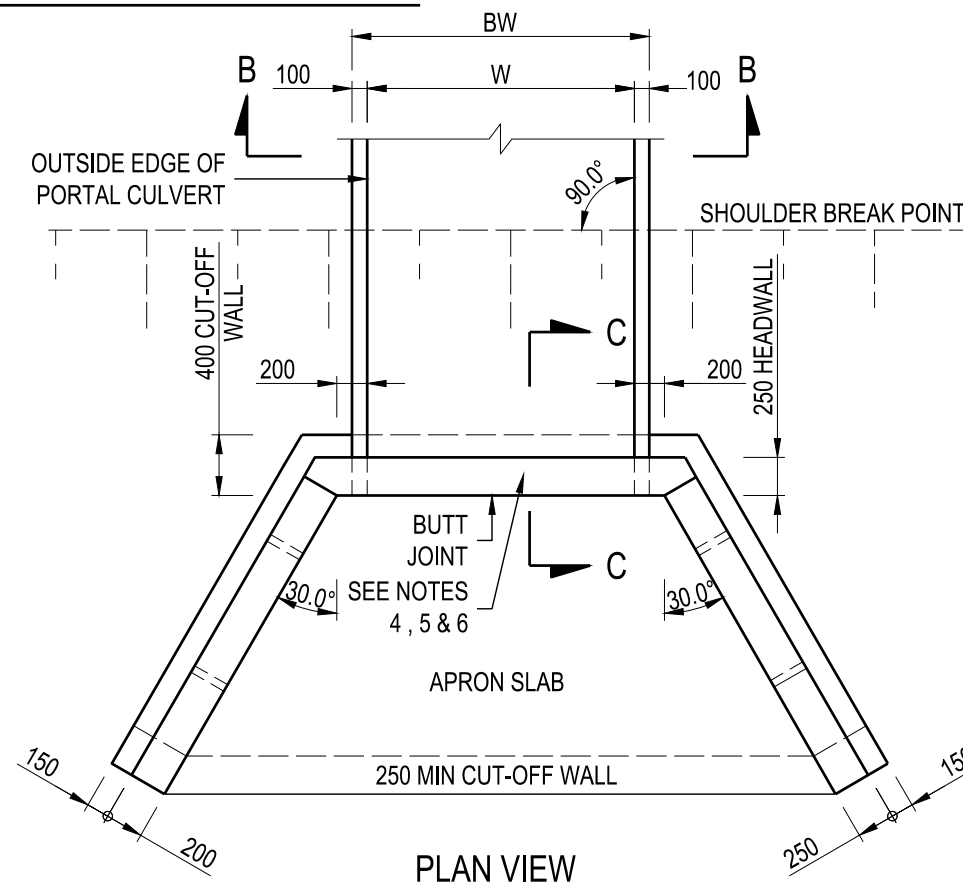
SECTION C-C: BUTT JOINT

TC1	PROTECTION DEPTH (A)
<800	0
800 - 1300	500
> 1300	1000

DETAIL 1: GABION PROTECTION DEPTH

NOTES:

- GENERAL
 - CUT-OFF WALLS TC1 AND TC2 TO BE CONSTRUCTED AT BOTH INLET AND OUTLET SIDES.
 - GABION SCOUR PROTECTION TO BE CONSTRUCTED AT OUTLET ONLY. EXTENT OF INLET/OUTLET PROTECTION AS SPECIFIED.
 - THIS DRAWING TO BE READ TOGETHER WITH SW-05-02 AND IN CONJUNCTION WITH 2200 OF THE COLTO DOCUMENT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE WORKS FOR STATE ROAD AUTHORITIES".
- NOTATION
 - H: CLEAR INTERNAL HEIGHT OF PORTAL
 - S: CLEAR INTERNAL SPAN OF PORTAL
 - W: TOTAL EXTERNAL WIDTH OF PORTAL
 - HH: HEADWALL HEIGHT
 - BW: BASE SLAB WIDTH
 - BD: BASE SLAB DEPTH
 - TC1: CUT-OFF WALL DEPTH AT END OF BASE SLAB
 - TC2: CUT-OFF WALL DEPTH AT END OF BASE SLAB
 - HF: HEIGHT OF FILL
 - WWH: WING WALL HEIGHT
 - FD: FOUNDATION DEPTH



DRAWING TITLE :

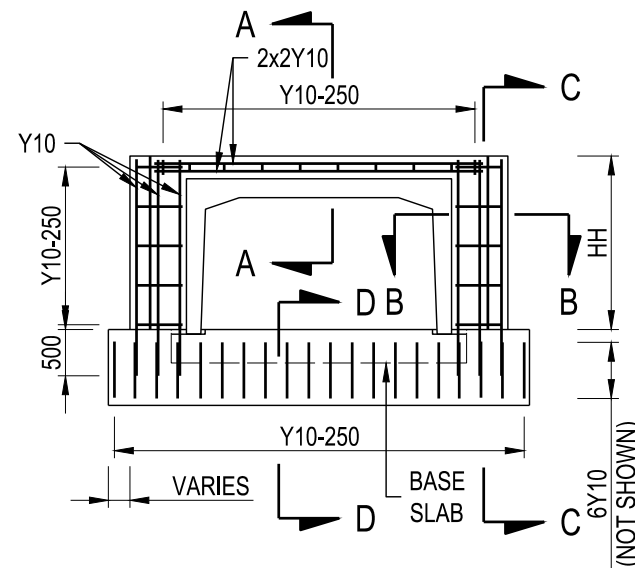
BOX CULVERT INLET AND OUTLET DETAILS

SCALE : NTS

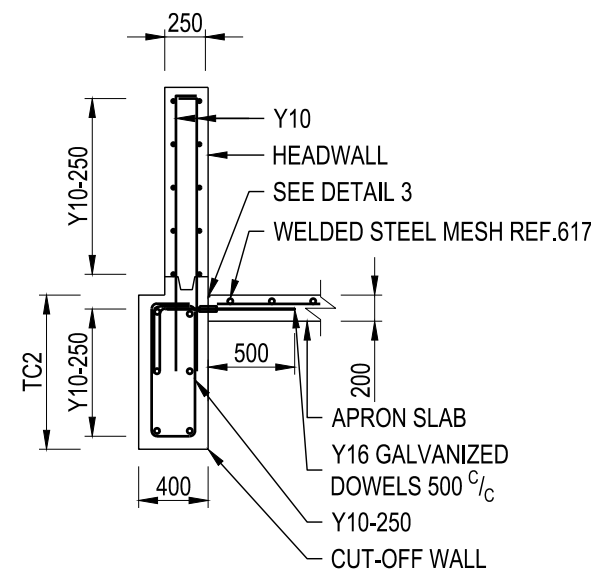
ORIGINAL DWG SIZE A3

DRAWING No. :

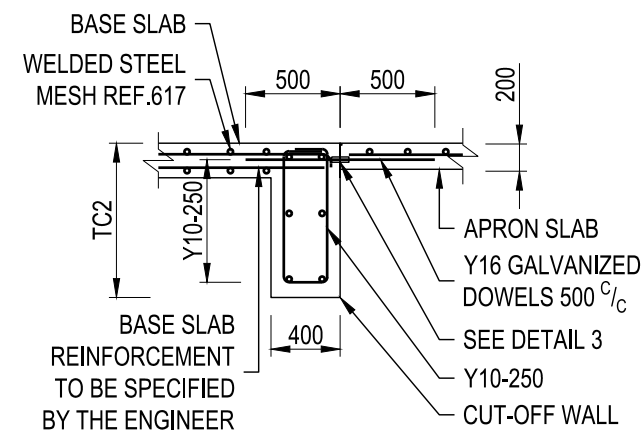
SW-05-01



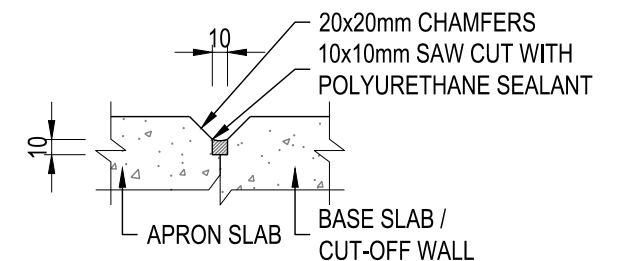
HEADWALL AND CUT-OFF WALL DETAIL



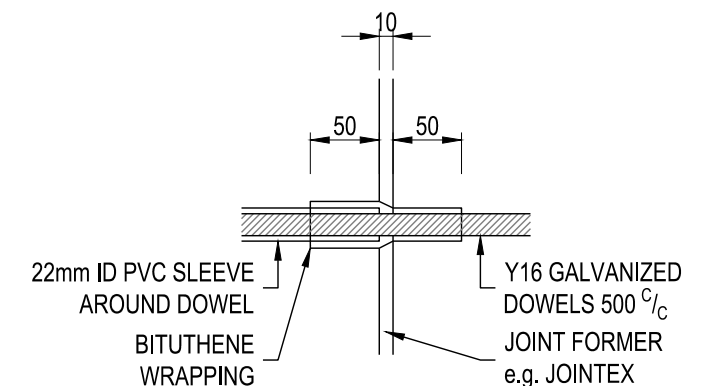
SECTION C-C: HEADWALL AND CUT-OFF WALL DETAIL



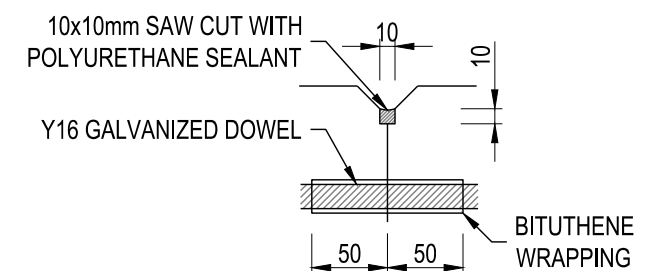
SECTION D-D: BASE SLAB, CUT-OFF WALL AND SPRON SLAB DETAIL



DETAIL 1

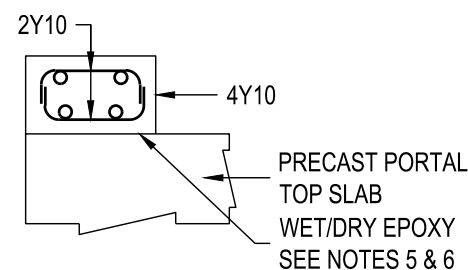


DETAIL 2

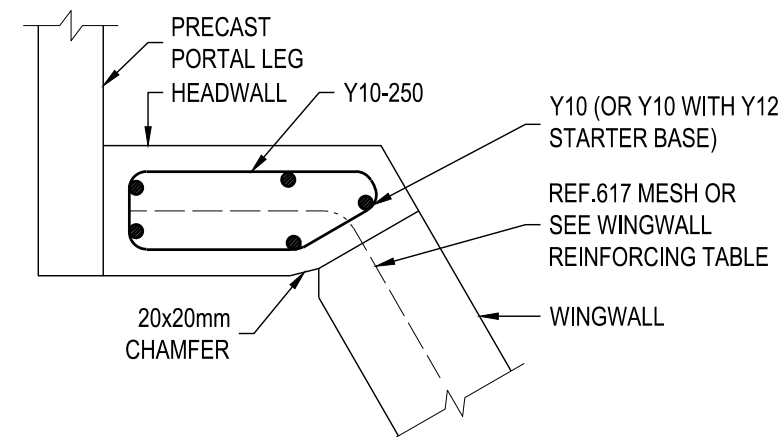


DETAIL 3

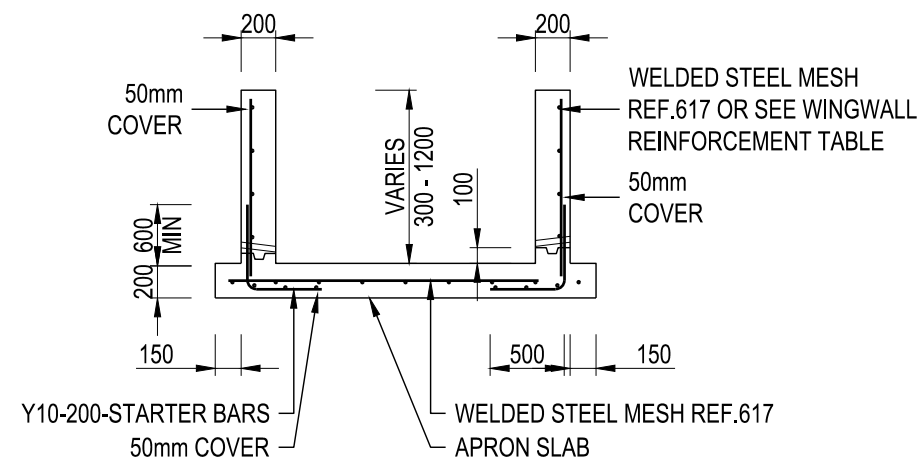
WINGWALL REINFORCEMENT	
WWH	VERTICAL STEEL
≤ 1200	Y10 - 250
ALL TRANSVERSE STEEL Y10-250 THROUGHOUT	



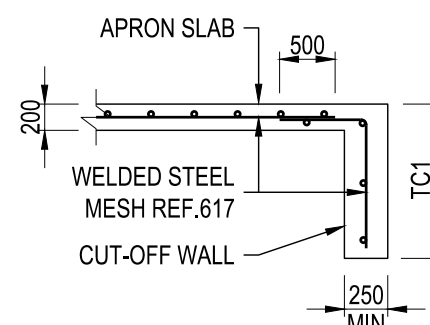
SECTION A-A



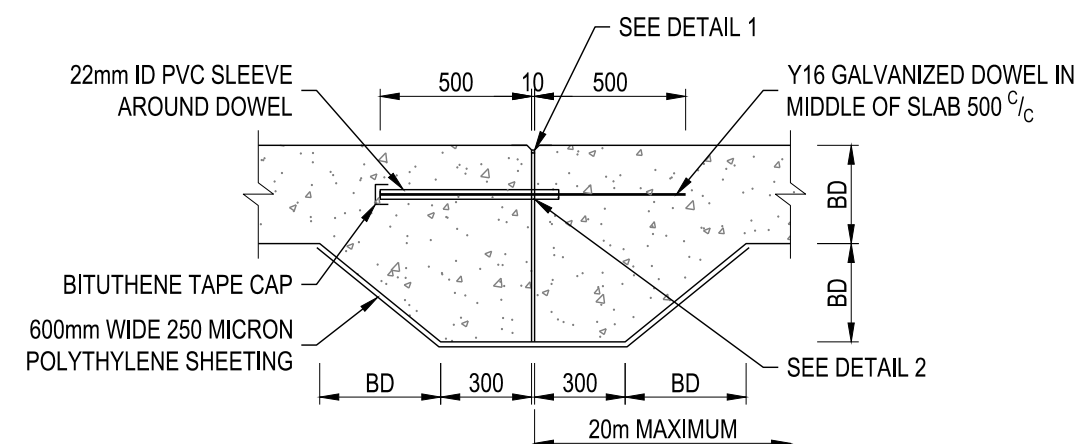
SECTION B-B



WINGWALL AND APRON SLAB DETAIL FOR HEADWALL HEIGHTS (HH) NOT EXCEEDING 1200mm

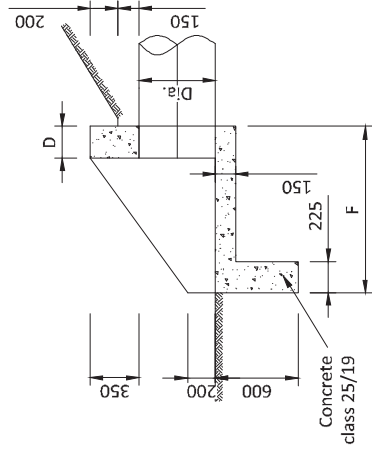


APRON SLAB AND CUT-OFF WALL DETAIL

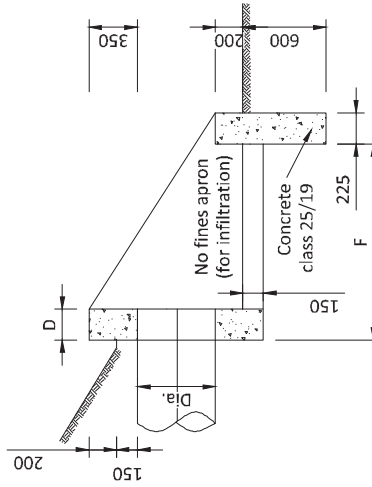


JOINTS IN BASE SLAB (TRANSVERSE)

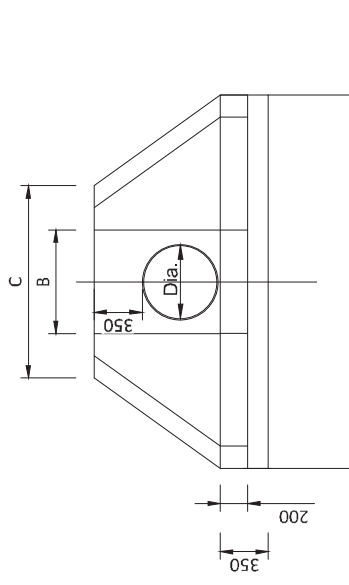
NOTES:
1. THIS DRAWING TO BE READ TOGETHER WITH SW-05-01.



**SECTION A - A
INLET**



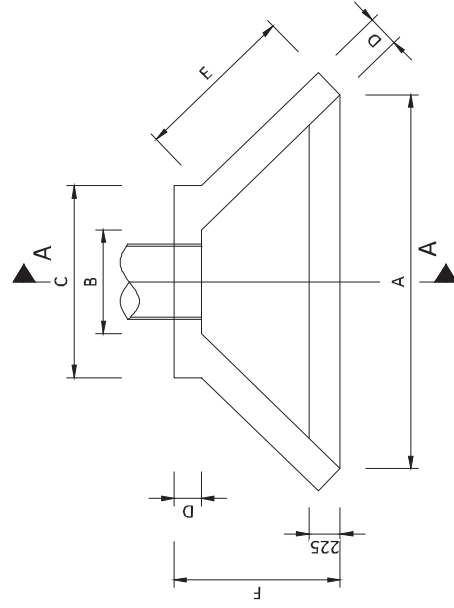
**SECTION A - A
OUTLET**



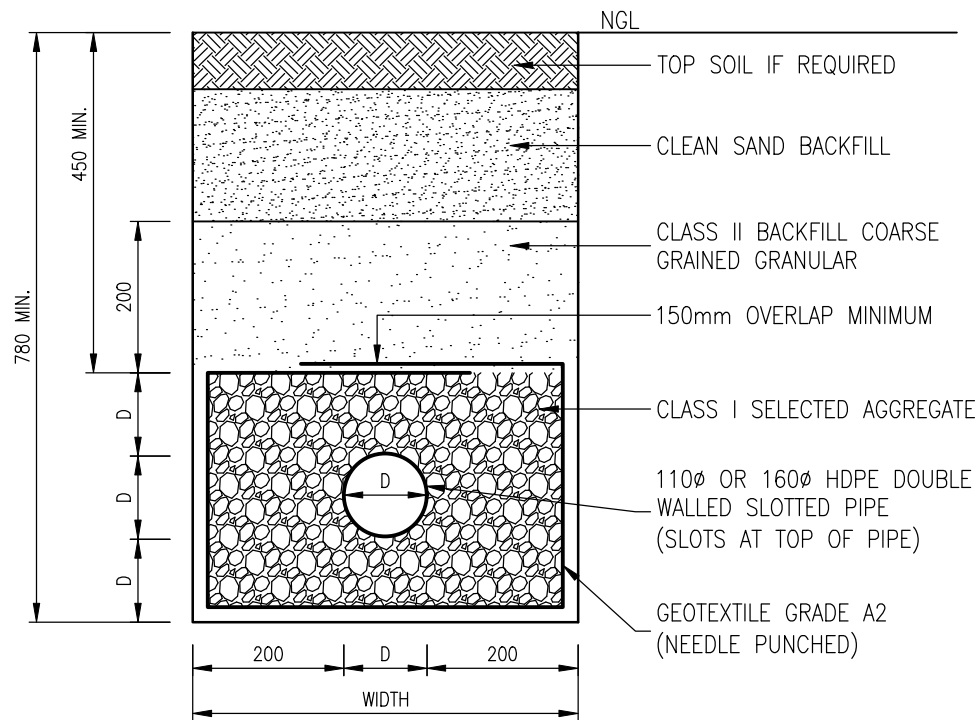
**ELEVATION
OUTLET**

- Notes:**
1. No fines base for infiltration
 2. Special detail to be drawn up for diameters larger than 1.35m
 3. Walls to be constructed of brickwork (see specifications for masonry units) or concrete (class 25/19mm).
 4. All exposed brickwork to be rendered in 1:2 plaster (concrete masonry units only)

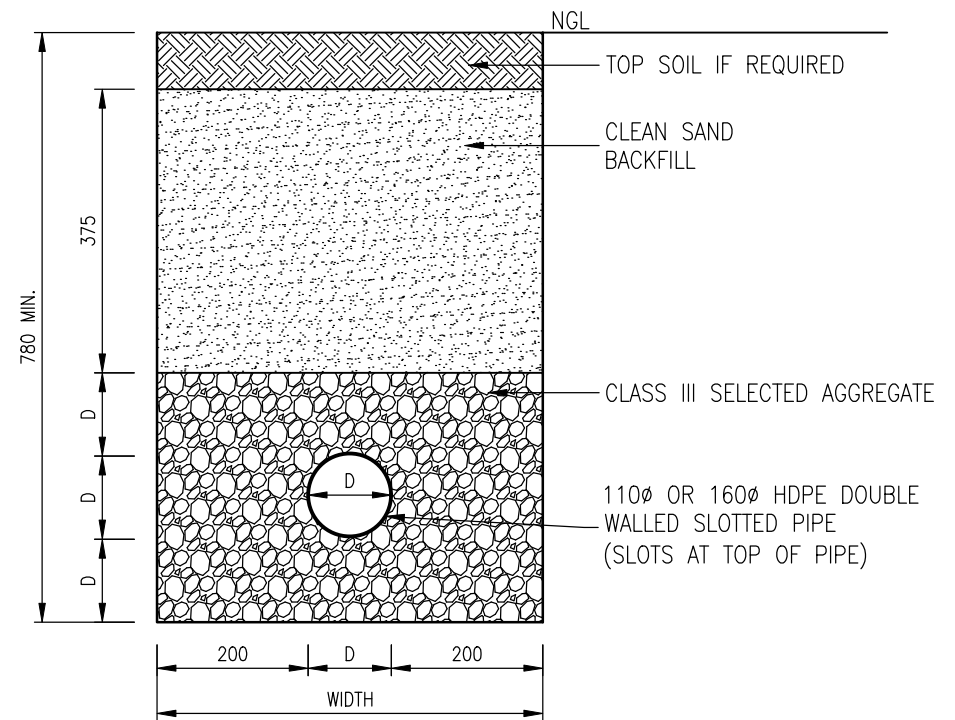
HEADWALL DIMENSIONS						
DIA.	A	B	C	D	E	OUTLET F
1350	6200	1500	2500	330	2970	3 x Ø
1200	5500	1350	2270	330	2605	3 x Ø
1050	4800	1200	2050	330	2245	3 x Ø
900	4100	1050	1825	330	1880	3 x Ø
825	3800	975	1720	330	1700	3 x Ø
750	3400	900	1610	330	1520	3 x Ø
600	2700	750	1390	220	1150	3 x Ø
525	2450	675	1275	220	1050	3 x Ø
450	2200	600	1160	220	930	3 x Ø
375	1700	525	1030	220	435	3 x Ø
300	1300	450	920	220	430	3 x Ø



**PLAN
OUTLET**



GENERAL CONDITIONS



CLAY CONDITIONS

NOTES:

PIPE BACKFILL:

- CLASS I: CRUSHED ROCK STONE AGGREGATE WITH LITTLE OR NO FINES (9–38mm).
- CLASS II: COARSE GRAINED FREE DRAINING NON-COHESIVE GRANULAR SOILS (0.6–38mm, FINES < 5%).
- CLASS III: WELL MIXED & COMPACTED CRUSHED STONE, GRADED AS FOLLOWS:
 - 50% – 13mm CUBICAL
 - 25% – 6.75mm CUBICAL
 - 25% – 4.75mm TO DUST (WASHED CRUSHER DUST)

NGL: NATURAL GROUND LEVEL
FRL: FINISHED ROAD LEVEL
FSL: FINISHED SURFACE LEVEL



CITY OF CAPE TOWN
URBAN MOBILITY

TITLE

SUB-SURFACE DRAIN: MAIN LINE

STANDARDS AND GUIDELINES DETAILS

SCALE

1:20

PAPER

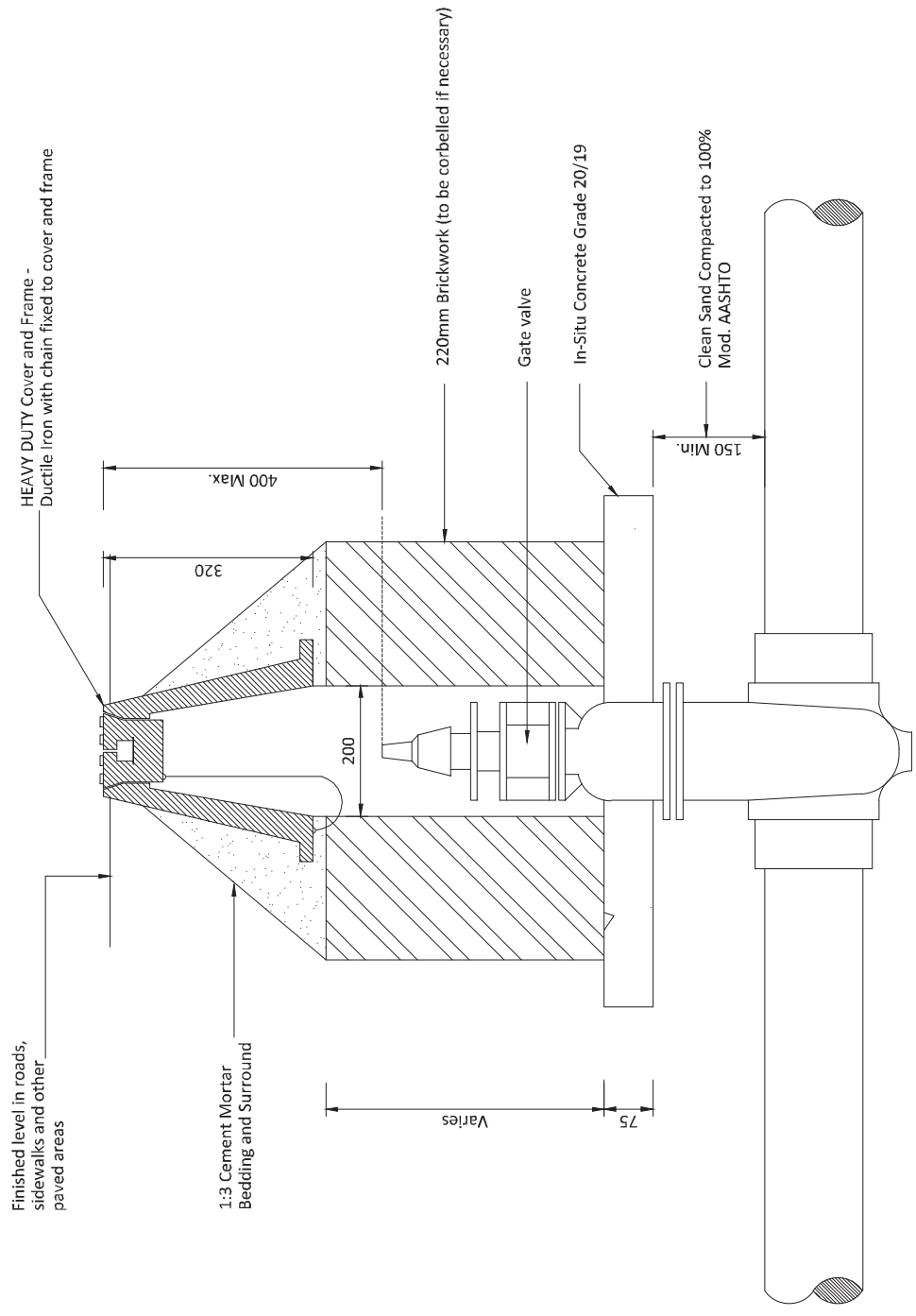
A4

DRAWING No.

SW1.1

REV

B



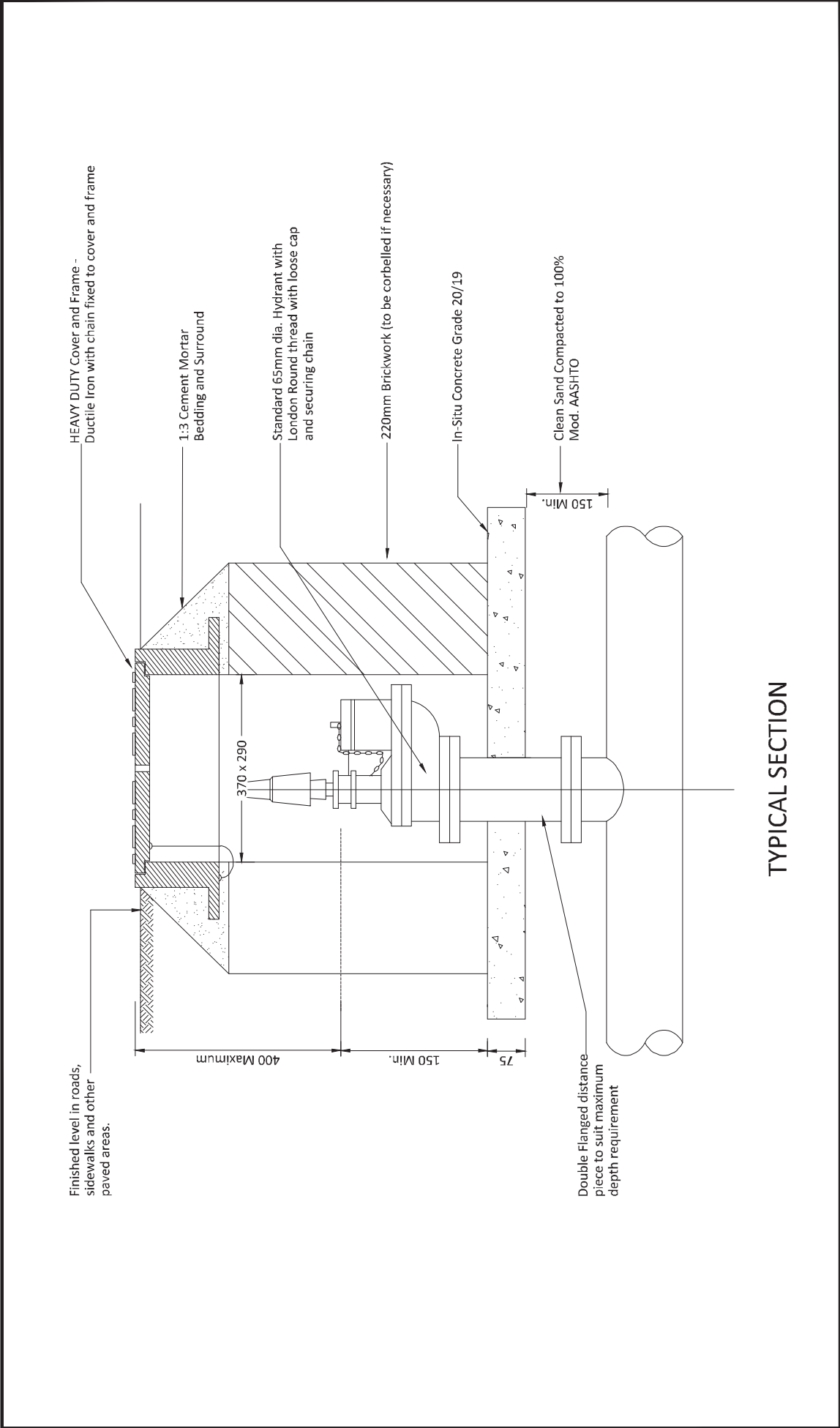
TYPICAL SECTION

DRAWING No. W1	CITY OF CAPE TOWN STANDARD DETAILS VALVE CHAMBER	SCALE 1:10

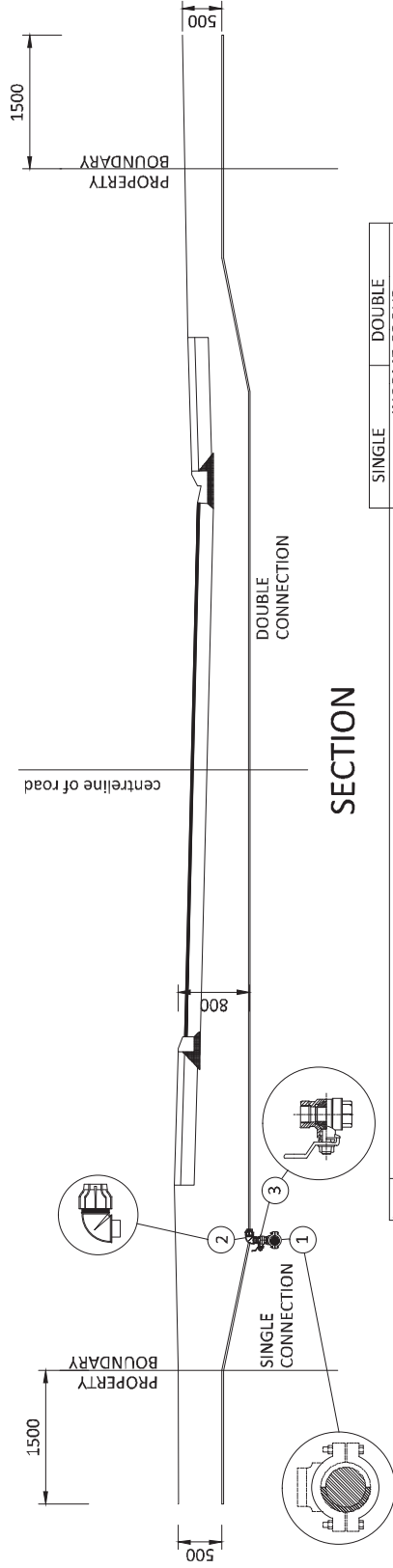
 CITY OF CAPE TOWN DESIGN & CONSTRUCTION 2014	APPROVED BY -----
	ISSUED DATE FEB 2013

THIS CITY WORKS FOR YOU



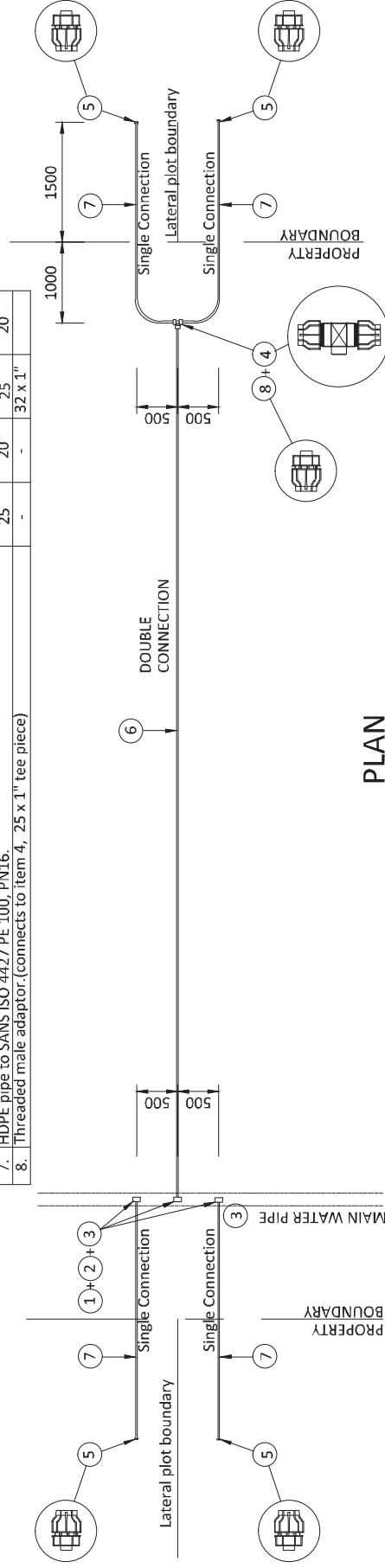


DRAWING No. W2		CITY OF CAPE TOWN STANDARD DETAILS HYDRANT CHAMBER	
SCALE 1:10		APPROVED BY ISSUED DATE FEB 2013	 CITY OF CAPE TOWN DESIGNED AND DRAWN BY: J. VAN DER MERWE THIS CITY WORKS FOR YOU



SECTION

Item No.	SPECIFICATIONS FOR PIPES AND FITTINGS	INCOME GROUP			
		SINGLE		DOUBLE	
		'H' to 'M'	LOW	'H' to 'M'	LOW
1.	Cast Iron, Ductile Iron or 'Alprene or Magnum' 16 bar JASWIC approved polypropylene saddle with threaded outlet and secured with stainless steel bolts and nuts.				
2.	Cast & Ductile Iron to be coated as specified in the City's Standard Specifications				
3.	Male threaded 45° or 90° elbow (45° preferred)	25 x 3/4"	20 x 1/2"	32 x 1"	25 x 3/4"
4.	Municipal DZR Ball Cock or DZR brass ferrule to SABS std. (optional)	3/4"	1"	1"	3/4"
5.	Increasing tee piece for 20 and 25 dia. pipe crossings.	-	-	25 x 20	25 x 20
6.	Female threaded tee piece for 40 dia. pipe crossing.	-	-	25 x 1"	25 x 1"
7.	End cap.	25	20	25	20
8.	HDPE pipe to SANS ISO 4427 PE 100, PN16.	-	-	32	25
	HDPE pipe to SANS ISO 4427 PE 100, PN16.	25	20	25	20
	Threaded male adaptor (connects to item 4, 25 x 1" tee piece)	-	-	32 x 1"	32 x 1"



PLAN

CITY OF CAPE TOWN STANDARD DETAILS TYPICAL WATER CONNECTION

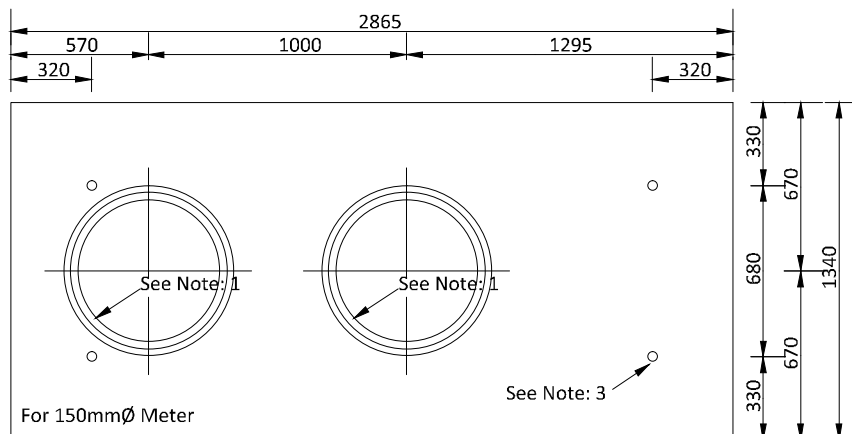
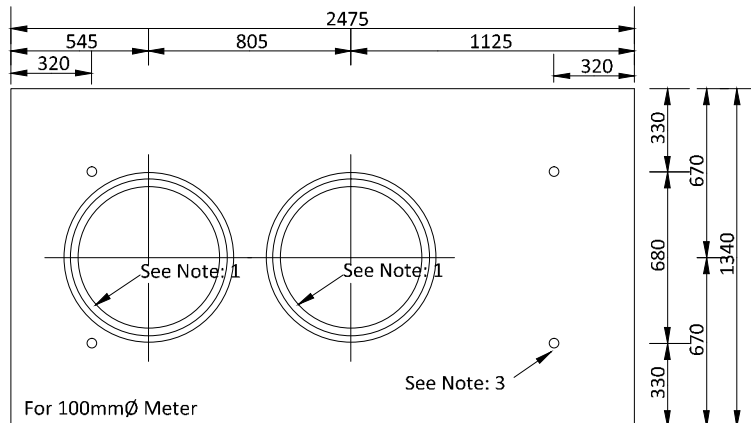
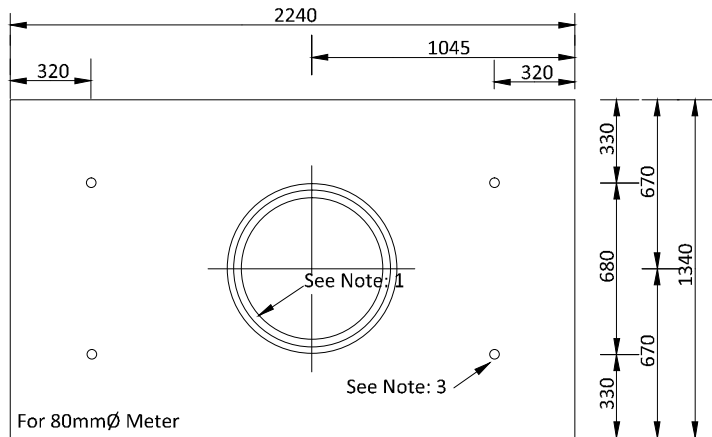
DRAWING No.

W3

SCALE
N.T.S.

APPROVED BY
ISSUED DATE
FEB 2013



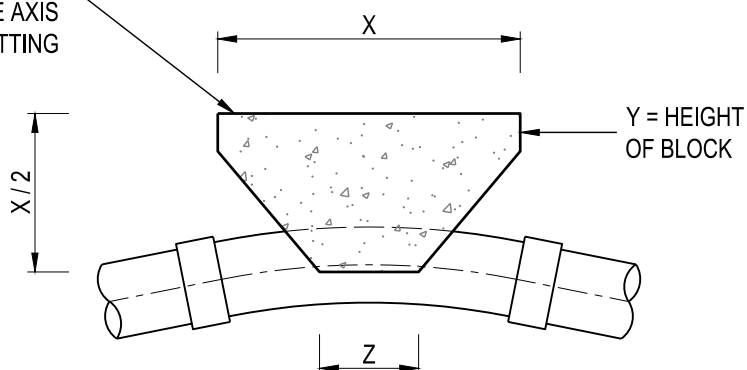


NOTES

- NOTE 1: DUCTILE IRON COVER FRAMES TO BE PLACED ABOVE WATER METER & STRAINER
- NOTE 2: CUT & BEND MESH TO SUIT COVER OPENING & SUMP
- NOTE 3: PROVIDE 4No. 40mmØ LIFTING HOLE IN ROOF SLAB [PLUGGED WITH BITUMEN AFTER ROOF SLAB IS IN PLACE TO PREVENT WATER SEEPAGE]
- NOTE 4: PLASTIC SHEETING 375 MICRON EMBOSSED D.P.C. SABS 952\1962 TYPE B TO BE PLACED ON WALLS BEFORE PLACING ROOF SLAB IN PLACE AND SEAL INTERNAL AND EXTERNAL JOINTS WITH SIKAFLEX-PRO 2HP
- NOTE 5: CONCRETE GRADE 25\19 FOR FLOOR AND ROOF SLABS
- NOTE 6: AVOID PLACING THE METER CHAMBER IN THE ROAD AND ENTRANCES WHEREVER POSSIBLE
- NOTE 7: CHAMBER WALLS TO BE PLASTERED, EXTERNAL AND INTERNAL, TO PREVENT SEEPAGE OF GROUND WATER INTO MANHOLE (PLASTER 13MM THICK, STEEL TROWELLED TO SMOOTH SURFACE)
- NOTE 8: EXTERNAL PLASTERED WALLS TO BE COATED WITH 2 COATS FLINTKOTE [ABE] AND 1 FINAL COAT SILVAKOTE [ABE] AND INTERNAL PLASTERED WALLS TO BE COATED WITH 3 COATS DURASLURRY[ABE]
- NOTE 9: ALL FLANGES TO BE DRILLED T16
- NOTE 10: VIKING JOHNSON COUPLING TO BE SEALED WITH DENSO TAPE
- NOTE 11: ONLY STAINLESS STEEL 316L SHOULD BE USED FOR BOLTS & NUTS
- NOTE 12: INTERNAL, PIPE PIECES SHALL BE COATED WITH 3 COATS CARBOLINE 891, MINIMUM TOTAL THICKNESS OF 250 MICRON
- NOTE 13: EXTERNAL, PIPE PIECES SHALL BE COATED WITH 3 COATS CARBOLINE 891, MINIMUM TOTAL THICKNESS OF 250 MICRON
- NOTE 14: EXTERNAL, VIKING JOHNSON/FLANGE ADAPTORS TO BE SEALED WITH DENSO TAPE
- NOTE 15: EXTERNAL BENDS, TEES & FLANGE ADAPTORS SHALL BE COATED WITH 3 COATS CARBOLINE 891, MINIMUM TOTAL THICKNESS OF 250 MICRON



15MPa CONCRETE TO BE CAST
AGAINST UNDISTURBED
IN-SITU MATERIAL AROUND THE AXIS
OF SYMMETRY OF THE FITTING



NOTE: COUPLINGS AND FLANGES TO BE LEFT FREE OF CONCRETE.

50-100kPa SOIL BEARING CAPACITY AND 1350kPa MAX SITE TEST PRESSURE

	11.25° BEND			22.25° BEND			45° BEND		
DN	X	Y	Z	X	Y	Z	X	Y	Z
75	200	200	150	300	300	150	350	350	150
100	250	250	200	350	350	200	500	400	200
150	400	300	300	550	450	300	750	550	300
200	550	350	350	700	550	350	1050	700	350
250	700	450	350	950	650	400	1350	850	450
300	850	550	400	1100	800	450	1650	1050	550
350	950	650	400	1250	950	500	1850	1250	550

100-200kPa SOIL BEARING CAPACITY AND 1350kPa MAX SITE TEST PRESSURE

	11.25° BEND			22.25° BEND			45° BEND		
DN	X	Y	Z	X	Y	Z	X	Y	Z
75	200	150	150	200	200	150	300	200	150
100	200	200	200	250	250	200	400	250	200
150	250	250	300	350	350	350	550	400	300
200	350	300	350	500	450	350	700	550	350
250	450	350	350	600	550	400	850	700	450
300	550	450	400	700	650	450	1000	850	550
350	650	500	400	800	750	500	1200	950	550

200-400kPa SOIL BEARING CAPACITY AND 1350kPa MAX SITE TEST PRESSURE

	11.25° BEND			22.25° BEND			45° BEND		
DN	X	Y	Z	X	Y	Z	X	Y	Z
75	200	100	150	200	150	150	250	150	150
100	200	150	200	250	200	200	300	200	200
150	250	150	300	350	200	300	450	250	300
200	300	200	350	400	300	350	550	350	350
250	350	250	350	450	350	400	650	450	450
300	400	300	400	550	450	450	750	600	550
350	500	350	400	600	550	500	850	700	550



DRAWING TITLE :

TYPICAL DETAIL OF THRUST BLOCK FOR BENDS

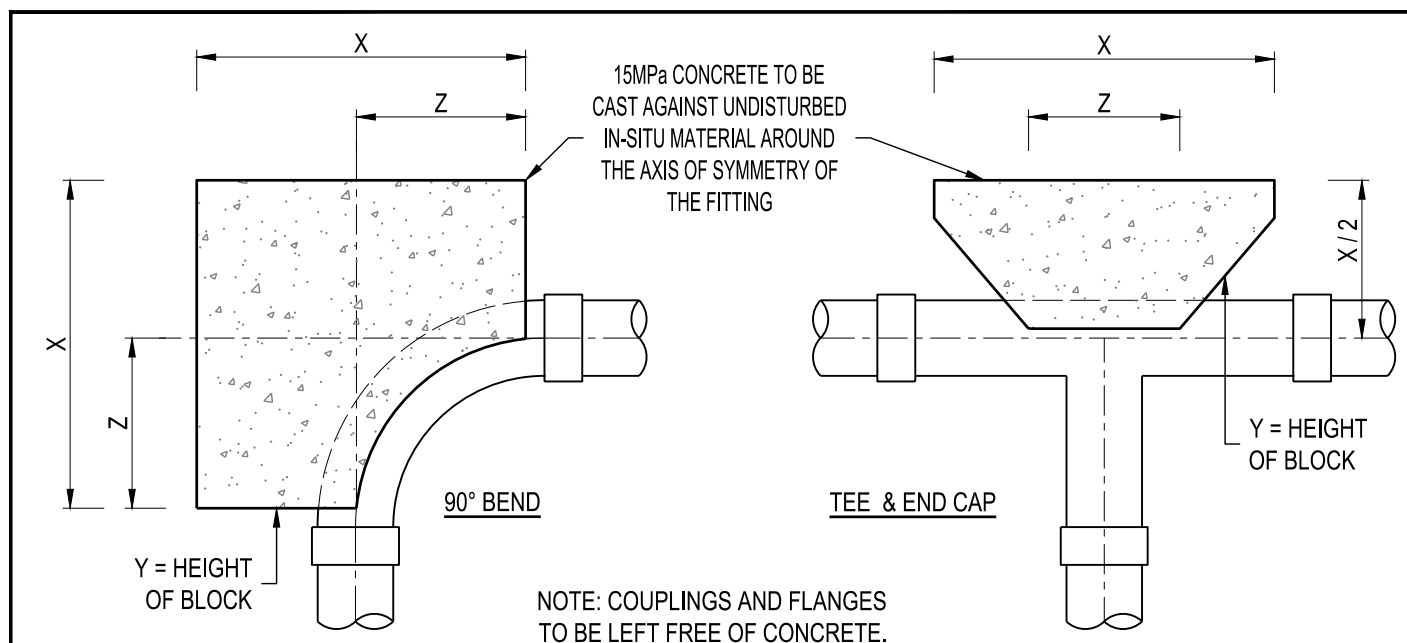
SCALE :

NTS

ORIGINAL DWG
SIZE A4

DRAWING No. :

W-10-01



50-100kPa SOIL BEARING CAPACITY AND 1350kPa MAX SITE TEST PRESSURE

	90° BEND			TEE & END CAP		
DN	X	Y	Z	X	Y	Z
75	400	400	200	400	350	150
100	600	450	250	600	400	200
150	1000	550	400	1000	550	300
200	1300	750	450	1350	700	350
250	1700	900	500	1750	850	450
300	2000	1100	550	2150	1000	550
350	2250	1300	600	2450	1200	550

100-200kPa SOIL BEARING CAPACITY AND 1350kPa MAX SITE TEST PRESSURE

	90° BEND			TEE & END CAP		
DN	X	Y	Z	X	Y	Z
75	350	250	200	300	250	150
100	450	300	250	400	300	200
150	650	450	400	600	450	300
200	850	600	450	800	600	350
250	1050	750	500	1000	750	450
300	1250	900	550	1250	900	550
350	1550	1000	600	1350	1100	550

200-400kPa SOIL BEARING CAPACITY AND 1350kPa MAX SITE TEST PRESSURE

	90° BEND			TEE & END CAP		
DN	X	Y	Z	X	Y	Z
75	250	200	200	250	250	150
100	300	250	250	350	350	200
150	500	300	400	450	450	300
200	650	400	450	550	550	350
250	800	500	500	650	650	450
300	950	650	550	800	800	550
350	1050	750	600	900	900	550



DRAWING TITLE :

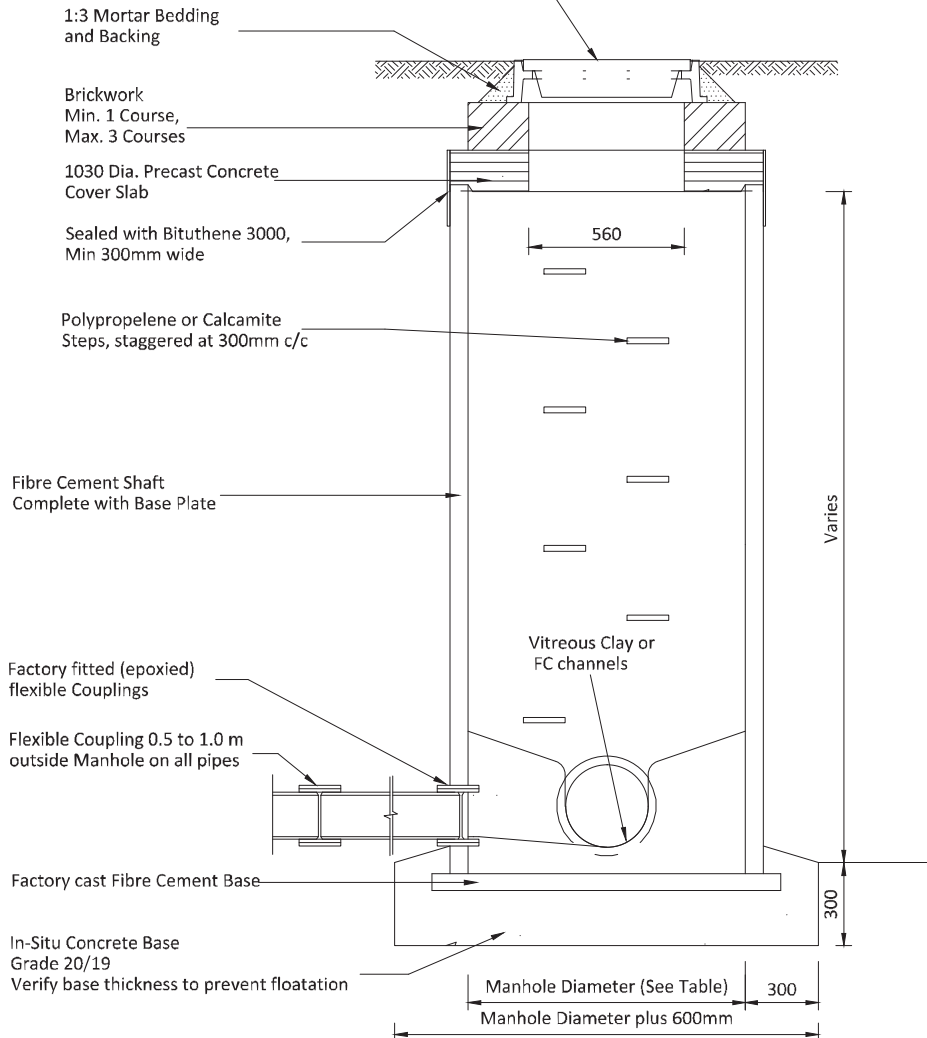
**TYPICAL DETAIL OF THRUST BLOCK
FOR 90 BEND, TEE & END CAP**

SCALE :
NTS

ORIGINAL DWG
SIZE A4

DRAWING No. :
W-10-02

REFER to CoCT standard manhole cover and frame 2010 (drawings SW8A, SW8B, SW8C)



Manhole Diameter Table.

Main Pipe	Junc Pipe	Manhole dia.
160 - 250	160 - 200	1000
275 - 325	160 - 250	1200
350 - 400	160 - 225	1200
425	160 - 300	1500
450 - 525	160 - 275	1500
550 - 575	160 - 250	1500
600	160 - 250	1500
625 - 650	160 - 325	1800
675 - 725	160 - 300	1800
750 - 800	160 - 275	1800
800 - 900	160 - 250	1800

Note:

Manholes for pipe diameters and junction angles that fall outside the above range needs to be specially designed to accommodate precast channel layouts.

Note:

- 1) Refer to SABS 1200 LD for Specifications and items not indicated
- 2) For sealing specifications refer to the text portion of the City's Standard Specifications
- 3) Check Manhole Diameter based on Channel Layout with centre line Radii of all channels = 2 x diameter.
- 4) Check/determine concrete base thickness to prevent flotation



APPROVED BY
ISSUED DATE
FEB 2013

**CITY OF CAPE TOWN
STANDARD DETAILS
SEWER MANHOLE
(Fibre Cement Type)**

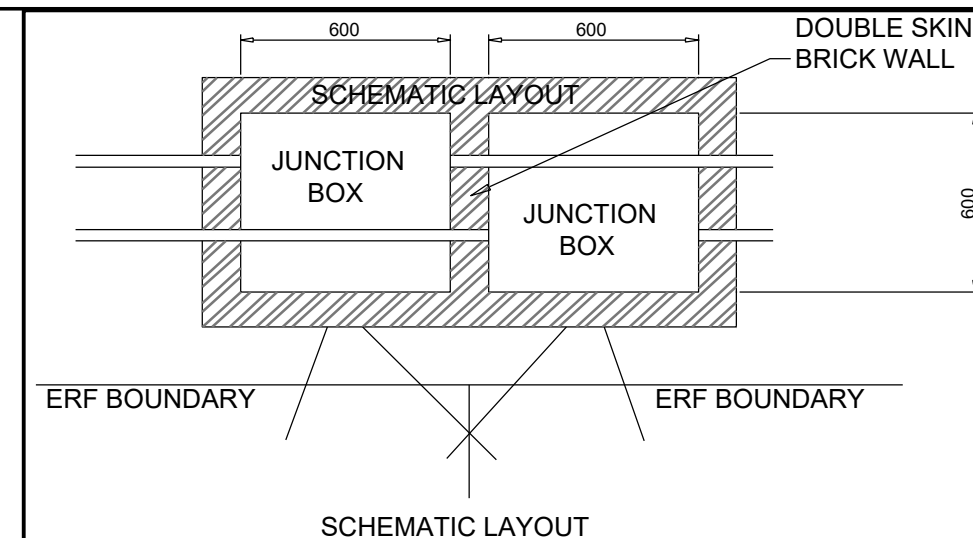
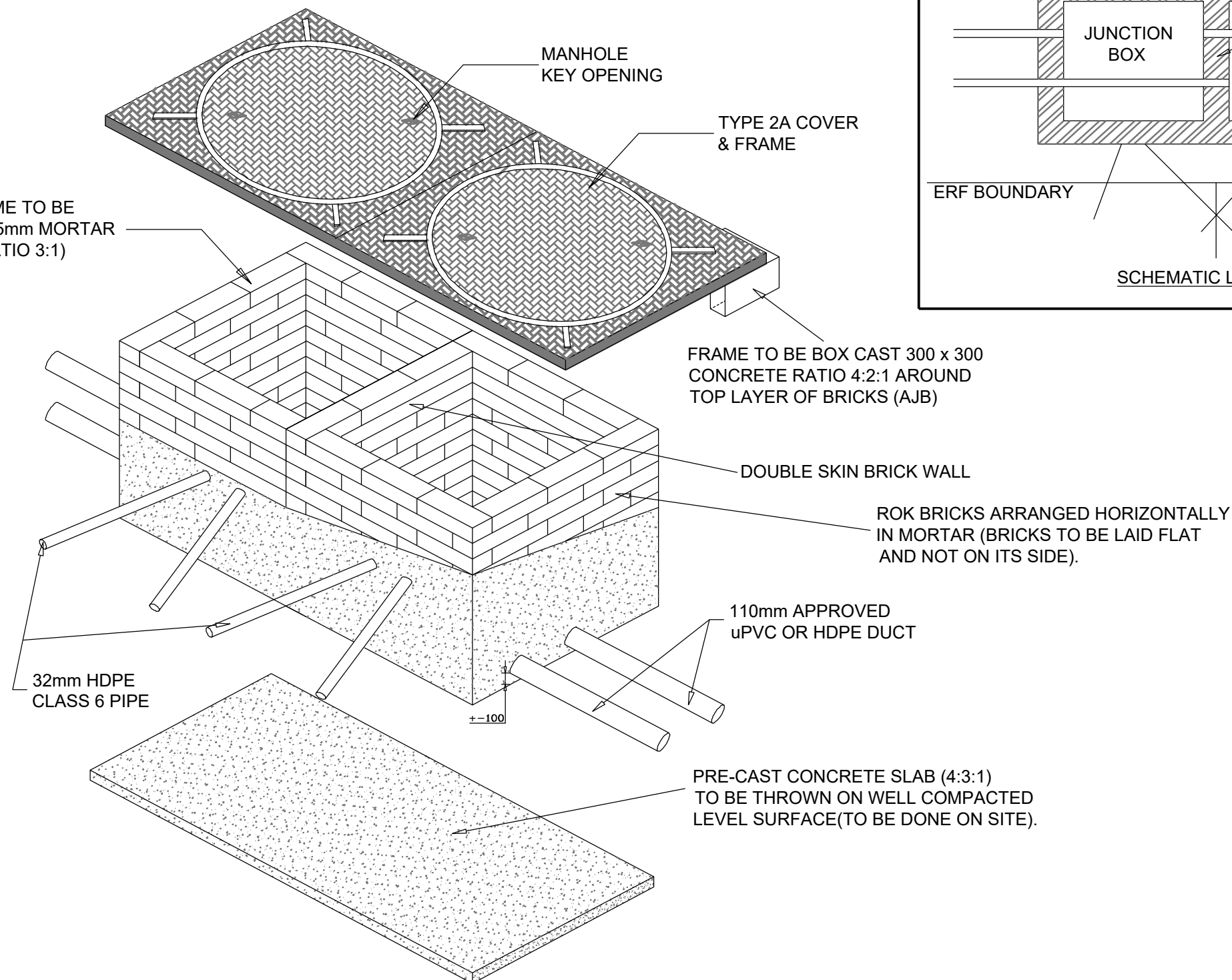
DRAWING No.

S2

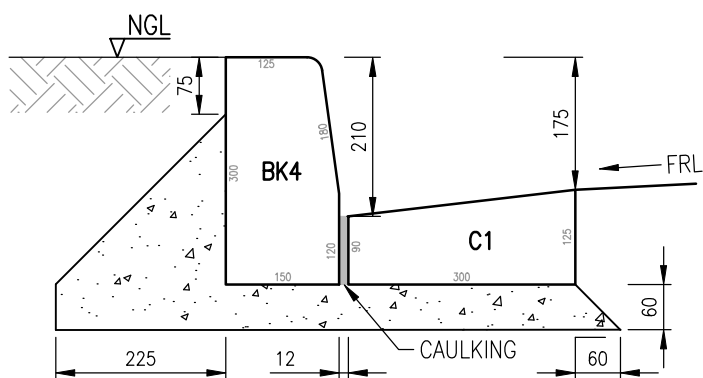
SCALE

1:25

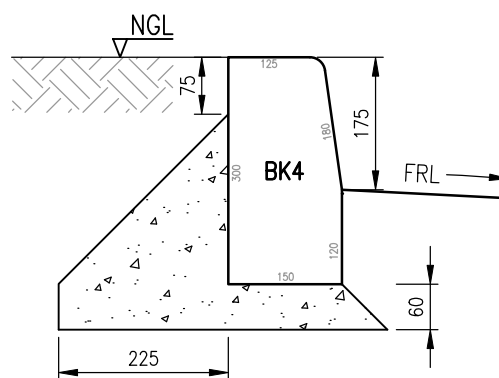
ENTIRE FRAME TO BE SEATED IN 15mm MORTAR (MIXTURE RATIO 3:1)



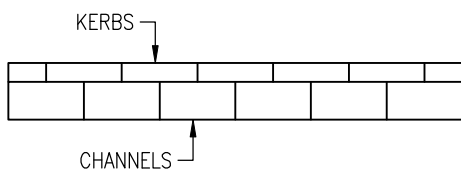
BK2 BARRIER KERB ONLY



BK4 BARRIER KERB & C1 CHANNEL



BK4 BARRIER KERB ONLY



STAGGERING OF KERBS AND CHANNELS

1. ALL UNITS MUST BE LAID WITH 20 MPa CONCRETE BEDDING/BACKING, UNLESS SHOWN OTHERWISE, ON SUBGRADE/SUBBASE COMPACTED TO THE REQUIRED SPECIFICATIONS
2. NO OUTFALL CHANNELS PERMITTED.
3. ALL RADII < 20m MUST BE BUILT WITH 300/330mm LONG ELEMENTS.
4. ALL PRECAST UNITS LAID LONGITUDINALLY NEXT TO ONE ANOTHER MUST BE STAGGERED.
5. ALL KERB JOINTS TO BE WATER SPRAYED BEFORE CAULKING.
6. CAULKING BETWEEN KERBS TO HAVE A CEMENT:SAND RATIO OF 1:3.
7. EXPANSION JOINTS ON KERBING:
 - A. SHALL BE 10mm WIDE, SPACED AT 10m c/c.
 - B. FILLED WITH FOAMED POLYSTYRENE (OR EQUIVALENT APPROVED)
 - C. SEALED WITH 20mm X 10mm SILICONE SEALANT (OR EQUIVALENT APPROVED)

NGL: NATURAL GROUND LEVEL
FRL: FINISHED ROAD LEVEL
FSL: FINISHED SURFACE LEVEL



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CITY OF CAPE TOWN
URBAN MOBILITY

TITLE

BARRIER KERBS AND CHANNELS

STANDARDS AND GUIDELINES DETAILS

SCALE

1:10

DRAWING No.

RD1.1

PAPER

A4

REV

B