



BOOK OF DRAWINGS



REVISIONS			
No	DATE	INIT	DESCRIPTION
PROJECT REPLACEMENT OF BULK RAW WATER AC PIPELINE FROM LAPA PUMP STATION TO BELA-BELA WTW (WARD 1 AND 9)			
CONTRACT NUMBER: 9/1/3 340 (21)			
TITLE BELA BELA (WARD 1 AND 9) BOOK OF DRAWINGS			
CLIENT:  BELA BELA LOCAL MUNICIPALITY CHRIS HAN DRIVE PRIVATE BAG X1609, BELA BELA, 0700 Tel: 014 736 8000			
CONSULTANT: 			
PHAMELA ENGINEERING SERVICES Unit 101,The Office Park, 90 Schoeman Street, Polokwane, 0699 Tel: 015 065 0585 Fax: 086 669 6824			
SCALE ON REDUCED DRAWING 80mm SCALE ON ORIGINAL DRAWING			
DRAWN SE PANDELANE		CHECKED F.BALOYI-Pr.ENG	
APPROVED			
DATE OCTOBER 2023		SCALE 1:125	
			REVISION 0



Coordinate List		
Lo 27		
LAPA BULK		
Node	YLo	XLo
Const:		
W1	74 792.359	2 751 717.059
W2	74 785.534	2 751 718.938
W3	74 767.014	2 751 751.503
W4	74 767.014	2 751 771.636
W5	74 507.832	2 752 237.583
W6	74 259.076	2 752 316.149
W7	73 724.960	2 752 403.778
W8	73 723.285	2 752 391.125
W9	73 539.359	2 752 417.896
W10	73 539.292	2 752 422.945
W11	73 421.927	2 752 440.835
W12	73 414.697	2 752 407.778
W13	73 407.261	2 752 407.778
W14	73 407.261	2 752 349.294
W15	73 326.785	2 752 349.756
W16	73 295.908	2 752 366.342
W17	73 215.807	2 752 391.229
W18	73 208.843	2 752 384.777
W19	73 208.769	2 752 354.065
W20	73 158.870	2 752 354.065
W21	73 158.870	2 752 441.871
W22	73 129.557	2 752 444.112
W23	73 122.337	2 752 443.536
W24	72 933.975	2 752 460.950
W25	72 895.844	2 752 466.441
W26	72 813.077	2 752 469.058
W27	72 441.662	2 752 421.060
W28	72 464.624	2 752 226.861
W29	72 025.649	2 752 231.592
W30	72 026.646	2 752 362.376
W31	72 021.631	2 752 362.376

Pipe Data List			MATERIAL	CLASS
Node - Node	Length	Dia.		
LAPA BULK	(m)	(mm)		
W1 - W2	7.08	400	uPVC	16
W2 - W3	37.46	400	uPVC	16
W3 - W4	20.13	400	uPVC	16
W4 - W5	533.18	400	uPVC	16
W5 - W6	260.87	400	uPVC	16
W6 - W7	541.26	400	uPVC	16
W7 - W8	12.76	400	uPVC	16
W8 - W9	185.86	400	uPVC	16
W9 - W10	5.05	400	uPVC	16
W10 - W11	118.72	400	uPVC	16
W11 - W12	33.84	400	uPVC	16
W12 - W13	7.44	400	uPVC	16
W13 - W14	58.48	400	uPVC	16
W14 - W15	80.48	400	uPVC	16
W15 - W16	35.05	400	uPVC	16
W16 - W17	83.88	400	uPVC	16
W17 - W18	9.49	400	uPVC	16
W18 - W19	30.71	400	uPVC	16
W19 - W20	49.90	400	uPVC	16
W20 - W21	87.81	400	uPVC	16
W21 - W22	29.40	400	uPVC	16
W22 - W23	7.24	400	uPVC	16
W23 - W24	189.17	400	uPVC	16
W24 - W25	38.52	400	uPVC	16
W25 - W26	82.81	400	uPVC	16
W26 - W27	374.50	400	uPVC	16
W27 - W28	195.55	400	uPVC	16
W28 - W29	439.00	400	uPVC	16
W29 - W30	130.79	400	uPVC	16
W30 - W31	5.02	400	uPVC	16

PIPE MATERIAL LIST		
Diameter (mm)	Class	Length (m)
uPVC		
400	16	3691.45
Total length :		3691.45

REVISIONS

No	DATE	INIT	DESCRIPTION

PROJECT

REPLACEMENT OF BULK RAW WATER AC PIPELINE FROM LAPA PUMP STATION TO BELA-BELA WTW (WARD 1 AND 9)

CONTRACT NUMBER:

9/1/3 340 (21)

TITLE

BELA BELA (WARD 1 AND 9)
SETTING-OUT DATA

CLIENT:



BELA BELA MUNICIPALITY
CHRIS HAN DRIVE
PRIVATE BAG X1609,
BELA BELA, 0700
Tel: 014 736 8000

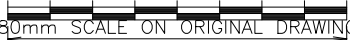
CONSULTANT:



PHAMELA ENGINEERING SERVICES

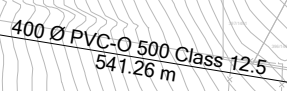
Unit 101,The Office Park,
90 Schoeman Street,
Polokwane, 0699
Tel: 015 065 0585 Fax: 086 669 6824

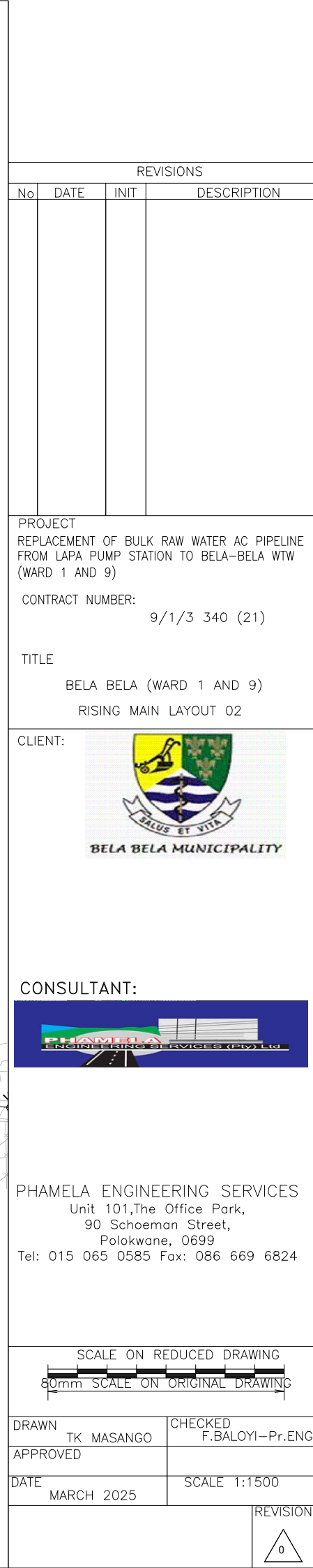
SCALE ON REDUCED DRAWING



80mm SCALE ON ORIGINAL DRAWING

DRAWN	TK MASANGO	CHECKED	F.BALOYI-Pr.ENG
APPROVED			
DATE	MARCH 2025	SCALE	1:4500
DRAWING NO.:	BLM-CIV-DRG-002	REVISION	0







ROAD D180 CROSSING

IN24

400 Ø PVC-O 500 Class 12.5

400 Ø PVC-O 500 Class 12.5
374.50 m

N28

400 Ø PVC-O 500 Class 12.5

439.00 m

400 Ø PVC-O 500
195.55 m

 N_2O
$$\frac{0.5}{0.5}$$

BELA BELA (WARD 1 AND 9)

RISING MAIN LAYOUT 03

CLIENT:



CONSULTANT:



PHAMELA ENGINEERING SERVICES

Unit 101, The Office Park,
90 Schoeman Street,
Polokwane, 0699
Tel: 015 065 0585 Fax: 086 669 6824

SCALE ON REDUCED DRAWING

30mm SCALE ON ORIGINAL DRAWING

DRAWN

CHECKED

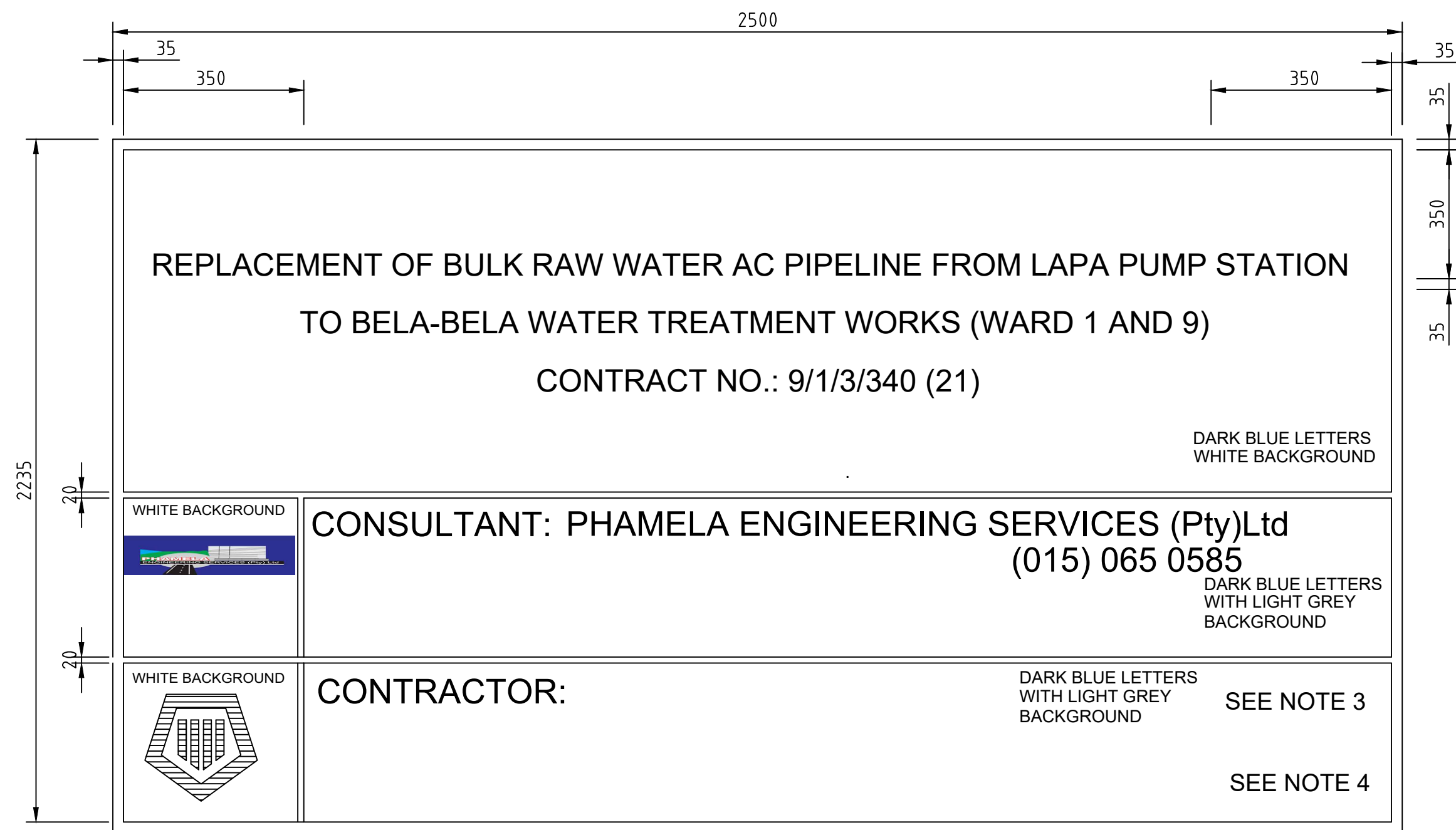
APPROVED

MARCH 2025

SCALE 1:1500

REVISION





NOTE 1
SITING AND ERECTION METHODS BY CONTRACTOR, ONE NAME BOARD IN ENGLISH, SHALL BE ERECTED, POSITIONS TO BE DETERMINED BY ENGINEER ON SITE.

NOTE 2
BACKGROUND:
a. TOP SECTION SEMI-MATT WHITE
b. LEFT BOTTOM SECTION: SEMI-MATT WHITE
c. RIGHT BOTTOM SECTION: SEMI-MATT LIGHT GREY

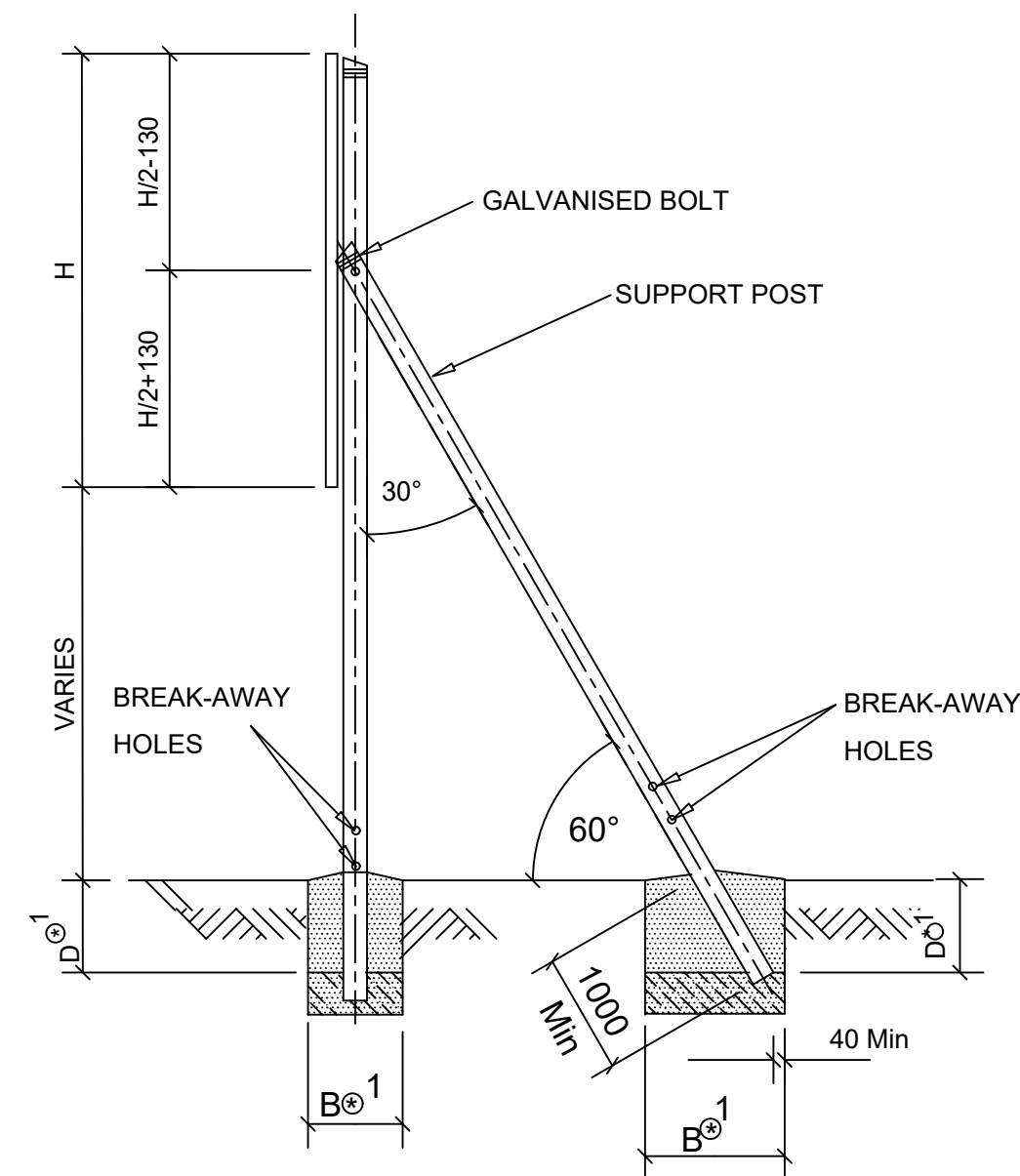
NOTE 3
CONTRACT PERIOD/ CONTRACTOR TEL. - LETTER HEIGHT 102mm

NOTE 4
NAME OF CONTRACTOR - LETTER HEIGHT 152mm

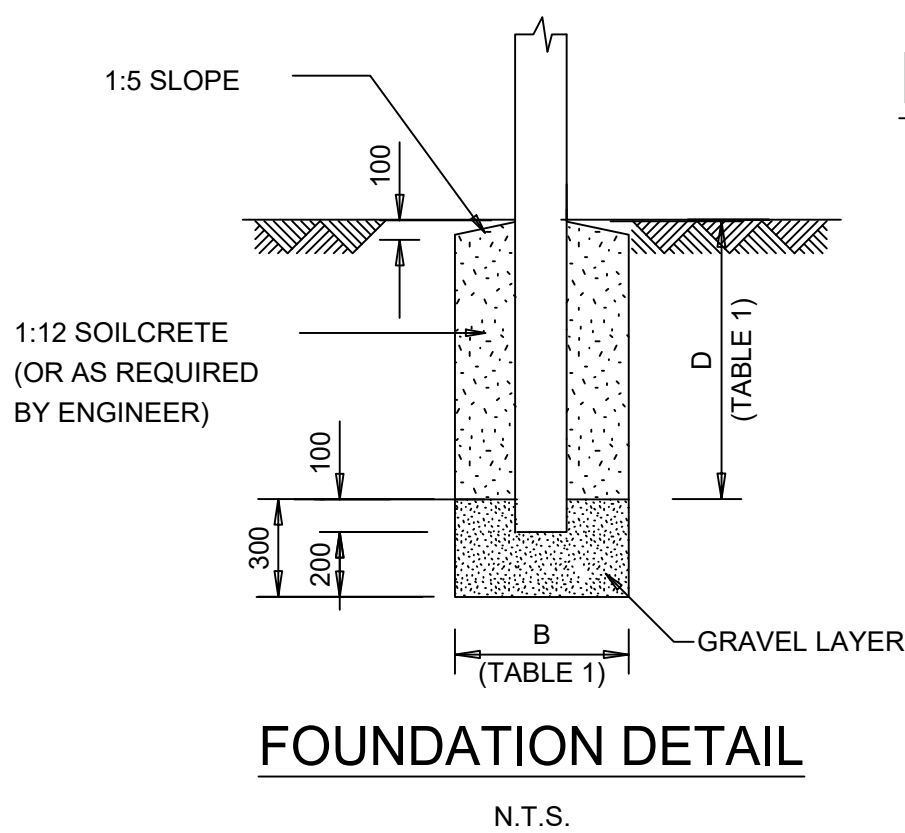
LETTERS
SERIES C, DARK BLUE

BORDER
GREEN NON-REFLECTIVE

EMBLEMS
MAY ONLY BE USED BY MEMBERS AND DISPLAYED IN FULL COLOUR

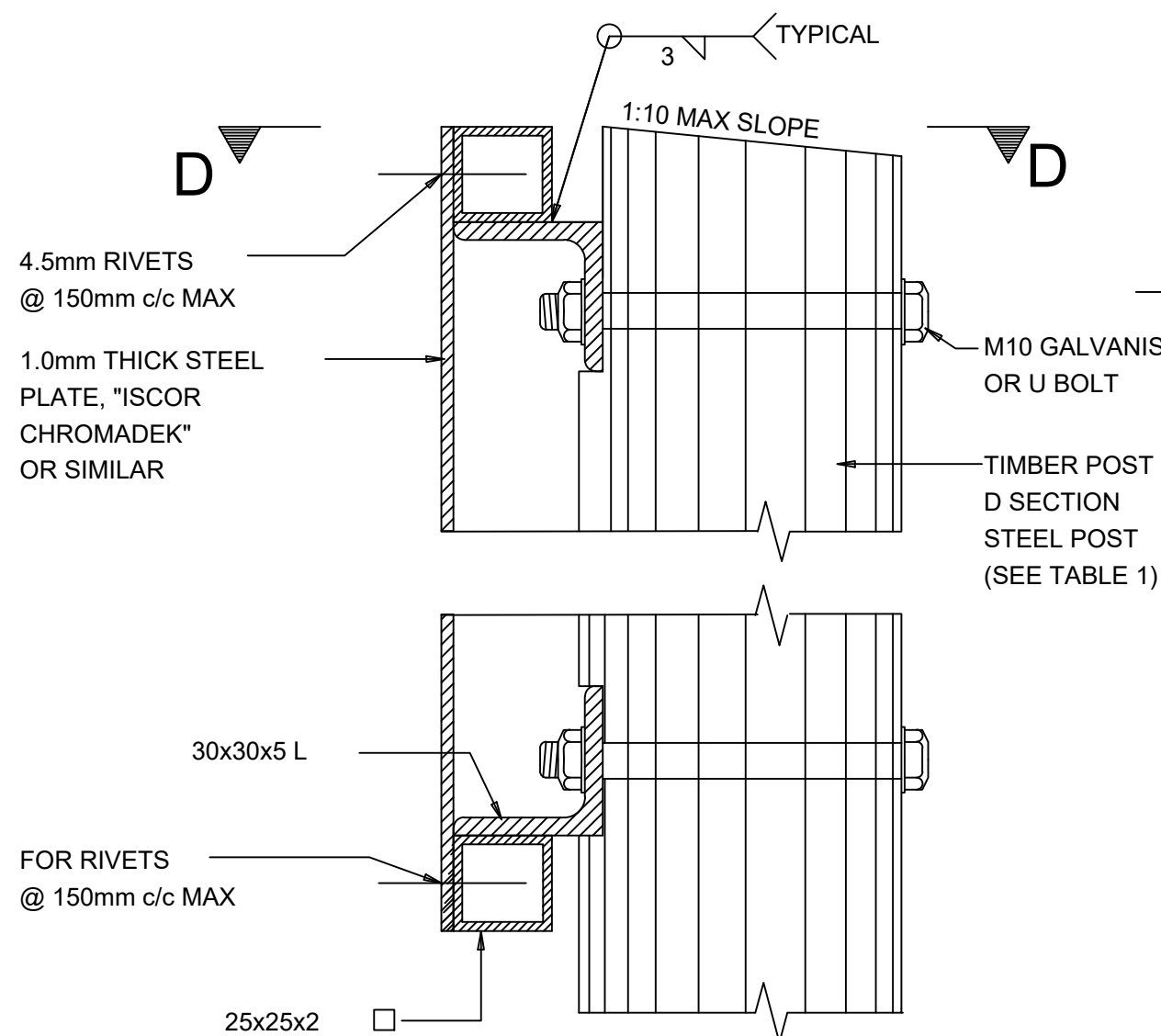


SIDE ELEVATION OF CONSTRUCTION SIGN BOARD
N.T.S.

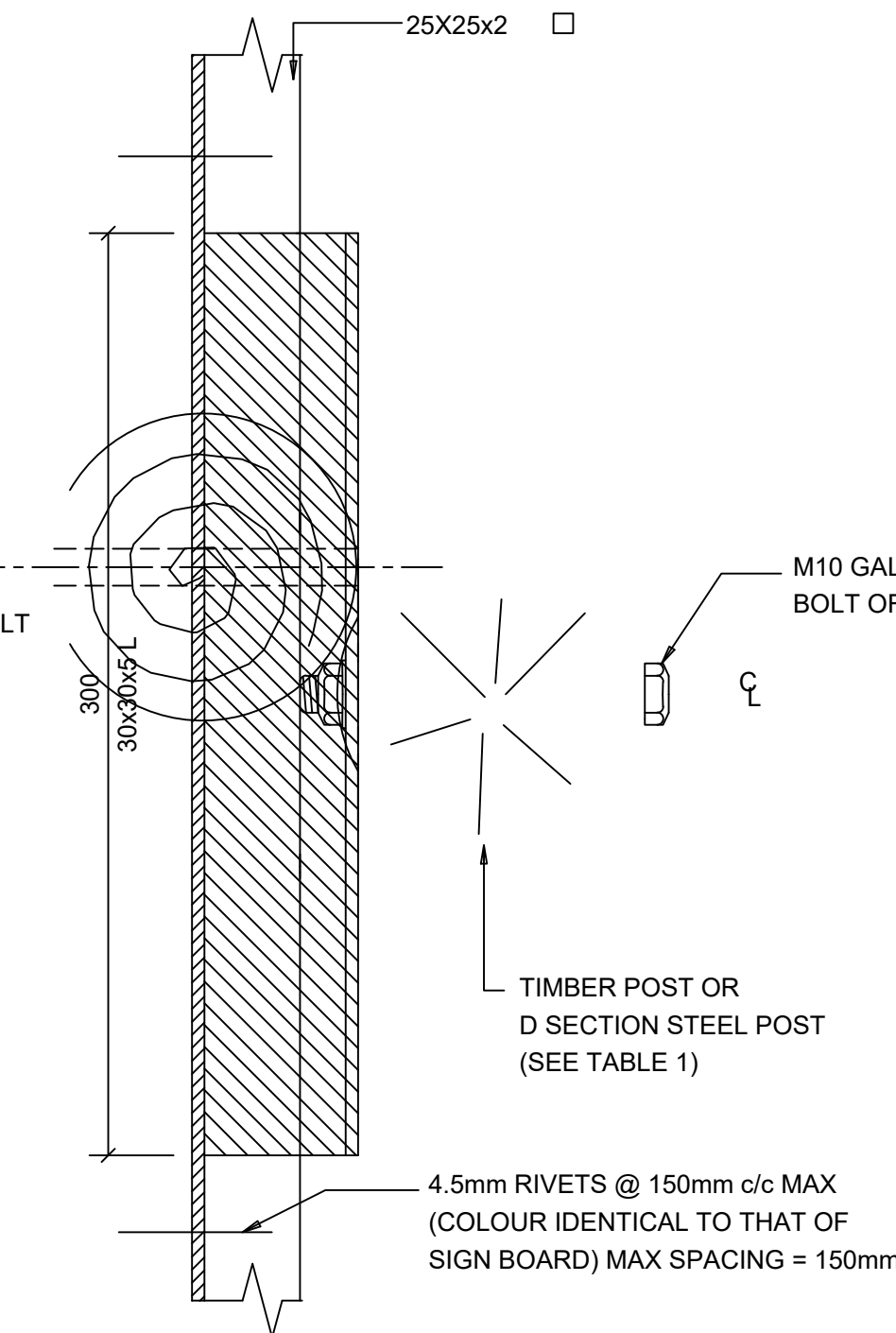


FOUNDATION DETAIL
N.T.S.

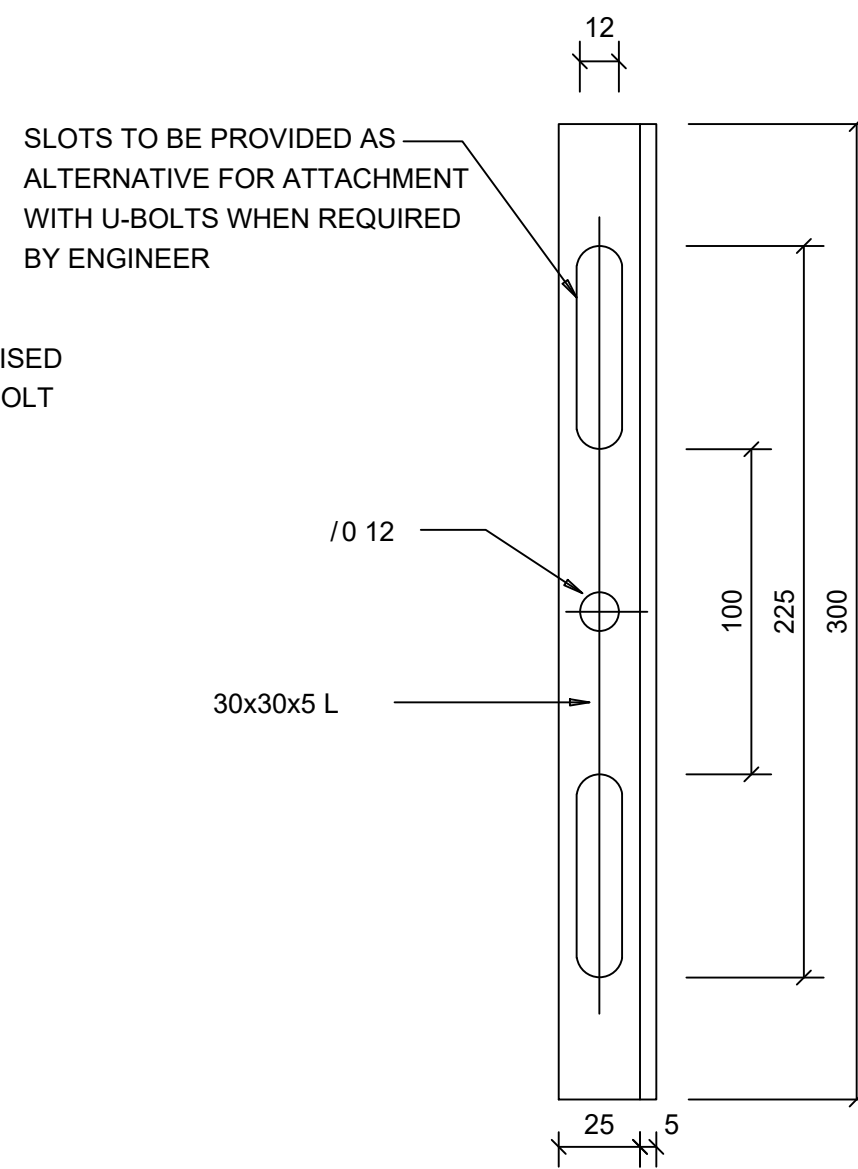
TABLE 1				
ERECTION DETAILS				
TYPE POST	UPRIGHT	STAY	D	B
TIMBER POST AND STAY	100mm	80mm	600mm	850mm
TIMBER POST	180mm	-	1000mm	1450mm
D SECTION STEEL POST	100mm x 4mm	-	1000mm	1450mm



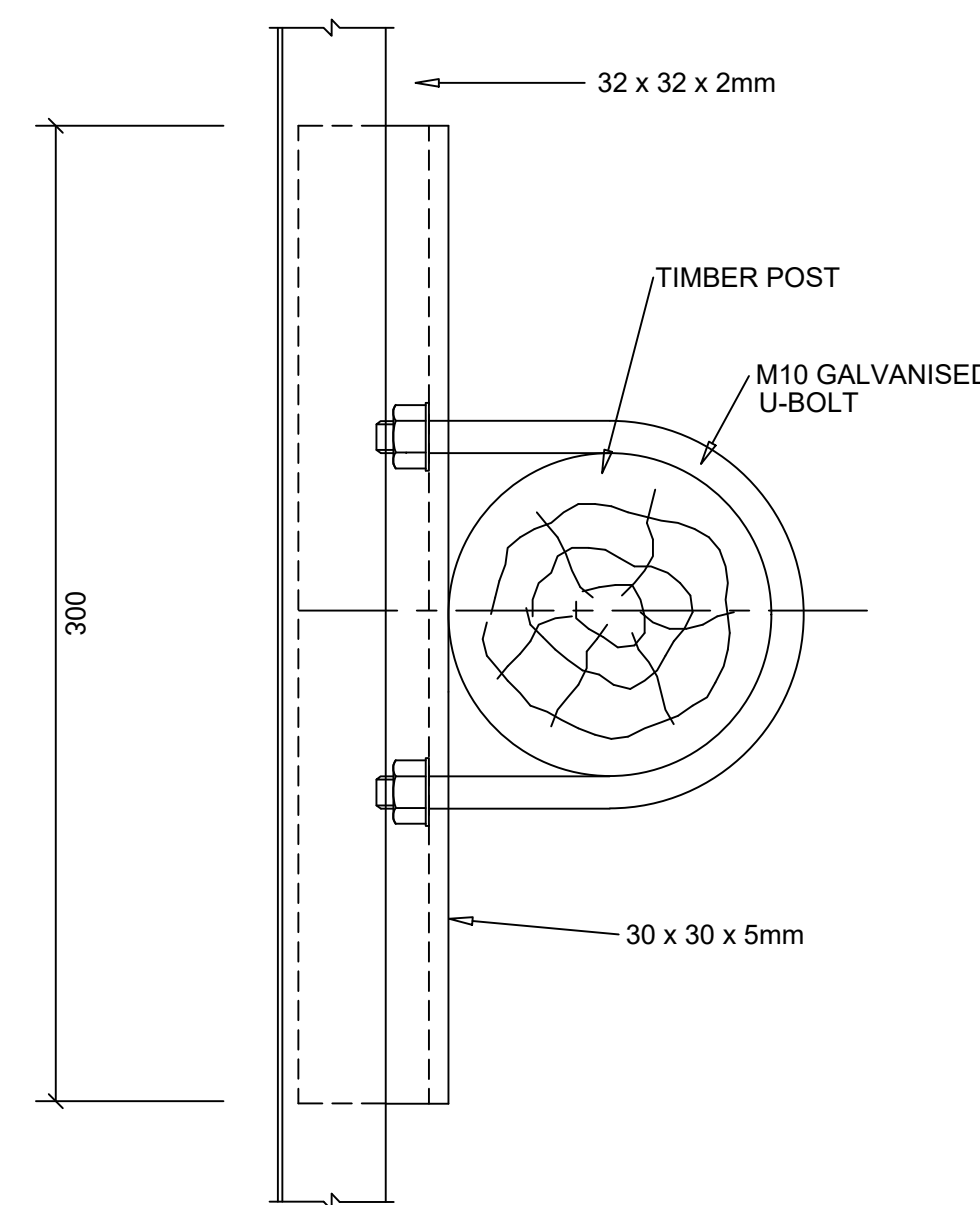
SIDE ELEVATION
N.T.S.



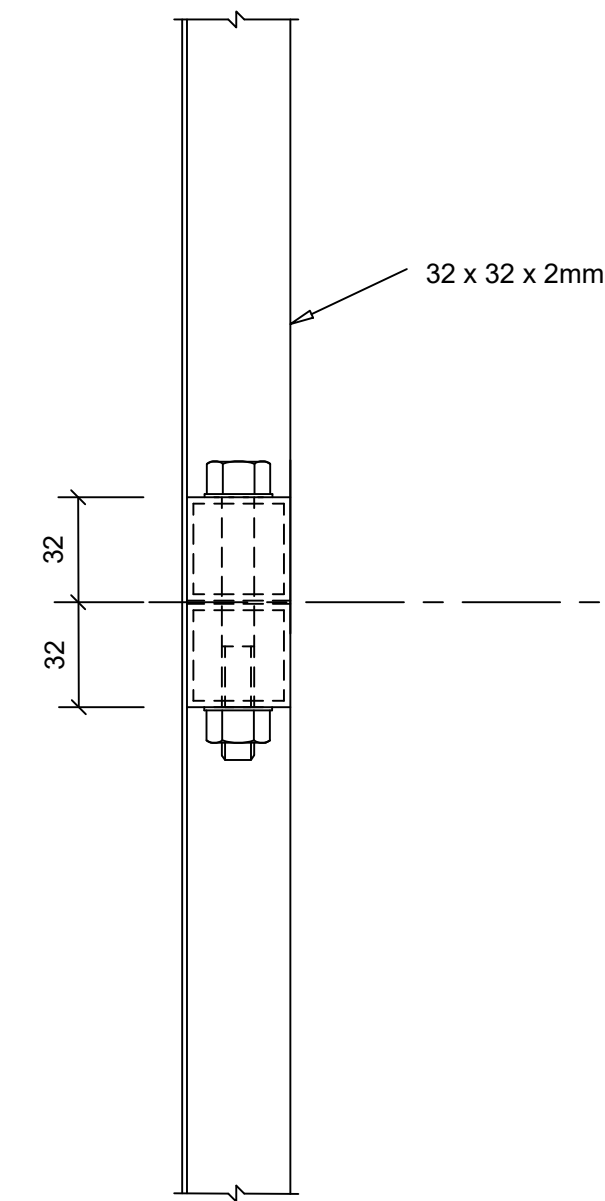
PLAN: SECTION D-D
N.T.S.



ELEVATION
ERECTION BRACKET
N.T.S.



SECTION A-A
(WITH U-BOLT)
N.T.S.



SECTION B-B
(AT JOINT OF SIGN)
N.T.S.

REVISIONS		
DATE	INIT	DESCRIPTION

PROJECT
REPLACEMENT OF BULK RAW WATER AC PIPELINE FROM LAPA PUMP STATION TO BELA-BELA WTW (WARD 1 AND 9)

CONTRACT NUMBER:
9/1/3 340 (21)

TITLE
BELA BELA (WARD 1 AND 9)
NOTICE BOARD

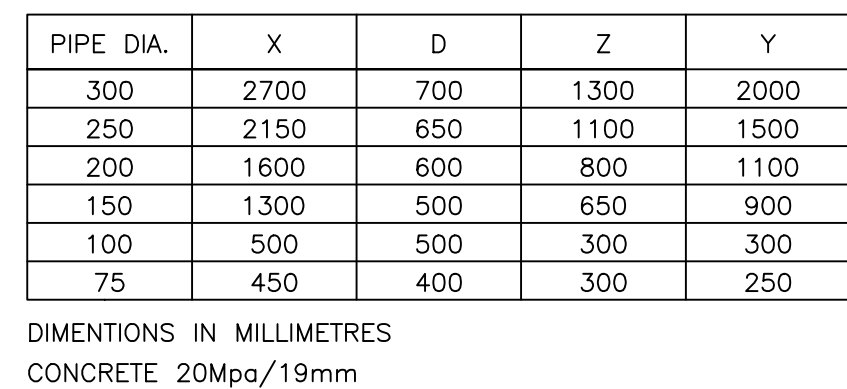
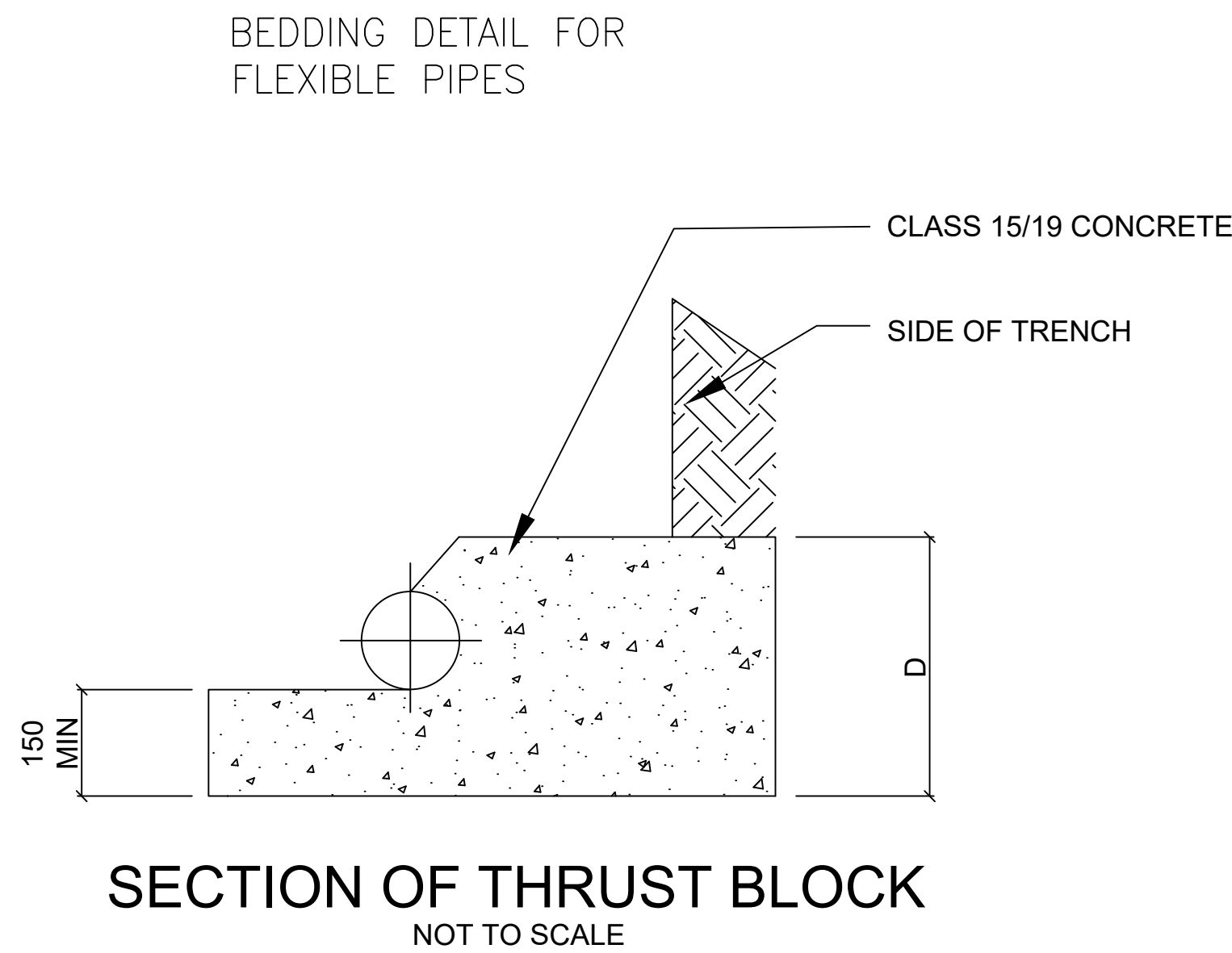
CLIENT:

BELA-BELA LOCAL MUNICIPALITY
CHRIS HAN DRIVE
PRIVATE BAG X1609,
BELA BELA, 0700
Tel: 014 736 8000

CONSULTANT:

PHAMELA ENGINEERING SERVICES
Unit 101, The Office Park,
90 Schoeman Street,
Polokwane, 0699
Tel: 015 065 0585 Fax: 086 669 6824

SCALE ON REDUCED DRAWING	
80mm SCALE ON ORIGINAL DRAWING	
DRAWN TK MASANGO	CHECKED F.BALOYI-Pr.ENG
APPROVED	
DATE FEBRUARY 2024	SCALE 1:1000
DRAWING NO: STD/BBLM/02/2024/002	REVISION 0



DIMENSIONS IN MILLIMETRES
CONCRETE 15Mpa/19mm

DIMENSIONS IN MILLIMETRES
CONCRETE 20Mpa/19mm

DIMENSIONS IN MILLIMETRES
CONCRETE 20Mpa/19mm

[illegible]

PROJECT:	
REPLACEMENT OF BULK RAW WATER AC PIPELINE FROM LAPA PUMP STATION TO BELA-BELA WTW (WARD 1 AND 9)	
CONTRACT NUMBER:	9/1/3 340 (21)

TITLE	BELA BELA (WARD 1 AND 9)
	BEDDING DETAILS
	(THRUST BLOCK DETAILS)

CLIENT:



BELA BELA MUNICIPALITY

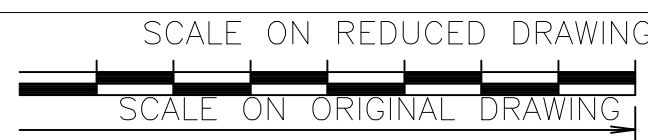
BELA BELA LOCAL MUNICIPALITY
CHRIS HAN DRIVE
PRIVATE BAG X1609,
BELA BELA, 0700
Tel: 014 736 8000

CONSULTANT:

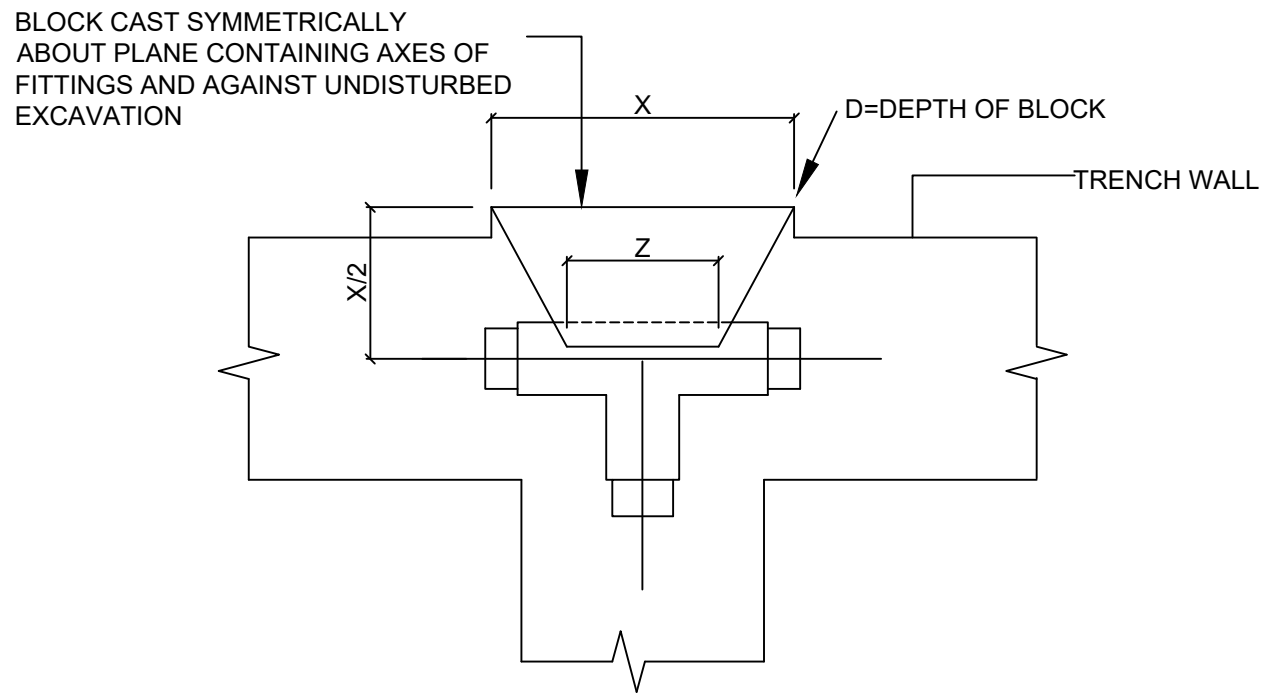


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010 880 0138

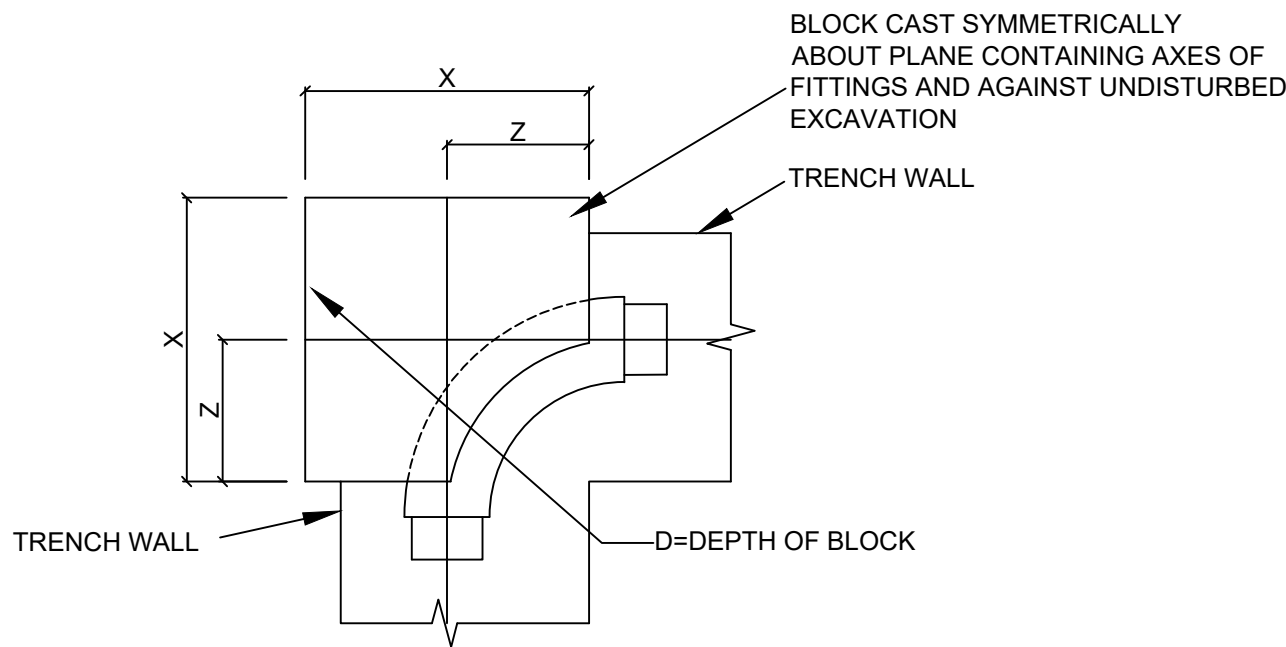


DRAWN TK MASANGO		CHECKED F.BALOYI-Pr.ENG	
APPROVED			
DATE FEBRUARY 2024		SCALE AS SHOWN	
DRAWING NUMBER STD/BBLM/02/2024 004			REVISION 0



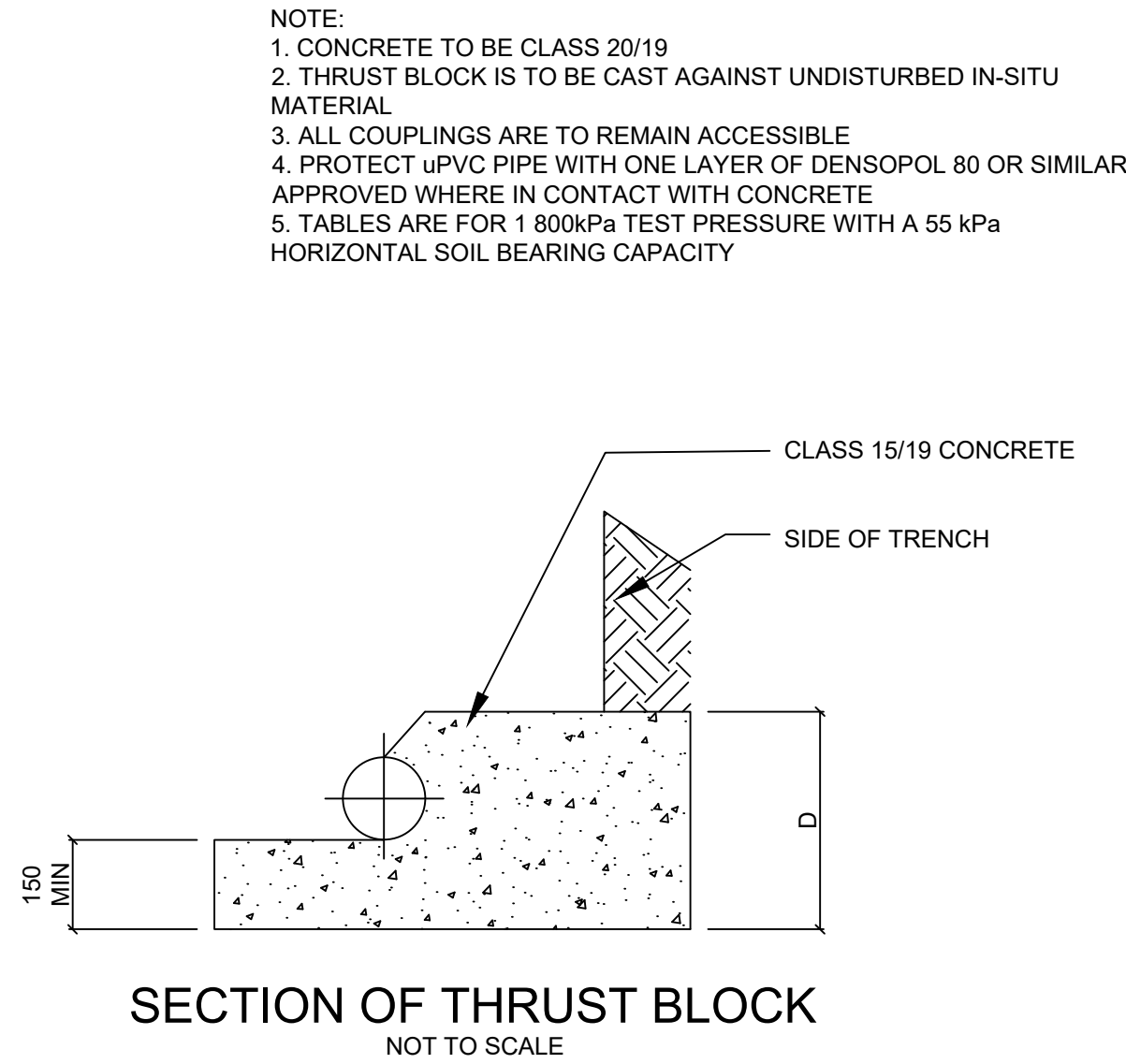
TEE	THRUST BLOCK DIMENSION (mm)		
PIPE DIAMETER	X	D	Z
300	2 000	1 200	550
225	1 500	900	425
200	1 300	800	350
150	1 000	600	275
100	650	400	200
75	500	300	150
50	350	200	100

TEE AND END CAP
NOT TO SCALE

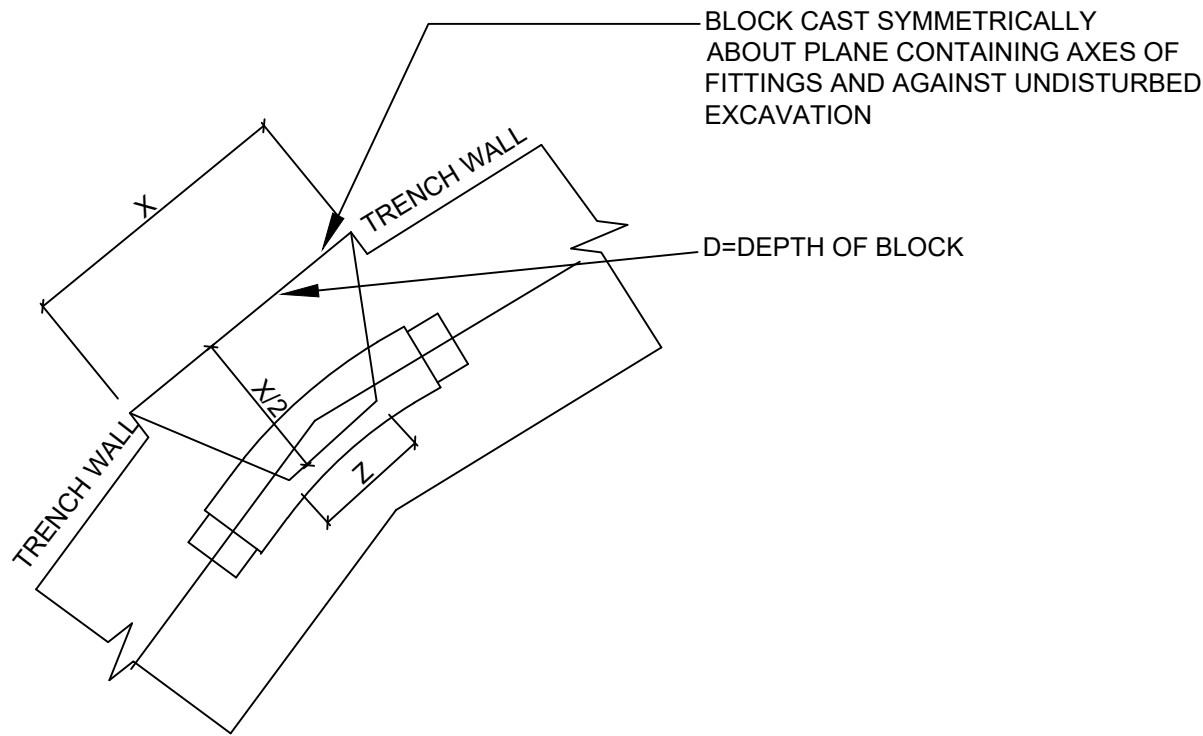


90° BEND	THRUST BLOCK DIMENSION (mm)		
PIPE DIAMETER	X	D	Z
300	2 500	1 300	575
225	1 900	1 000	500
200	1 650	900	475
150	1 200	700	400
100	750	500	250
75	550	400	175
50	350	300	125

TEE AND END CAP
NOT TO SCALE

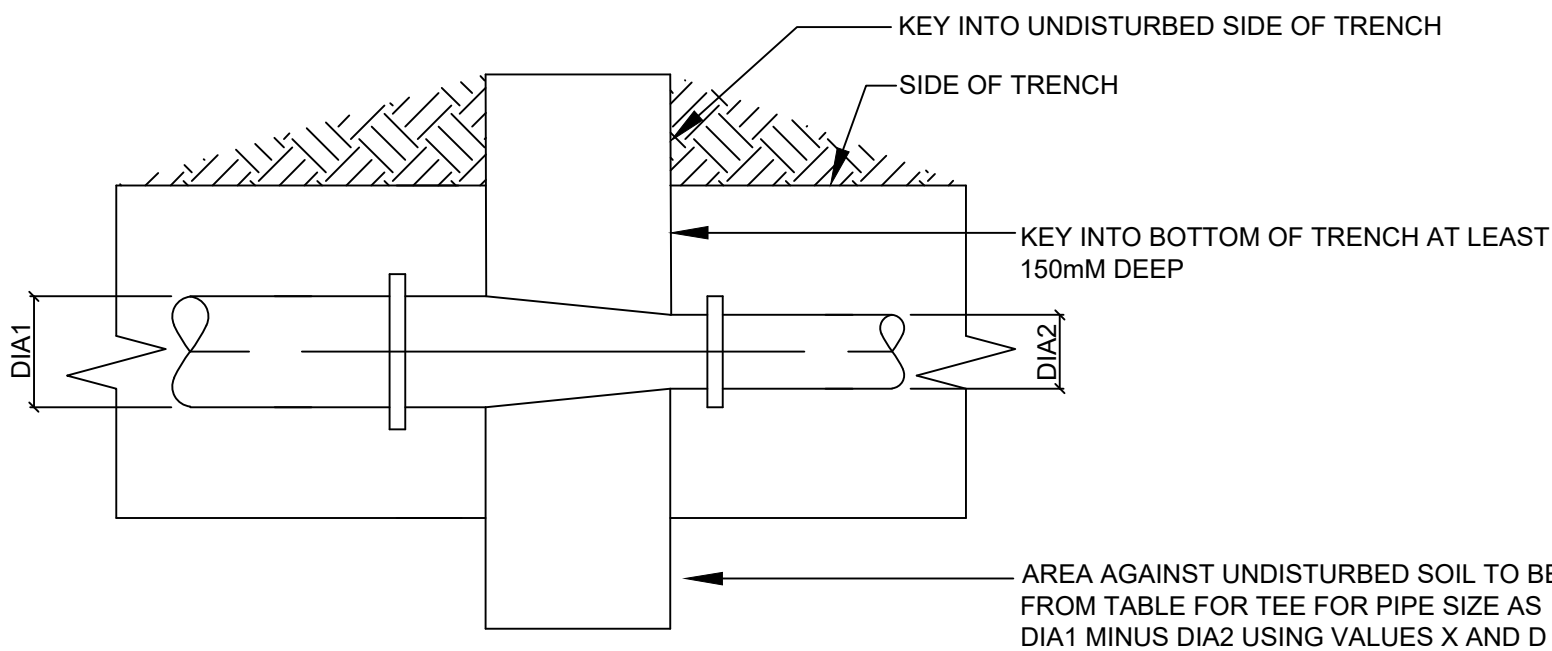


SECTION OF THRUST BLOCK
NOT TO SCALE



45° BEND	THRUST BLOCK DIMENSION (mm)		
PIPE DIAMETER	X	D	Z
300	1 500	1 200	375
225	1 150	900	350
200	1 000	800	325
150	750	600	275
100	500	400	175
75	375	300	125
50	250	200	75

45° AND 22.5° BEND
NOT TO SCALE



REDUCER
NOT TO SCALE

VERSION/AMENDMENTS			
No.	DATE	DESCRIPTION	AUTHORISED BY

CLIENT

BELA BELA LOCAL MUNICIPALITY
CHRIS HAN DRIVE
PRIVATE BAG X1609,
BELA BELA, 0700
Tel: 014 736 8000

CONSULTANT:

PHAMELA ENGINEERING SERVICES
Unit 101,The Office Park,
90 Schoeman Street,
Polokwane, 0699
Tel: 015 065 0585 Fax: 086 669 6824

PROJECT NAME:
REPLACING OF BULK RAW WATER AC PIPELINE FROM LAPA PUMP STATION TO BELA-BELA WATER TREATMENT WORKS (WARD 1 AND 2)
CONTRACT NUMBER:9/1/3/340 (21)
DRAWING TITLE:
BELA BELA (WARD 1 AND 2)
THRUST BLOCKS DETAILS

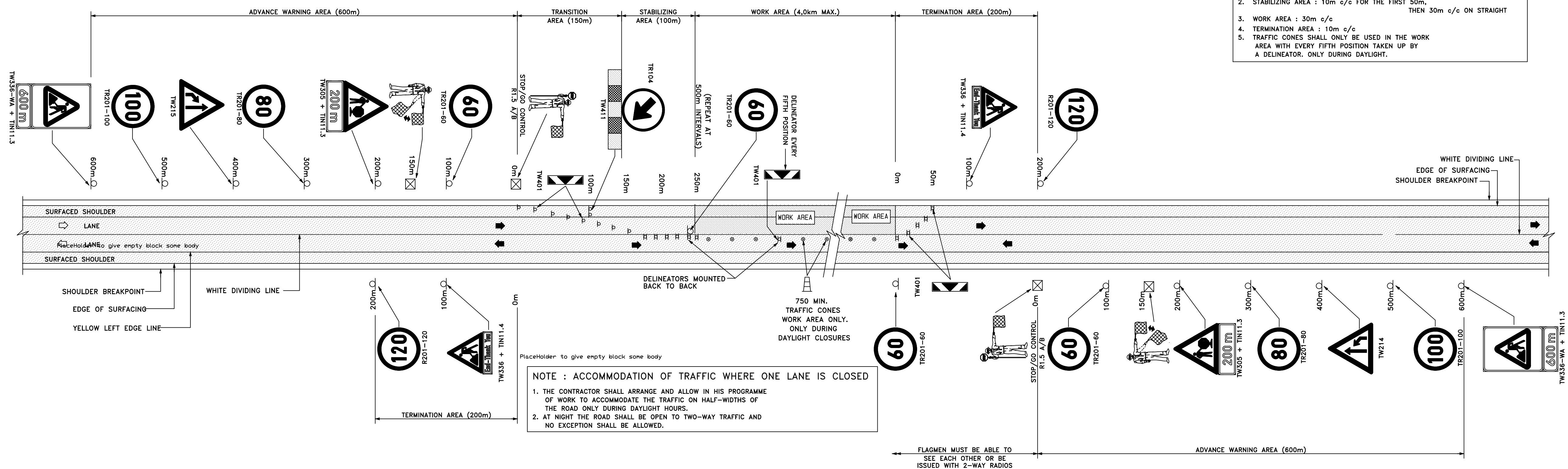
LEGEND


SCALE ON ORIGINAL DRAWING: 1:20000
APPROVED:
CLIENT OR ASSIGNEE: DATE:
CLIENT DRAWING No.: BLM/MUN/10/2023/SD/03
CLIENT REF No.:

DRAWN: TK MASANGO	CHECKED: F.BALOYI-PI.ENG
APPROVED:	DATE: FEBRUARY 2024
APPROVED ON BEHALF OF PHAMELA ENGINEERING SERVICES	
ENGINEER: DATE:	DRAWING No.: BBLM/STD/02/2024/004
VERSION: 0	

NOTE : SPACING OF DELINEATORS / CONES

1. TRANSITION AREA : 10m c/c
2. STABILIZING AREA : 10m c/c FOR THE FIRST 50m,
THEN 30m c/c ON STRAIGHT
3. WORK AREA : 30m c/c
4. TERMINATION AREA : 10m c/c
5. TRAFFIC CONES SHALL ONLY BE USED IN THE WORK
AREA WITH EVERY FIFTH POSITION TAKEN UP BY
A DELINEATOR. ONLY DURING DAYLIGHT.

[illegible]

SIGN SEQUENCE FOR WORK ON SHOULDERS ON SINGLE CARRIAGEWAY ROADS

REVISIONS		
DATE	INIT	DESCRIPTION

PROJECT:	REPLACEMENT OF BULK RAW WATER AC PIPELINE FROM LAPA PUMP STATION TO BELA-BELA WTW (WARD 1 AND 9)
CONTRACT NUMBER:	9/1/3 340 (21)

TITLE	BELA BELA (WARD 1 AND 9)
	TRAFFIC ACCOMODATION

CLIENT:



BELA BELA MUNICIPALITY

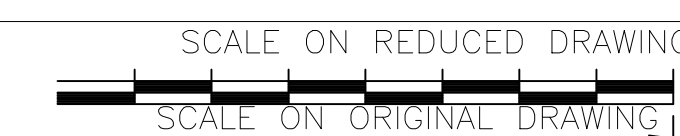
BELA BELA LOCAL MUNICIPALITY
CHRIS HAN DRIVE
PRIVATE BAG X1609,
BELA BELA, 0700
Tel: 014 736 8000

CONSULTANT:

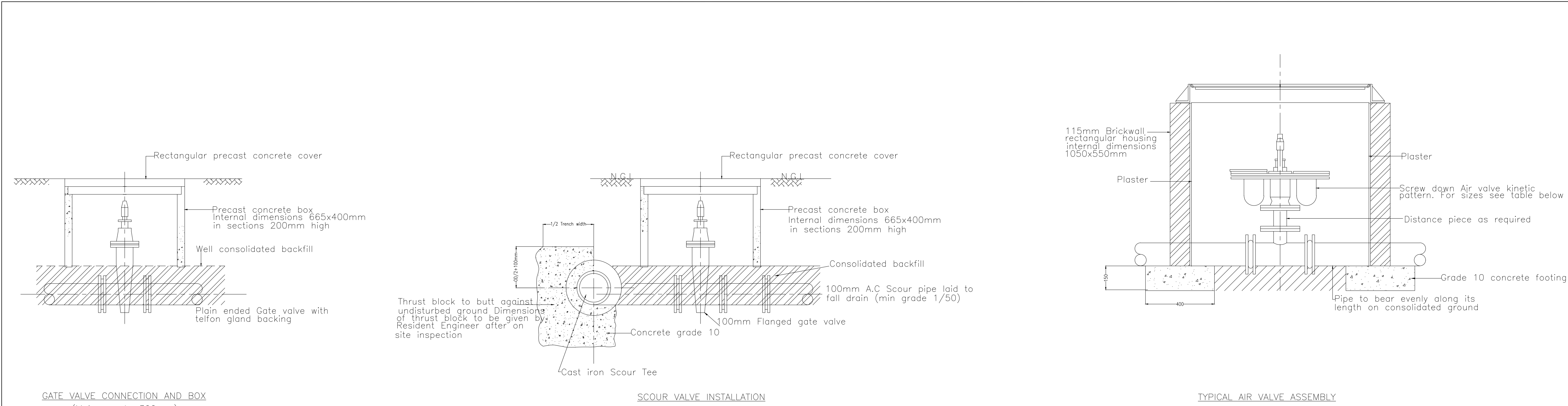
The logo for Phamella Engineering Services (Pty) Ltd features the company name in a stylized font. 'PHAMELLA' is in red with a green outline, and 'ENGINEERING SERVICES (Pty) Ltd' is in white. The text is set against a blue background with a green and yellow swoosh. Below the text is a graphic of a road with white dashed lines receding into the distance.

Unit 101, The Office Park,
90 Schoeman Street,
Polokwane, 0699

Tel: 015 295 2059/015 065 0585/
010 880 0138



DRAWN TK MASANGO	CHECKED F.BALOYI-Pr.ENG
APPROVED	
DATE FEBRUARY 2024	SCALE AS SHOWN
DRAWING NUMBER STD/BBLM/02/2024/003	REVISION 0

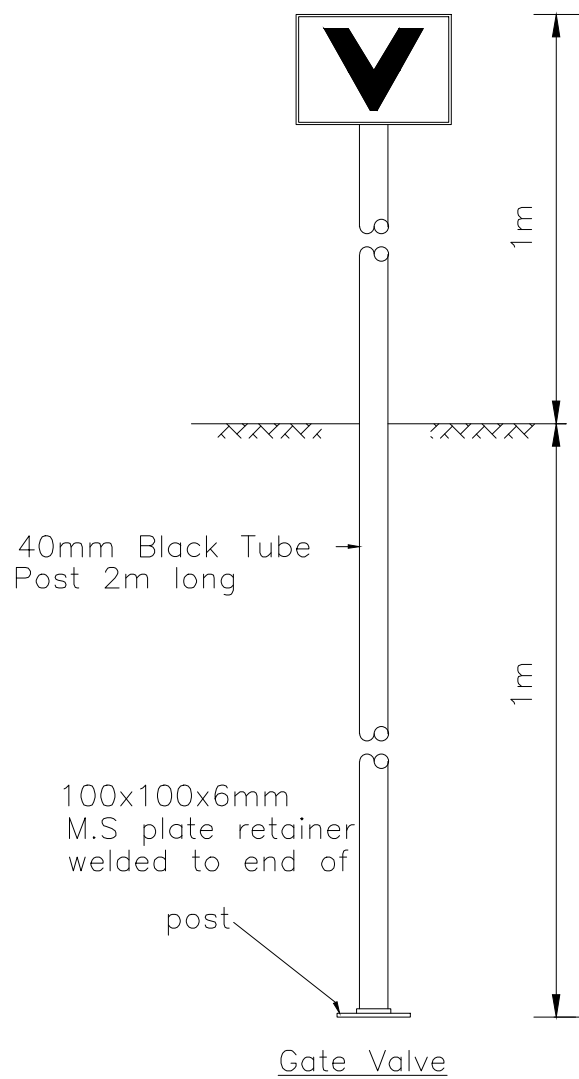
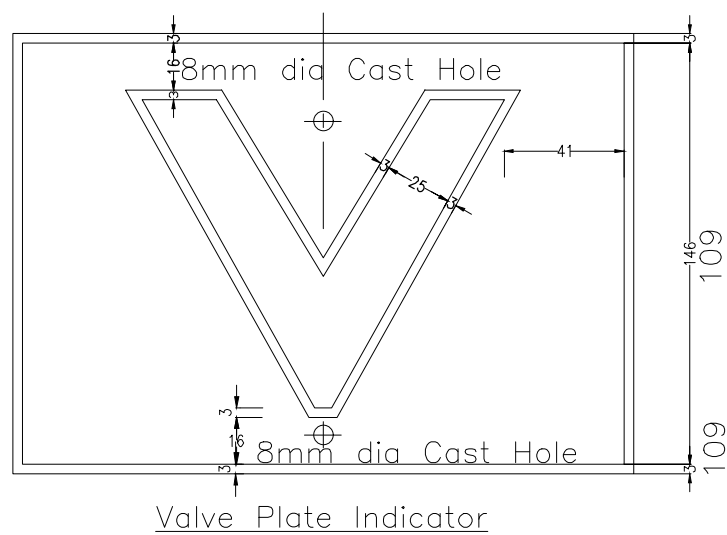


GATE VALVE CONNECTION AND BOX
(Mains up to 300mm)

SCOUR VALVE INSTALLATION

TYPICAL AIR VALVE ASSEMBLY

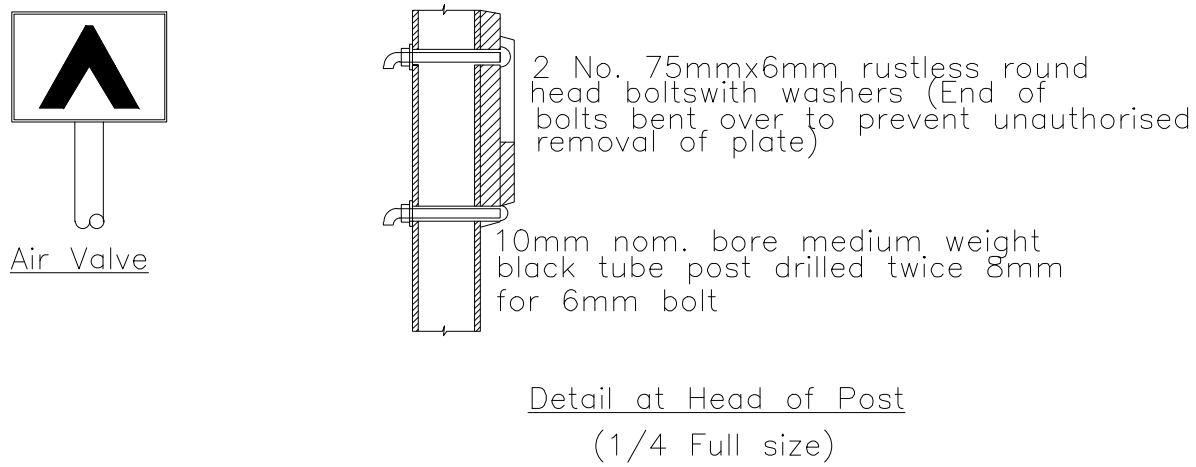
SIZE OF MAIN	SIZE AND TYPE OF AIR VALVE
Up to 300mm	25mm single ball orifices
300mm to 450mm	75mm Double
525mm and over	100mm Double



NOTES:

1. Marker plates to MUNICIPALITY STANDARDS
2. The plates shall be thoroughly cleaned, primed with a zinc based primer and painted two coats black enamel gloss for the figures, and two coats yellow reflective paint for the background. Posts shall be similarly painted yellow.
3. Marker posts shall not be concreted into the ground unless for any reason (e.g. rock) the base of the post is less than 600mm below ground level when 0.03 cu m of concrete shall be placed around the pipe above the level of the retainer plate.
4. Where a zone valve is used its position shall be indicated by a ZV marker plate. The surface box shall be circular and the 600mm square concrete slab shall be painted yellow.

DETAILS OF MARKER PLATES AND POSTS



REVISIONS		
DATE	INIT	DESCRIPTION

PROJECT:
REPLACEMENT OF BULK RAW WATER AC PIPELINE FROM LAPA PUMP STATION TO BELA-BELA WTW (WARD 1 AND 9)

CONTRACT NUMBER:
9/1/3 340 (21)

TITLE BELA BELA (WARD 1 AND 9)
VALVE ASSEMBLY AND BOXES DETAILS

CLIENT:

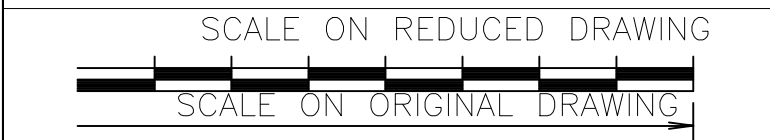


BELA BELA MUNICIPALITY
BELA BELA LOCAL MUNICIPALITY
CHRIS HAN DRIVE
PRIVATE BAG X1609,
BELA BELA, 0700
Tel: 014 736 8000

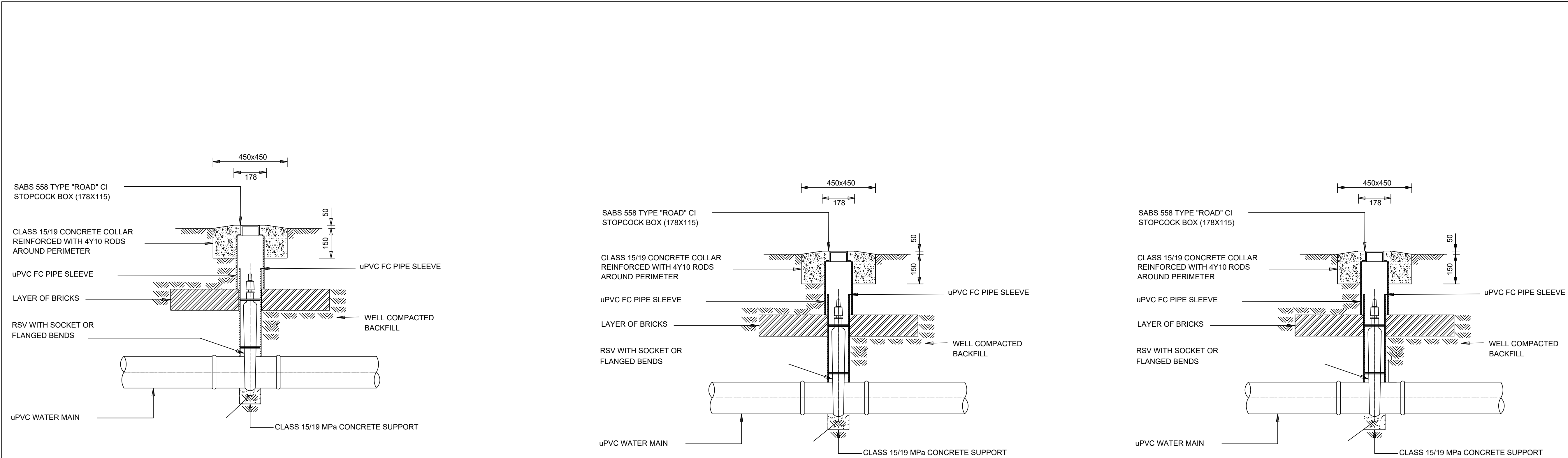
CONSULTANT:



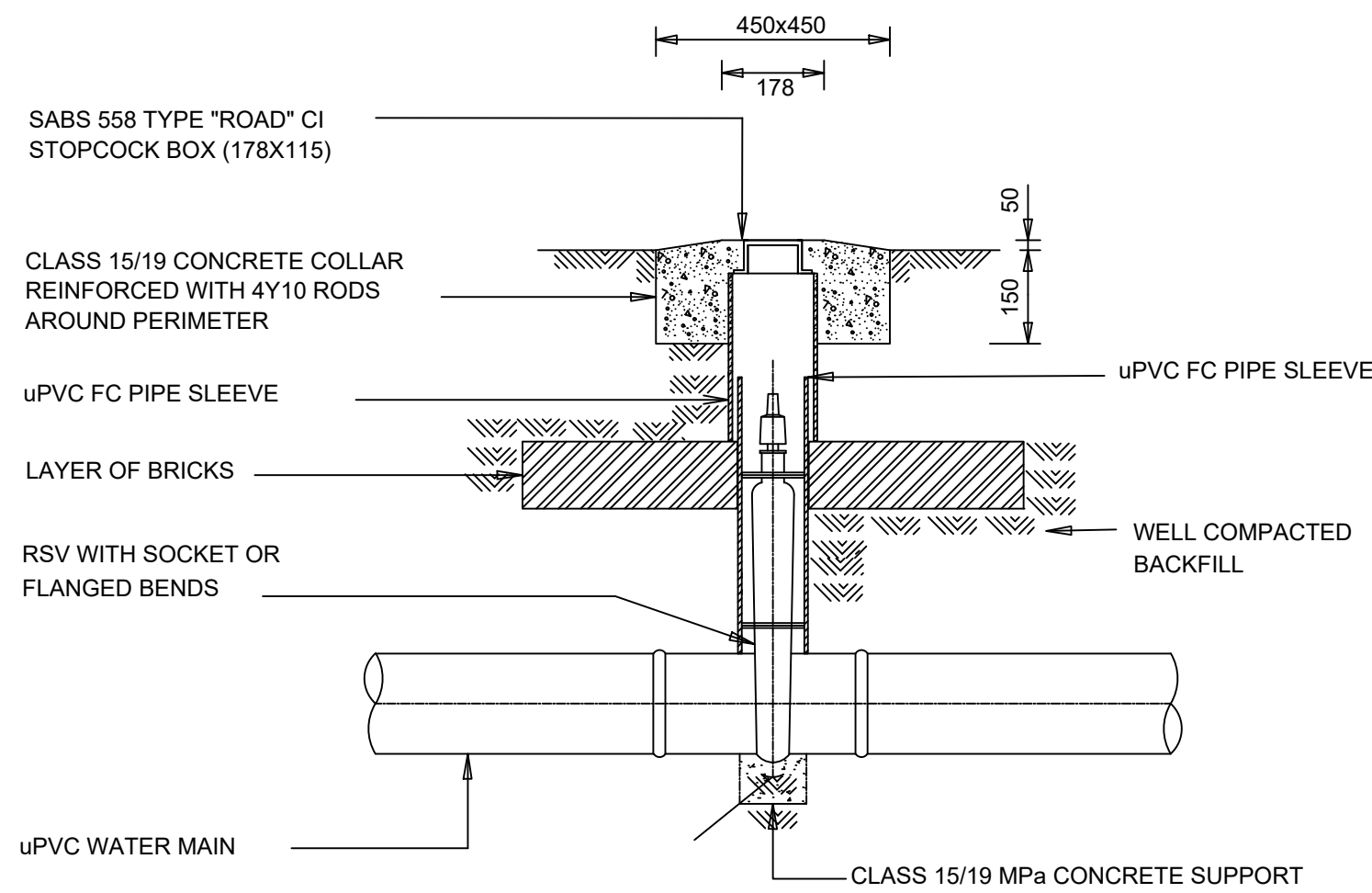
Unit 101, The Office Park,
90 Schoeman Street,
Polokwane, 0699
Tel: 015 295 2059/015 065 0585/
010 880 0138



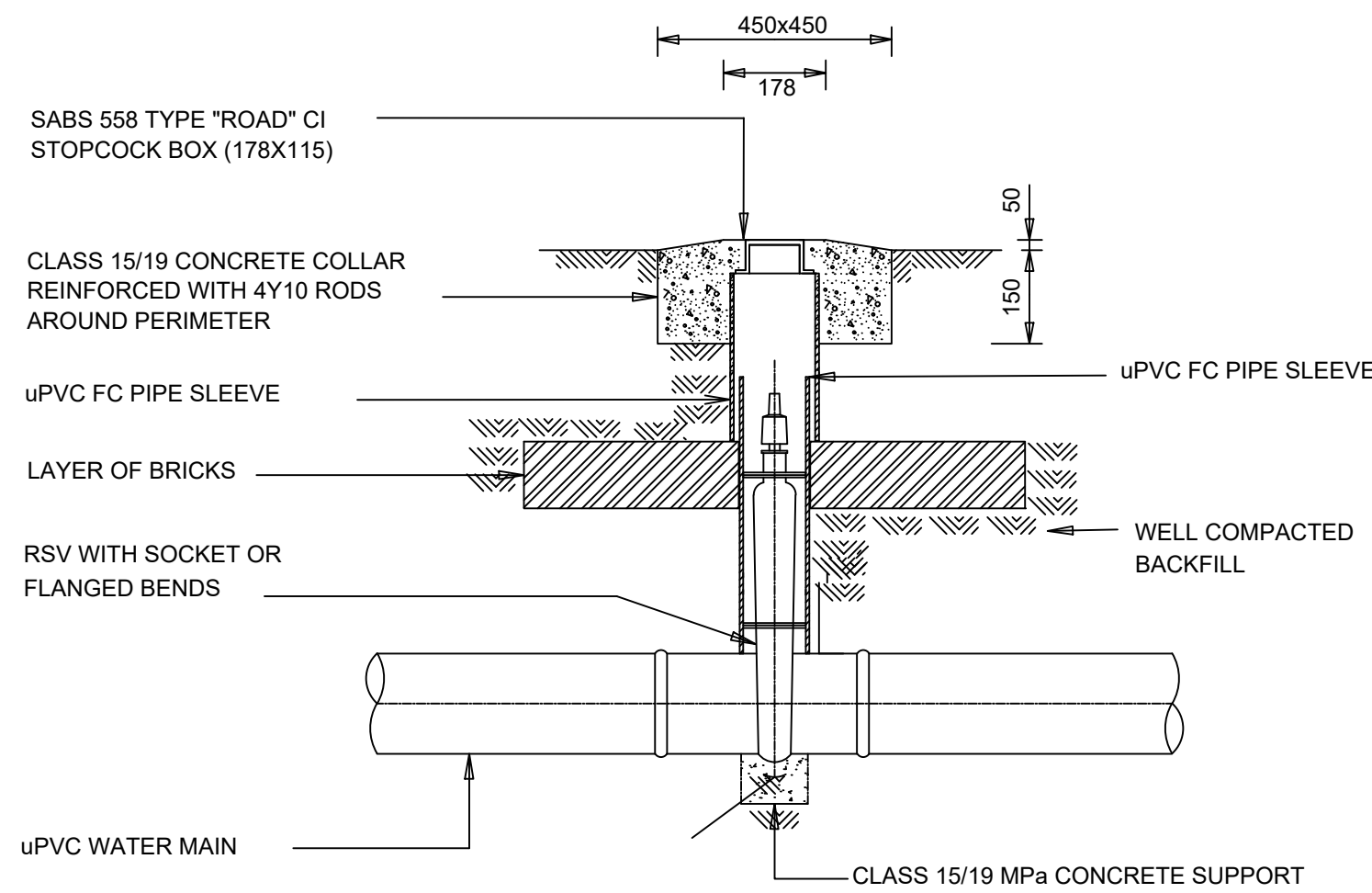
DRAWN TK_MASANGO	CHECKED F.BALOYI-Pr.ENG
APPROVED	
DATE FEBRUARY 2024	SCALE AS SHOWN
DRAWING NUMBER STD/BBLM/02/2024/006	REVISION △



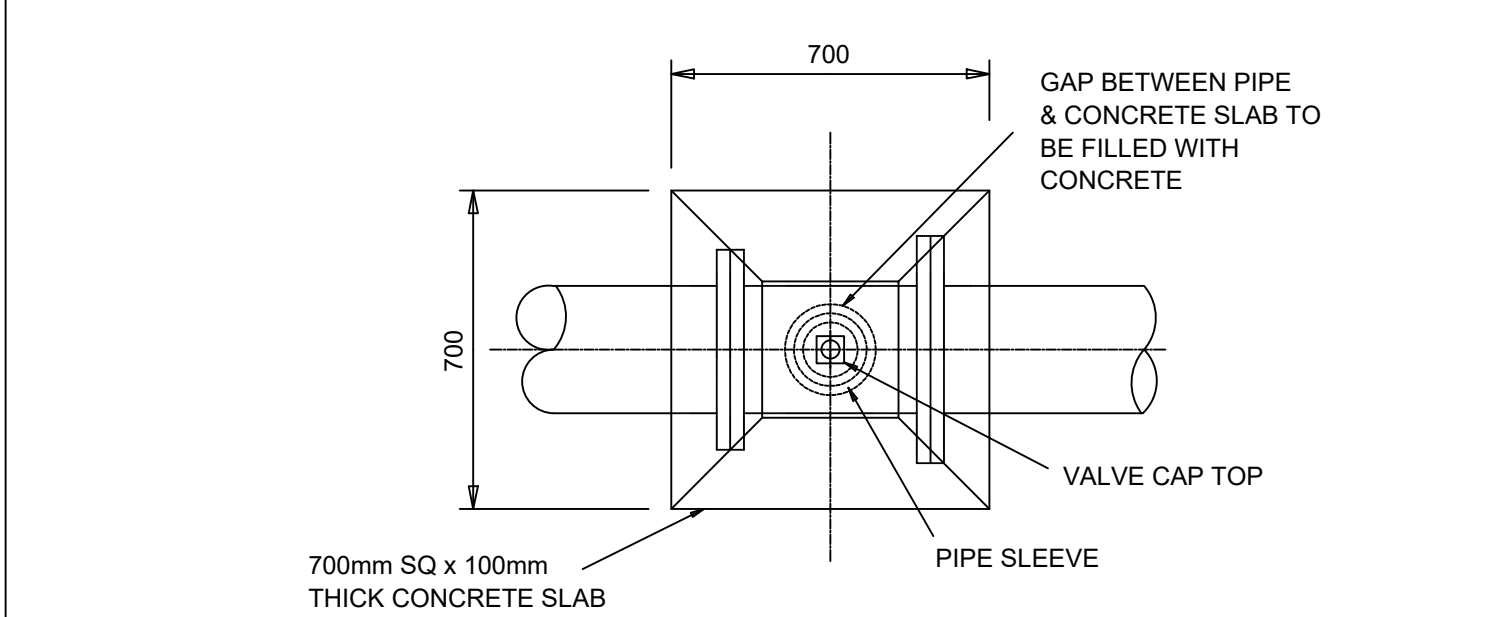
SECTION: ISOLATING VALVE BOX



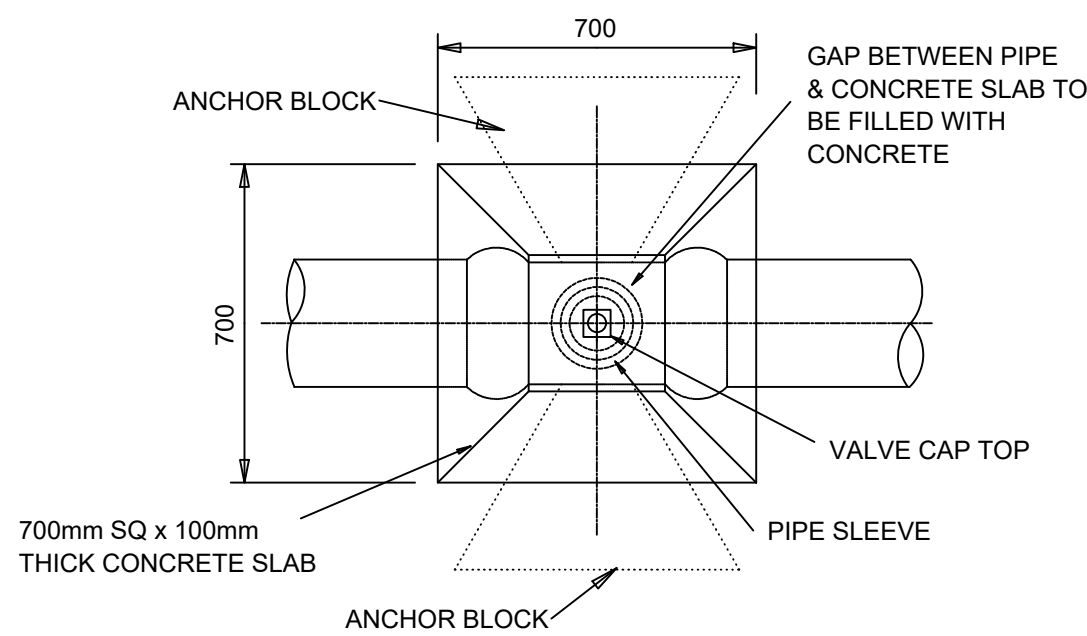
SECTION: ISOLATING VALVE BOX



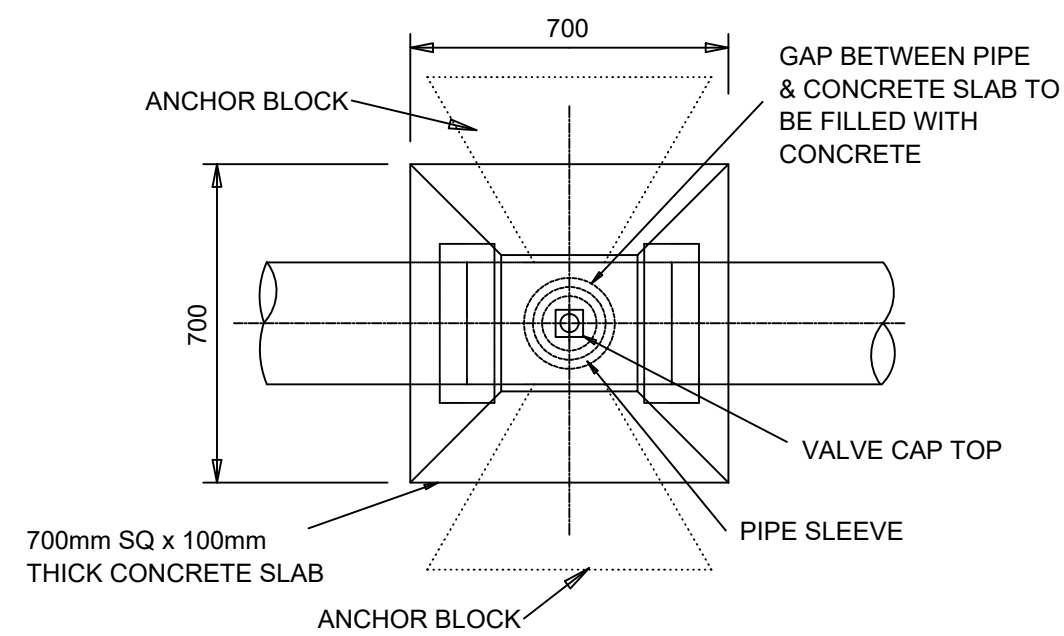
SECTION: ISOLATING VALVE BOX SECTION



VALVE BOX FOR 50-300ND FLANGED PIPEWORK

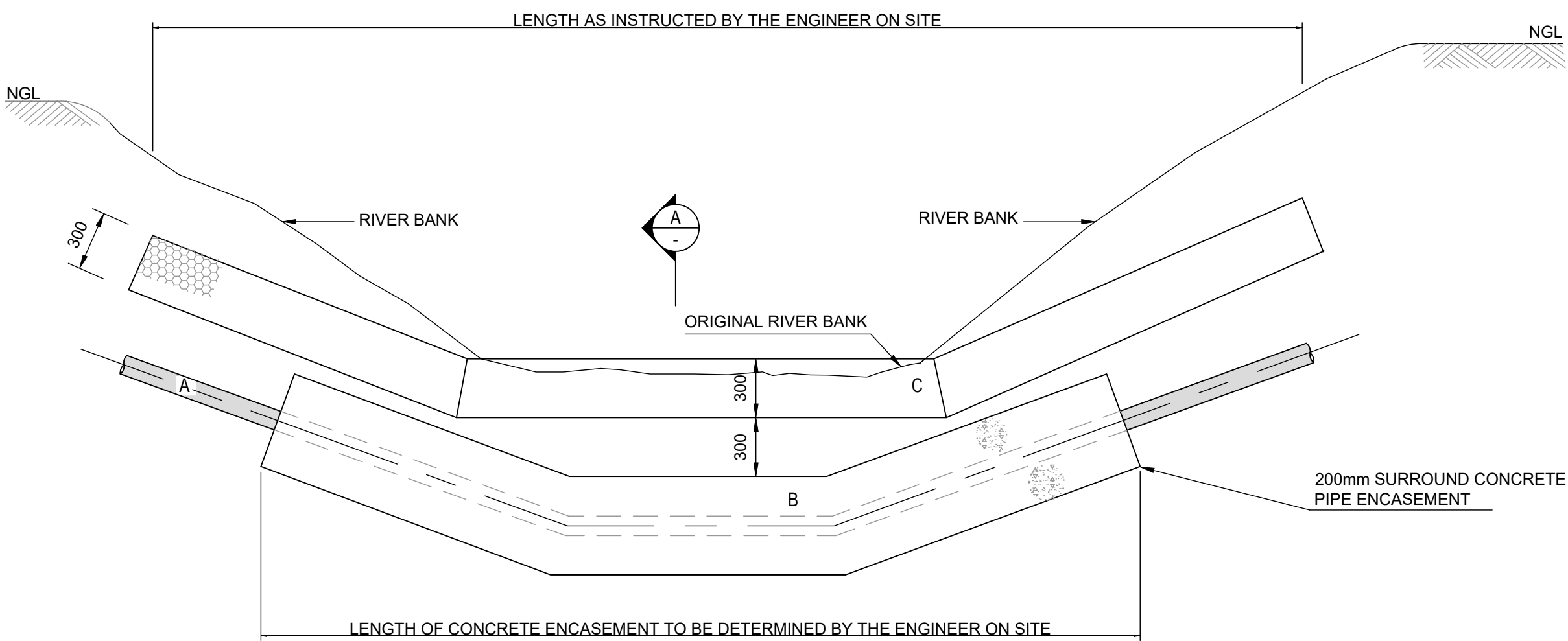


VALVE BOX FOR 63-200ND PVO PIPEWORK



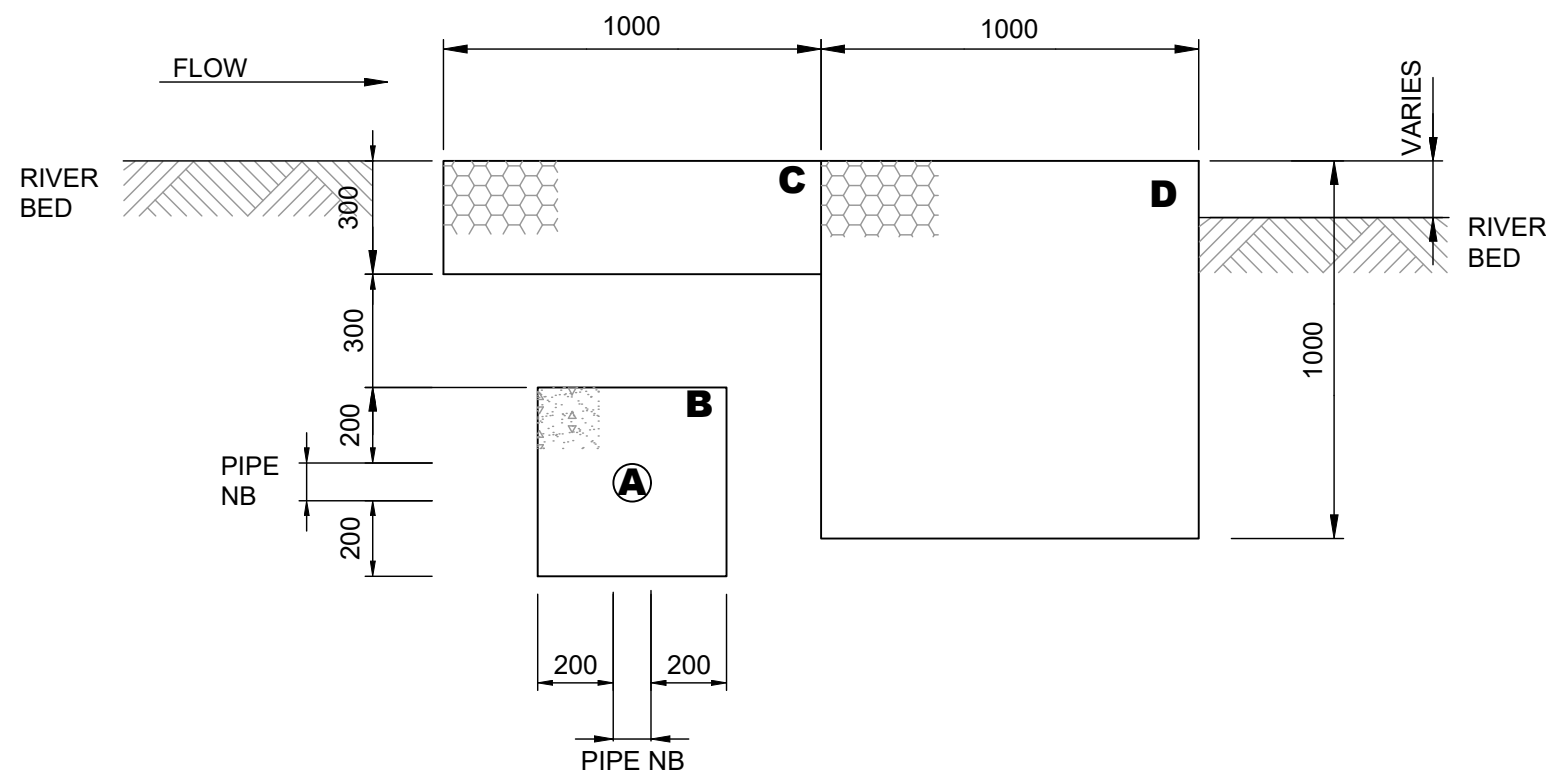
VALVE BOX FOR 50-300ND FIBRE CEMENT PIPEWORK

REVISIONS		
DATE	INIT	DESCRIPTION
PROJECT: REPLACEMENT OF BULK RAW WATER AC PIPELINE FROM LAPA PUMP STATION TO BELA-BELA WTW (WARD 1 AND 9)		
CONTRACT NUMBER: 9/1/3 340 (21)		
TITLE BELA BELA (WARD 1 AND 9) VALVE DETAILS		
CLIENT:  BELA BELA LOCAL MUNICIPALITY CHRIS HAN DRIVE PRIVATE BAG X1609, BELA BELA, 0700 Tel: 014 736 8000		
CONSULTANT:  Unit 101,The Office Park, 90 Schoeman Street, Polokwane, 0699 Tel: 015 295 2059/015 065 0585/ 010 880 0138		
SCALE ON REDUCED DRAWING  SCALE ON ORIGINAL DRAWING		
DRAWN TK_MASANGO		CHECKED F.BALOYI-Pr.ENG
APPROVED		
DATE FEBRUARY 2024		SCALE AS SHOWN
DRAWING NUMBER STD/BBLM/02/2024/005		REVISION 

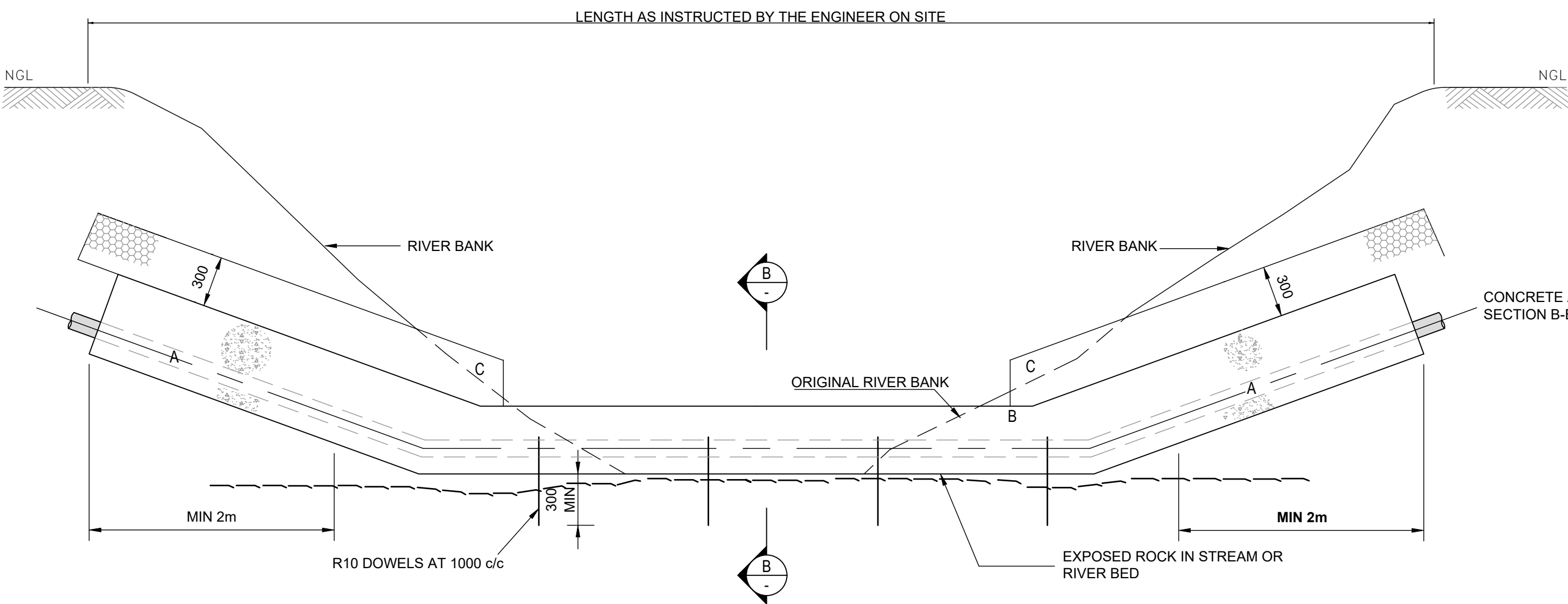


EXCAVATED RIVER CROSSING [1]
ELEVATION
SCALE 1:25

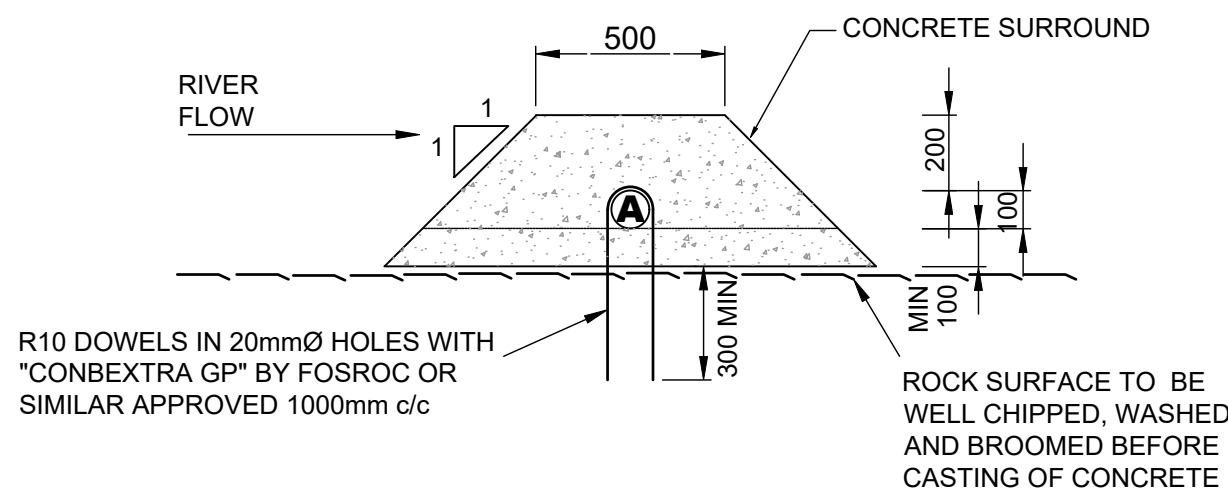
COMPONENT LIST	
COMPONENT	DESCRIPTION
A	PIPE
B	200mm SURROUND CONCRETE ENCASEMENT
C	300mm THICK RENO MATTRESS
D	1m x 1m GABION BASKET(LENGTH AS REQUIRED)



EXCAVATED RIVER CROSSING [1]
SECTION A-A
SCALE 1:20



EXPOSED ROCK CROSSING [2]
ELEVATION
SCALE 1:25



EXPOSED ROCK CROSSING [2]
SECTION B-B
SCALE 1:20

EXCAVATED RIVER CROSSING [1]			
	CONDITIONS ENCOUNTERED WHERE RIVER BED EXCAVATED TO AT LEAST 2m (NO HARD ROCK)	SUGGESTED COMPONENTS TO BE USED	PIPE TYPE (A)
1)	GENTLY FALLING RIVER BED AND SLOW / LOW VELOCITY WITH: (GENERALLY TOWARDS END OF RIVER AND CLOSER TO RIVER MOUTH).	a) MINIMAL EVIDENCE OF ONGOING EROSION IN RIVER BED AND BANKS. b) SOME EVIDENCE OF EROSION IN RIVER BED AND BANKS.	HDPE
2)	MODERATELY FALLING RIVER BED AND MEDIUM RIVER VELOCITY WITH: (GENERALLY IN MIDDLE AREA OF RIVER).	a) MINIMAL EVIDENCE OF ONGOING EROSION IN RIVER BED AND BANKS. b) SOME EVIDENCE OF EROSION IN RIVER BED AND BANKS. c) SEVERE EROSION EVIDENT.	HDPE HDPE STEEL
3)	STEEP RIVER BED AND HIGH RIVER VELOCITIES WITH: (GENERALLY NEAR RIVER SOURCE).	a) SOME EVIDENCE OF ONGOING EROSION IN RIVER BED AND BANKS. b) SEVERE EROSION EVIDENT.	STEEL STEEL

EXPOSED ROCK CROSSING [2]			
	CONDITIONS ENCOUNTERED WHERE A ROCK SHELF IS PRESENT AT THE RIVER BED OR JUST BELOW	SUGGESTED COMPONENTS TO BE USED	PIPE TYPE
1)	GENTLY FALLING RIVER BED AND SLOW / LOW VELOCITY WITH: (GENERALLY TOWARDS END OF RIVER AND CLOSER TO RIVER MOUTH).	a) MINIMAL EVIDENCE OF ONGOING EROSION IN RIVER BED AND BANKS. b) SOME EVIDENCE OF EROSION IN RIVER BED AND BANKS.	HDPE
2)	MODERATELY FALLING RIVER BED AND MEDIUM RIVER VELOCITY WITH: (GENERALLY IN MIDDLE AREA OF RIVER).	a) MINIMAL EVIDENCE OF ONGOING EROSION IN RIVER BED AND BANKS. b) SOME EVIDENCE OF EROSION IN RIVER BED AND BANKS. c) SEVERE EROSION EVIDENT.	HDPE HDPE STEEL
3)	STEEP RIVER BED AND HIGH RIVER VELOCITIES WITH: (GENERALLY NEAR RIVER SOURCE).	a) MINIMAL EVIDENCE OF ONGOING EROSION IN RIVER BED AND BANKS. b) SEVERE EROSION EVIDENT.	STEEL STEEL

NOTES

- CONCRETE TO BE CLASS 20/19.
- SITE ENGINEER TO INSPECT & APPROVE ALL WORKS BEFORE CASTING OF CONCRETE.
- THIS DRAWING IS INTENDED FOR USE AS A GUIDELINE TO THE SITE ENGINEER. EACH CROSSING ENCOUNTERED IS DIFFERENT AND APPROPRIATE JUDGEMENT MUST BE USED TO ESTABLISH WHICH ASPECT OF THE DRAWING TO USE SOME GENERAL CRITERIA ARE PRESENT TO ASSIST IN THIS SELECTION
- WHERE HDPE PIPE IS USED, THE RIVER CROSSING MUST CONSIST OF A CONTINUOUS LENGTH OF PIPE (NO JOINTS) EXTENDING AT LEAST 20m FROM THE RIVER BANK ON EACH SIDE. (NO JOINTS IN OR NEAR THE RIVER).
- R10 DOWEL BENT TO SUIT PIPE DIAMETER ON SITE.
- DISTURBED GROUND TO BE RECOMPACTED TO AT LEAST THE SAME DENSITY AS UNDISTURBED INSITU MATERIAL EVERY EFFORT MUST BE MADE TO MINIMIZE DISTURBANCE TO THE NATURAL RIVER.
- WHERE uPVC PIPES ARE REQUIRED TO CROSS RIVERS OR EROSION GULLIES, THE PIPE MUST BE REPLACED WITH SUITABLE GRADE AND DIAMETER HDPE OR STEEL PIPE IN ACCORDANCE WITH THE ENGINEERS' INSTRUCTION.
- NO CONSTRUCTION ACTIVITY CAN COMMENCE WITHIN 32m OF A WATERCOURSE WITHOUT THE ENGINEERS APPROVAL.

No.	DESCRIPTION	NAME	DATE
0	FOR CONSTRUCTION	TV	
A	FOR TENDER	TV	

REVISION



CHRIS HAN DRIVE, PRIVATE BAG X1609, BELA BELA, 0920

TEL: (014) 736 8000
FAX: (014) 736 3288

BELA BELA LOCAL MUNICIPALITY

APPROVED:
CAPACITY:
DATE:



SCALE ON A1 : AS SHOWN
DESIGNED: T.K MASANGO
DRAWN : T.K MASANGO
CONTRACT No. 9/1/3/340 (21)
DESIGN CHECKED BY: F. BALOYI PR. Eng
CAPACITY: PROJECT ENGINEER

DATE: MARCH 2025
CHECKED: F. BALOYI PR. Eng
CHECKED: F. BALOYI PR. Eng

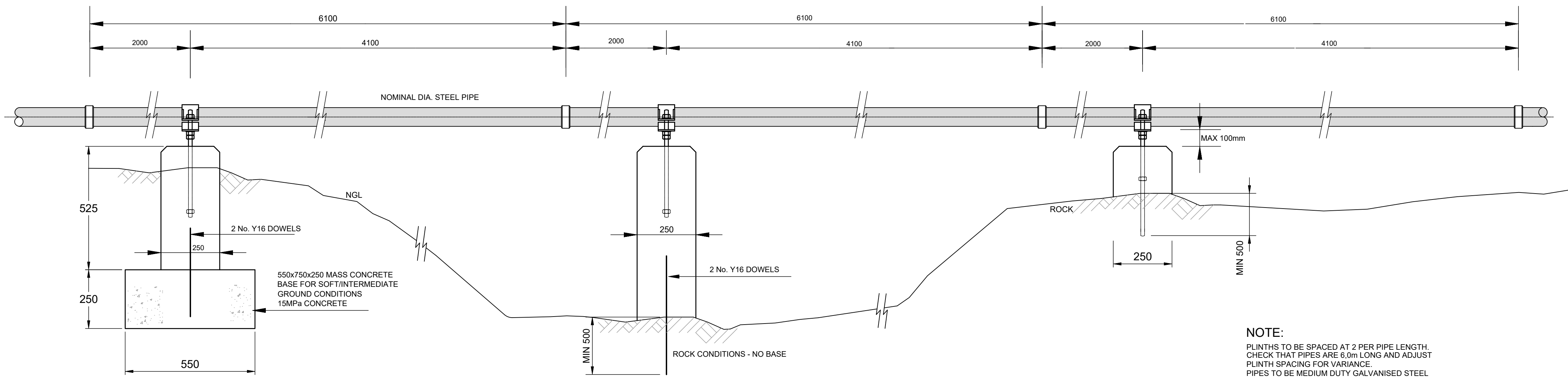
PROJECT: RAW WATER PIPELINE BELA-BELA

TITLE: RIVER AND EROSION GULLY CROSSINGS

DESCRIPTION: TYPICAL DETAILS

DRAWING No. BBLM/STD/03/2025/420

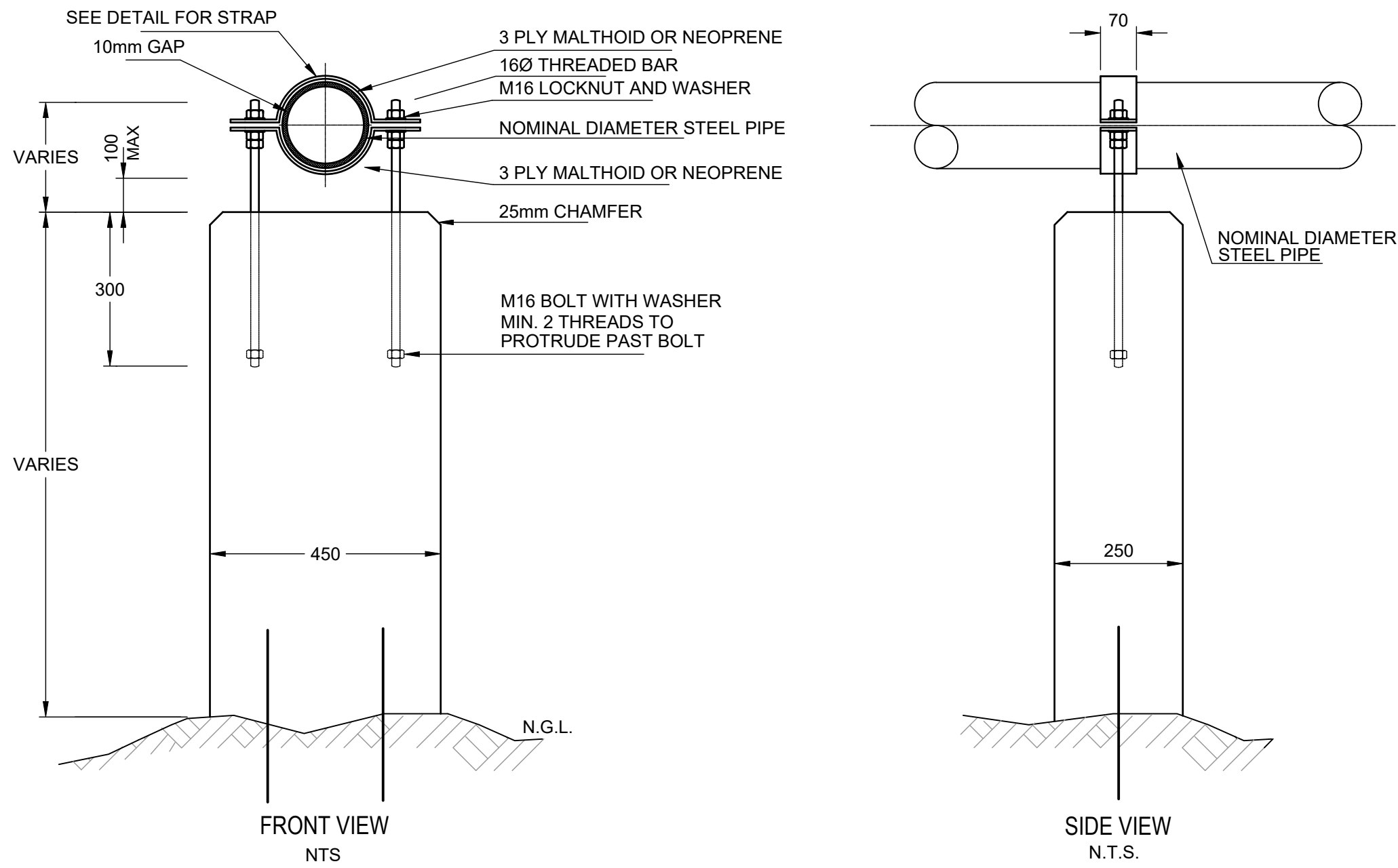
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DETAIL WHERE ROCK LEVEL IS GREATER THAN 1000mm BELOW NGL

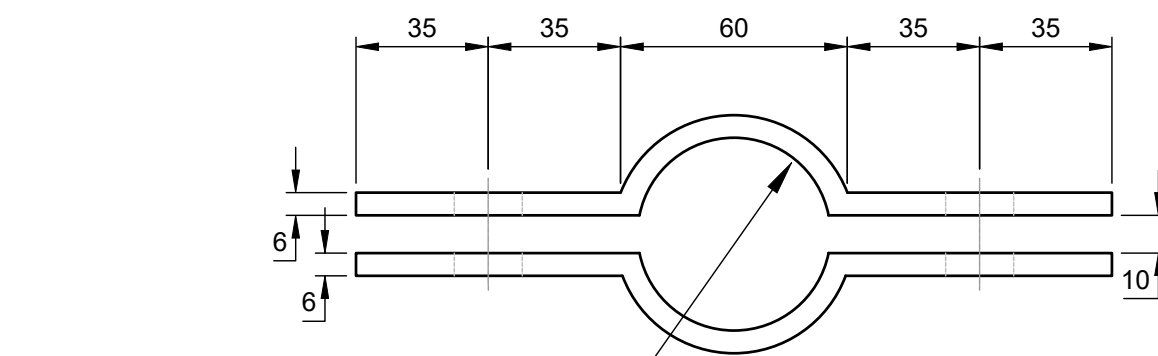
TYPICAL VIEW ON PIPELINE
N.T.S.

NOTE:
PLINTHS TO BE SPACED AT 2 PER PIPE LENGTH.
CHECK THAT PIPES ARE 8.0m LONG AND ADJUST
PLINTH SPACING FOR VARIANCE
PIPES TO BE MEDIUM DUTY GALVANISED STEEL

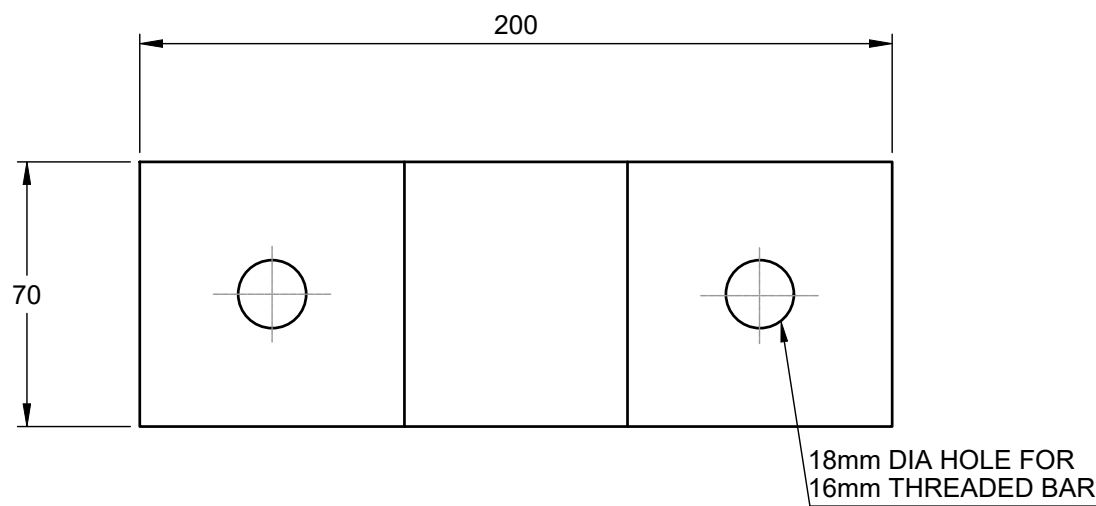


FRONT VIEW
NTS

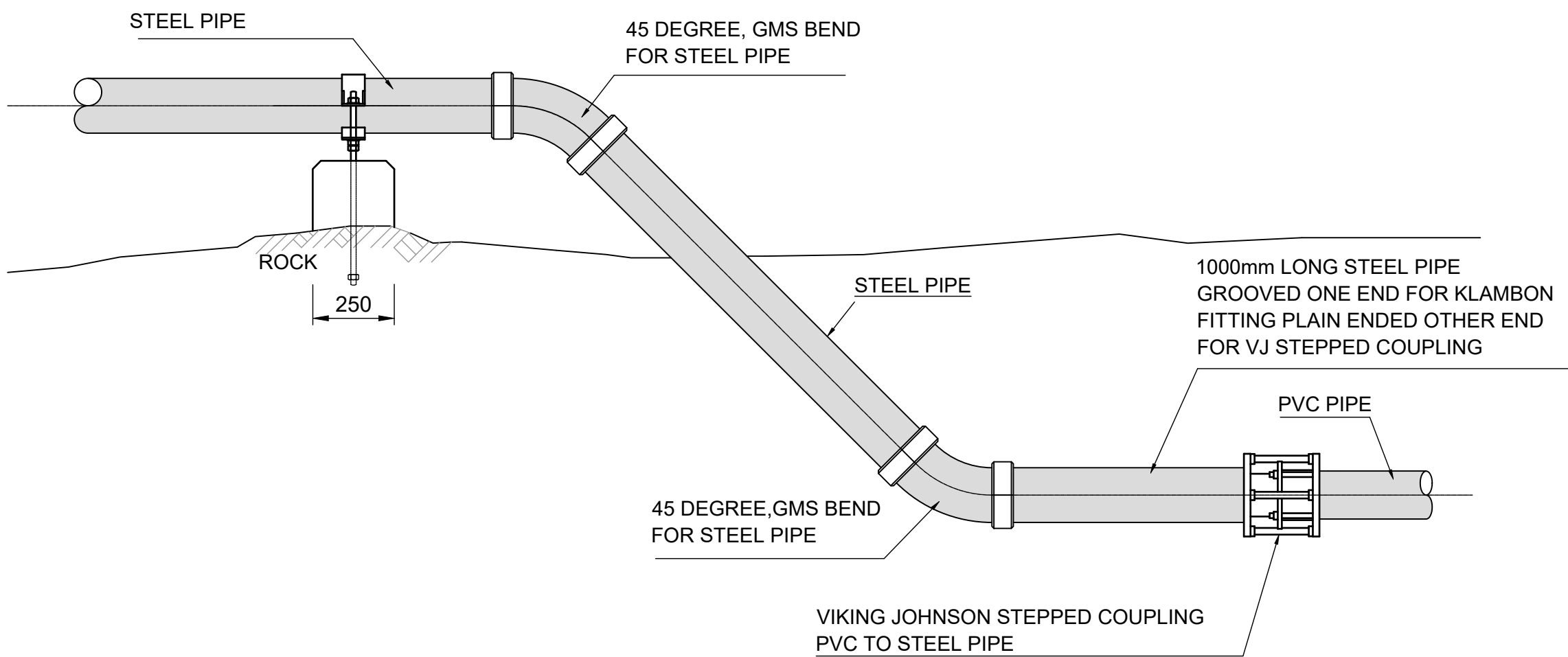
SIDE VIEW
N.T.S.



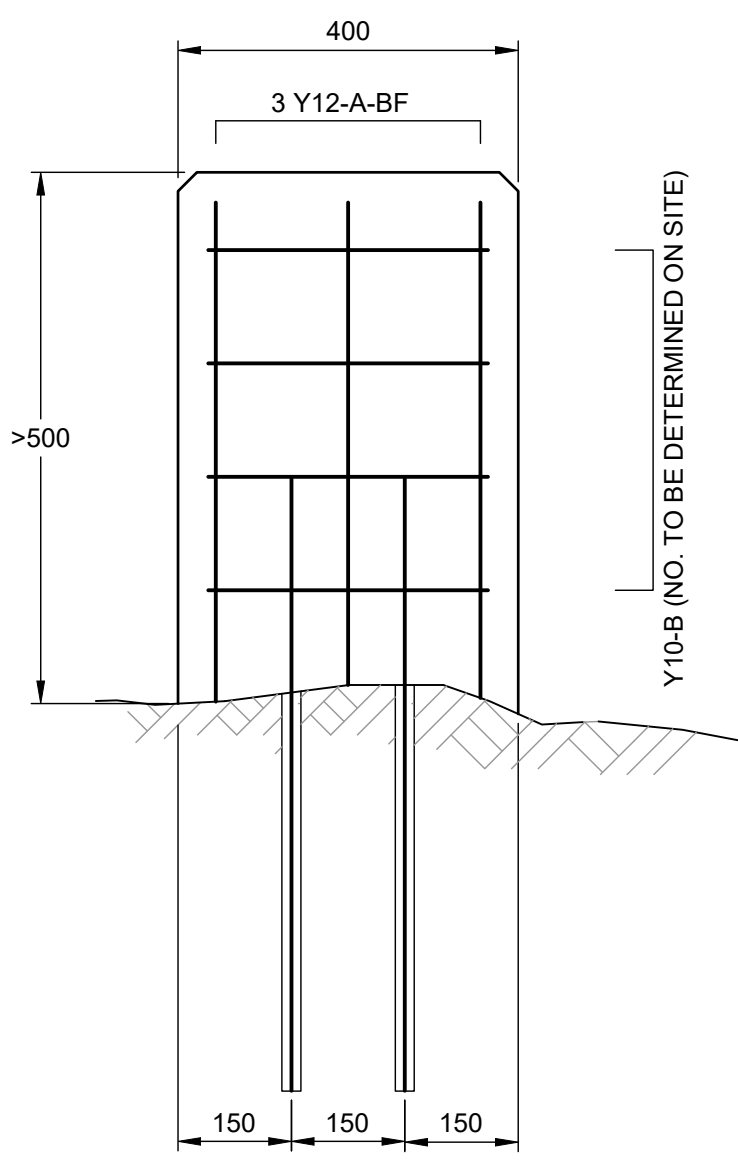
DETAIL OF MILD STEEL
PIPE STRAP
SCALE 1:2



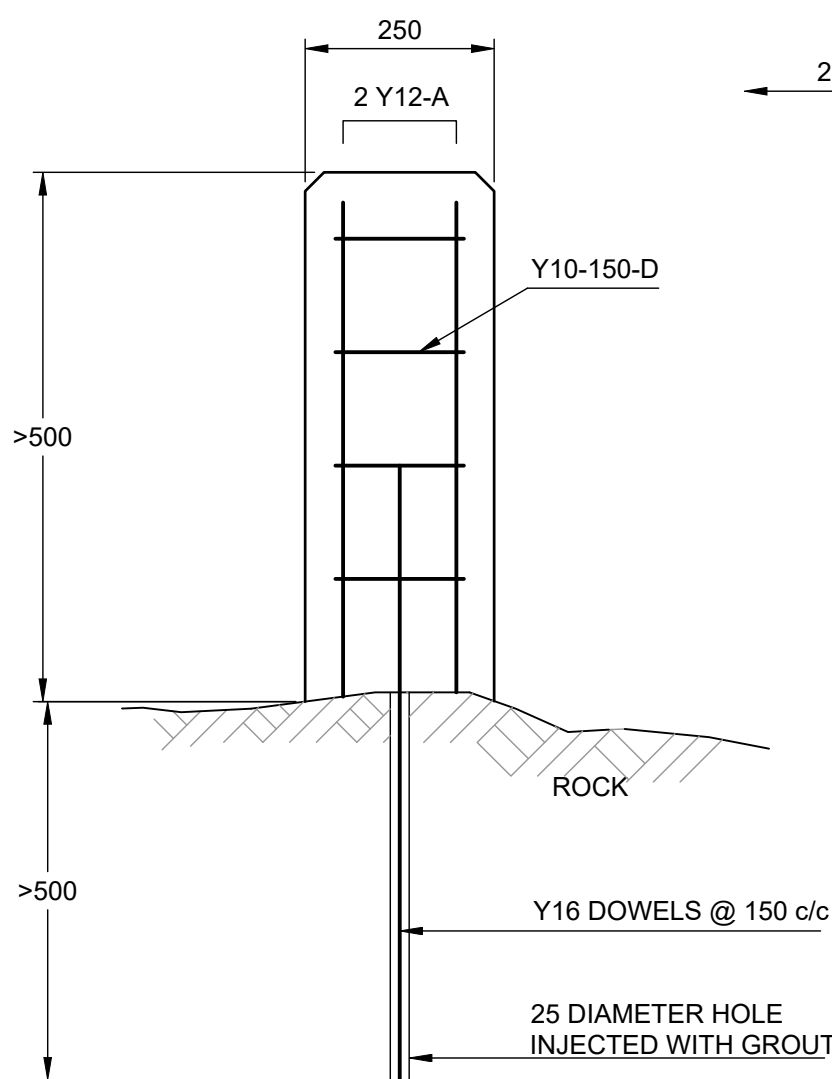
PLAN VIEW OF STRAP
SCALE 1:2



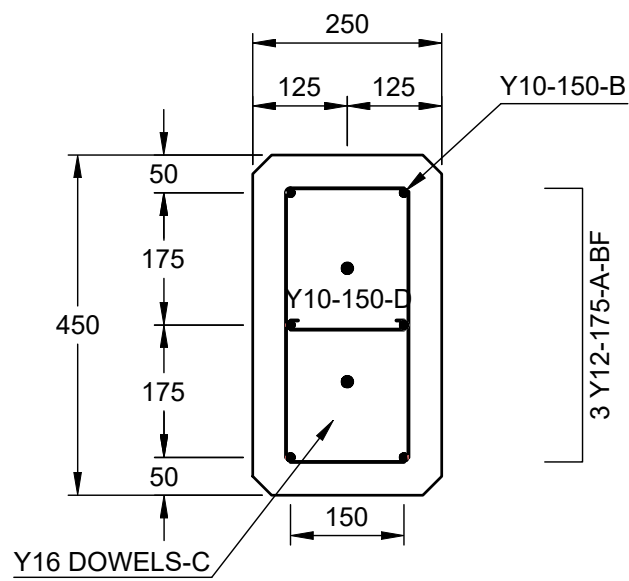
TYPICAL VIEW ON PIPELINE
N.T.S.



FRONT ELEVATION
SCALE 1:10



SIDE ELEVATION
SCALE 1:10



PLAN
NTS

- NOTES
1. ROCK BASE TO BE THOROUGHLY CLEANED AND BROOMED BEFORE PLACING CONCRETE.
 2. THE WATER:CEMENT RATIO OF THE GROUT SHALL BE 0.4.
 3. FINE AGGREGATE SHALL CONSIST OF VERY FINE SAND AND SHALL PASS THROUGH A 0.600mm SIEVE.
 4. THE AGGREGATE CONTENT IN THE GROUT SHALL NOT EXCEED 30% OF THE MASS OF THE CEMENT.
 5. 40mm COVER TO ALL REBAR.
 6. BF = BOTH FACES
 7. BARS CUT TO SUIT ON SITE DEPENDING ON PLINTH HEIGHT.

DETAIL OF REBAR FOR PLINTH
HEIGHT > 500mm

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. CONCRETE CLASS 25/19
3. 40mm COVER TO ALL REINFORCED PIPE SUPPORTS AND BOLTS TO BE GALVANISED TO ISO 1461-2000
4. ALL EDGES TO BE 25mm CHAMFER
5. BOLTS TO BE PROTECTED USING DENSO BITUMEN
6. ALL WELDS TO BE 6mm CONTINUOUS FILLET TO SABS 044
7. PIPE STRAP AND SUPPORT TO BE 6mm GALVANISED PRESSED MILD STEEL.
8. THREADS OF BOLT TO BE LUBRICATED BEFORE NUT IS TIGHTENED.
9. PLINTHS ARE TO BE FOUNDED ON HARD UNWEATHERED ROCK, APPROVED ON SITE BY THE ENGINEER AND DOWELLED INTO THE ROCK AND GROUTED WITH LOCKSET S40 (FOSROC) OR SIMILAR APPROVED ALTERNATIVELY TO BE CONSTRUCTED ON MASS CONCRETE AS DETAILED
10. EACH PLINTH TO HAVE 2 x Y16 DOWELS
11. HOLES FOR DOWELS TO BE 25mm
12. ALL NUTS TO BE SPOT WELDED IN TWO PLACES TO PREVENT REMOVAL AND THEREAFTER COLD GALVINISED.

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APPROVED:
CAPACITY:
DATE:



SCALE ON A1 : AS SHOWN
DESIGNED: T.K MASANGO
DRAWN: T.K MASANGO
CONTRACT No. 91/13/340 (21)
DATE: MARCH 2025
CHECKED: F. BALOYI PR. Eng
CHECKED: F. BALOYI PR. Eng
DESIGN CHECKED BY: F. BALOYI PR. Eng
CAPACITY: PROJECT ENGINEER

PROJECT: RAW WATER BULK
TITLE: PIPELINE BELA-BELA
DESCRIPTION: TYPICAL DETAILS

DRAWING No. BBLM/STD/03/2025/421